RK
& Associates, Inc.

January 13, 2021

R17421-7.3

Mr. Renante Marante
Environmental Engineer III
Chicago Department of Public Health
333 S. State Street, Room 200
Chicago, Illinois 60604

Large Recycling Facility Permit Application
General III, LLC (d/b/a Southside Recycling)
11554 S. Avenue O - Chicago, Illinois

Dear Mr. Marante:

In accordance with a Chicago Department of Public Health (CDPH) letter dated December 23, 2020, please allow the following submittal to serve as a new Class IVB Recycling Facility Permit application for General III, LLC d/b/a Southside Recycling ("Southside Recycling") at 11600 S. Burley Avenue, Chicago, IL.

The information presented herein and in the attached new application was compiled by various technical experts retained by Southside Recycling and by facility representatives.

Please note that the information and documentation included in this new application are being provided as a supplement to the original November 11, 2020 application. As such, the narratives and attachments from the original application are included herein. However, for ease of review any new or revised information being provided in the narrative sections of this application are included in blue text. Wherever additional attachments provided in this revised application conflict with attachments included in the original application, the new attachments supersede the original attachments.

If you have any questions or need any additional information, please don't hesitate to contact Jim Kallas, Environmental Manager Southside Recycling (jimkallas@general-iron.com) at 847-508-9170 or me (jpinion@rka-inc.com) at 630-393-9000.

Yours very truly,
RK & Associates, Inc.

John G. Pinion
Principal Engineer

cc: Mr. Jim Kallas – Environmental Manager – Southside Recycling – Chicago, Illinois – via e-mail

2 South 631 Route 59; Suite B
Warrenville, IL 60555
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Large Recycling Facility Permit Application
General III, LLC (d/b/a Southside Recycling)
11554 S. Avenue O - Chicago, Illinois

January 13, 2021

Prepared for:

Southside Recycling
11600 S. Burley Avenue
Chicago, Illinois 60617

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RK & Associates, Inc.

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ATTACHMENTS

Addendum 1

Response to December 23, 2020 Request for Additional Information for a
Class IVB Large Recycling Facility Permit Application located at
11600 S. Burley Avenue, Chicago, Illinois

1.0 INTRODUCTION

1.1 Description of Operations

General III, LLC (d/b/a Southside Recycling) will purchase discarded and end of life recyclable scrap metal from a variety of sources including independent recyclers, demolition companies, end-of-life vehicle suppliers, other recycling facilities, etc. Approximately 98 percent of the scrap metal delivered to Southside Recycling will be processed by a hammermill shredder and ferrous material separation system in order to separate ferrous metal (iron/steel) from nonferrous materials (nonferrous metal and nonmetallic material). Recovered ferrous metal will be loaded into barges, trucks and/or rail cars for delivery to steel mills and foundries. Nonferrous material, also known as shredder residue, will be further processed by the nonferrous material separation system to separate nonferrous metals (i.e. aluminum, copper, brass, etc.) from nonmetallic material (i.e. plastic, foam, etc.). Recovered nonferrous metal will be loaded into trucks for delivery to secondary nonferrous metal processing facilities, refiners, smelters, etc. All metals recovered from the process will be re-melted by steel mills, foundries, refiners, smelters, etc. and will eventually be transformed into consumable ferrous and nonferrous products. The nonmetallic material, also known as shredder fluff, will be loaded into trucks and sent to a landfill for use as alternate daily cover.

1.2 Applicant Summary

Corporation Name:	*General III, LLC (d/b/a Southside Recycling)*
Corporation Address:	*11554 S. Avenue O – Chicago, IL 60617*
Corporation Contact Name:	*Hal Tolin*
Corporation Phone Number:	*773-382-0123*

1.3 Facility and Property Summary

Facility Street Address:	*11600 S. Burley Avenue – Chicago, IL 60617*
Facility Phone Number:	*773-382-0123*

List of other businesses operating on the Property:

- *Reserve Marine Terminals*
- *Napuck Salvage of Waupaca*
- *South Shore Recycling*
- *RSR Partners (Regency Technologies)*

Description of other operations at the Property not covered under Permit:

The four entities listed above that are currently operating on the Property are all involved in activities associated with the recycling of scrap metal (ferrous and non-ferrous) and electronic devices including material receiving, sorting, shredding, breaking, baling, shearing, torch cutting, metal separation, ferrous/non-ferrous metals recovery, stockpiling, and off-site shipment of finished products. Inbound materials are delivered to the Property campus from a variety of sources including independent recyclers and commercial/industrial accounts via trucks, contract haulers, barge, and rail..

Following are activities specific to each operation:

- *Napuck Salvage of Waupaca operates an indoor Reserve Marine Terminals operates an indoor foundry sand/scrap recovery process and also conducts outdoor scrap processing activities that include sorting, shearing, breakage and torch cutting.*
- *Napuck Salvage of Waupaca operates an indoor aluminum and cast iron recycling process that includes crushing, shredding, screening, and washing.*
- *South Shore Recycling operates a small indoor/outdoor ferrous/non-ferrous scrap recycling center and also processes scrap metal through sorting, shearing, torch cutting and baling.*
- *RSR Partners (Regency Technologies) operates an indoor electronics recycling process that consists of manual breakdown of electronic materials with some limited baling.*

1.4 Property Owner's Authorization

A notarized letter, signed by the Owner, authorizing the Operator to use the Property as a Large Recycling Facility is included in Attachment A.

1.5 Property Taxes

Documentation evidencing the payment of real estate property taxes is included in Attachment B.

1.6 Nature of a Special Use

A copy of the minutes from the City of Chicago Zoning Board of Appeals documenting approval of a Special Use is included in Attachment C.

Included in Addendum 1 – Attachment A is copy of the "FINDINGS OF THE ZONING BOARD OF APPEALS IN THE MATTER OF THE SPECIAL USE AND VARIATION APPLICATIONS FOR 11600 S. BURLEY AVENUE BY GENERAL, III" along with a copy of the associated presentation to the Zoning Board of Appeals. Please note that the drawings and plant layout diagrams included in the presentation are renderings prepared for the purpose of meeting the standards set forth by the Zoning Board of Appeals. Separate drawings were prepared and submitted to Chicago Department of Buildings for purposes of construction.

2.0 DESIGN REPORT

The following sections document the components of the Design Report for the Facility.

2.1 Site Survey

A site survey prepared by a Professional Surveyor is included in Attachment D.

2.2 USGS Site Location Map

A USGS 7.5 Minute Quadrangle Map is included in Attachment E.

2.3 Aerial Photograph Drawing

An aerial photograph taken within the last year is included in Attachment F.

2.4 Residential Setbacks

No Facility boundary will be within 1,500 feet of the nearest residence.

2.5 Lake Michigan

The Facility will not be located within the Lake Michigan and Chicago Lakefront Protection District. A Lakefront Protection District Map identifying the location of the Facility is included in Attachment G.

2.6 One hundred Year Flood Plain

The Facility will not be located within the 100-year flood plain. A FEMA map identifying the location of Facility in an "*Area of Minimal Flood Hazard*" is included in Attachment H.

2.7 Wetlands

The Facility will not have a negative impact on wetlands. A Wetlands Inventory Map identifying the location of the Facility is included in Attachment I.

2.8 Endangered Species

The Facility will not pose a threat to any endangered species of plant, fish or wildlife. Pollution control measures at the Facility including storm water treatment systems and air emissions control equipment will help ensure that no endangered species are threatened.

2.9 Historical and Natural Areas

The Facility will not pose a threat to any historic site. A Chicago Landmarks and National Register of Historic Places (NHRP) map demonstrating that no landmarks or NHRPs are located within a half mile of the Facility is included in Attachment J.

2.10 General Layout of the Facility

Scaled drawings describing the general layout of the Facility as specified in Sections 3.9.5.1 to 3.9.5.13 of the "*Rules for Large Recycling Facilities Effective June 5, 2020*" are included in Attachment K.

Barge loading activity is included in *Section 1.1 Description of Operations* ("Recovered ferrous metal will be loaded into barges, trucks and/or rail cars for delivery to steel mills and foundries.") and throughout *Attachment V Air Quality Impact Assessment* of the application and contained herein. Further, emissions from barge loading activity was accounted for in the air dispersion modeling conducted for and approved by Illinois EPA Bureau of Air. Included in Addendum 1 – Attachment B is a Site Plan that delineates the location of the barge loading system. It should be noted that the property adjacent to the Calumet River is an approved Homeland Security (DHS) facility under 33 CFR Part 105. While Southside Recycling will be allowed egress onto the property adjacent to the river for the purposes of accessing barge loading operations, the owners of the property will continue to fulfill their obligations under the agreement with DHS.

2.11 Pavements

All roads and parking areas within the Facility will be paved with concrete, hot-mix asphalt, gravel or asphalt grindings. Scaled drawings demonstrating that all internal roads and parking areas are designed, constructed, and maintained to accommodate the vehicle flow rates and type of traffic loading expected at the Facility as specified in Sections 3.9.6.1 to 3.9.6.4 of the "*Rules for Large Recycling Facilities Effective June 5, 2020*" are included in Attachment L.

Included in Addendum 1 – Attachment C is an updated Site Plan indicating the final pavement layout at the Facility along with documentation of the aggregate base course and gradations for the material at the Facility. There will be no recyclable material stored in the gravel area between the scales and the ponds (delineated on the attached Site Plan as the 24,470 square foot area and the adjacent 8,231 square foot area.). The approximately 105,426 square foot gravel area south/southwest of the scales is primarily an unused portion of the Facility but it will have occasional vehicles and equipment passing over and/or stored on it. The approximately 22,000 square foot gravel area just north of the shredder will be utilized for storage of heavy shredder parts as well as shearing of heavy metal (i.e. rebar, beams, etc.). Concrete is not suitable in this approximately 22,000 square foot area due to the extreme weight and density of the material that will be handled and processed via shearing which would destroy the concrete very quickly. The gravel area where a portion of the shredded steel will be stockpiled is delineated on the attached Site

Plan as the 22,714 square foot area and the adjacent 75,143 square foot area. Due to the abrasive nature of loading out shredded ferrous material, concrete would be destroyed very quickly. Also included in Addendum 1 – Attachment C is a Draft Pavement Maintenance Plan. Pavement surfaces were designed and constructed in accordance with the facility grading plan to allow drainage of storm water toward catch basins and detention ponds to minimize ponding, dust and mud and to ensure no storm water runs off-site. In accordance with the grading plan, gravel surfaces were laid out with a grader equipped with a GPS to ensure proper level and grading of all surfaces. Gravel surfaces were then thoroughly compacted with a heavy-duty roller similar to those used in roadway construction projects. Due to the level of activity at the Facility, water will not be allowed to remain undisturbed for more than 48 hours.

2.12 Utilities

Scaled drawings demonstrating that Utilities are of adequate capacity and are readily available for the operations of the Facility as specified in Sections 3.9.7.1 to 3.9.7.3 of the "*Rules for Large Recycling Facilities Effective June 5, 2020*" are included in Attachment M.

Based on a thorough review of electrical requirements for the Facility, the electric utility provider (ComEd) determined that adequate capacity is available to meet the peak electrical demands for the operation. Included in Addendum 1 – Attachment D is a copy of an e-mail from a ComEd representative along with load capability reports confirming that the transformers are capable of providing the anticipated load at the Facility.

2.13 Water Sources

Water will be used at the Facility for shredder processing, fire suppression, dust control and employee facilities. Water usage will vary based on the season and precipitation levels. The anticipated annual water usage is approximately 50 million gallons per year. Scaled Fire Protection drawings are included in Attachment N.

Included in Addendum 1 – Attachment E is an estimated breakdown of approximate annual water usage at the Facility. Also included in Addendum 1 – Attachment F are Cut Sheets that provide the pump schedules requested by CDPH. The first pump system (1,500 GPM) is manufactured by Fairbanks Morse and it utilizes a jockey pump that produces 10 GPM. Pump Package 3, which is located in the shredder building, is manufactured by Bell & Gossett. At peak demand, the yard hydrants, Dust Bosses and shredder nozzles output 1,185 GPM at 90 psi. A breakdown of these components, which is included in the pump schedule for Pump Package 3 in Addendum 1 – Attachment F, demonstrates that adequate pressure and water flow will be provided for the yard hydrants, Dust Bosses and shredder nozzles.

2.14 Site Security

In order to prevent unauthorized access to the Facility, overseas containers will be placed along the

eastern boundary and portions of the northern boundary of the Facility, gates will be closed during off hours and a security camera surveillance system will be installed. Containers will be placed such that the height of the barrier will be between 16 and 24 feet above grade.

2.15 Structures and Fixed Equipment

The City of Chicago Department of Buildings issued Permits for all structures and fixed equipment at the Facility thereby ensuring that the Facility can be operated in a safe manner. Copies of Building Permits are included in Attachment O.

The shredding system, including shredder, material handlers, sorting equipment, conveyors, and air pollution control devices, is capable of processing 500 tons per hour or more. The Facility's Illinois EPA Bureau of Air permit allows for operation of the shredder system Monday through Friday from 7:00 a.m. to 7:00 p.m. and Saturday from 7:00 a.m. to 5:00 p.m. This is approximately 300 allowable shredding hours per month. Thus, the shredding system has the capacity to process approximately 150,000 tons per month. This capacity is well above the 100,000 tons per month that the Facility's shredding system is permitted to process by the Illinois EPA. Specifications for equipment for which an Air Pollution Control (APC) Permit was issued by CDPH are included in Addendum 1 – Attachment G. The associated sorting equipment, conveyors, and air pollution control devices are more than capable of handling their respective portions of the system capacity since each piece of equipment downstream of the shredder has a capacity well in excess of the quantity of material handled. The tables in Appendix A of the air dispersion modeling report included in Attachment V list the estimated material throughput rate for each piece of equipment. These figures are based on the approximate percentage of the material the shredder is expected to process (500 tons/hour). For instance, the conveyor that transports the residue after the shredder is expected to handle approximately 26 percent of the material processed by the shredder (500 tons/hour X 0.26 = 130 tons of residue per hour). While there is no specific data available for individual conveyors, based on experience at the Existing Facility this conveyor can handle quantities well in excess of 130 tons per hour.

The nonferrous separation system is capable of processing approximately 70 tons per hour. The Facility's Illinois EPA Bureau of Air permit allows for operation of the nonferrous separation system Monday through Saturday from 5:00 a.m. to 11:00 p.m. This is approximately 465 allowable operating hours per month. Thus, the nonferrous separation system has the capacity to process approximately 32,550 tons per month. Since the nonferrous generation rate is approximately 25% of the shredding system feed rate, the above capacity (32,550 tons per month) is well above the 25,000 tons per month that the Facility's shredding system will produce based on its 100,000 tons per month Illinois EPA permitted shredding system input. As explained above for the shredding system and based on experience from the Existing Facility, the associated sorting equipment, conveyors, and air pollution control devices for the nonferrous separation system are more than capable of handling their respective portions of the system capacity. The estimated amount that each piece of equipment will handle is identified in the tables provided in

Appendix B of the air dispersion modeling report included in Attachment V.

The process rates and descriptions for applicable equipment identified in the One-Line Diagram of Attachment M and the process rates of all manually operated processing areas and sorting stations are included in the above narrative and calculations for the shredding system and the nonferrous separation system.

Equipment Operations and Maintenance (O&M) Plans are included in Addendum 1 – Attachment H. The intent of the O&M Plans is to document certain responsibilities and procedures for the operation and maintenance of facility process and emission control equipment. Welding will be conducted as part of O&M and equipment repairs on an as-needed basis as indicated in the attached O&M Plans. As an example, if a crack was observed during a periodic inspection of the shredder feed chute, welding would be required to repair the crack. Maintenance on the RTO and wet scrubber will be performed in accordance with manufacturer recommendations. For calculations of the estimated amount of shredder fluff to be generated as a result of the metal shredding and separation process, historical data indicates that approximately 20.5% of material processed by the shredder is waste (i.e. shredder fluff). As an example, if 760,000 tons of material will be processed by the shredder per year yields approximately 155,800 tons of shredder fluff per year (0.205 x 760,000 tons). The only other waste generated by the structures and fixed equipment will be used lubricating oil generated during equipment maintenance activities. Small quantities of equipment lubricating oil, as well as other used oil generated as part of Facility maintenance activities, will be stored in the used oil ASTs equipped with secondary containment as outlined in the facility SPCC Plan. Used oil is ultimately disposed of by a licensed contractor. The quantity of used oil generated and shipped off-site will be recorded and documented in the Liquid Waste report which will be submitted to CDPH on an annual basis.

2.16 Tipping Floor and Storage Capacity

Calculations and drawings included in Attachment P demonstrate that sufficient floor and staging capacity exists to accommodate the inspection and unloading of peak volumes of inbound material and the staging and storage of materials.

Included in Addendum 1 – Attachment I is a drawing showing the areas that inbound material may be unloaded and the area that items requiring special handling (i.e. compressed gas cylinders, containers that may have contained flammable or combustible materials, materials that could potentially cause a fire, PCB-containing ballasts and capacitors mercury-containing devices and asbestos-containing materials). The area available for screening, unloading, handling and storage of inbound materials is approximately 111,300 square feet. The area available for the storage and staging of materials that require special handling is approximately 7,120 square feet. This is over 4 times the amount of space utilized at the Existing Facility for materials that require special handling. We estimate that the quantity of materials that will require special handling at the Facility will be less than 1/3 of the amount generated at the

Existing Facility due to the reduction in the estimated number of peddlers. Thus, the Facility has an abundance of excess space and capacity available. A calculation of the volume in cubic yards is not applicable since such materials will not be stacked. It should be noted that since scrap metal is very heterogeneous in nature, no two loads of incoming material are the same. As such, no inbound loads would be considered "atypical" or "random" nor would there be a specific, designated area for inspecting, screening, staging or storing atypical or unauthorized materials. Therefore, the facility will screen all loads and inspect for materials that require special handling in accordance with the Feedstock Management Plan included in Attachment W. The purpose of the Feedstock Management Plan is to detail the policy and procedures to be implemented in order to prevent certain materials from being processed by the shredder, and to ensure that such materials are handled and disposed of properly.

The area as shown in Addendum 1 – Attachment I that is available for unloading and staging of inbound materials is approximately 420 feet x 265 feet or 11,300 square feet. The angle of repose for scrap metal is estimated to be greater than 45 degrees. However, to be conservative and for ease of review, we have assumed a 45-degree angle of repose on all sides of a 30-foot tall material pile. The shape of such a pile is assumed to most closely resemble a truncated pyramid which is a pyramid whose vertex is cut away by a plane parallel to the base and has 6 faces (base, top and 4 lateral faces). The approximate volume of the pile was calculated using a calculator on aqua-calc.com, a website that includes a comprehensive list of conversions, calculations and reference tools from wide range of categories. Assuming the top of the pile is 360 feet x 205 feet, the estimated volume of the area available for unloading and staging inbound materials is approximately 102,167 cubic yards. It should be noted that any material storage or staging areas shown on the drawings submitted with the application were not intended to depict the exact location or dimensions of those areas. Rather, the drawings were intended to the show approximate locations of storage and staging piles and to demonstrate that the amount of space available at the Facility for such activities is more than adequate.

The two areas shown in Addendum 1 – Attachment I that are available for processed ferrous material total approximately 55,000 square feet. For ease of review and to be conservative, assuming that each area is approximately 200 feet x 135 feet (27,000 square feet per pile) this yields 54,000 square feet total for both piles. Assuming a 45-degree angle of repose on all sides of a 20-foot tall material pile and using the truncated pyramid calculator on aqua-calc.com yields a volume of 15,432 cubic yards per pile or 30,864 cubic yards total for processed ferrous material.

The area shown in Addendum 1 – Attachment I that is available for shredder residue awaiting processing at the nonferrous separation plant is approximately 120 feet x 100 feet. Assuming a 45-degree angle of repose on all sides of a 30-foot tall material pile and using the truncated pyramid calculator on aqua-calc.com yields a volume of 7,333 cubic yards.

Included in Addendum 1 – Attachment J are drawings (elevation and plan view) of the proposed covered post-processed ASR storage enclosure, steel storage bins, along with approximate locations of other extra

miscellaneous storage bins constructed of moveable concrete blocks. Storage bins will be used to store post-processed or intermediate-processed recyclable materials.

Due to the excessive amount of space available at the Facility, many of the miscellaneous storage bins depicted on some of the renderings submitted with the application are merely placeholders. Nevertheless, the total volume of miscellaneous product storage bins is far in excess of the storage capacity at the Existing Facility, which has proven to be more than adequate. Therefore, the storage capacity for the products to be stored at the Facility will not be an issue.

2.17 Water Drainage

The City of Chicago Department of Buildings approved plans for connection of drains at the Facility to the main sewer thereby demonstrating that adequate systems exist to handle stormwater and wastewater flows from the Facility. A copy of the approval letter and associated drawings are included in Attachment Q.

Included in Addendum 1 – Attachment K is a copy of the General NPDES Permit for Construction Activity issued to the Facility by the IEPA Bureau of Water. A General Storm Water NPDES Permit for Industrial Activity is not required since storm water from the Facility will discharge to the Metropolitan Water Reclamation District (MWRD) and not to "Waters of the United States". The NPDES Permit previously issued for the campus property by the Illinois EPA is in effect and will remain in effect even after Southside Recycling begins operations, with the exception that the portion of the property leased by Southside Recycling will be specifically excluded from the Permit. The NPDES Permit for the campus property is currently being updated to reflect this change. It should be noted that a retaining wall along the western edge of the campus property prevents any storm water that may not be collected and discharged to the MWRD treatment system from reaching the Calumet River. The Facility will operate in accordance with the SPCC Plan included in Attachment U. It should also be noted that all water from the Facility will pass through a system of catch basins, detention ponds and/or a triple basin, in order to collect solids and oils, and finally through a voluntarily purchased and installed state-of-the-art water treatment system for removal of other pollutants (i.e., TSS, FOG, etc.) prior to being discharged to the MWRD. The measures described above demonstrate that the water quality of the Calumet River will not be impacted by the Southside Recycling operation.

Based on an analysis of Facility operations, the manufacturer of the proposed storm water treatment system expects the treatment system to remove greater than 90% of TSS and FOG at a discharge rate of 1.62 cfs. The purpose of the caustic additive is pH adjustment and treatment optimization. Included in Addendum 1 – Attachment L is a copy of a Safety Data Sheet for 50% NaOH along with a copy of the O&M Plan for the treatment unit. Also included in Addendum 1 – Attachment L is a drawing and specifications for the triple basin associated with the system. Storm water detention ponds and associated inlets will be inspected quarterly for proper drainage and removal of any debris will also be conducted on

a quarterly basis. Accumulated sediment from the ponds will be handled and disposed of in accordance with applicable regulations.

2.18 Traffic

The size, design and layout of the facility will ensure that unnecessary idling of vehicles and equipment does not occur and that there will be minimal impact to existing traffic flows. According to a Traffic Impact Study performed for the facility, "it is anticipated that Site-generated trips and background traffic growth will be readily accommodated at the study intersections with minimal impacts." Vehicles anticipated at the Facility will include approximately 5 front end loaders, 5 forklifts, 3 skid steers, 2 fuel trucks, 2 water trucks, 1 street sweeper and 1 maintenance truck. Designated yard personnel will be qualified to operate each vehicle. A drawing depicting anticipated vehicle movement at the Facility along with the Traffic Impact Study referenced above is included in Attachment R.

Included in Addendum 1 – Attachment M is a stacking plan for trucks and other vehicles. The stacking plan demonstrates that there is adequate space for trucks within the facility and there should be no staging of trucks on the public way during normal and peak operations.

Included in Addendum 1 – Attachment N is a copy of the Traffic Study previously submitted to CDPH for initial review which concluded that the surrounding roadway network is designed to accommodate additional traffic potentially generated by Facility operations. This Study, along with the truck stacking plan, further demonstrates the adequacy and capacity of the Facility to avoid staging trucks on the public way during normal and peak operations.

2.19 Expected Waste Generation

Following is an estimate of the amount of waste to be generated at the Facility: Used oil: *8,000 gallons per year*

Parts washer solvent:	*300 gallons per year*
Shredder fluff: (nonhazardous special waste)	*150,000 tons per year*
PCB ballast and capacitors: (TSCA waste)	*15 tons per year*

The anticipated waste generation rates are estimates based on historical rates at the Existing Facility. Included in Addendum 1 – Attachment O are calculations of the estimated amount of refrigerants anticipated to be recovered each month. Also included in Addendum 1 – Attachment O are specifications for the EPA-certified device anticipated to be used for recovery of refrigerants at the Facility. It should be noted that the amount of refrigerants anticipated to be recovered will be less than 1/3 of the amount generated at the Existing Facility. This is due to the reduced number of peddlers expected to deliver scrap to the new facility and since peddlers are the primary source of refrigerant-containing materials. It should also be noted that the Facility will have extra recovery units and recovery tanks (i.e. 50-pound cylinders) on hand to ensure that the Facility will have more than enough capacity to handle and process all recyclable materials delivered to the Facility.

2.20 Parking

It is anticipated that the Facility will employ approximate 100 people. The total number of available parking spaces will exceed 100. The layout and design of Facility parking was previously approved by the City of Chicago Zoning Department.

2.21 Employee Facilities

A drawing depicting the location of employee facilities is included in Attachment S.

2.22 Perimeter Barrier

Overseas containers stacked 2–3 high (16’ – 24’) along the eastern boundary and portions of the northern boundary will obscure Facility Operations from the public way and adjacent properties.

2.23 Stormwater Pollution Prevention

The Facility will not be subject to Stormwater Pollution Prevention requirements since all storm water at the Facility will discharge to the Metropolitan Water Reclamation District (MWRD) of Greater Chicago wastewater treatment systems.

As noted, the Facility will discharge to the Metropolitan Water Reclamation District (MWRD) and not to “Waters of the United States”. Storm water will be contained and managed by an elevated rail track and a retaining wall along the western edge of the campus property. Implementation of the SPCC Plan that will further prevent any storm water that may not be collected and discharged to the MWRD treatment system from reaching the Calumet River. Water from the Facility will also be contained and managed by the system of catch basins, detention ponds and a triple basin, in order to collect solids and oils, and also by the voluntarily purchased and installed state-of-the-art water treatment system for removal of other pollutants (i.e., TSS, FOG, etc.) prior to being discharged to the MWRD.

2.24 Noise Impact Assessment

A Noise Impact Assessment prepared by Shiner Acoustics is included in Attachment T.

Included in Addendum 1 – Attachment P is a draft noise monitoring plan along with specifications for the proposed noise meter that will be placed in the same general location as the PM-10 monitor (near the Northeast corner of the campus property). The Noise Impact Assessment included in Attachment T indicates that the Facility will be in compliance with applicable noise regulations. Sound pressure levels recorded by the noise meter will be periodically reviewed to ensure that any noise from Facility operations remains below allowable levels.

2.25 Storage Tanks

All storage tanks used to store oil, chemicals and flammable liquids will have secondary containment and will be approved by the Office of the Illinois State Fire Marshal and CDPH's Storage Tank Unit. A draft Facility Spill Prevention Control and Countermeasure (SPCC) Plan is included in U.

There will be two 550-gallon hydraulic tanks located in the NW corner of the maintenance building at the Facility. They will sit within a containment box that measures 6.5' wide by 12.75' long by 2.25' tall. Two 275-gallon used oil tanks will also be located in the NW corner of the building. They will sit within a containment box that measures 5' wide by 7.5' long by 3' tall. Included in Addendum 1 – Attachment Q is a drawing showing the expected locations of the aboveground storage tanks (ASTs) anticipated to be installed at the Facility along with a schematic of the hydraulic oil ASTs. Final AST locations will be determined following a review by Chicago Fire Prevention Bureau.

2.26 Air Quality Impact Assessment

An Air Quality Impact Assessment including an air dispersion modeling report and a dust monitoring plan is included in Attachment V.

The layouts of the processing systems for the ferrous and non-ferrous material processing systems are proprietary and contain information critical to the ongoing sustainability of the business. The information contained in the drawings would reveal information regarding the Facility's proprietary processes that yield processing and recycling rates that are unmatched in the industry. However, any and all information regarding environmental impacts of the ferrous and nonferrous material processing systems are being presented in the following manner: 1) The location of the systems are shown on the site plans included in the application; 2) All the equipment that comprise each of the systems are listed in the APC Permit and are included in Addendum 1 – Attachment G; 3) Detailed descriptions of equipment and material transfer points are listed in Appendix A and Appendix B of the Air Dispersion Modeling Reporting included in Attachment V; and 4) Air Dispersion Modeling results, submitted to and approved by Illinois EPA Bureau of Air, accounted for all equipment including exact location at the Facility.

Included in Addendum 1 – Attachment R are calculations of PM_{-10} emissions due to vehicle travel on paved and unpaved surfaces. As described herein, the majority of the roads will be paved. For purposes of the IEPA construction permit application, it was estimated that less than 5% of the vehicle travel areas would be unpaved and the unpaved areas would not be routinely traveled. Due to the anticipated low usage of unpaved areas, unpaved road emissions were not considered in the modeling but were included in the permit application for completeness.

Included in Addendum 1 – Attachment S describes a revision of the PM_{10} emission rate from Dust Collector DC-01 used in the PM_{10} modeling analysis. DC-01 is a baghouse that will control particulate emissions from sources located in the Fines Processing Building, which is part of the Non-Ferrous Material Separation System. The emission rate used in the initial PM_{10} modeling analysis was reported as a lb/hr emission rate but was actually a lb/minute emission rate. The lb/min PM_{10} emission rate was adjusted to a lb/hr PM_{10} emission rate and the model was re-run. The revised modeling identified only a slight increase in the predicted 6^{th} highest PM_{10} concentration from 29.37 to 30.02 ug/m3, which is still significantly below the applicable standard. A description of this change and a summary of the revised modeling results is included in Addendum 1 - Attachment S.

The placement of the west PM-10 monitor is anticipated to be in the Northwest corner of the campus property. The activities closest to this location include vehicle traffic and barge loading. It is the opinion of air emissions experts that this is the most appropriate “upwind” location and the best possible way to minimize the potential of measuring PM-10 emissions from on-site activities. It should be noted, however, that while the predominant wind direction in the Chicago area is generally west to east, it may not always be possible to avoid measuring PM-10 emissions at the “upwind” monitor due to variations in wind direction and speed.

3.0 OPERATING PLAN

The following sections document the components of the Operating Plan for the Facility.

3.1 Types of Recyclable Material

The Facility will accept ferrous and nonferrous recyclable materials as outlined in the Description of Operations. Material inspection and screening procedures are described in the Feedstock Management Plan which is included in W. Any hazardous or dangerous materials will be handled by licensed third-party contractors.

Included in Addendum 1 – Attachment T is correspondence from RadComm which includes specifications, maintenance and calibration requirements for the radiation detectors in sheet TM-01. Also included in Addendum 1 – Attachment T are procedures for screening potential radioactive material which was developed in consultation with the Illinois Emergency Management Agency (IEMA). Potential radioactive materials that are segregated at the Facility will be stored in a secure room prior to being picked up by IEMA personnel. Radioactive materials picked up from the Facility will be handled and disposed of by IEMA under the Illinois Orphan Source Recovery Program, which is a non-emergency response hazard mitigation program that collects and properly disposes of unwanted or abandoned radioactive material.

3.2 Quantity of Recyclable Material

Facility is permitted by Illinois EPA to process up to 100,000 tons per month of scrap metal. Facility will implement an electronic receiving/shipping program in order to track and record all information in an electronic database.

While the Illinois EPA Permit for the Facility does not include daily production limits, a daily rate has been estimated to demonstrate that the peak daily quantity of material can be accepted and processed at the Facility. Based on the Illinois EPA Permit which allows the Facility to handle and process up to 100,000 tons of material per month and based on historical data indicating that the Existing Facility receives approximately 50% less material on Saturdays, this yields approximately 4,228 tons of inbound material per day (100,000 tons/month X 1 month/4.3 weeks X 1 week/5.5 days). As outlined in the enclosed Truck Stacking Plan, the estimated peak unloading capacity at the Facility is 900 tons per hour. Assuming trucks are capable of unloading at the maximum rate for 14 hours, the peak quantity of metal that could be accepted at the Facility is 12,600 tons per day. As outlined above, the Facility has approximately 102,167 cubic yards of space available for staging of inbound material. Assuming an approximate weight of 15 pounds per cubic foot for unprocessed ferrous scrap, the staging area in front of the shredder could accommodate over 20,000 tons of material (15 pounds/cubic foot X 27 cubic feet/cubic yard X 102,167 cubic yards X 1 ton/2,000 pounds = 20,689 tons). This represents enough

space to stage inbound material for almost five days if the Facility shredding system did not operate during the five day period. While the Illinois EPA Permit does not limit shredding system production on a daily basis, it does currently include daily operating limits (12 hours per day Monday through Friday, 10 hours on Saturday). Assuming the shredding system operates at 500 tons per hour, the system is capable of processing 6,000 tons of material in one day (12 hours/day X 500 tons/hour), which is significantly more than 4,228 tons.

Included in Addendum 1 – Attachment U is an example of the information that will be documented and recorded for each load of material entering and exiting the facility through a Tableau tracking system. As demonstrated by the example provided, this is a robust system capable of tracking all inbound and outbound loads and generating detailed reports summarizing material deliveries and shipments broken down by material type and by mode of transportation.

As detailed above, the Facility is capable of processing substantially more than the permitted amount of 100,000 tons per month. Based on historical data from the Existing Facility along with knowledge of the metal recycling market, the expected peak volumes of inbound material will be 20% to 25% less that the monthly permitted amount. Since it has been demonstrated that the Facility can easily handle and process in excess of 100,000 tons per month, the Facility is clearly capable of processing peak material volumes.

3.3 Devices, Apparatus, and Processes

The Facility will be capable of processing 100,000 tons per month of scrap metal as permitted by Illinois EPA. A description of the Facility Health and Safety Plan and worker air and noise exposure sampling is included in Attachment X.

Included in Addendum 1 – Attachment V is the draft health and safety plan and job hazard assessment matrix for the Facility.

Hearing protection will be provided to workers in certain areas that, based on experience at the Existing Facility, could potentially require hearing protection. In order to comply with OSHA Standard 1910.95, Occupational Noise Exposure, Southside Recycling will contract with a Certified Industrial Hygienist (CIH) to determine the areas within the Facility that produce noise levels at 85 decibels or more using a sound level meter. Employees working in these identified areas will be entered into the Hearing Conservation Program where they will receive training and testing in accordance with the Standard. The CIH will also assess areas at the Facility that may require a respiratory protection program. Based on conditions at the Existing Facility, a respiratory program is not required. However, once the Facility is operational, to comply with OSHA Standard 1910.134, Respiratory Protection, Southside Recycling will contract with the CIH to establish baseline levels, which will then be used to determine whether repeat air monitoring is necessary.

3.4 Fire Prevention

Flammable or explosive liquids will be stored in appropriate explosion-proof containers/cabinets. Compressed gas cylinders will be secured and stored in dedicated areas of the Facility away from potential ignition sources. Infrared detection devices will be used to detect potential hot spots in material storage piles. The hammermill shredder will be equipped with a deluge water system to rapidly extinguish a fire that may occur during the shredding process. Designated yard personnel will be trained in fire extinguishing procedures.

Included in Addendum 1 – Attachment W is a list of flammable or explosive materials anticipated to be used at the Facility along with an estimated maximum amount of each material anticipated to be on site at any one time.

An air monitor/bypass damper system will be installed to monitor the shredder exhaust stream for potentially explosive gases and allow such gases to bypass the RTO in order to prevent explosion and damage to the RTO. Included in Addendum 1 – Attachment X is a thorough narrative that was provided to Illinois EPA detailing the equipment and procedures to be implemented at the Facility to prevent explosion and damage to the RTO. Also included in Addendum 1 – Attachment X are specification sheets for the Flammability Analyzer (LEL Monitor) that will measure the Lower Explosive/Flammability Level of the shredder exhaust stream.

Included in Addendum 1 – Attachment Y is a site plan that delineates the approximate location of fire extinguishers anticipated to be in place at the Facility. These locations were selected based on the size and potential hazards at the Facility. Exact locations of fire extinguishers will be finalized after fire prevention professionals are consulted and construction of the Facility is complete.

Included in Addendum 1 – Attachment Z is a specification sheet for the six (6) thermal cameras anticipated to be installed at the Facility along with a site plan that delineates the approximate location of each camera at the Facility and the spatial extent covered by each detector. Also included in Addendum 1 – Attachment Z are operating procedures for the cameras and procedures for responding to a hot spot.

3.5 Emergency Communications

Chain-of-command in the event of an emergency is 1) yard personnel to 2) Environmental Manager to 3) third party contractor (i.e. Hazchem Environmental, Addison, IL).

3.6 First Aid Equipment

Each building at the Facility will be equipped with at least one first aid kit for treatment of minor injuries. First aid kits will be supplied and inspected by a third party contractor (i.e. Cintas) on a regular basis.

3.7 Rodent/Vector Control

A third party vector control specialist will be contracted to provide services required including inspection of Facility on a monthly basis.

Included in Addendum 1 – Attachment AA is a letter from Smithereen Pest Management Services (Smithereen) documenting that Smithereen has been contracted to prepare a vector control plan (Plan) for the Facility. According to Smithereen, a final Plan cannot adequately be prepared during the winter months due to the lack of vectors during cold weather. Smithereen recommends waiting until construction of the Facility is complete and until spring weather arrives in April before preparing a final Plan. Nevertheless, the attached letter lists the procedures that Smithereen anticipates performing as part of the Plan in order to control vectors. A final vector control plan will be submitted to CDPH as soon as it is prepared by Smithereen.

3.8 Vehicles

Vehicles anticipated at the Facility will include approximately 5 front end loaders, 5 forklifts, 3 skid steers, 2 fuel trucks, 2 water trucks, 1 street sweeper and 1 maintenance truck. Designated yard personnel will be qualified to operate each vehicle.

Included in Addendum 1 – Attachment BB is a draft Vehicle Operating Plan for the Facility that lists potential activities to be performed by each vehicle. It should be noted that each vehicle may be used for a variety of purposes. For instance, the front-end loaders may be used to load processed ferrous scrap, to load shredder fluff or to consolidate scrap material into piles. The amount of time that each front-end loader will spend performing each task will constantly be changing, and one or more of those tasks may not even be performed by a particular vehicle on any given day. An operating plan for each vehicle to be used at the Facility is not appropriate since the proposed vehicles merely serve as support equipment for recycling operations within the Facility. Operation of vehicles within a facility do not require licenses or certifications However, certain vehicles (i.e. forklifts) that may be regulated by OSHA will comply with applicable regulations. Preventive maintenance checks and services will be performed as recommended by the vehicle manufacturer.

As outlined above, the vehicles proposed to be operated at the Facility will merely serve to support recycling operations and, as such, none of the vehicles can be assigned a process rate or capacity. However, the size and number of vehicles at the Facility will ensure that all inbound and outbound materials can be handled efficiently, even during peak operating levels.

3.9 Disposal Facilities

Following are the anticipated disposal facilities to be used by the Facility:

- Shredder fluff: *Newton County Landfill*
- PCB ballasts/capacitors: *Veolia Environmental Services*
- Used oil: *Excel Oil Service*
- Parts washer solvent: *Safety-Kleen*
- Recovered refrigerants: *Hudson Technologies*

Waste characterization profiles for the shredder fluff generated at the Existing Facility demonstrate that the shredder fluff is nonhazardous. However, such profiles and associated laboratory analysis results cannot be utilized for landfill approval of the shredder fluff at the new facility. As such, shredder fluff to be generated will need to be collected and a new waste characterization profile will need to be obtained from the landfill once the Facility is operational. Regardless, the most recent Waste Profile and associated laboratory analytical results for the shredder fluff from the Existing Facility are included in Addendum 1 – Attachment CC. No treatment is necessary to render shredder fluff a non-hazardous waste prior to shipment offsite. It should be noted that the Existing Facility voluntarily chose to introduce a stabilization product into the nonferrous material process even though the vast majority of metal shredding facilities in the United States do not introduce any such stabilization materials into their process. Initially, Southside Recycling plans to utilize stabilization material at the new facility and to continue disposing of the shredder fluff at Newton County Landfill. The expectation is that the landfill, at their discretion, will utilize the fluff as daily cover.

3.10 Daily Housekeeping and Cleaning

Facility will operate in accordance with the Fugitive Particulate Operating Program submitted to Illinois EPA.

Included in Addendum 1 – Attachment DD is a copy of the Fugitive Particulate Operating Program that was submitted to the IEPA.

Included in Addendum 1 – Attachment EE are the specifications for the street sweeper anticipated to be used at the Facility. The specifications for the street sweeper do not include rated effectiveness at removing fine particulates such as PM10. However, the street sweeper is typical of those used for cleaning paved surfaces.

The referenced "Shaker" structure referenced in Attachment R is simply a set of two conveyors including a vibratory (shaking) conveyor that load overseas containers. Southside has not yet decided whether this

equipment will be installed and operated at the Facility. Potential emissions from these conveyors were included and accounted for in the air dispersion modeling conducted for the Facility. In the event that Southside Recycling decides to install this equipment, CDPH will be provided the required information.

Included in Addendum 1 – Attachment FF is a plan drawing showing the approximate spatial coverage for each Dust Boss. It should be noted that the coverage of each Dust Boss will vary due to the variability of wind speed and direction on a particular day and time. The proposed location of each Dust Boss was strategically chosen based on the areas within the Facility that are most likely to produce dust and based on the device's ability to mitigate airborne dust before it reaches property boundaries. However, it should be noted that the number and location of Dust Bosses was not selected with the intent of operating all Dust Bosses simultaneously nor providing coverage for the entire Facility. We know of no other metal recycling facility in the country that employ anywhere near this quantity of Dust Bosses.

Included in Addendum 1 – Attachment GG is a plan and schedule for patrolling and cleaning adjacent off-site areas for materials potentially generated from activities at the Facility. Due to the location of the Facility within the campus property and size of the campus property itself, in combination with the Facility Fugitive Particulate Operating Program, no litter or ASR fiber is expected to travel onto the public way.

3.11 Hours of Operation

Facility will operate 24 hours per day, 7 days per week. However, shredding activities will be limited to the hours between 7:00 a.m. and 7:00 p.m. Monday through Friday and between 7:00 a.m. and 5:00 p.m. Saturday.

The IEPA Air Permit was issued as a means of regulating Facility operations by setting limits on certain activities that produce air emissions (i.e. vehicle traffic, non-ferrous system barge loading, etc.). A large percentage of the 24/7 operation will involve activities (i.e. equipment and vehicle maintenance) that do not produce air emissions and thus, would not be addressed in the IEPA Air Permit. Therefore, the hours of operation in the IEPA Permit and the LRF Permit do not coincide. Regarding instances in which a particular activity is regulated by both the IEPA Permit and the LRF Permit, the Facility will operate in accordance with the more restrictive permit.

3.12 Closure Plan

Material to be received and processed at the Facility is a commodity that would be sold upon closure. Purchase and installation of equipment is a significant investment that would also be sold upon closure.

3.13 Other Information

Included in Addendum 1 – Attachment HH is an odor monitoring plan for the Facility. With regard to odor control, it should be noted that at metal shredding facilities, the shredding operation is the most likely source of odors. The most proven and effective method of controlling odors generated from a metal shredding process is the operation of an RTO for the destruction of Volatile Organic Compounds (VOCs). Since the RTO to be installed on the shredder at the Facility has been proven to have a VOC destruction efficiency of >98%, the plan for controlling odors at the Facility is the operation of the RTO.

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment A
Property Owner Authorization

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South Chicago Property Management Ltd.
11600 S. Burley Ave.
Chicago, IL 60617
(773) 382-0123

To Whom It May Concern:

South Chicago Property Management Ltd. hereby authorizes General III, LLC to operate a recycling facility in accordance with The City of Chicago Large Recycling Facility Ordinance.

If you have any questions, please feel free to contact me.

Sincerely,
South Chicago Property Management Ltd.

Hal Tolin
Manager

STATE OF INDIANA NOTARY SEAL
DENISE E. FOLLMAR
Notary Public, State of Indiana
Lake County
Commission # 697056
My Commission Expires
February 22, 2025

Denise E. Follmar
9/24/20

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RK
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Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment B
Property Taxes

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26-19-102-020-0000

No Sold or Delinquent Taxes for this PIN as of 10/1/2020

Data provided reflects only delinquencies for general taxes billed under this property index number. Additional delinquencies may exist for this property index number. For information regarding Special Assessments, please contact our office. Additional delinquencies may exist for this property if parcels have been voided as part of a parcel reconfiguration, such as a parcel division, subdivision or consolidation.

The data displayed herein is for public information purposes only. No warranties of any kind, express or implied, as to the accuracy or completeness of the information contained herein, as to its interpretation, as to any omissions therefrom, as to its freedom from contamination from computer viruses and malware, or as to its fitness for any particular purpose.

Users hereof are specifically advised and cautioned that the information contained herein does not constitute an official record. Although it is periodically updated, this information may not reflect the data currently on file in the business records of the Cook County Clerk's Office. The Cook County Clerk assumes no liability for any damages incurred, whether directly or indirectly, actual, incidental, punitive or consequential, as a result of any errors, omissions or discrepancies in any information contained herein or as a result of any person's use of such information. Any use of the information contained herein shall be at the sole risk of the user.

26-19-200-023-0000

No Sold or Delinquent Taxes for this PIN as of 10/1/2020

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26-19-200-021-0000

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26-19-201-017-0000

No Sold or Delinquent Taxes for this PIN as of 10/1/2020

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26-19-201-018-0000

No Sold or Delinquent Taxes for this PIN as of 10/1/2020

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26-19-102-018-0000

No Sold or Delinquent Taxes for this PIN as of 10/1/2020

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26-19-200-024-0000

No Sold or Delinquent Taxes for this PIN as of 10/1/2020

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26-19-200-027-0000

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Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment C
Nature of a Special Use

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CITY OF CHICAGO ZONING BOARD OF APPEALS
FRIDAY- March 15, 2019
121 N. LaSalle Street- City Council Chambers- 2nd Floor

Approval of the minutes from the February 15, 2019 regular meeting of the Board.

Approval of the agenda for the March 15, 2019 regular meeting of the Board.

9:00 A.M.

136-19-Z **ZONING DISTRICT: B2-3** **WARD: 25**
APPLICANT: Skyriver Archer Development, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3188 S. Archer Avenue
SUBJECT: Application for a variation to reduce the rear setback from the required 30' to 10' on floors containing dwelling units for a proposed four-story building with general retail sales and twenty-four dwelling unit building.

- **Approved**

137-19-Z **ZONING DISTRICT: B2-3** **WARD: 25**
APPLICANT: Skyriver Archer Development, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3198 S. Archer Avenue
SUBJECT: Application for a variation to reduce the rear yard setback from the required 30' to 10' on floors containing dwelling units for a proposed four-story building with ground floor retail and twenty-four dwelling units above.

- **Approved**

138-19-Z **ZONING DISTRICT: B2-3** **WARD: 25**
APPLICANT: Skyriver Archer Development. LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3210 S. Archer Avenue
SUBJECT: Application for a variation to reduce the rear yard setback from the required 30' to 10' on floors containing dwelling units for a proposed four-story building with ground floor retail and twenty-four dwelling units above.

- **Approved**

139-18-Z **ZONING DISTRICT: B2-3** **WARD: 25**
APPLICANT: Skyriver Archer Development, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3218 S. Archer Avenue
SUBJECT: Application for a variation to reduce the rear yard setback from the required 30' to 10' on floors containing dwelling units for a proposed four-story building with ground floor retail sales and twenty-four dwelling units above.

- **Approved**

140-19-Z **ZONING DISTRICT: C1-1** **WARD: 21**
APPLICANT: Beverage Art II dba Wild Blossom II Southworks Brewing Co.
OWNER: 9015 S. Hermitage, LLC
PREMISES AFFECTED: 9016-30 S. Hermitage Avenue
SUBJECT: Application for a variation to establish a public place of amusement license to provide live entertainment and retail space within an existing brewery which is located within 125' of a residential district.

- **Continued to April 19, 2019 at 9:00 a.m.**

141-19-S **ZONING DISTRICT: B3-2** **WARD: 22**
APPLICANT: Moreno's Discount Liquors, Inc. dba Osito's Tap
OWNER: Rosemary and Michael Moreno
PREMISES AFFECTED: 2553 S. Ridgeway Avenue
SUBJECT: Application for a special use to establish a tavern.

- **Approved**

142-19-S **ZONING DISTRICT: B1-1** **WARD: 16**
APPLICANT: Antoine Bryant
OWNER: Ray Farhoud
PREMISES AFFECTED: 5956 S. Racine Avenue
SUBJECT: Application for a special use to establish a beauty salon.

- **Approved**

143-19-Z **ZONING DISTRICT: RS-3** **WARD: 25**
APPLICANT: Adolfo Orozco
OWNER: Same as applicant
PREMISES AFFECTED: 2012 W. Coulter Avenue
SUBJECT: Application for a variation to reduce the front setback from the required 9.44' to 8.4', east setback from 2' to 1.88', west setback from 2' to 1.27', combined side setback from 4.8' to 3.15' to replace the existing basement frame walls with masonry and concrete of the existing single family residence.

- **Approved**

144-19-Z **ZONING DISTRICT: RS-2** **WARD: 41**
APPLICANT: Chi Partners, LLC 5500 Series
OWNER: Same as applicant
PREMISES AFFECTED: 5500 N. Nottingham Avenue
SUBJECT: Application for a variation to reduce the rear setback from the required 36.60' to 2.62', north setback from 4.36' to 0.36', south setback from 4.36' to 3.55', combined side setback from 13.10' to 3.71' for the subdivision of an existing zoning lot into two lots. The existing single family residence shall remain.

- **Approved**

145-19-Z **ZONING DISTRICT: RS-2** **WARD: 41**
APPLICANT: Chi Partners, LLC 5500 Series
OWNER: Same as applicant
PREMISES AFFECTED: 5500 N Nottingham Avenue
SUBJECT: Application for a variation to reduce the rear yard open space from the required 400 square feet to 78 square feet to allow the subdivision of an existing zoning lot into two zoning lots. The existing single family residence shall remain.

- **Approved**

146-19-Z **ZONING DISTRICT: RS-2** **WARD: 41**
APPLICANT: Chi Partners, LLC 5500 Series
OWNER: Same as applicant
PREMISES AFFECTED: 5462 N. Nottingham Avenue
SUBJECT: Application for a variation to reduce the front setback from the required 76.21' to 14', north setback from 4.29' to 3' south from 4.29' to 3.08', combined setback from 12.87' to 6.08' for a proposed two-story single family residence with an attached two-car garage.

- **Approved**

147-19-Z **ZONING DISTRICT: RT-4** **WARD: 43**
APPLICANT: Marcus Trivedi Declaration of trust dated 9/20/06
OWNER: Same as applicant
PREMISES AFFECTED: 2224 N. Halsted Street
SUBJECT: Application for a variation to reduce the front setback from the required 15' to 13.83', north from 2' to 0.33', combined side setback from 5' to 3.33' rear for the detached garage from 2' to 1.44' for a proposed three-story, single family residence with a roof deck and detached garage.

- **Approved**

148-19-S **ZONING DISTRICT: B3-5** **WARD: 28**
APPLICANT: Chicago Fuel, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 43 N. Homan Boulevard
SUBJECT: Application for a special use to establish a gas station with nine pumps and a one-story accessory retail building.

- **Continued to April 19, 2019 at 9:00 a.m.**

149-19-Z **ZONING DISTRICT: RT-3.5** **WARD: 44**
APPLICANT: Joseph Martin Brown
OWNER: Joseph Martin Brown and Kimberly Susan Deeb
PREMISES AFFECTED: 3735 N. Wayne Avenue
SUBJECT: Application for a variation to reduce the rear setback from the required 34.68' to 2', north setback from 3' to zero, south setback from 3' to zero, combined side setback from 6' to zero for a proposed rear yard connection from the principal building to the garage roof deck.

- **Approved**

150-19-S **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-35 N. Elston, LLC
PREMISES AFFECTED: 4033 N. Elston Avenue
SUBJECT: Application for a special use to establish residential use below the second floor for a proposed four-story, four dwelling unit building.

- **Approved**

151-19-Z **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-35 N. Elston, LLC
PREMISES AFFECTED: 4033 N. Elston Avenue
SUBJECT: Application for a variation to reduce the minimum lot area from the required 4,000 square feet to 3,794.591 square feet for a proposed four-story, four dwelling unit building.

- **Approved**

152-19-Z **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-35 N. Elston, LLC
PREMISES AFFECTED: 4033 N. Elston Avenue
SUBJECT: Application for a variation to increase the maximum allowed height of 45' to 49.29' which is not more than 10% for a proposed four-story, four dwelling unit building.

- **Approved**

153-19-S **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-35 N. Elston, LLC
PREMISES AFFECTED: 4035 N. Elston Avenue
SUBJECT: Application for a special use to establish residential use below the second floor for a proposed four-story, four dwelling unit building.

- **Approved**

154-19-Z **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-35 N. Elston, LLC
PREMISES AFFECTED: 4035 N. Elston Avenue
SUBJECT: Application for a variation to increase the maximum allowed height from 45' to 49.29' which is not more than 10% for a proposed four-story, four dwelling unit building.

- **Approved**

155-19-S **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-35 N. Elston, LLC
PREMISES AFFECTED: 4039 N. Elston Avenue
SUBJECT: Application for a special use to establish residential use below the second floor for a proposed four-story, four dwelling unit building.

- **Approved**

156-19-Z **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-35 N. Elston, LLC
PREMISES AFFECTED: 4039 N. Elston Avenue
SUBJECT: Application for a variation to reduce the minimum lot area from the required 4,000 square feet to 3,814.883 square feet for a proposed four-story, four dwelling unit building.

- **Approved**

157-19-Z **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-35 N. Elston, LLC
PREMISES AFFECTED: 4039 N. Elston Avenue
SUBJECT: Application for a variation to increase the height from the maximum 45' to 49.29' which is not more than 10% for a proposed four-story, four dwelling unit building.

- **Approved**

158-19-S **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-15 N. Elston, LLC
PREMISES AFFECTED: 4041 N. Elston Avenue
SUBJECT: Application for a special use to establish residential use below the second floor for a proposed four-story, four dwelling unit building.

- **Approved**

159-19-Z **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-35 N. Elston, LLC
PREMISES AFFECTED: 4041 N. Elston Avenue
SUBJECT: Application for a variation to reduce the minimum lot area from the required 4,000 square feet to 3,997.618 square feet for a proposed four-story, four dwelling unit building.

- **Approved**

160-19-Z **ZONING DISTRICT: C2-2** **WARD: 45**
APPLICANT: 4031 N. Elston, LLC
OWNER: 4031-35 N. Elston, LLC
PREMISES AFFECTED: 4041 N. Elston Avenue
SUBJECT: Application for a variation to increase the height from the maximum 45' to 49.29' which is not more than 10% for a proposed four-story, four dwelling unit building.

- **Approved**

161-19-Z **ZONING DISTRICT: B2-3** **WARD: 33**
APPLICANT: GMP Development, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3253 N. Elston Avenue
SUBJECT: Application for a variation to reduce the front setback from the required 8.25' to 0.5', rear setback from 30' to zero on floors containing dwelling units, north and south setbacks from 2' each to zero for a proposed four-story, three dwelling unit building with roof deck, rear open deck and three enclosed parking stalls.

- **Approved**

162-19-S **ZONING DISTRICT: C1-2** **WARD: 19**
APPLICANT: Vidhi Properties, LLC
OWNER: City of Chicago
PREMISES AFFECTED: 1955 W. Monterey Avenue
SUBJECT: Application for a special use to establish a one-lane drive through to serve a proposed one-story fast food restaurant.

- **Approved**

163-19-Z **ZONING DISTRICT: RS-2** **WARD: 39**
APPLICANT: Jennifer Nykaza Zwagerman
OWNER: Same as applicant
PREMISES AFFECTED: 5269 N. Laporte Avenue
SUBJECT: Application for a variation to reduce the rear setback from the required 34.7' to 2', south setback from 4' to 0.01' (north to be 0.75'), combined side setback from 9.3' to 0.76' for a proposed second floor addition, a two story addition and a three-car garage with roof deck.

- **Approved**

164-19-Z **ZONING DISTRICT: B3-1** **WARD: 14**
APPLICANT: Chris Araiza
OWNER: Jacel Kozminski
PREMISES AFFECTED: 4758 S. Pulaski Road
SUBJECT: Application for a variation to establish a public place of amusement license to provide live entertainment, music, DJ and cover charge within an existing tavern which is located within 125' of a residential district.

- **Continued to May 17, 2019 at 9:00 a.m.**

165-19-Z **ZONING DISTRICT: B2-5** **WARD: 27**
APPLICANT: 1511 Sedgwick, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 1511 N. Sedgwick Street
SUBJECT: Application for a variation to reduce the rear yard setback from the required 30' to 4.50' for a proposed four-story, seven dwelling unit building with two interior parking spaces, roof deck and stair enclosures.

- **Approved**

166-19-Z **ZONING DISTRICT: B2-5** **WARD: 27**
APPLICANT: 1511 Sedgwick, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 1511 N. Sedgwick Street
SUBJECT: Application for a variation to increase the maximum height of 50' to 50.50' which is less than 10% for a proposed four-story, seven dwelling unit building with two interior parking spaces, roof deck and stair enclosures.

- **Withdrawn**

167-19-S **ZONING DISTRICT: B3-2** **WARD: 3**
APPLICANT: Diza Taco Properties Dan Ryan, LLC
OWNER: Sasafrasnet, LLC
PREMISES AFFECTED: 255 W. Garfield Boulevard
SUBJECT: Application for a special use to establish a one-lane drive-through facility to serve a proposed fast food restaurant.

- **Approved**

168-19-S **ZONING DISTRICT: C1-2** **WARD: 5**
APPLICANT: Raina Stony, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 7019 S. Stony Island Avenue
SUBJECT: Application for a special use to establish a one-lane drive-through to serve a proposed one-story fast food restaurant.

- **Approved**

169-19-S **ZONING DISTRICT: B3-5** **WARD: 27**
APPLICANT: Old Town Luxury Suites, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 155-59 W. North Avenue
SUBJECT: Application for a special use to reduce the required on-site parking by 100% for a proposed six-story, building with retail on the ground floor, fourteen interior parking spaces, one loading berth and thirty-five dwelling units above which shall be a transit served location.

- **Approved**

170-19-Z **ZONING DISTRICT: B3-5** **WARD: 27**
APPLICANT: Old Town Luxury Suites, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 155-59 W. North Avenue
SUBJECT: Application for a variation to reduce the rear setback from the required 30' to 3.4' on floors containing dwelling units for a proposed six-story building with ground floor retail, fourteen interior parking spaces, one loading berth and thirty-five dwelling units above which shall be a transit served location.

- **Approved**

171-19-Z **ZONING DISTRICT: B3-5** **WARD: 27**
APPLICANT: Old Town Luxury Suites, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 155-59 W. North Avenue
SUBJECT: Application for a variation to increase the maximum height from the permitted 70' to 74.1' which is less than 10% for a proposed six-story building with ground floor retail, fourteen interior parking spaces, one loading berth and thirty-five dwelling units above which shall be a transit served location.

- **Approved**

172-19-Z **ZONING DISTRICT: C1-2** **WARD: 30**
APPLICANT: 3741 W. Belmont, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3743 W. Belmont Avenue
SUBJECT: Application for a variation to reduce the rear yard setback from the required 30' to 20' on floors containing dwelling units for a proposed four-story building with ground floor retail and fourteen dwelling units above.

- **Continued to April 19, 2019 at 9:00 a.m.**

173-19-Z **ZONING DISTRICT: C1-2** **WARD: 30**
APPLICANT: 3741 W. Belmont, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3743 W. Belmont Avenue
SUBJECT: Application for a variation to reduce the minimum lot area from the required 14,000 square feet to 13,250 square feet for a proposed four-story building with ground floor retail and fourteen dwelling units above.

- **Continued to April 19, 2019 at 9:00 a.m.**

174-19-Z **ZONING DISTRICT: RS-3** **WARD: 32**
APPLICANT: Ben Feller
OWNER: Same as applicant
PREMISES AFFECTED: 1712 W. Barry Avenue
SUBJECT: Application for a variation to increase the existing floor area by 175.95 square feet for a proposed two-story front addition to the existing two-story, single family residence with attached garage and roof deck.

- **Approved**

175-19-Z **ZONING DISTRICT: RS-3** **WARD: 32**
APPLICANT: Ben Feller
OWNER: Same as applicant
PREMISES AFFECTED: 1712 W. Barry Avenue
SUBJECT: Application for a variation to reduce the rear setback from the required 35.04' to 29.89', east setback from 2' to 1.33'* (west to be 3'), combined side setback from 4.80' to 4.33'* for a proposed two-story front addition to the existing two-story, single family residence with an attached garage and roof deck.

- **Approved**

176-19-Z **ZONING DISTRICT: RS-3** **WARD: 32**
APPLICANT: Ben Feller
OWNER: Same as applicant
PREMISES AFFECTED: 1712 W. Barry Avenue
SUBJECT: Application for a variation to increase the height from the maximum 30' to 31.33' for a proposed two story front addition to the existing two-story, single family residence with an attached garage and roof deck.

- **Approved**

177-19-S **ZONING DISTRICT: RT-3.5** **WARD: 32**
APPLICANT: Maryville Academy
OWNER: The Catholic Bishop of Chicago
PREMISES AFFECTED: 1456 W. Oakdale Avenue
SUBJECT: Application for a special use to establish a transitional residence for not more than twenty-five children.

- **Approved**

178-19-S **ZONING DISTRICT: PMD-6** **WARD: 10**
APPLICANT: General III, LLC
OWNER: South Chicago Property Management Ltd.
PREMISES AFFECTED: 11600 S. Burley Avenue
SUBJECT: Application for a special use to expand an existing development to operate a Class IV-B recycling facility.

- **Approved**

*Amended at hearing

179-19-Z **ZONING DISTRICT: PMD-6** **WARD: 10**
APPLICANT: General III, LLC
OWNER: South Chicago Property Management
PREMISES AFFECTED: 11600 S. Burley Avenue
SUBJECT: Application for a variation to reduce the interior landscape area from 260,489 square feet to 3,484 square feet and to reduce the number of interior trees from 2,084 to 10 to accommodate the vehicular use area for the proposed expansion of an existing Class IV-B recycling facility.

- **Approved**

180-19-Z **ZONING DISTRICT: RT-4** **WARD: 44**
APPLICANT: Shoreditch, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3259 N. Racine Avenue
SUBJECT: Application for a variation to increase the area occupied by an accessory building from the maximum 538.69 square feet to 546.09 square feet for a detached three car garage with roof deck and an existing stair to remain to allow for a three-story, three dwelling unit building.

- **Approved**

181-19-Z **ZONING DISTRICT: RT-4** **WARD: 44**
APPLICANT: Shoreditch, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3259 N. Racine Avenue
SUBJECT: Application for a variation to relocate the required 195 square feet of rear yard open space to a deck for a proposed three-story, three dwelling unit building with a three car garage with roof deck and access stairs.

- **Approved**

CONTINUANCES

622-18-Z (A) **ZONING DISTRICT: RT-4** **WARD: 44**
APPLICANT: Shoreditch, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3259 N. Racine Avenue
SUBJECT: Application for a variation to reduce the front setback from the required 14.84' to 11' for a proposed three-story, three dwelling unit building.

- **Approved**

623-18-Z (A) **ZONING DISTRICT: RT-4** **WARD: 44**
APPLICANT: Shoreditch, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 3259 N. Racine Avenue
SUBJECT: Application for a variation to reduce the minimum lot area per dwelling unit from 1,000 to 993.32 (which is less than 10%) for a proposed Three-story, three dwelling unit building.

- **Approved**

61-19-Z **ZONING DISTRICT: RS-1** **WARD: 40**
APPLICANT: Avi Ron
OWNER: Andrew Rubenstein
PREMISES AFFECTED: 2939-47 W. Catalpa Avenue
SUBJECT: Application for a variation to reduce the front setback from the required 22.88' to 20', east setback from 12.01' to 1.47', west setback from 12.01' to 6.41' combined side setback from 36.02' to 7.88' to divide an existing zoning lot into two zoning lots. The existing building at 2939 W. Catalpa shall remain. A single family residence is proposed for 2947 W. Catalpa.

- **Continued to May 17, 2019 at 9:00 a.m.**

62-19-Z **ZONING DISTRICT: RS-3** **WARD: 48**
APPLICANT: Jack Tusk
OWNER: Same as applicant
PREMISES AFFECTED: 5343 N. Wayne Avenue
SUBJECT: Application for a variation to reduce the rear setback from the required 36.9' to 1.59', north and south side setback from 2.4' to zero each, combined side setback from 6' to zero, rear setback feature from 2' to 1.59' for a proposed three-car garage with roof deck access from an existing rear open porch.

- **Withdrawn**

76-19-Z (B) **ZONING DISTRICT: RM-5** **WARD: 2**
APPLICANT: Grief Properties, Inc.
OWNER: Gregory Griief
PREMISES AFFECTED: 1638 N. Sedgwick Street
SUBJECT: Application for a variation to reduce the front setback from the required 25.93' to 9.45', north from 2' to zero (south to be 3.33'), combined side setback from 4.80' to 3.33' for a proposed four-story, two dwelling unit building and an existing two car garage.

- **Continued to April 19, 2019 at 9:00 a.m.**

79-19-Z **ZONING DISTRICT: RM-4.5 WARD: 43**
APPLICANT: Shepherd Real Estate Subsidiary, LLC-1901 Halsted Series
OWNER: Same as applicant
PREMISES AFFECTED: 1877 N. Halsted Street
SUBJECT: Application for a variation to reduce the rear setback from the required 39.38' to 5' for a proposed four-story, twelve dwelling unit building with an attached thirteen car garage with rood decks and access stairs.

- **Approved**

80-19-Z **ZONING DISTRICT: RM-4.5 WARD: 43**
APPLICANT: Shepherd Real Estate Subsidiary, LLC-1901 Halsted Series
OWNER: Same as applicant
PREMISES AFFECTED: 1877 N. Halsted Street
SUBJECT: Application for a variation to relocate the required 832.35 square feet of rear yard open space to a deck or patio which is more than 4' above grade for a proposed four-story, twelve dwelling unit building with an attached thirteen car garage with roof decks and access stairs.

- **Approved**

81-19-Z **ZONING DISTRICT: RM-4.5 WARD: 43**
APPLICANT: Shepherd Real Estate Subsidiary, LLC- 1901 Halsted Series
OWNER: Same as applicant
PREMISES AFFECTED: 1877 N. Halsted Street
SUBJECT: Application for a variation to allow a 16' wide driveway along a pedestrian street to access required parking on a lot that does not have alley access for a proposed four-story, twelve dwelling unit building with an attached thirteen car garage with roof decks and stairs for access.

- **Approved**

82-19-Z **ZONING DISTRICT: RM-4.5 WARD: 43**
APPLICANT: Shepherd Real Estate Subsidiary, LLC-1901 Halsted Series
OWNER: Same as applicant
PREMISES AFFECTED: 1877 N. Halsted Street
SUBJECT: Application for a variation to reduce the required 25% of street facing transparent window area from the required 291.6 square feet to 218.7 square feet and to allow a recessed entry along a pedestrian street that is 22.31' in width and 15.13' in depth for a proposed four-story, twelve dwelling unit building with an attached thirteen car garage with roof decks and stairs to access.

- **Approved**

84-19-S **ZONING DISTRICT: C1-2** **WARD: 28**
APPLICANT: Thorntons Inc. c/o Drew Zazofsky
OWNER: Crossroads Ogden, LLC
PREMISES AFFECTED: 2335-61 W. Ogden / 2300-36 W. 13th St. / 1230-52 S. Oakley
SUBJECT: Application for a special use to establish a gas station with a one-story accessory retail building.

- **Continued to April 19, 2019 at 9:00 a.m.**

89-19-Z **ZONING DISTRICT: RS-2** **WARD: 19**
APPLICANT: John Difilippo
OWNER: Same as applicant
PREMISES AFFECTED: 2645 W. 107th Street
SUBJECT: Application for a variation to increase the area occupied by an accessory building in the rear setback from the maximum 1,008 square feet to 1,102.90 square feet (16.34’ x 20.10') which serves the existing single family residence.

- **Approved**

111-19-S **ZONING DISTRICT: M1-2** **WARD: 32**
APPLICANT: The Night Ministry
OWNER: 1735 N Ashland Partners LP
PREMISES AFFECTED: 1735 N. Ashland Avenue
SUBJECT: Application for a special use to establish a temporary overnight shelter for up to twenty-five homeless youth on the first floor of an existing four-story commercial building.

- **Approved**

2:00 P.M.

CONTINUANCES

537-18-S **ZONING DISTRICT: M1-1** **WARD: 14**
APPLICANT: Maquella Management, LLC
OWNER: Same as applicant
PREMISES AFFECTED: 5252 S. Archer Avenue
SUBJECT: Application for a special use to establish a six pump gas station with an accessory one-story retail sales and restaurant with drive-through use building and a two-story car wash use building.

- **Withdrawn**

538-18-S **ZONING DISTRICT: M1-1** **WARD: 14**
APPLICANT: Maquella Management
OWNER: Same as applicant
PREMISES AFFECTED: 5252 S. Archer Avenue
SUBJECT: Application for a special use to establish a drive through facility for a proposed accessory restaurant on a lot containing a gas station, a retail sales building and a car wash building.

- **Withdrawn**

Approval of the written resolutions containing findings of fact consistent with the votes of the Board for Board Cal. Nos. 1-19-S, 2-19-Z, 3-19-Z, 25-19-Z, 26-19-Z, 47-19-Z, 55-19-Z, 56-19-Z, 63-19-Z, 534-18-S and 535-18-S.

Approval of the written resolutions containing findings of fact consistent with the votes of the Board at its regular meeting of February15, 2019, except for Board Cal No. 126-19-A.

Adjournment.

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment D
Site Survey

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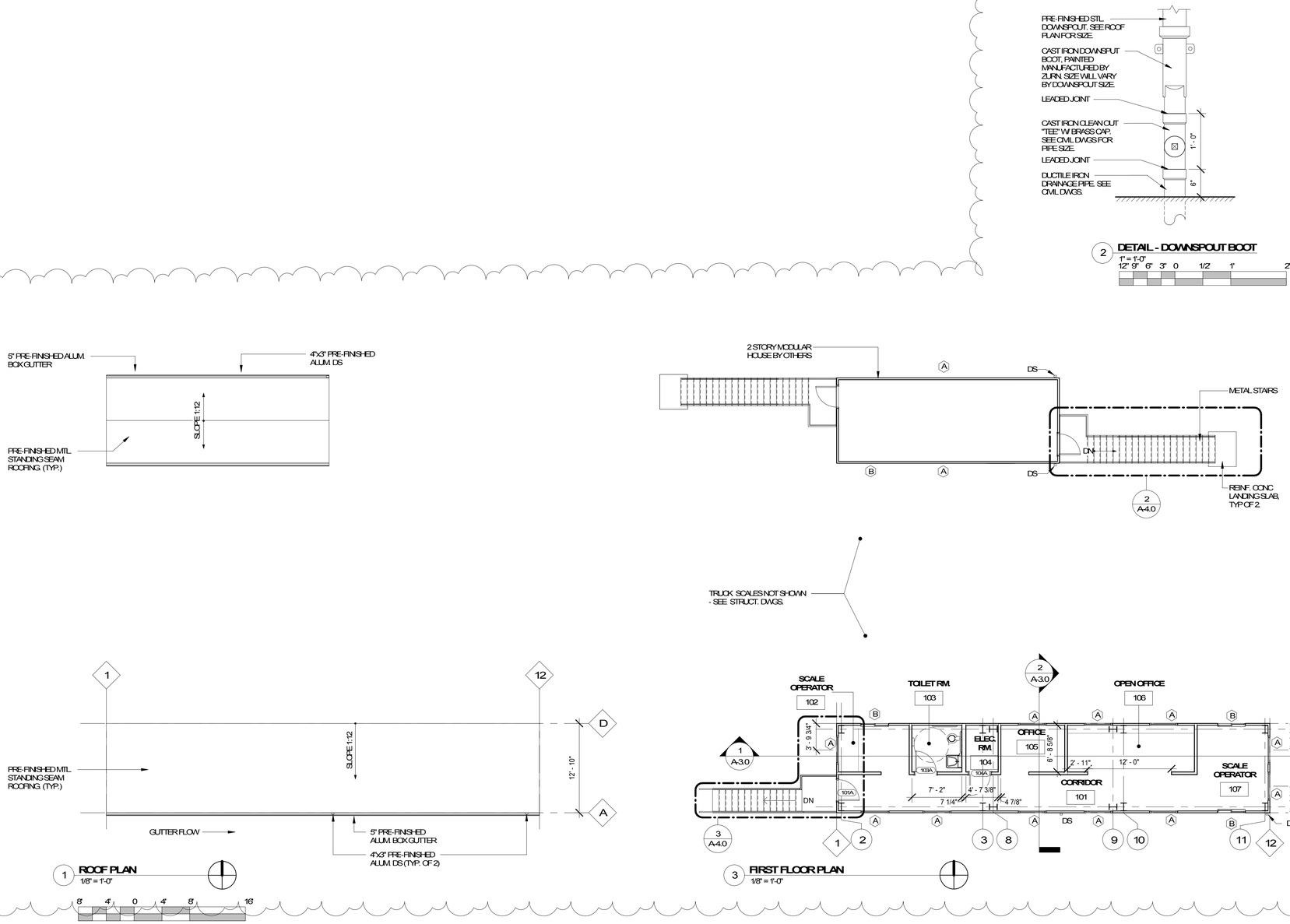


PROGRESS SET - NOT FOR CONSTRUCTION

KNIGHT
Engineers & Architects
Knight E/A Inc.
221 N LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knighttea.com

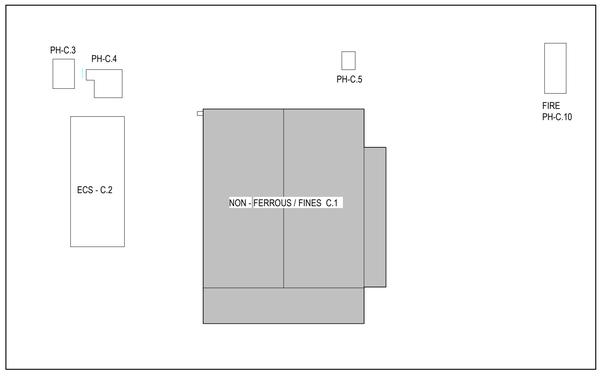
PROJECT:
GENERAL III, LLC
STRUCTURE - B SCALE HOUSES
11551 S. AVENUE O
CHICAGO, IL, 60617

#	DATE	ISSUE
3	06/22/2020	REVISION TO PERMIT
2	04/01/2020	ISSUE FOR CONSTRUCTION
1	01/10/2020	ISSUE FOR BID

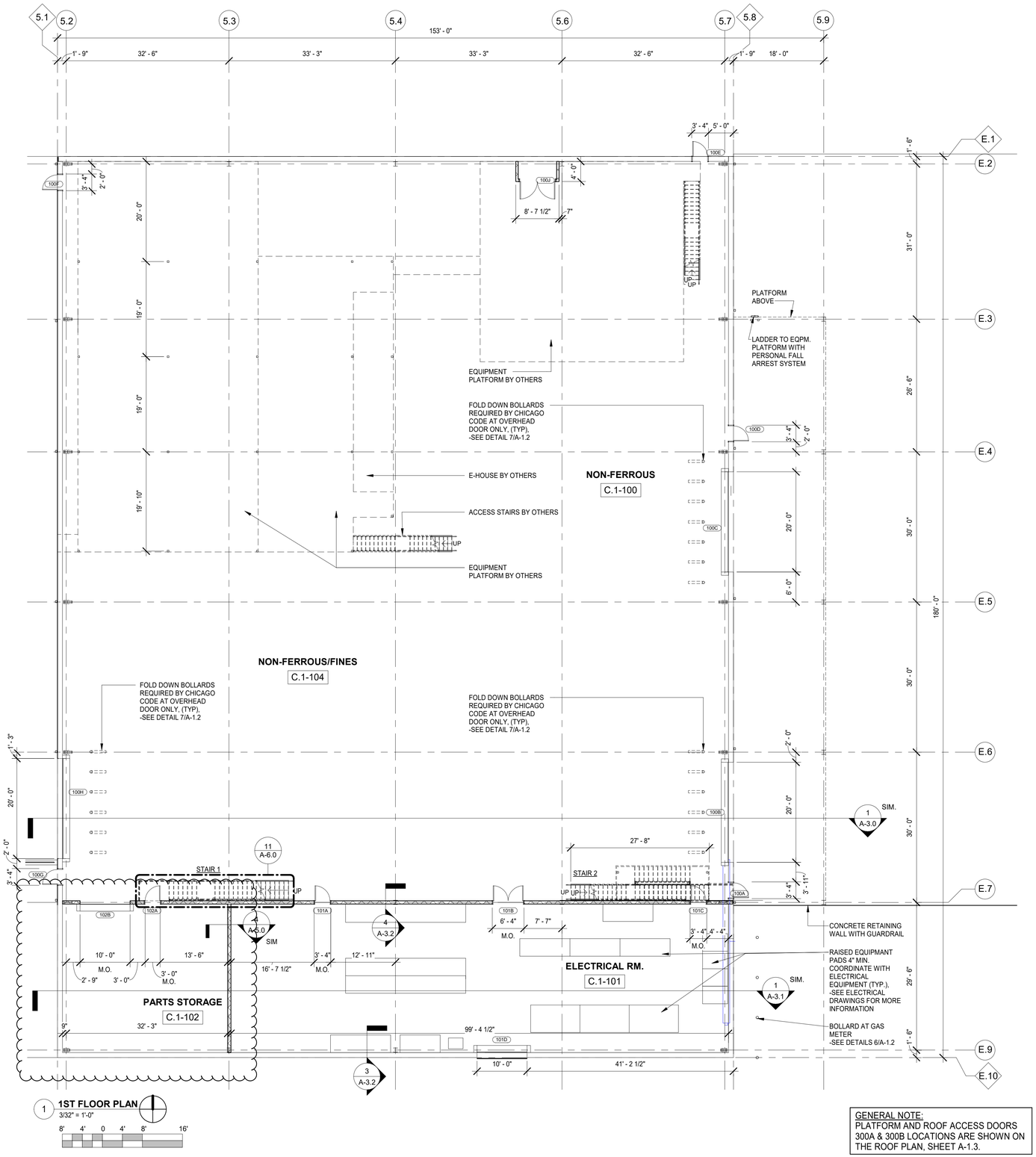
FIRST FLOOR & ROOF PLAN

PROJECT #	DATE
Project Number	07/16/2019

A-1.0



KEY PLAN
1" = 60'-0"



1 1ST FLOOR PLAN
3/32" = 1'-0"
8' 4' 0 4' 8' 16'

GENERAL NOTE:
PLATFORM AND ROOF ACCESS DOORS 300A & 300B LOCATIONS ARE SHOWN ON THE ROOF PLAN, SHEET A-1.3.

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 N. LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

STATE OF ILLINOIS
ROXANNE M. KNAPP
#001-015533
LICENSED ARCHITECT
SEAL

PROJECT:
GENERAL III
STRUCTURE C - NON-FERROUS BUILDINGS
11554 S AVE. O
CHICAGO, IL 60617

#	DATE	ISSUE
3	06/22/2020	REVISION TO PERMIT
2	04/01/2020	ISSUE FOR REVISION TO PERMIT
1	08/09/2019	ISSUED FOR PERMIT REVIEW

FIRST FLOOR PLAN

PROJECT #:	DATE:
7563	09/27/19

A-1.0

FIRE PROTECTION 153
HYDRAULIC OIL STORAGE TANK BY OTHERS
ACTIVE STORAGE 152.1
TIME CLOCK
RECEIVING 144
PURCHASING 126
VESTIBULE 125
SHELF ROD
OPS OFFICE 124
ADAM'S OFFICE 112
CONFERENCE ROOM 111
HAL'S OFFICE 110
CORR 127
OFFICE 128
OFFICE 123
ACCT. OFFICE 122
ACCT. OFFICE 121
XEC. ASSISTANT 109
FLEX OFFICE 108
EMERGENCY EYEWASH / SHOWER
LUNCH ROOM 145
HR OFFICE 129
OPEN OFFICE 120
TRUCK LOBBY 107
HR OFFICE 130
WORKSTATION PARTITION PANELS BY OTHERS
AYOUT ASSISTANCE 106
MEN'S LOCKER ROOM 151
JANITOR CLST 146
OFFICE 131
OFFICE 119
OFFICE 118
OFFICE 117
PEDDLE LOBBY 105
LOCKER COUNT = 232
CONFERENCE ROOM 132
MARKETING OFFICE 133
SUPERVISOR'S SHOWERS 116A
SUPERVISOR'S LOCKERS 116B
CORR. 113
SWITCH ROOM 104
PANTRY 102
MEN'S SHOWERS 147
MEN'S TOILETS 154
MEN'S 115
W.S. 148.1
WORKSTATION PARTITION PANELS BY OTHERS
S&L OFFICE 136
S&L OFFICE 134
LAUNDRY 103
WOMEN'S SHOWERS 114A
WOMEN'S TOILETS 114C
WOMEN'S LOCKERS 114B
MICROWAVES
REF.
MAINTENANCE SHOP 152
S&L OFFICE 135
S&L OFFICE 137
GENERAL OFFICE 140
KITCHENETTE & LUNCH ROOM 101
RACKING - BY OWNER
ELECTRICAL ROOM 150
CORR. 149
TRAINING ROOM 148
KEVIN'S OFFICE 141
S&L OFFICE 139
S&L OFFICE 138
BRENT'S OFFICE 142
WORKOUT 143
VESTIBULE 100
SERVING COUNTER 12' - 6"
INACTIVE STORAGE 152.2
RETAINING WALL W/ GUARDRAIL

1 OFFICE & MAINTENANCE - FLOOR PLAN
1/8" = 1'-0"

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 N. LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

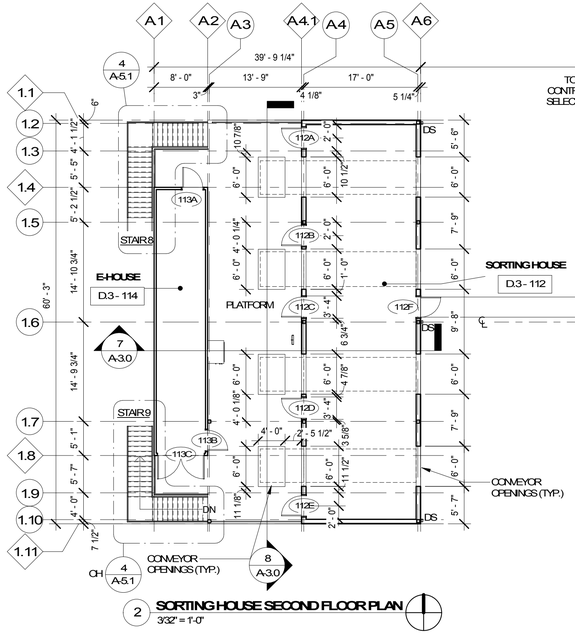
PROJECT:
GENERAL III, LLC
STRUCTURE A - OFFICE / MAINTENANCE
11551 S. AVE. O
CHICAGO, IL, 60617

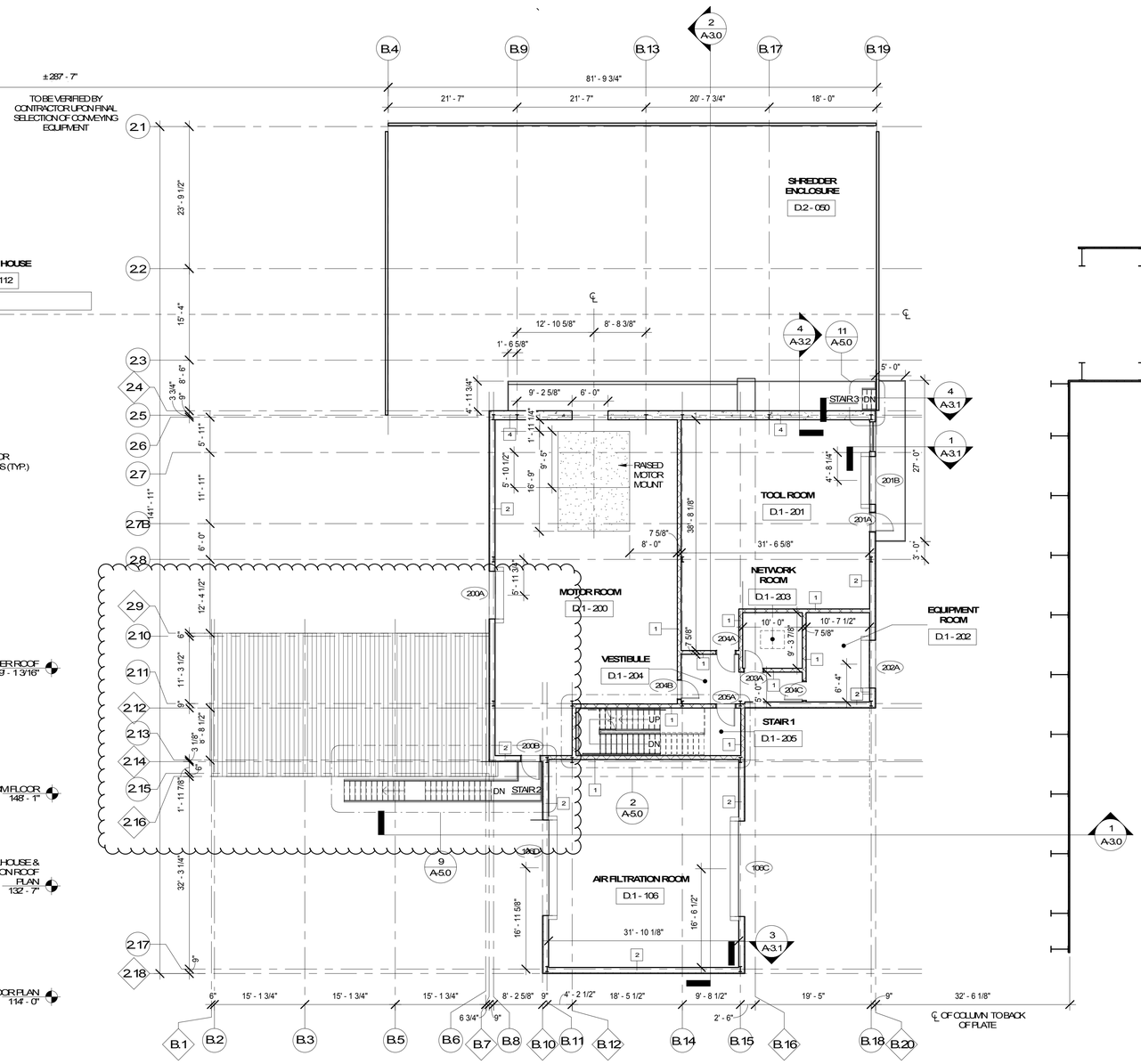
#	DATE	ISSUE
3	06/26/2020	ISSUE FOR PERMIT REVISION
2	04/01/2020	REVISION TO PERMIT
1	07/16/2019	ISSUE FOR PERMIT REVIEW

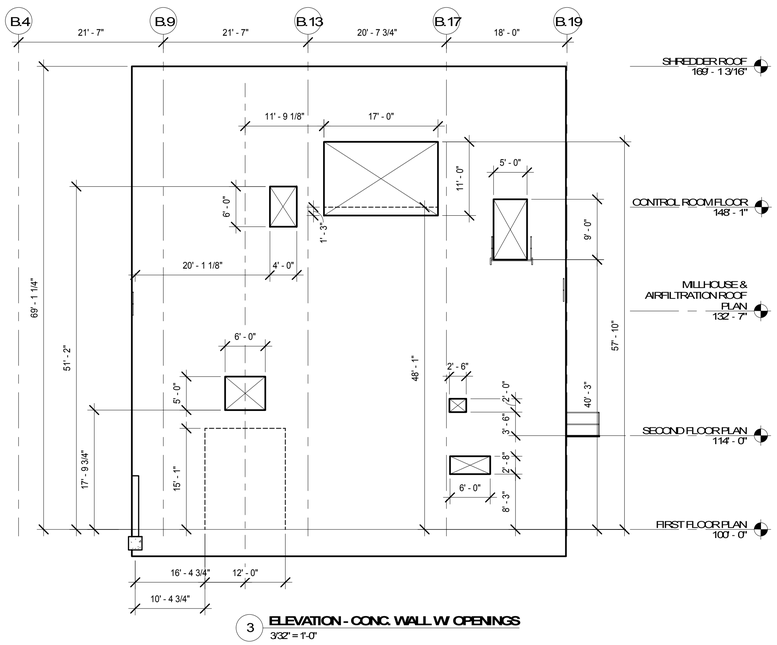
FLOOR PLAN

PROJECT #:	DATE:
7563	7/16/19

A-1.0



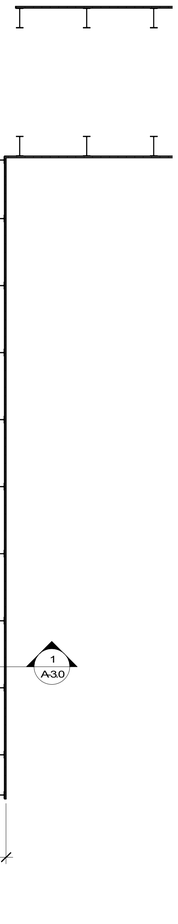




3 **ELEVATION - CONC. WALL W OPENINGS**
3/32" = 1'-0"

1 **SECOND FLOOR PLAN**
3/32" = 1'-0"

8' 4' 0 4' 8' 16'



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ROXANNE M. KNAPP
#001-015533
LICENSED ARCHITECT
SEAL

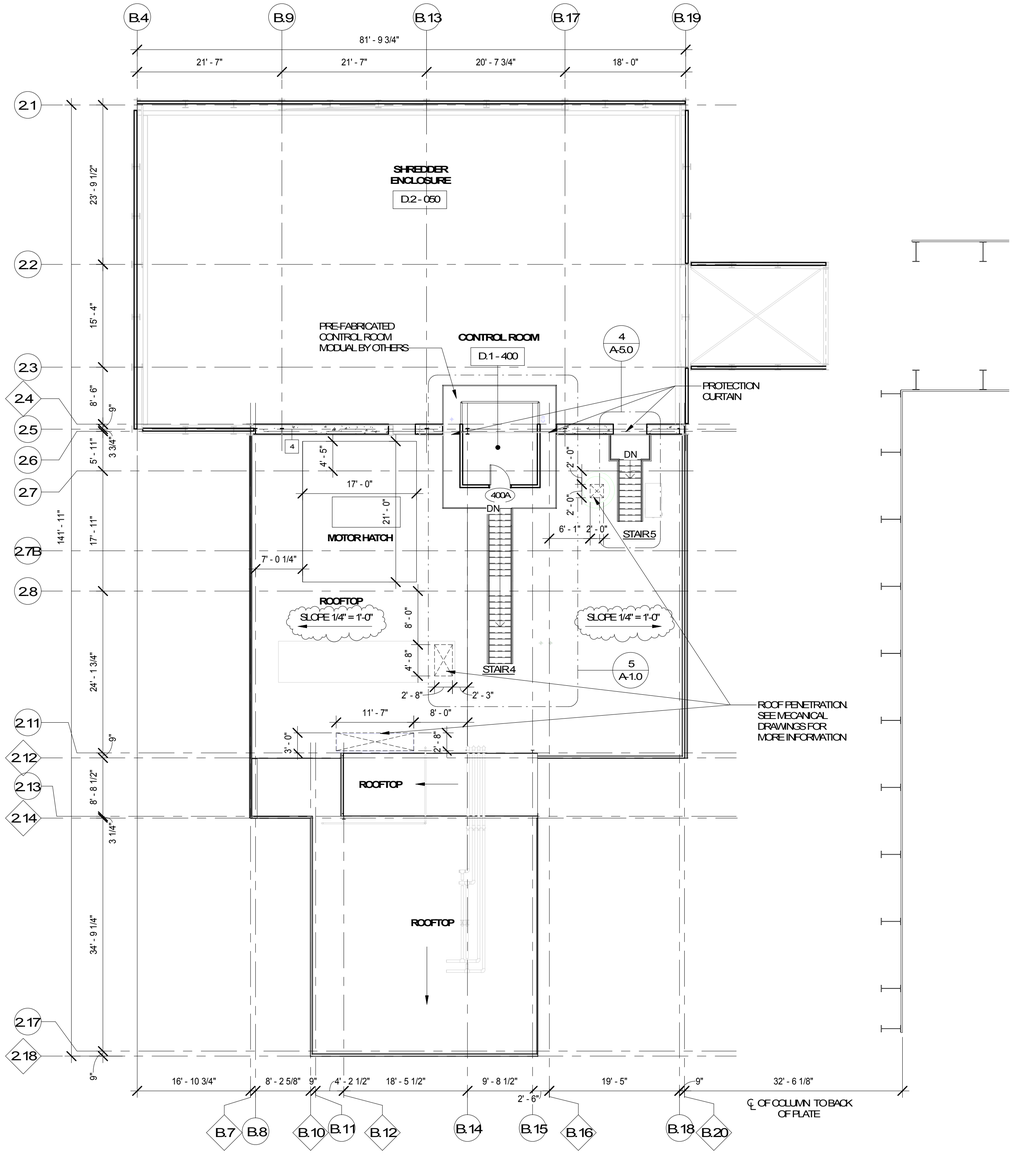
PROJECT:
GENERAL III, LLC
STRUCTURED - SHREDDER SORTING BUILDINGS
11554 S. AVENUE O
CHICAGO, IL, 60617

#	DATE	ISSUE
2	04/01/2020	REVISION TO PERMIT
1	09/27/2019	ISSUED FOR PERMIT REVIEW

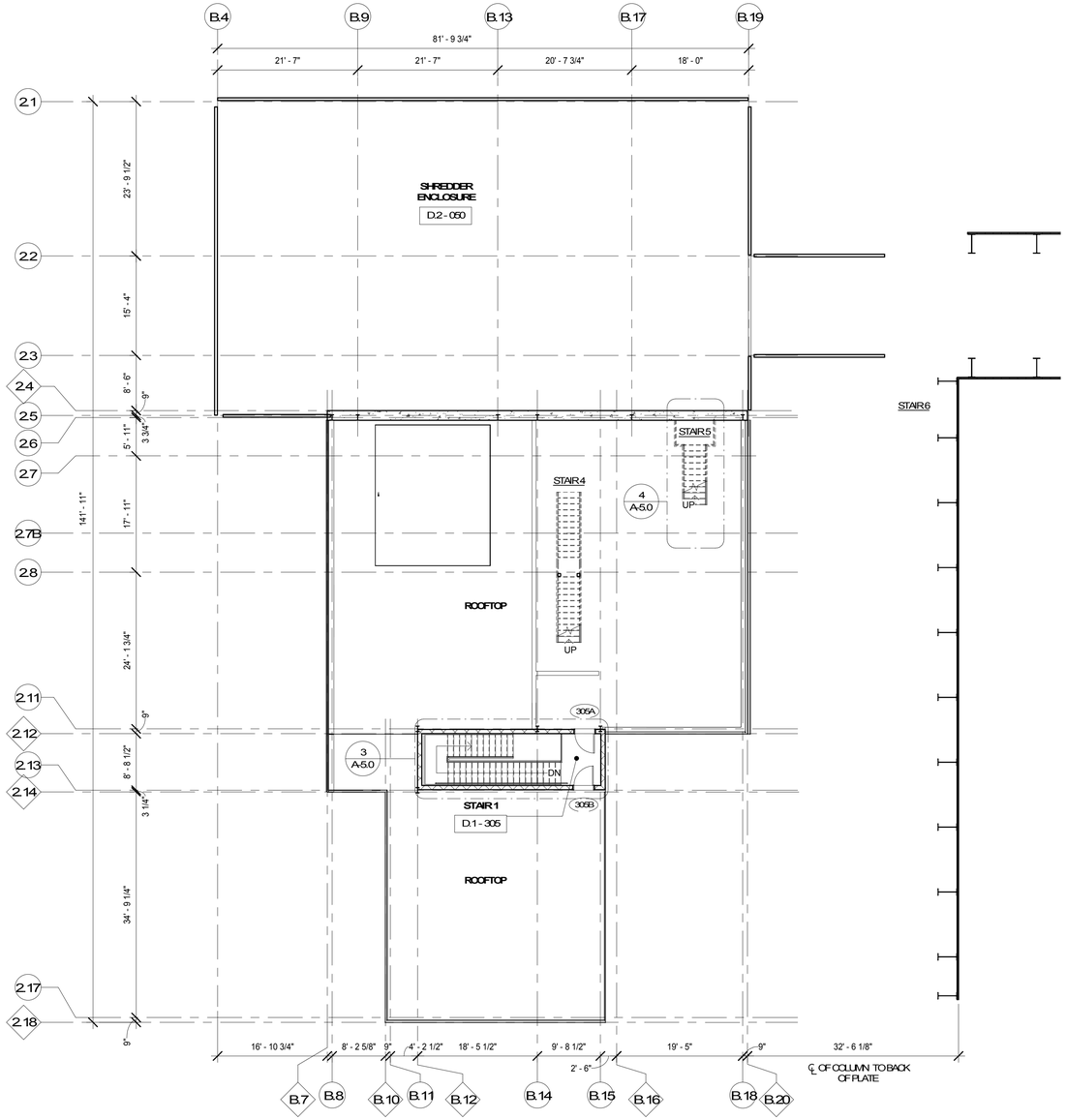
SECOND FLOOR PLAN

PROJECT #	DATE:
7563	09/27/2019

A-1.1



2 CONTROL ROOM FLOOR PLAN
3/32" = 1'-0"



1 MILLHOUSE & AIRFILTRATION ROOF PLAN
3/32" = 1'-0"

8' 4' 0 4' 8' 16'

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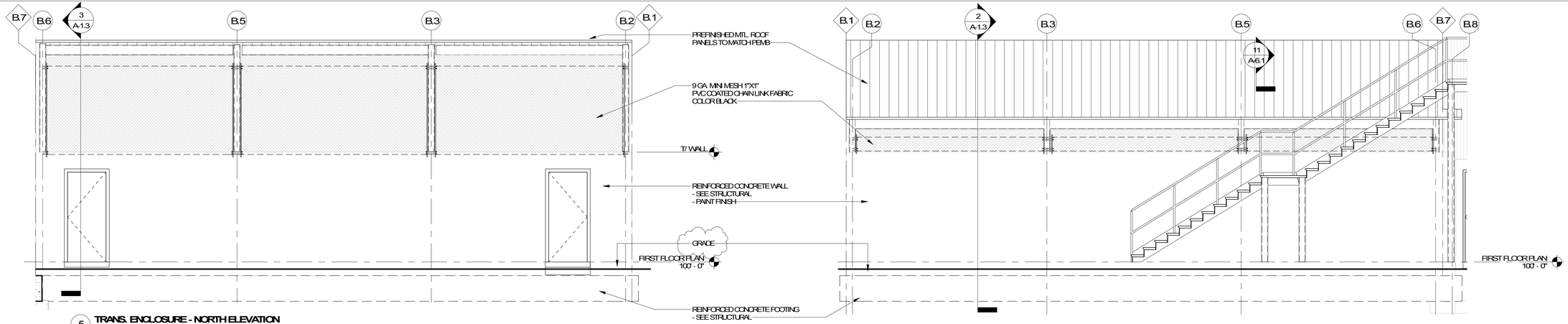
PROJECT:
GENERAL III, LLC
STRUCTURED - SHREDDER SORTING BUILDINGS
11554 S. AVENUE O
CHICAGO, IL, 60617

#	DATE	ISSUE
3	06/22/2020	ISSUE FOR PERMIT REVISION
2	04/01/2020	REVISION TO PERMIT
1	09/27/2019	ISSUED FOR PERMIT REVIEW

CONTROL ROOM PLAN

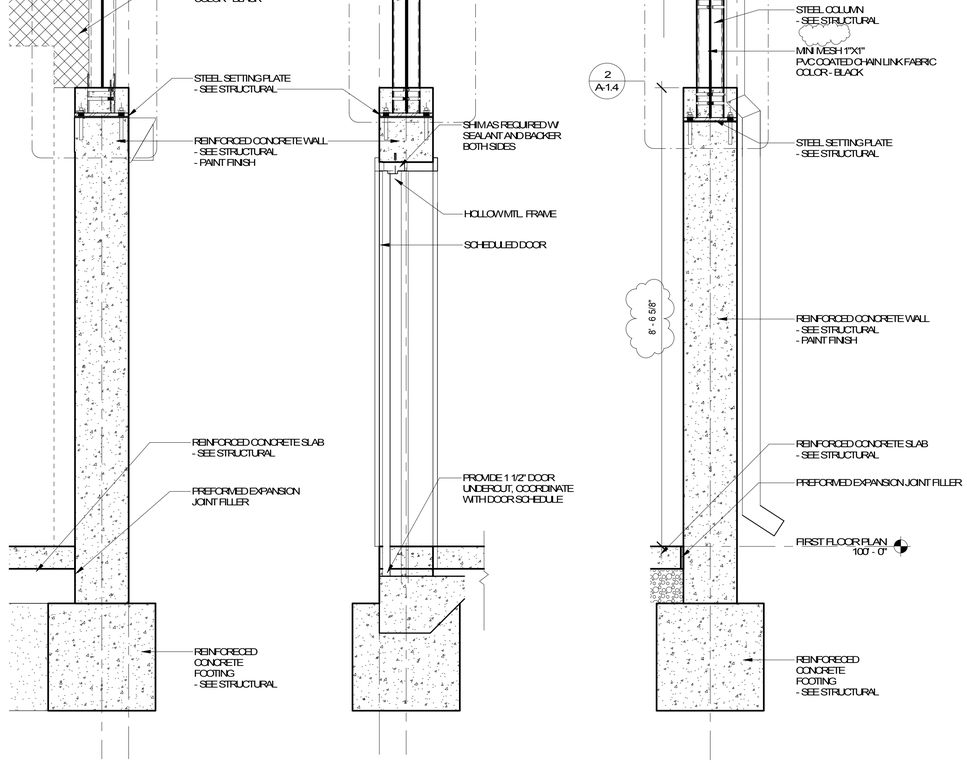
PROJECT #	DATE
7563	09/27/2019

A-1.2



5 **TRANS. ENCLOSURE - NORTH ELEVATION**
1/4" = 1'-0"

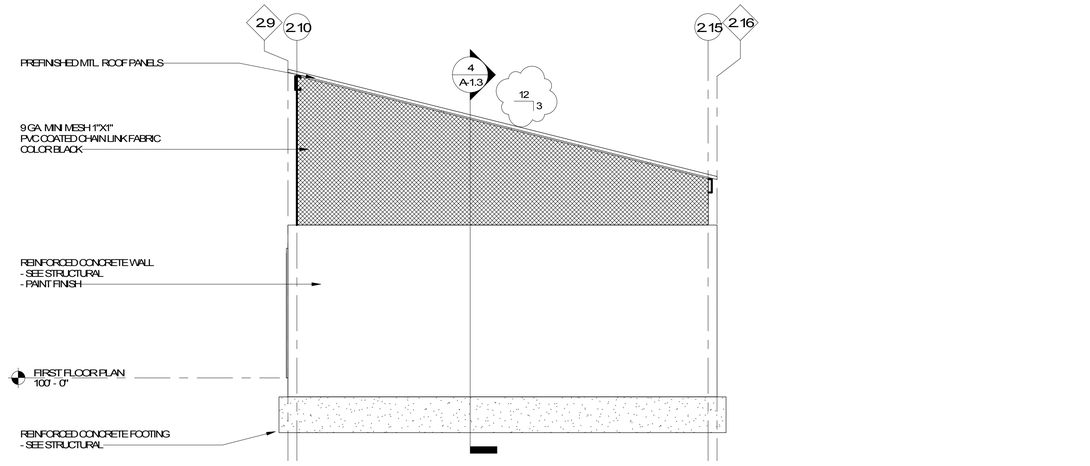
6 **TRANS. ENCLOSURE - SOUTH ELEVATION**
1/4" = 1'-0"



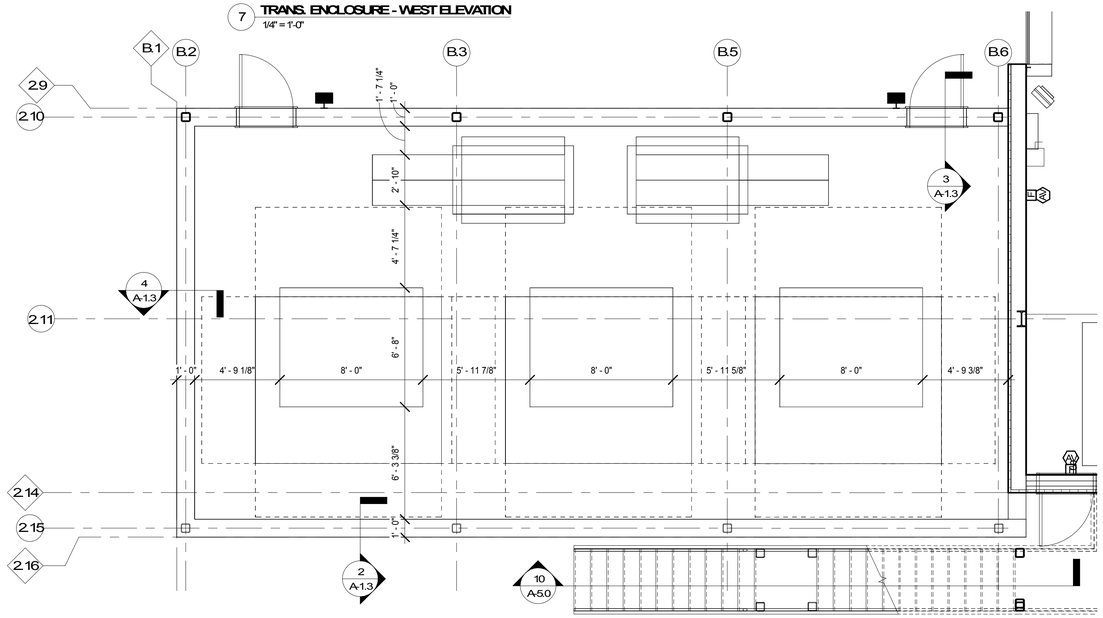
4 **TRANS. ENCLOSURE - WALL SECTION 1**
3/4" = 1'-0"

3 **TRANS. ENCLOSURE - WALL SECTION 2**
3/4" = 1'-0"

2 **TRANS. ENCLOSURE - WALL SECTION 3**
3/4" = 1'-0"



7 **TRANS. ENCLOSURE - WEST ELEVATION**
1/4" = 1'-0"



1 **TRANSFORMER ENCLOSURE PLAN**
1/4" = 1'-0"

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PROJECT
GENERAL III, LLC
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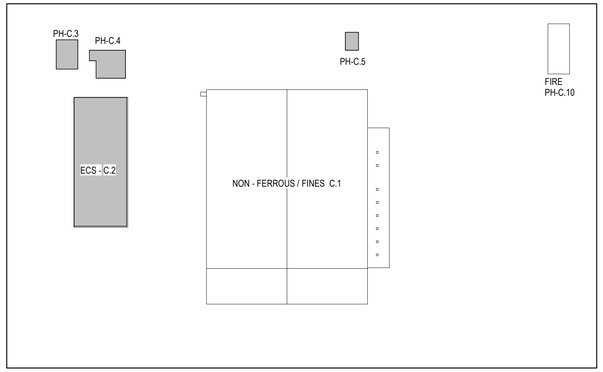
11554 S. AVENUE O
CHICAGO, IL, 60617

NO.	DATE	ISSUE
4	06/22/2020	ISSUE FOR PERMIT REVISION
3	04/01/2020	REVISION TO PERMIT

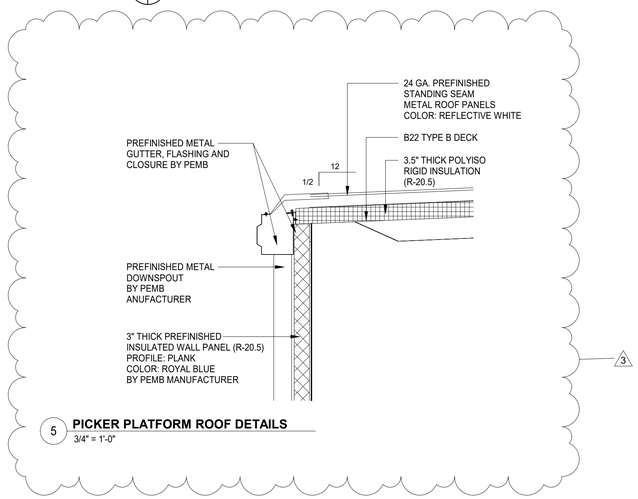
TRANSFORMER ENCLOSURE

PROJECT #	DATE
7563	10/15/19

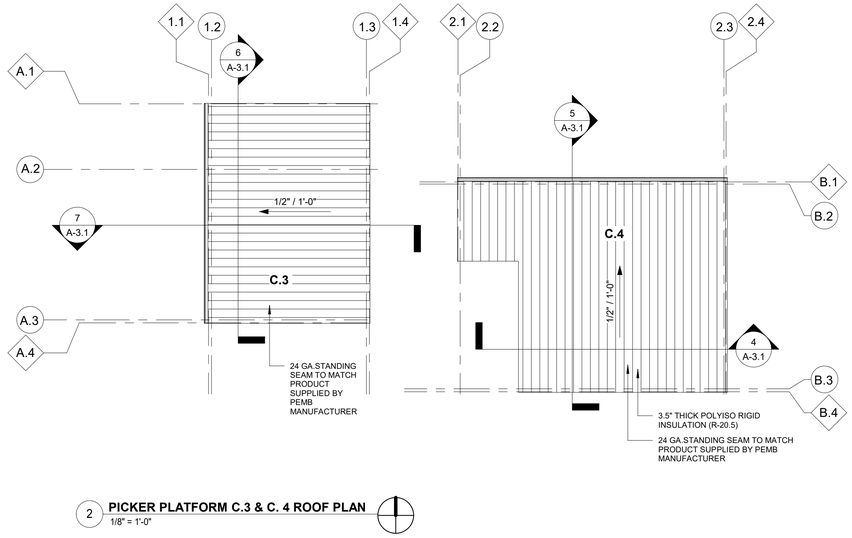
A-1.3



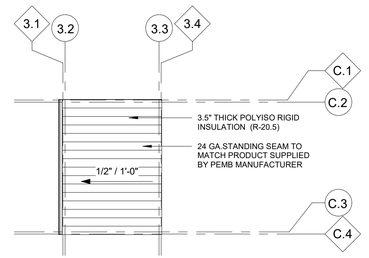
4 KEY .PLAN
1" = 60'-0"



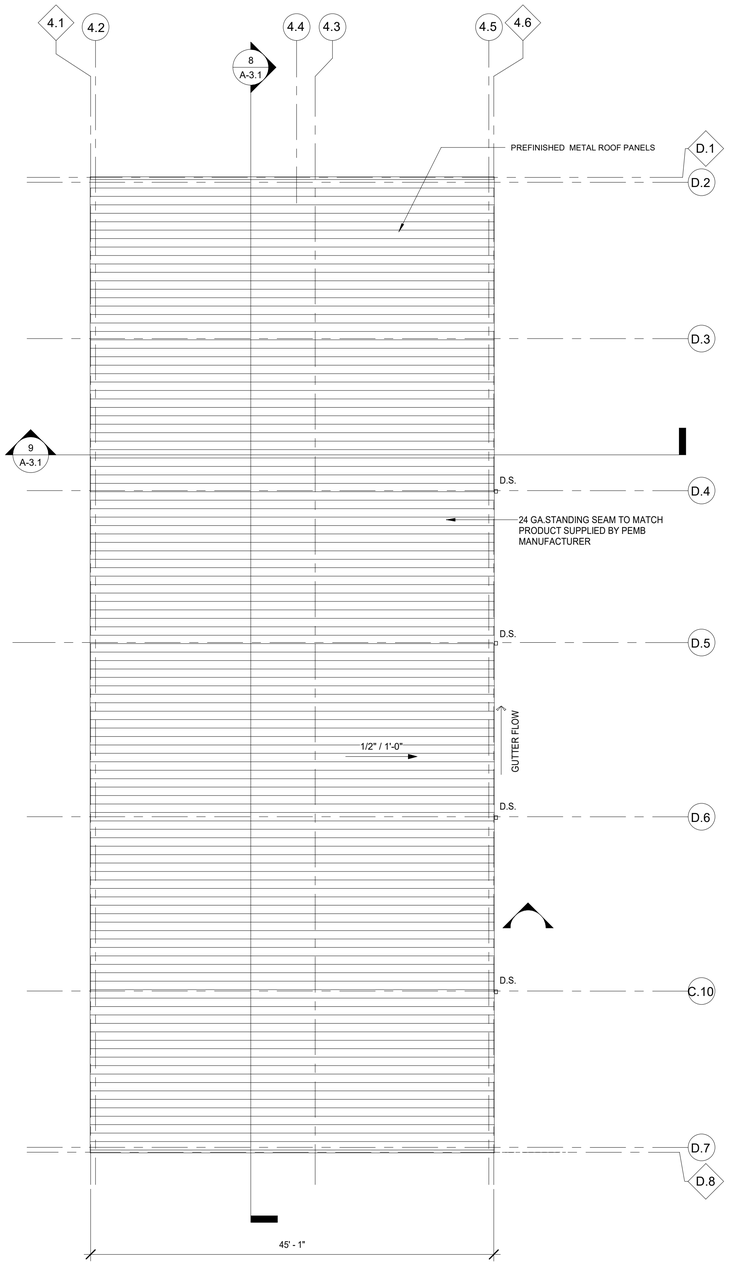
5 **PICKER PLATFORM ROOF DETAILS**
3/4" = 1'-0"



2 **PICKER PLATFORM C.3 & C. 4 ROOF PLAN**
1/8" = 1'-0"



3 **PICKER PLATFORM C. 5 ROOF PLAN**
1/8" = 1'-0"



1 **ECS C.2 PLATFORM ROOF PLAN**
1/8" = 1'-0"
8' 4' 0 4' 8' 16'

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PROJECT:
GENERAL III
STRUCTURE C - NON-FERROUS BUILDINGS
11554 S AVE. O
CHICAGO, IL 60617

#	DATE	ISSUE
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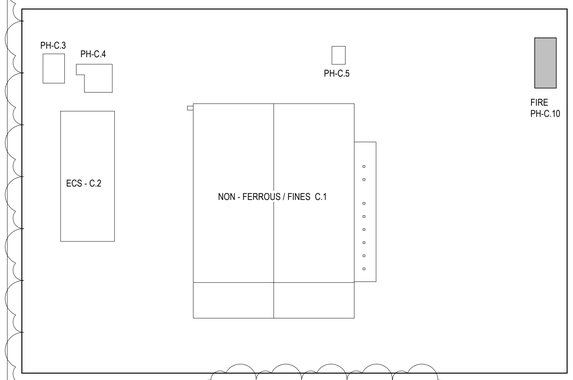
1	08/09/2019	ISSUED FOR PERMIT REVIEW

EQPM. PLATFORM & PICKER PLATFORM ROOF PLANS

PROJECT #:	DATE:
7563	08/21/19

A-1.4



10 KEY PLAN
1" = 60'-0"

NOTE:
STRUCTURE C.10 IS TO BE PROVIDED BY THE PEMB MANUFACTURER.

DOOR SCHEDULE:

DOOR No.	WIDTH	PANEL HEIGHT	PANEL THICKNESS	PANEL MAT.	PANEL CORE	FRAME TYPE	FRAME MAT.	HARDWARE SET	CARD READER	COMMENTS
100L	8'-0"	7'-0"	-	-	-	-	STL	-	-	DOOR BY OTHERS
100M	8'-0"	7'-0"	-	-	-	-	STL	-	-	DOOR BY OTHERS
100N	3'-0"	7'-0"	1'-3/4"	HM	INSUL	F-1	HM-18	1	YES	
100P	3'-0"	7'-0"	1'-3/4"	HM	INSUL	F-1	HM-18	1	YES	

DOOR & WINDOW ABBREVIATION SCHEDULE:

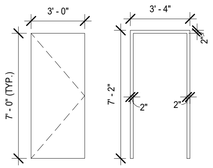
HM = HOLLOW METAL, PAINTED, STL = STEEL

DOOR HARDWARE SCHEDULE

MK - McKinney | RO - Rockwood | SA - Sargent | RF - Rixson | NO - Norton | PE - Pemko | SU - Securitron

Set: 1.0

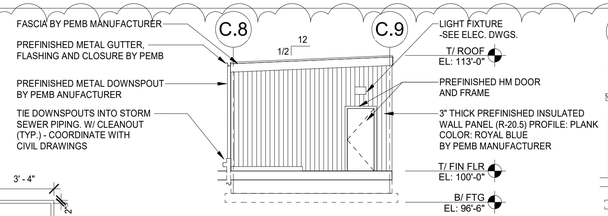
3 BB Hinge NRP	TA271 4 1/2" x 4 1/2"	US32D MK
1 Access Control Mort Lock (SAFE)	1-82270-IPS LNMC	US32D SA
2 Lever Handles (1 ea. side)	Tactile Warning at exterior	US32D SA
1 Door Closer w/ stop arm	CPS7500	689 NO
1 Kick Plate	K1050 8" high 4BE CSK	US32D RO
1 Threshold	252x3AFG	PE
1 Drip Cap	346C	PE
1 Head Gasketing	2891AS	PE
1 Jamb Gasketing Set	290AS	PE
1 Sweep w/ Drip cap	345ANB	PE
1 Wiring Diagram	By Security Contractor	
1 Card reader	By Security Contractor	
1 Position Switch	DPS-M-BK	SU
1 Power Supply	AQD3	SU



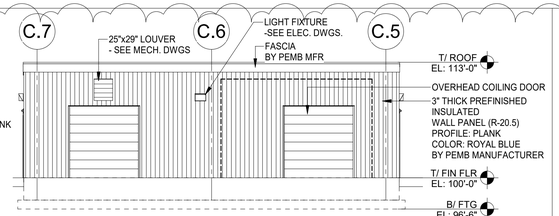
DOOR & FRAME TYPES

DOOR SCHEDULE NOTES:

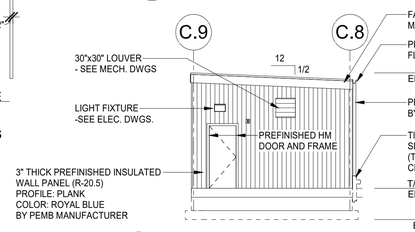
1. IT IS THE RESPONSIBILITY OF THE DOOR HARDWARE CONTRACTOR TO ENSURE THAT ALL DOORS AND DOOR HARDWARE CONFORMS WITH CURRENT ILLINOIS ACCESSIBILITY CODE AND FEDERAL ADA REGULATIONS. NO KEYED LOCKSETS ALLOWED ON THE MEANS OF EGRESS SIDES OF EXIT DOORS. PROVIDE OPERATING DEVICES CAPABLE OF OPERATION WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING, OR TWISTING OF WRIST TO OPERATE. EGRESS DOORS SHALL OPEN READILY FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.
2. PROVIDE DETECTABLE WARNINGS (KNURLED HARDWARE) AT ALL DOORS TO HAZARDOUS AREAS INCLUDING BUT NOT LIMITED TO: JANITOR'S CLOSET, MECHANICAL & ELECTRICAL ROOMS, IN ACCORDANCE WITH ANSI 4273.
3. PROVIDE SIGNAGE INDICATING INTERNATIONAL SYMBOL, FOR ACCESSIBILITY AT ACCESSIBLE ENTRANCES IN ACCORDANCE TO ANSI SECTION 4285.
4. VERIFY ALL DOOR HARDWARE & FINISHES W/ OWNER PRIOR TO CONSTRUCTION.
5. ALL EXTERIOR HOLLOW METAL TO BE INSULATED.
6. ALL FIRE RATED DOORS TO BE U.L. LABELED AND TO HAVE A MAXIMUM TRANSMITTED TEMPERATURE END POINT OF NOT MORE THAN 450 DEGREES F.



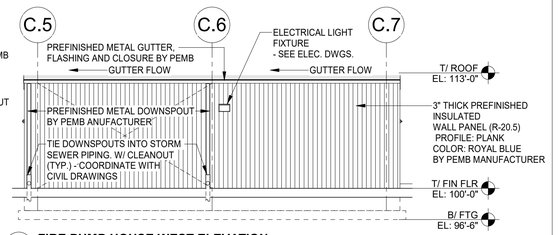
9 FIRE PUMP HOUSE SOUTH ELEVATION
1/8" = 1'-0"



8 FIRE PUMP HOUSE EAST ELEVATION
1/8" = 1'-0"

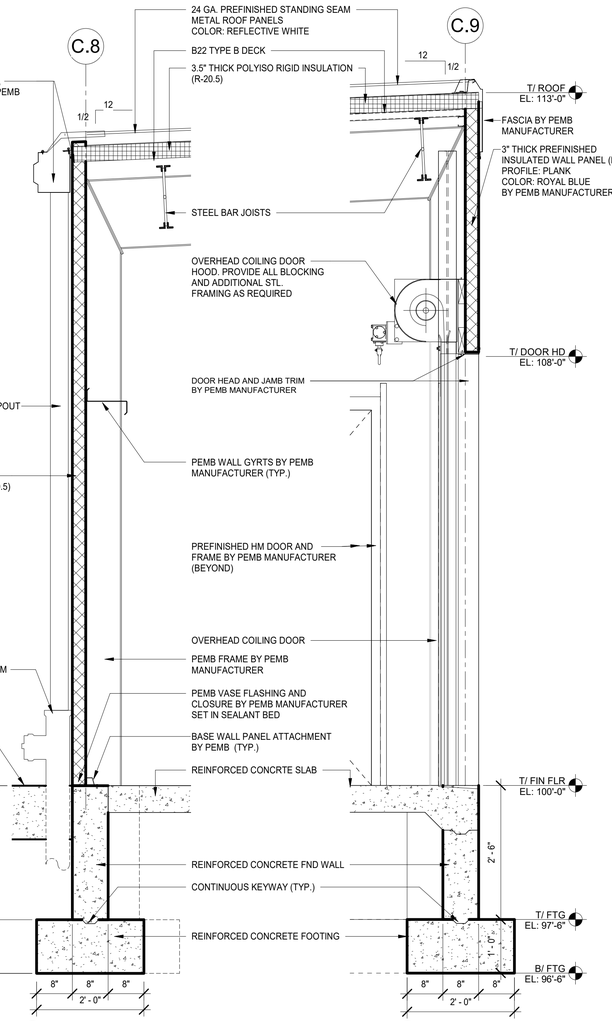


7 FIRE PUMP HOUSE NORTH ELEVATION
1/8" = 1'-0"



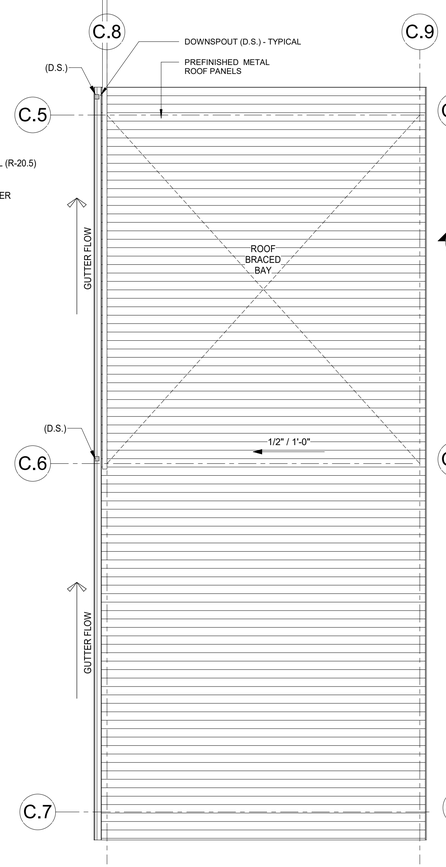
6 FIRE PUMP HOUSE WEST ELEVATION
1/8" = 1'-0"

8' 4' 0 4' 8' 16'

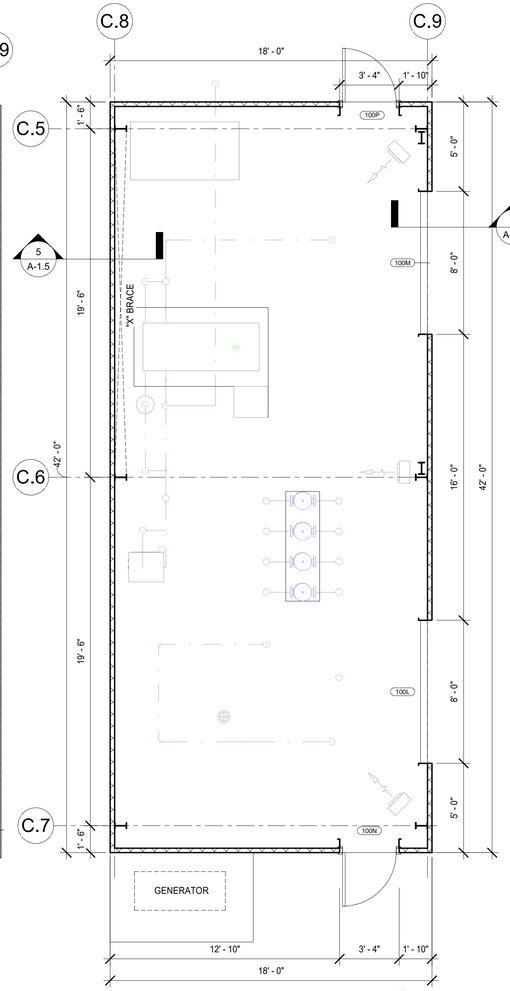


5 WALL SECTION
3/4" = 1'-0"

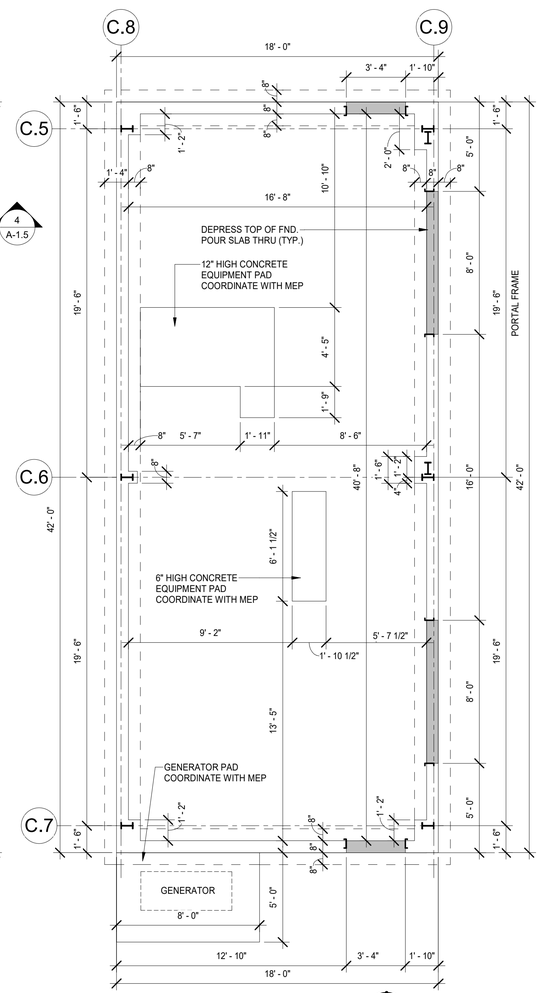
4 WALL SECTION
3/4" = 1'-0"



3 FIRE PUMP HOUSE C.10 ROOF PLAN
1/4" = 1'-0"



2 FIRE PUMP HOUSE C.10 PLAN
1/4" = 1'-0"



1 FIRE PUMP HOUSE C.10 FND PLAN
1/4" = 1'-0"

4' 2' 0 2' 4' 8'
SCALE: 1/4" = 1'-0"

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LICENSED ARCHITECT
SEAL

PROJECT:
GENERAL III
STRUCTURE C - NON-FERROUS BUILDINGS
11554 S AVE. O
CHICAGO, IL 60617

#	DATE	ISSUE
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2	04/01/2020	ISSUE FOR REVISION TO PERMIT
1	08/09/2019	ISSUED FOR PERMIT REVIEW

FIRE PUMP HOUSE PLAN, ELEVATION & SECTION

PROJECT #: 7563
DATE: 03/23/20

A-1.5

STRUCTURE GROUP LEGEND

A - OFFICE / MAITENANCE BUILDING
- A.1 - OFFICE BUILDING
- A.2 - MAITENANCE BUILDING

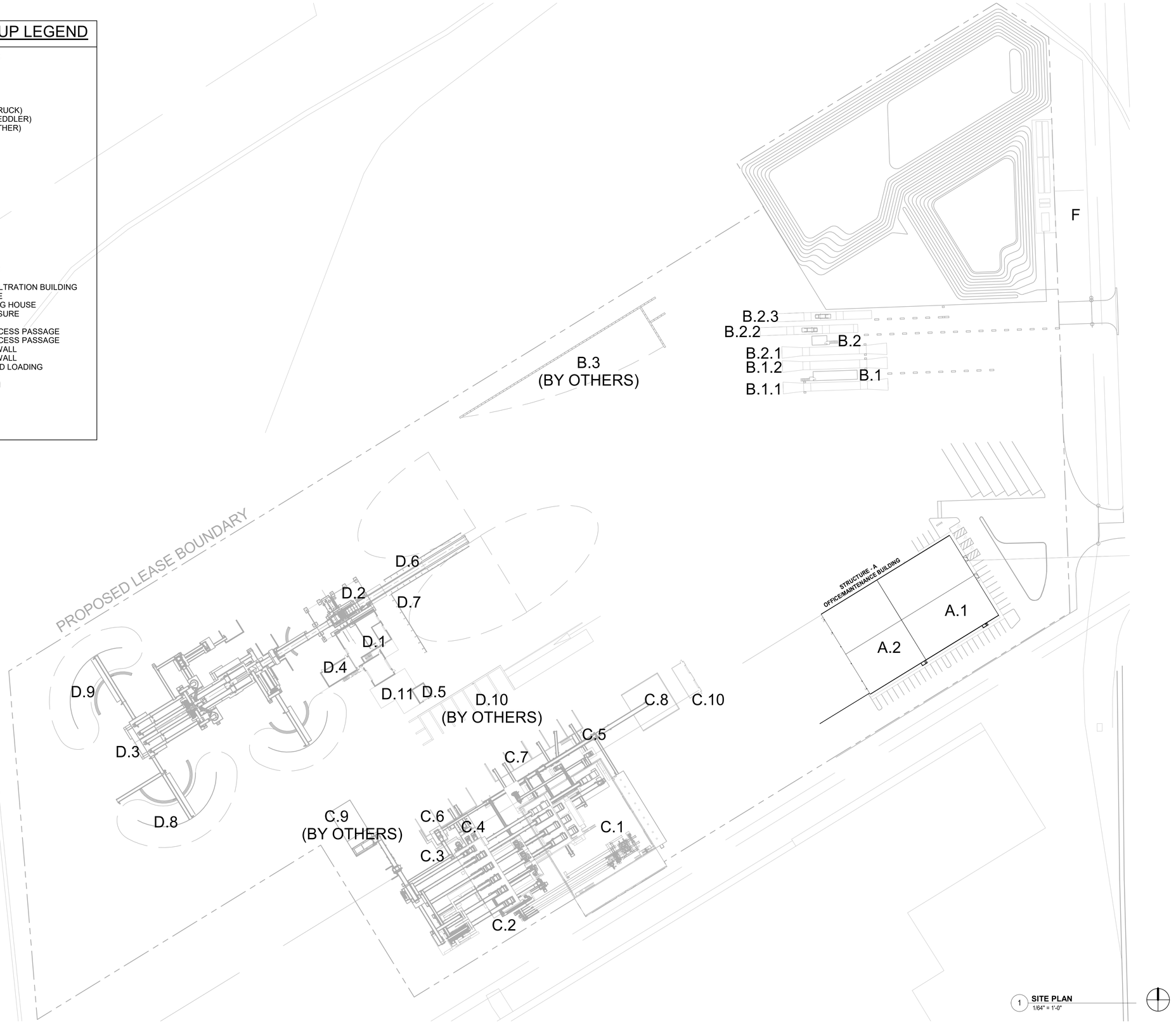
B - SCALE HOUSES
- B.1 - LARGE SCALE HOUSE (TRUCK)
- B.2 - SMALL SCALE HOUSE (PEDDLER)
- B.3 - SCRAP PILE WALL (BY OTHER)

C - NON-FERROUS BUILDING
- C.1 - NON-FERROUS / FINES PROCESSING
- C.2 - ECS PLATFORM
- C.3 - EQUIPMENT PLATFORM
- C.4 - SORTING PLATFORM
- C.5 - SORTING PLATFORM
- C.6 - MATERIAL BIN WALLS
- C.7 - MATERIAL BIN WALLS
- C.8 - MATERIAL BIN WALLS
- C.9 - RAMP (BY OTHERS)
- C.10 - FIRE PUMP BUILDING

D - SHREDDER / SORTING BUILDING
- D.1 - MILL HOUSE AND AIR FILTRATION BUILDING
- D.2 - SHREDDER ENCLOSURE
- D.3 - DOWN STREAM SORTING HOUSE
- D.4 - TRANSFORMER ENCLOSURE
- D.5 - PUMP HOUSE
- D.6 - DEBRIS PILE WALL / ACCESS PASSAGE
- D.7 - DEBRIS PILE WALL / ACCESS PASSAGE
- D.8 - CONVEYOR SUPPORT WALL
- D.9 - CONVEYOR SUPPORT WALL
- D.10 - MATERIAL BIN WALL AND LOADING RAMP (BY OTHERS)
- D.11 - RAISED RTO PLATFORM

E - "NOT USED"

F - WATER TREATMENT PAD



1 **SITE PLAN**
1/64" = 1'-0"

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PROJECT:
GENERAL III, LLC
STRUCTURE A - OFFICE / MAINTENANCE
11551 S. AVE. O
CHICAGO, IL., 60617

#	DATE	ISSUE
3	06/26/2020	ISSUE FOR PERMIT REVISION
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1	07/16/2019	ISSUE FOR PERMIT REVIEW

BUILDING SITE PLAN

PROJECT #:	DATE:
7563	7/16/2019

G-1.2

STRUCTURE GROUP LEGEND

A - OFFICE / MAITENANCE BUILDING
- A.1 - OFFICE BUILDING
- A.2 - MAITENANCE BUILDING

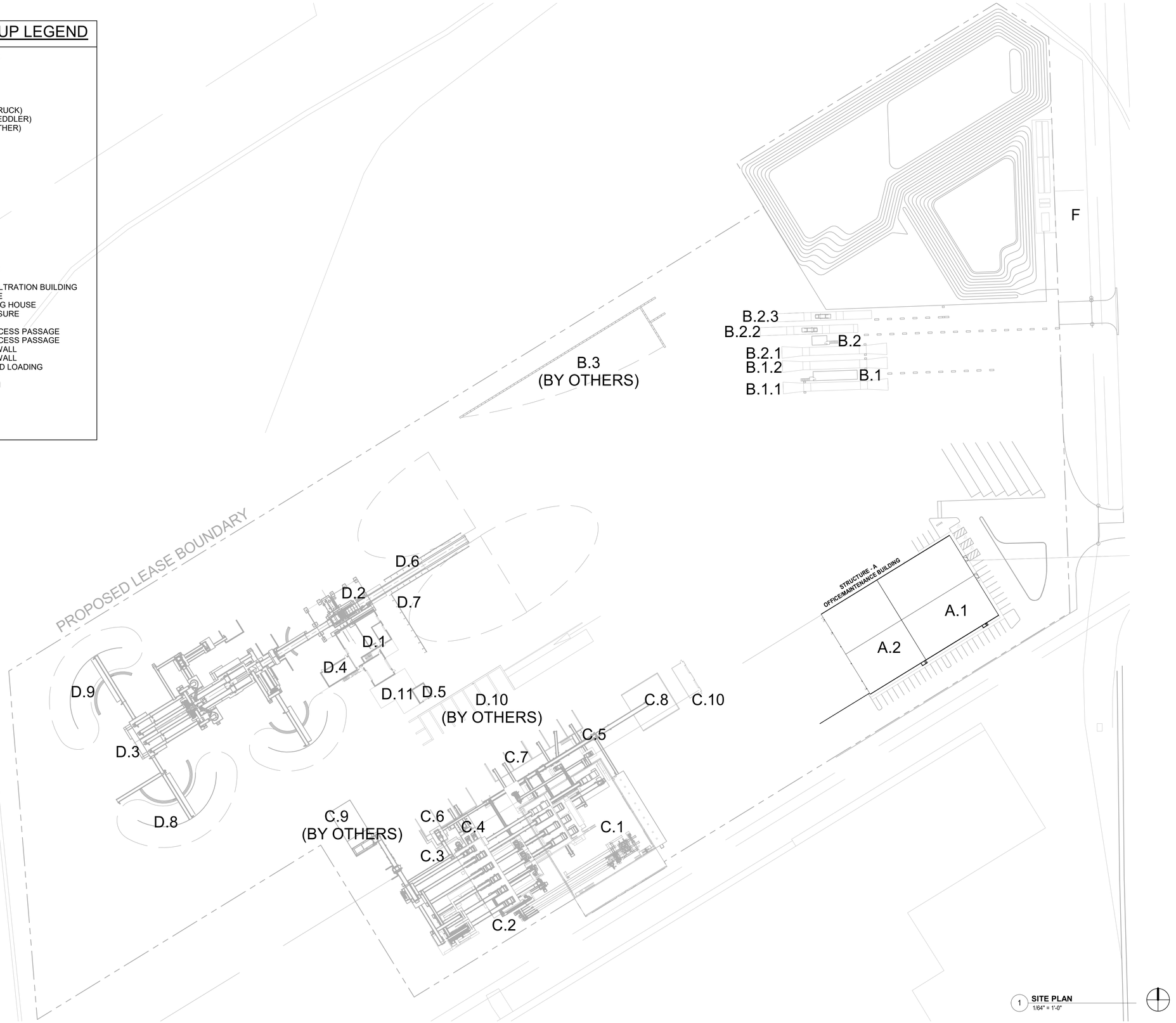
B - SCALE HOUSES
- B.1 - LARGE SCALE HOUSE (TRUCK)
- B.2 - SMALL SCALE HOUSE (PEDDLER)
- B.3 - SCRAP PILE WALL (BY OTHER)

C - NON-FERROUS BUILDING
- C.1 - NON-FERROUS / FINES PROCESSING
- C.2 - ECS PLATFORM
- C.3 - EQUIPMENT PLATFORM
- C.4 - SORTING PLATFORM
- C.5 - SORTING PLATFORM
- C.6 - MATERIAL BIN WALLS
- C.7 - MATERIAL BIN WALLS
- C.8 - MATERIAL BIN WALLS
- C.9 - RAMP (BY OTHERS)
- C.10 - FIRE PUMP BUILDING

D - SHREDDER / SORTING BUILDING
- D.1 - MILL HOUSE AND AIR FILTRATION BUILDING
- D.2 - SHREDDER ENCLOSURE
- D.3 - DOWN STREAM SORTING HOUSE
- D.4 - TRANSFORMER ENCLOSURE
- D.5 - PUMP HOUSE
- D.6 - DEBRIS PILE WALL / ACCESS PASSAGE
- D.7 - DEBRIS PILE WALL / ACCESS PASSAGE
- D.8 - CONVEYOR SUPPORT WALL
- D.9 - CONVEYOR SUPPORT WALL
- D.10 - MATERIAL BIN WALL AND LOADING RAMP (BY OTHERS)
- D.11 - RAISED RTO PLATFORM

E - "NOT USED"

F - WATER TREATMENT PAD



1 **SITE PLAN**
1/64" = 1'-0"

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SEAL

PROJECT:
GENERAL III, LLC
STRUCTURE A - OFFICE / MAINTENANCE
11551 S. AVE. O
CHICAGO, IL., 60617

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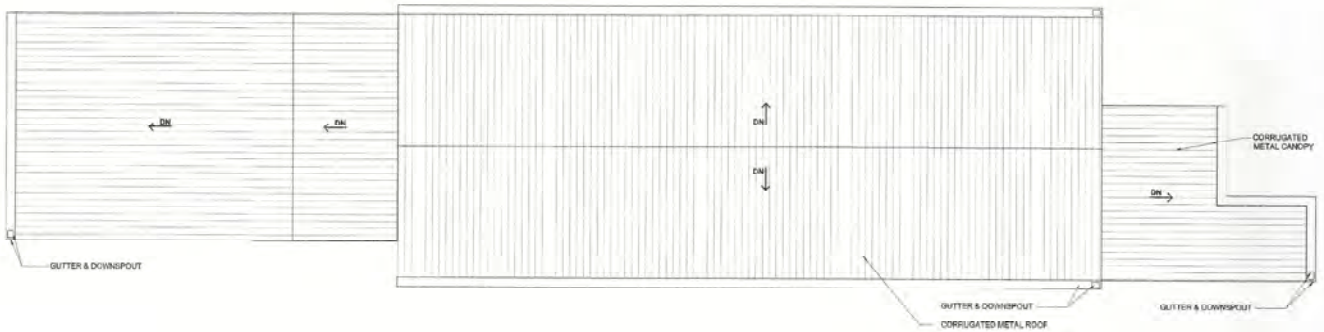
1	07/16/2019	ISSUE FOR PERMIT REVIEW

BUILDING SITE PLAN

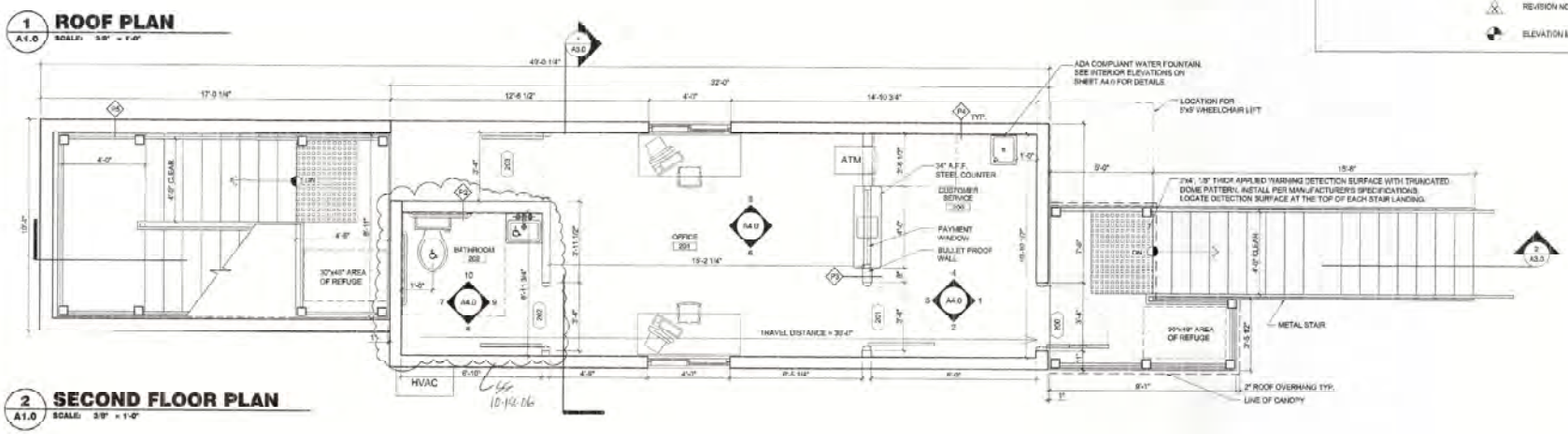
PROJECT #:	DATE:
7563	7/16/2019

G-1.2

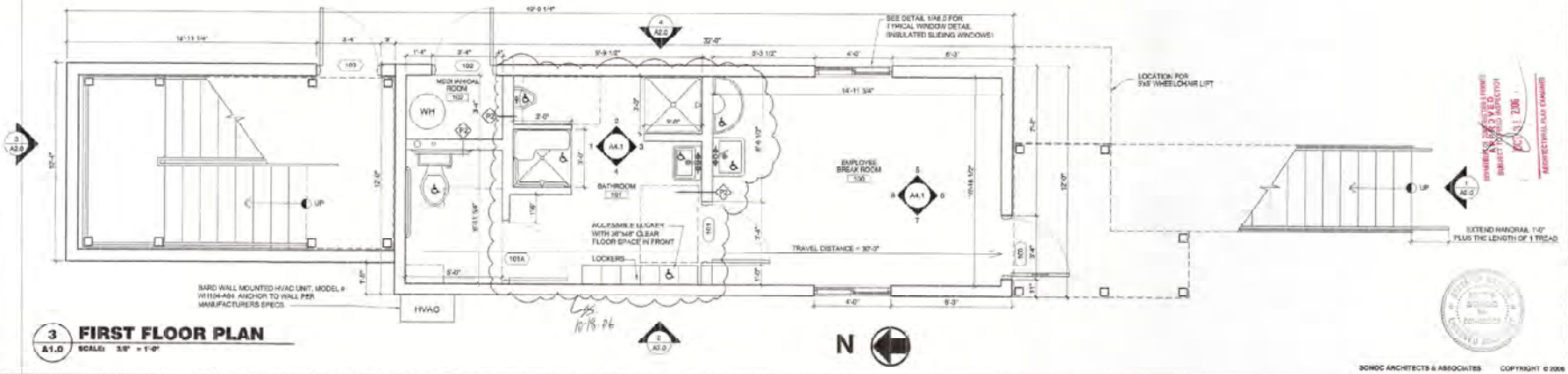


1 ROOF PLAN
A1.0 SCALE: 3/8" = 1'-0"

2 SECOND FLOOR PLAN
A1.0 SCALE: 3/8" = 1'-0"



3 FIRST FLOOR PLAN
A1.0 SCALE: 3/8" = 1'-0"



N

FLOOR PLAN NOTES

1. CONTRACTOR SHALL VERIFY IN THE FIELD ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION AND INSTALLATION OF ALL NEW WORK.
2. ALL INTERIOR FINISHES TO BE CLASS 1 OR BETTER.
3. ALL INTERIOR PARTITIONS TO BE RATED 1 HOUR OR BETTER.
4. ALL INTERIOR PARTITIONS TO BE 3½" UNLESS NOTED OTHERWISE.

SYMBOL LEGEND

DETAIL CUT — DETAIL # / SHEET #
ELEVATION INDICATION — DETAIL # / SHEET #
SECTION CUT — DETAIL # / SHEET #
PARTITION TYPE
DOOR TYPE
WINDOW TYPE
REVISION NOTE
ELEVATION MARK

SONOC ARCHITECTS & ASSOCIATES
715 WEST DIVISION STREET
CHICAGO ILLINOIS 60610
312 280-5954
FAX 266-5968
SONOC@SONOC.COM
WWW.SONOC.COM

GENERAL IRON INDUSTRIES
1909 N. CLIFTON AVE.
CHICAGO, ILLINOIS 60614

DATE	DESCRIPTION
07.14.06	FOR REVIEW
09.29.06	ISSUED FOR PERMIT
10.18.06	ISSUED FOR PERMIT CORRECTIONS

PROJECT
GENERAL IRON OFFICE BUILDING

4550 W. DIVISION ST.
CHICAGO, ILLINOIS 60651

DESCRIPTION
FLOOR PLANS

DRAWN BY | CHECKED BY | PROJECT NO.

DRAWING NO.
A1.0

LEGEND

PAVEMENT SURFACES

- GRAVEL PAVEMENT
- 9'' CONCRETE
- 12'' CONCRETE
- 14'' CONCRETE
- ASPHALT
- POND SURFACES

N

ASPHALT POND PAVEMENT SHALL BE PROVIDED ON POND OVERFLOW WIER

12" CONCRETE 4480 SQ FT

ASPHALT POND PAVEMENT SHALL BE PROVIDED AROUND WATER TREATMENT PAD

POND 1

POND 2

STA. 25+16.0 179.0' LT

STA. 24+63.23 138.9' LT

STA. 24+63.23 139.0' LT

STA. 25+16.0 138.9' LT

STA. 23+86.75 71.9' LT

STA. 23+38.8 139.9' LT

STA. 23+86.75 14.0' RT

STA. 23+38.8 71.9' LT

STA. 23+53.87 54.0' RT

MATERIAL PILE AREA

STA. 22+38.16 14.0' RT

STA. 22+38.16 54.0' RT

STA. 21+78.16 54.0' LT

STA. 20+50.0 71.9' LT

14" CONCRETE 80,855 SQ FT

GRAVEL PAVEMENT 24,470 SQ FT

ASPHALT 187,020 SQ FT

STA. 28+48.4 145.6' LT

Stop

STA. 25+54.8 167.5' RT

STA. 25+85.4 234.8' RT

STA. 25+85.4 302.0' RT

GRAVEL PAVEMENT 105,426 SQ FT

STA. 18+35.6 139.9' LT

STA. 17+95.3 139.9' LT

9" CONCRETE 194,094 SQ FT

12" CONCRETE 23,019 SQ FT

STA. 18+35.6 145.6' RT

STA. 18+22.6 158.1' RT

STA. 18+22.6 177.3' RT

STA. 21+78.16 177.3' RT

STA. 24+61.5 302.0' RT

STA. 22+90.2 354.0' RT

STA. 24+61.5 353.7' RT

STA. 16+81.9 66.2' RT

STA. 16+83.7 40.0' RT

STA. 16+83.7 41.1' LT

STA. 15+01.4 179.0' LT

STA. 15+01.4 75.0' LT

STA. 20+50.0 145.6' RT

STA. 20+50.0 158.1' RT

STA. 19+55.9 314.4 RT

STA. 19+89.7 302.4' RT

STA. 20+87.7 302.4' RT

DEPRESSED C&G

C&G TYPE B-6.12 BARRIER

C&G TYPE B-6.12 BARRIER

Yield To Incoming Traffic

Yield To Incoming Traffic

14" CONCRETE 22,714 SQ FT

CALUMET RIVER

STA. 13+87.3 75.0' LT

STA. 12+57.6 75.0' LT

STA. 14+10.0 41.1' LT

STA. 14+10.0 41.1' RT

STA. 14+16.0 66.2' RT

STA. 15+93 41.1' RT

STA. 15+93 57.5' RT

STA. 16+27.9 40.0' RT

STA. 16+27.9 57.5' RT

STA. 19+57.7 217.3' RT

STA. 19+57.7 285.4' RT

STA. 18+11.7 284.8' RT

STA. 17+72.7 296.4 RT

STA. 22+90.2 361.0' RT

STA. 22+90.2 483.6' RT

STA. 20+87.7 362.4' RT

STA 20+56.2 362.4' RT

STA. 19+89.7 362.4' RT

STA. 22+44.9 483.6' RT

PROPOSED LEASE LINE

C&G TYPE B-6.12 BARRIER

12" CONCRETE 11,218 SQ FT

12" CONCRETE 5,880.0 SQ FT

STA. 18+11.7 314.3' RT

STA. 18+11.7 363.1' RT

STA. 19+56.1 513.0' RT

STA 20+56.1 513.0' RT

STA 20+56.1 534.75' RT

STA. 15+72.3 226.0' RT

STA. 14+16.0 226.0' RT

GRAVEL PAVEMENT 75,143 SQ FT

STA. 16+38.7 296.4' RT

STA. 16+38.7 326.4' RT

STA. 15+72.3 400.4' RT

STA. 16+10.7 400.4' RT

STA. 17+72.7 326.4' RT

STA. 19+56.1 534.75' RT

GRAVEL PAVEMENT 2,177 SQ FT

12" CONCRETE 153,825 SQ FT

9" CONCRETE 14,082 SQ FT

STA. 16+10.7 511.9' RT

STA. 17+72.7 363.1' RT

EXISTING BUILDING N.I.C.

PROPOSED LEASE LINE

IN-PLANT ROAD

H. ST.

Peddler Traffic

Semi Trucks

60 0 60 120

HORIZONTAL SCALE IN FEET

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

LUKASZ P. SLODZ
062-068653
LICENSED PROFESSIONAL ENGINEER OF
ILLINOIS
04-01-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

SITE GEOMETRY PAVEMENT PLAN

PROJECT #:	DATE:
7563	04-01-2020

C-1.5

D-12

ALTA/NSPS LAND TITLE SURVEY

PARCEL 1: (PARCEL 1 IN TITLE COMMITMENT 19000243NOWF) PIN: 26–19–102–020–0000
THAT PART OF THE WEST 1/2 OF THE NORTHEAST 1/4 AND THE EAST 1/2 OF THE NORTHWEST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, AS ESTABLISHED BY SURVEY OF THE UNITED STATES ENGINEER'S OFFICE WAR DEPARTMENT (AS SHOWN ON SHEET NO. 6 DATED MARCH 1939 AND SHEET NO. 7 DATED MARCH 1938) TITLED "CONTROL SURVEY CALUMET RIVER", BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 19; THENCE SOUTH 89 DEGREES 38 MINUTES 23 SECONDS WEST ALONG THE NORTH LINE OF SAID SECTION 19 (BASIS OF BEARINGS) 1508.48 FEET; THENCE SOUTH 00 DEGREES 43 MINUTES 42 SECONDS EAST 244.82 FEET ALONG A LINE 40 FEET WESTERLY FROM, MEASURED AT RIGHT ANGLES, AND PARALLEL WITH THE WEST RIGHT–OF–WAY LINE OF CONRAIL (FORMERLY THE SOUTH CHICAGO AND SOUTHERN RAILROAD) TO THE POINT OF BEGINNING; THENCE CONTINUING SOUTH 00 DEGREES 43 MINUTES 42 SECONDS EAST 1038.20 FEET ALONG SAID LINE 40 FEET WESTERLY FROM, MEASURED AT RIGHT ANGLES, AND PARALLEL WITH THE PREVIOUSLY MENTIONED WEST RIGHT–OF–WAY LINE OF CONRAIL; THENCE SOUTH 89 DEGREES 38 MINUTES 23 SECONDS WEST 287.71 FEET ALONG THE NORTHERLY LINE OF REPUBLIC ENGINEERED STEELS, INC.; THENCE SOUTH 59 DEGREES 48 MINUTES 04 SECONDS WEST 1584.98 FEET ALONG THE NORTHWESTERLY LINE OF REPUBLIC ENGINEERED STEELS, INC.; THENCE NORTH 07 DEGREES 51 MINUTES 15 SECONDS WEST 641.95 FEET ALONG THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER; THENCE NORTH 01 DEGREE 06 MINUTES 41 SECONDS EAST 569.35 FEET ALONG SAID EASTERLY CHANNEL LINE; THENCE NORTH 58 DEGREES 41 MINUTES 01 SECOND EAST 740.33 FEET; THENCE NORTH 13 DEGREES 32 MINUTES 22 SECONDS WEST 124.01 FEET; THENCE NORTH 61 DEGREES 50 MINUTES 14 SECONDS EAST 613.80 FEET; THENCE SOUTH 77 DEGREES 54 SECONDS 07 MINUTES EAST 165.39 FEET; THENCE SOUTH 24 DEGREES 08 MINUTES 50 SECONDS EAST 297.67 FEET; THENCE NORTH 63 DEGREES 56 MINUTES 50 SECONDS EAST 326.13 FEET TO THE POINT OF BEGINNING, CONTAINING 48.778 ACRES, MORE OR LESS, ALL IN COOK COUNTY, ILLINOIS.

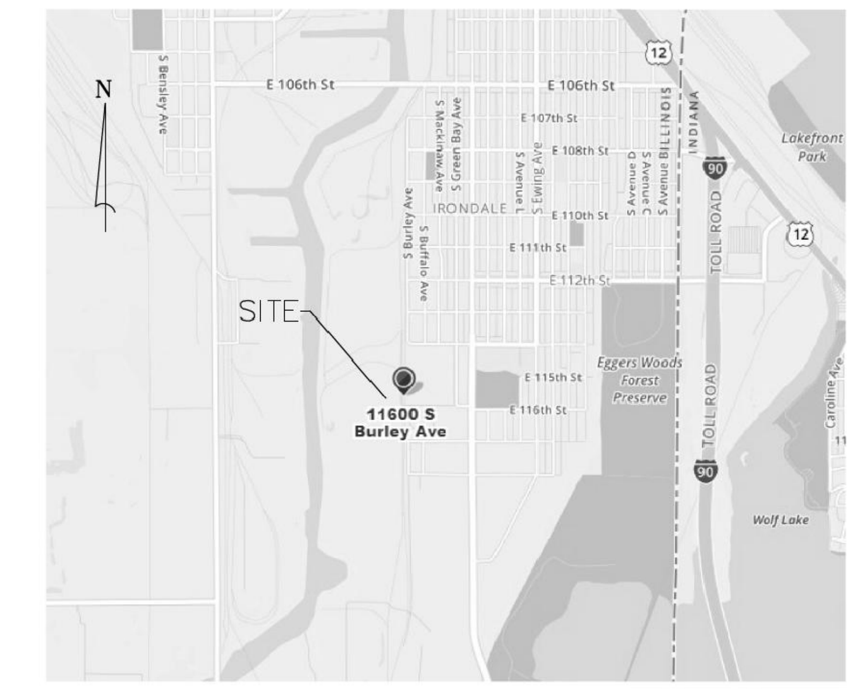
CONTAINING AN APPROXIMATE AREA OF 2,124,752 SQ.FT. OR 48.778 ACRES, MORE OR LESS.

PARCEL 2: (PARCEL 1 IN TITLE COMMITMENT 19000245NOWF) PIN: 26–19–102–016–0000
THAT PART OF THE WEST 1/2 OF THE NORTHEAST 1/4 AND THE EAST 1/2 OF THE NORTHWEST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, AS ESTABLISHED BY SURVEY OF THE UNITED STATES ENGINEER'S OFFICE, WAR DEPARTMENT (AS SHOWN ON SHEET NUMBER 6 DATED MARCH 1939 AND SHEET NUMBER 7 DATED MARCH 1938) TITLED CONTROL SURVEY CALUMET RIVER BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE CENTER LINE OF EAST 111TH STREET (NOW VACATED) AND THE WEST LINE OF SOUTH BURLEY AVENUE; THENCE SOUTH 00 DEGREES 23 MINUTES 09 SECONDS WEST ON THE WEST LINE OF SOUTH BURLEY AVENUE, 1952.08 FEET TO A POINT 33 FEET NORTH OF THE SOUTH LINE OF SECTION 18; THENCE SOUTH 00 DEGREES 23 MINUTES 40 SECONDS WEST, 1309.13 FEET TO A MONUMENT; THENCE SOUTH 60 DEGREES 55 MINUTES 26 SECONDS WEST, A DISTANCE OF 133.70 FEET TO A POINT, SAID POINT BEING ON THE WEST RIGHT OF WAY LINE OF THE 116.40 FOOT WIDE RIGHT OF WAY OF THE SOUTH CHICAGO AND SOUTHERN RAILROAD; THENCE NORTH 00 DEGREES 23 MINUTES 40 SECONDS EAST ON THE WEST LINE OF SAID RAILROAD, 17.23 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 60 DEGREES 55 MINUTES 26 SECONDS WEST, 1743.09 FEET; THENCE SOUTH 85 DEGREES 03 MINUTES 18 SECONDS WEST, 173.49 FEET TO A POINT ON THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, ESTABLISHED AS AFORESAID; THENCE NORTH 6 DEGREES 43 MINUTES 53 SECONDS WEST, 139.55 FEET; THENCE NORTH 60 DEGREES 55 MINUTES 26 SECONDS EAST, 1584.98 FEET TO A POINT ON A LINE 1283.00 FEET SOUTH OF AND PARALLEL TO THE NORTH LINE OF THE NORTHEAST 1/4 OF SECTION 19; THENCE SOUTH 89 DEGREES 14 MINUTES 15 SECONDS EAST ON THE LAST DESCRIBED LINE 327.70 FEET TO A POINT ON THE WEST RIGHT OF WAY LINE OF SAID RAILROAD; THENCE SOUTH 00 DEGREES 23 MINUTES 40 SECONDS WEST ON THE WEST LINE OF SAID RAILROAD 42.44 FEET TO THE POINT OF BEGINNING IN COOK COUNTY, ILLINOIS.

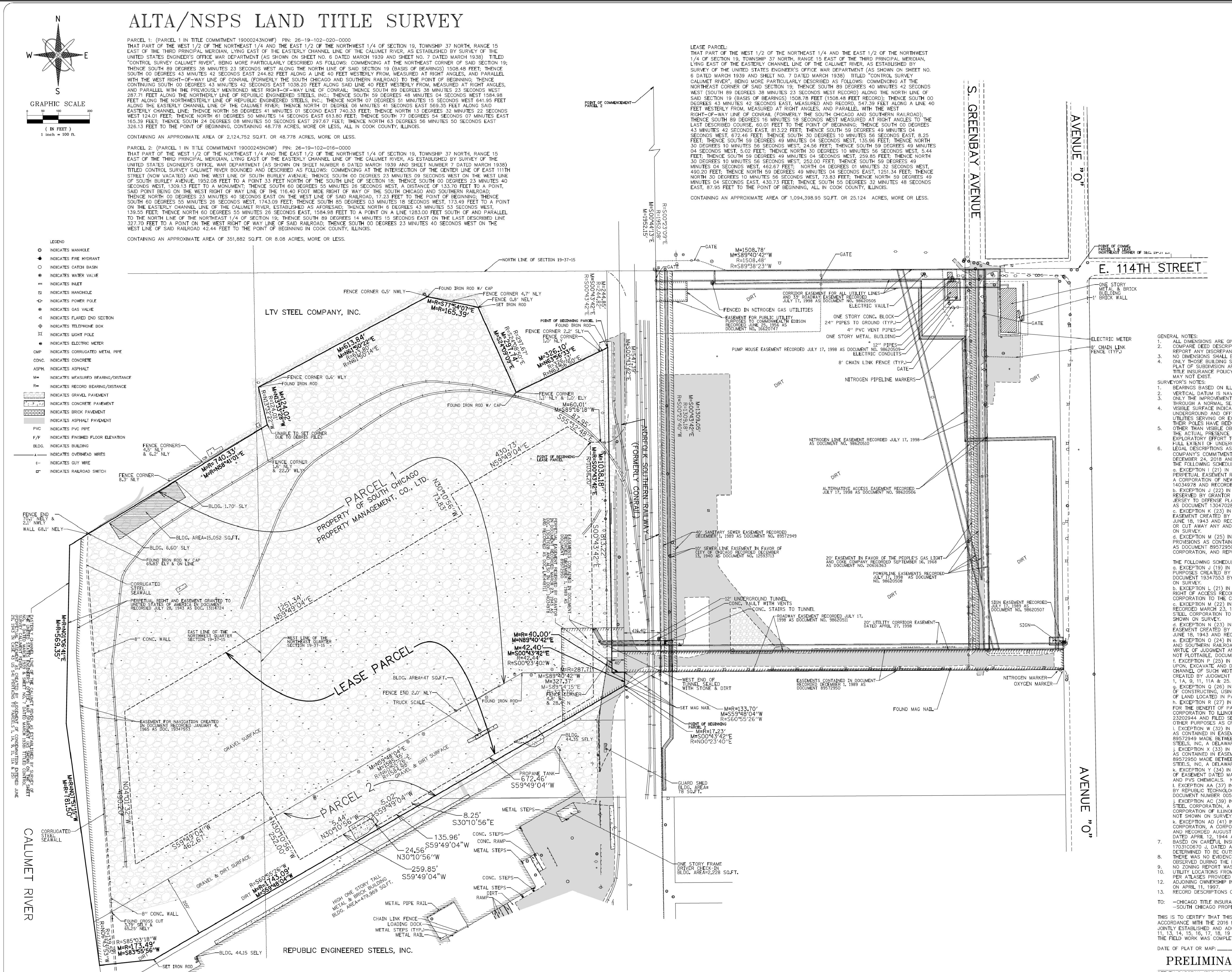
CONTAINING AN APPROXIMATE AREA OF 351,882 SQ.FT. OR 8.08 ACRES, MORE OR LESS.

LEASE PARCEL:
THAT PART OF THE WEST 1/2 OF THE NORTHEAST 1/4 AND THE EAST 1/2 OF THE NORTHWEST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, AS ESTABLISHED BY SURVEY OF THE UNITED STATES ENGINEER'S OFFICE WAR DEPARTMENT (AS SHOWN ON SHEET NO. 6 DATED MARCH 1939 AND SHEET NO. 7 DATED MARCH 1938) TITLED "CONTROL SURVEY CALUMET RIVER", BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 19; THENCE SOUTH 89 DEGREES 40 MINUTES 42 SECONDS WEST (SOUTH 89 DEGREES 38 MINUTES 23 SECONDS WEST RECORD) ALONG THE NORTH LINE OF SAID SECTION 19 (BASIS OF BEARINGS) 1508.78 FEET (1508.48 FEET RECORD); THENCE SOUTH 00 DEGREES 43 MINUTES 42 SECONDS EAST, MEASURED AND RECORD, 547.39 FEET ALONG A LINE 40 FEET WESTERLY FROM, MEASURED AT RIGHT ANGLES, AND PARALLEL WITH THE WEST RIGHT–OF–WAY LINE OF CONRAIL (FORMERLY THE SOUTH CHICAGO AND SOUTHERN RAILROAD); THENCE SOUTH 89 DEGREES 16 MINUTES 18 SECONDS WEST MEASURED AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE, 60.01 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 00 DEGREES 43 MINUTES 42 SECONDS EAST, 813.22 FEET; THENCE SOUTH 59 DEGREES 49 MINUTES 04 SECONDS WEST, 672.46 FEET; THENCE SOUTH 30 DEGREES 10 MINUTES 56 SECONDS EAST, 8.25 FEET; THENCE SOUTH 59 DEGREES 49 MINUTES 04 SECONDS WEST, 135.96 FEET; THENCE NORTH 30 DEGREES 10 MINUTES 56 SECONDS WEST, 24.56 FEET; THENCE SOUTH 59 DEGREES 49 MINUTES 04 SECONDS WEST, 5.02 FEET; THENCE NORTH 30 DEGREES 10 MINUTES 56 SECONDS WEST, 5.44 FEET; THENCE SOUTH 59 DEGREES 49 MINUTES 04 SECONDS WEST, 259.85 FEET; THENCE NORTH 30 DEGREES 10 MINUTES 56 SECONDS WEST, 252.00 FEET; THENCE SOUTH 59 DEGREES 49 MINUTES 04 SECONDS WEST, 462.67 FEET; NORTH 04 DEGREES 01 MINUTES 32 SECONDS WEST, 490.20 FEET; THENCE NORTH 59 DEGREES 49 MINUTES 04 SECONDS EAST, 1251.34 FEET; THENCE NORTH 30 DEGREES 10 MINUTES 56 SECONDS WEST, 73.83 FEET; THENCE NORTH 59 DEGREES 49 MINUTES 04 SECONDS EAST, 430.73 FEET; THENCE SOUTH 55 DEGREES 32 MINUTES 48 SECONDS EAST, 87.95 FEET TO THE POINT OF BEGINNING, ALL IN COOK COUNTY, ILLINOIS.

CONTAINING AN APPROXIMATE AREA OF 1,094,398.95 SQ.FT. OR 25.124 ACRES, MORE OR LESS.



SITE LOCATION DETAIL
N.T.S.



GENERAL NOTES:
1. ALL DIMENSIONS ARE GIVEN IN FEET AND DECIMAL PARTS THEREOF.
2. COMPARE DEED DESCRIPTION AND SITE CONDITIONS WITH THE DATA SHOWN HEREON AND REPORT ANY DISCREPANCIES AT ONCE.
3. NO DIMENSIONS SHALL BE DERIVED FROM SCALED MEASUREMENT.
4. ONLY THOSE BUILDING SETBACK LINES AND EASEMENTS WHICH ARE SHOWN ON THE RECORDED PLAT OF SUBDIVISION ARE SHOWN HEREON, UNLESS INDICATED OTHERWISE. REFER TO DEED, TITLE INSURANCE POLICY AND LOCAL ORDINANCES FOR OTHER RESTRICTIONS WHICH MAY OR MAY NOT EXIST.

SURVEYOR'S NOTES:
1. BEARINGS BASED ON ILLINOIS STATE PLANE EAST ZONE, NAD83 (2011), GPS DERIVED.
2. VERTICAL DATUM IS NAVD'88, GPS DERIVED.
3. ONLY THE IMPROVEMENTS THAT WERE VISIBLE FROM ABOVE GROUND AT TIME OF SURVEY AND THROUGH A NORMAL SEARCH AND WALK THROUGH OF THE SITE ARE SHOWN ON THE FACE OF THIS PLAT.
4. VISIBLE SURFACE INDICATIONS OF UTILITIES ON THE SURVEYED PARCEL AND HAVE BEEN SHOWN. UNDERGROUND AND OFFSITE OBSERVATIONS HAVE NOT BEEN MADE TO DETERMINE THE EXTENT OF UTILITIES SERVING OR EXISTING ON THE PROPERTY. OVERHEAD WIRES, IF ANY, ARE EXISTING AND THEIR POLES HAVE BEEN SHOWN, HOWEVER THEIR FUNCTION AND DIMENSIONS HAVE NOT BEEN NOTED.
5. OTHER THAN VISIBLE OBSERVATIONS NOTED HEREON, THIS SURVEY MAKES NO STATEMENT REGARDING THE ACTUAL PRESENCE OR ABSENCE OF ANY SERVICE OR UTILITY LINE. CONTROLLED UNDERGROUND EXPLORATORY EFFORT TOGETHER WITH J.U.L.I.E. LOCATIONS IS RECOMMENDED TO DETERMINE THE FULL EXTENT OF UNDERGROUND SERVICE AND UTILITY LINES. CONTACT J.U.L.I.E. AT: 1–800–892–0123.
6. LEGAL DESCRIPTIONS AS SHOWN HEREON CONFORMS TO THOSE CONTAINED IN CHICAGO TITLE INSURANCE COMPANY'S COMMITMENT FOR TITLE INSURANCE, FILE NO. 19000243NOWF WITH AN EFFECTIVE DATE OF DECEMBER 24, 2018 AND FILE NO. 19000245NOWF WITH AN EFFECTIVE DATE OF DECEMBER 27, 2018.
THE FOLLOWING SCHEDULE B EXCEPTIONS FROM FILE NO. 19000243NOWF ARE NOTED:
a. EXCEPTION I (21) IN THE ABOVE REFERENCED NOTE NO. 6, FILE NO. 19000243NOWF REFERS TO THE PERPETUAL EASEMENT RESERVED BY GRANTOR IN THE MORTGAGE FROM REPUBLIC STEEL CORPORATION, A CORPORATION OF NEW JERSEY TO RECONSTRUCTION FINANCE CORPORATION IN MORTGAGE DOCUMENT 14034978 AND RECORDED AS DOCUMENT LR 1448711. SHOWN ON SURVEY.
b. EXCEPTION J (22) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE PERPETUAL EASEMENT RESERVED BY GRANTOR IN TEH DEED FROM REPUBLIC STEEL CORPORATIO, A CORPORATION OF NEW JERSEY TO DEFENSE PLANT CORPORATION DATED FEBRUARY 17, 1943 AND RECORDED MARCH 23, 1943 AS DOCUMENT 13047028. SHOWN ON SURVEY.
c. EXCEPTION K (23) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE PERPETUAL RIGHT AND EASEMENT CREATED BY GRANT FROM DEFENSE PLANT CORPORATION TO UNITED STATES OF AMERICA, DATED JUNE 18, 1943 AND RECORDED JULY 28, 1943 AS DOCUMENT 13114724 OF THE RIGHT TO ENTER UPON, DIG, OR CUT AWAY ANY AND REMOVE ANY OR ALL OF THE DESCRIBED PART OF THE PREMISES. SHOWN ON SURVEY.
d. EXCEPTION M (25) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENTS, TERMS AND PROVISIONS AS CONTAINED IN EASEMENT DATED NOVEMBER 28, 1989 AND RECORDED DECEMBER 1, 1989 AS DOCUMENT 89572950 MADE BY AND BETWEEN LTV STEEL COMPANY, INC., AND NEW JERSEY CORPORATION, AND REPUBLIC ENGINEERED STEELS, INC., A DELAWARE CORPORATION. SHOWN ON SURVEY.

THE FOLLOWING SCHEDULE B EXCEPTIONS FROM FILE NO. 19000245NOWF ARE NOTED:
a. EXCEPTION J (19) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT FOR NAVIGATION PURPOSES CREATED BY INDENTURE DATED DECEMBER 23, 1964 AND RECORDED JANUARY 4, 1965 AS DOCUMENT 19347553 BY REPUBLIC STEEL CORPORATION TO THE UNITED STATES OF AMERICA. SHOWN ON SURVEY.
b. EXCEPTION L (21) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT FOR SEWER WITH RIGHT OF ACCESS RECORDED DECEMBER 13, 1940 AS DOCUMENT 12593713 BY REPUBLIC STEEL CORPORATION TO THE CITY OF CHICAGO. SHOWN ON SURVEY.
c. EXCEPTION M (22) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE PERPETUAL EASEMENT RECORDED MARCH 23, 1943 AS DOCUMENT 13047028 RESERVED BY GRANTOR IN THE DEED FROM REPUBLIC STEEL CORPORATION TO DEFENSE PLANT CORPORATION DATED FEBRUARY 17, 1943 FOR TRACK MAINTENANCE. SHOWN ON SURVEY.
d. EXCEPTION N (23) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE PERPETUAL RIGHT AND EASEMENT CREATED BY GRANT FROM DEFENSE PLANT CORPORATION TO UNITED STATES OF AMERICA, DATED JUNE 18, 1943 AND RECORDED JULY 28, 1943 AS DOCUMENT 13114724. SHOWN ON SURVEY.
e. EXCEPTION O (24) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT OF SOUTH CHICAGO AND SOUTHERN RAILROAD COMPANY IN LOTS 1, 2 AND 5 TO 12 IN BLOCK 4 AND OTHER PROPERTY BY VIRTUE OF JUDGMENT AND CONDEMNATION ENTERED IN CASE 7100 COUNTY COUR TOF COOK COUNTY, ILLINOIS. NOT PLOTTABLE, DOCUMENT NOT PROVIDED TO SURVEYOR. PERTAINS TO PART OF PARCEL 10.
f. EXCEPTION P (25) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE PERPETUAL EASEMENT TO ENTER UPON, EXCAVATE AND DREDGE, TO REMOVE THEREFROM ANY AND ALL MATERIALS NECESSARY TO PROVIDE A CHANNEL OF SUCH WIDTH AND DEPTH AS IS AUTHORIZED BY EXISTING LAW TO MAINTAIN SAID CHANNEL AS CREATED BY JUDGMENT OF CONDEMNATION ENTERED JUNE 29, 1943 IN CASE 43 US 541. PERTAINS TO PARCELS 1, 1A, 9, 11, 11A & 25.
g. EXCEPTION Q (26) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT FOR THE PURPOSE OF CONSTRUCTING, USING, MAINTAINING, REPAIRING AND REPLACING CERTAIN RAILROAD TRACKS OVER THAT PART OF LAND LOCATED IN PARCEL 11 RECORDED MARCH 23, 1943 AS DOCUMENT 13047028. NO SHOWN ON SURVEY.
h. EXCEPTION R (27) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT APPURTENANT TO AND FOR THE BENEFIT OF PARCEL "A" AS DESCRIBED IN INSTRUMENT OF TRANSFER FROM REPUBLIC STEEL CORPORATION TO ILLINOIS POLLUTION CONTROL FINANCING AUTHORITY RECORDED AUGUST 28, 1675 AS DOCUMENT 23202944 AND FILED SEPTEMBER 8, 1975 AS DOCUMENT LR2828072 FOR SUPPORT, EASEMENT AND EGRESS AND OTHER PURPOSES AS CREATED BY SAID INSTRUMENT OF TRANSFER. NOT SHOWN ON SURVEY.
i. EXCEPTION W (32) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENTS, TERMS AND PROVISIONS AS CONTAINED IN EASEMENT DATED NOVEMBER 28, 1989 AND RECORDED DECEMBER 1, 1989 AS DOCUMENT 89572949 MADE BETWEEN LTV STEEL COMPANY, INC, A NEW JERSEY CROPORATION, AND REPUBLIC ENGINEERED STEELS, INC, A DELAWARE CORPORATION. NOT SHOWN ON SURVEY.
j. EXCEPTION X (33) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENTS, TERMS AND PROVISIONS AS CONTAINED IN EASEMENT DATED NOVEMBER 28, 1989 AND RECORDED DECEMBER 1, 1989 AS DOCUMENT 89572950 MADE BETWEEN LTV STEEL COMPANY, INC, A NEW JERSEY CROPORATION, AND REPUBLIC ENGINEERED STEELS, INC, A DELAWARE CORPORATION. NOT SHOWN ON SURVEY.
k. EXCEPTION Y (34) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO TERMS AND PROVISIONS OF ASSIGNMENT OF EASEMENT DATED MAY 3, 1994 AS DOCUMENT NUMBER 94423591 MADE BY AND BETWEEN ALLIED SIGNAL INC AND PVS CHEMICALS. NOT SHOWN ON SURVEY.
l. EXCEPTION AA (37) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE DECLARATION OF EASEMENTS MADE BY REPUBLIC TECHNOLOGIES INTERNATIONAL, LLC, DATED JULY 10, 2000 AND RECORDED JULY 18, 2000 AS DOCUMENT NUMBER 00536969, IN CONNECTION WITH A CERTAIN PURCHASE. NOT SHOWN ON SURVEY.
j. EXCEPTION AC (39) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT MADE BY REPUBLIC STEEL CORPORATION, A CORPORATION OF NEW JERSEY TO THE PEOPLES GAS LIGHT AND COKE COMPANY, A CORPORATION OF ILLINOIS DATED DECEMBER 21, 1965 AND RECORDED APRIL 19, 1979 AS DOCUMENT 24925628. NOT SHOWN ON SURVEY.
k. EXCEPTION AD (41) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT BY REPUBLIC STEEL CORPORATION, A CORPORATION OF ILLINOIS OF NEW JERSEY TO UNITED STATES OF AMERICA, DATED JULY 13, 1943 AND RECORDED AUGUST 5, 1943 AS DOCUMENT 13119807 AS MODIFIED BY INSTURMENT BETWEEN SAID PARTIES DATED APRIL 12, 1944 AND RECORDED MARCH 12, 1944 AS DOCUMENT 13282470. NOT PLOTTABLE.
7. BASED ON CAREFUL INSPECTION OF FEMA FLOOD INSURANCE RATE MAP, COMMUNITY PANEL 17031C0670 J, DATED AUGUST 19, 2008, THE PROPERTY SHOWN HEREON LIES WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
8. THERE WAS NO EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED DURING THE PROCESS OF THE SURVEY FIELD WORK.
9. NO ZONING REPORT WAS PROVIDED TO THE SURVEYOR FOR REVIEW.
10. UTILITY LOCATIONS FROM J.U.L.I.E. DESIGN STAGE LOCATE TICKET NUMBER 00616 X1302279–00X SHOWN PER ATLASES PROVIDED BY CORRESPONDING UTILITY COMPANY. LOCATIONS ARE APPROXIMATE.
12. ADJOINING OWNERSHIP INFORMATION TAKEN FROM LAND TITLE SURVEY PREPARED BY COLE ASSOCIATES INC. ON APRIL 11, 1997.
13. RECORD DESCRIPTIONS OF ADJOINERS NOT PROVIDED TO SURVEYOR.

TO: –CHICAGO TITLE INSURANCE COMPANY
–SOUTH CHICAGO PROPERTY MANAGEMENT COMPANY, LTD. AN OHIO LIMITED LIABILITY COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6(a), 6(b), 7(b1), 8, 11, 13, 14, 15, 16, 17, 18, 19 AND 20 OF TABLE A THEREOF.
THE FIELD WORK WAS COMPLETED ON JANUARY 28, 2019.

DATE OF PLAT OR MAP: ______________________

PRELIMINARY

STEVEN BARCZAK, IPLS NO. 035–003269
LICENSE EXPIRES: 11/30/2020
SBARCZAK@KNIGHTEA.COM

PROFESSIONAL LAND SURVEYOR STEVEN BARCZAK NO. 3269 CHICAGO STATE OF ILLINOIS

THIS PROFESSIONAL SERVICE CONFORMS TO THE ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

LUKASZ P. SLEDZ 062-068653 LICENSED PROFESSIONAL ENGINEER OF ILLINOIS
04-01-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

TOPOGRAPHIC AND UTILITY SURVEY

PROJECT #:	DATE:
7563	04-00-2020

C-0.2

SHEET NO. 1 OF 1
DATE: 09/12/19
JOB NO. 7563.01

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221 N. LaSalle Street, Suite 300
Chicago, Illinois 60601-1211
Phone (312) 577-3300
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11554 S. AVENUE O
PREPARED FOR:
GENERAL III, LLC
11600 S. BURLEY AVENUE
CHICAGO, IL 60617

Drawn By: JV Designed By: SB Scale: 1"=100'
ALTA/NSPS LAND TITLE SURVEY
REVISIONS

ALTA/NSPS LAND TITLE SURVEY

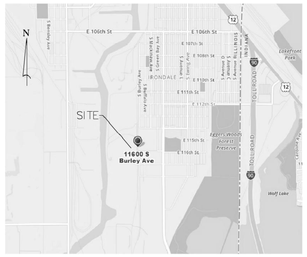
PARCEL 1: (PARCEL 1 IN TITLE COMMITMENT 19000243NOWF) PIN: 26-19-102-020-0000
THAT PART OF THE WEST 1/2 OF THE NORTHEAST 1/4 AND THE EAST 1/2 OF THE NORTHWEST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, AS ESTABLISHED BY SURVEY OF THE UNITED STATES ENGINEER'S OFFICE WAR DEPARTMENT (AS SHOWN ON SHEET NO. 6 DATED MARCH 1939 AND SHEET NO. 7 DATED MARCH 1938) TITLED "CONTROL SURVEY, CALUMET RIVER", BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 19; THENCE SOUTH 89 DEGREES 38 MINUTES 23 SECONDS WEST ALONG THE NORTH LINE OF SAID SECTION 19 (BASIS OF BEARINGS) 1508.48 FEET; THENCE SOUTH 00 DEGREES 43 MINUTES 42 SECONDS EAST 244.82 FEET ALONG A LINE 40 FEET WESTERLY FROM, MEASURED AT RIGHT ANGLES, AND PARALLEL WITH THE WEST RIGHT-OF-WAY LINE OF CONRAIL (FORMERLY THE SOUTH CHICAGO AND SOUTHERN RAILROAD) TO THE POINT OF BEGINNING; THENCE CONTINUING SOUTH 00 DEGREES 43 MINUTES 42 SECONDS EAST 1038.20 FEET ALONG SAID LINE 40 FEET WESTERLY FROM, MEASURED AT RIGHT ANGLES, AND PARALLEL WITH THE PREVIOUSLY MENTIONED WEST RIGHT-OF-WAY LINE OF CONRAIL; THENCE SOUTH 89 DEGREES 38 MINUTES 23 SECONDS WEST 287.71 FEET ALONG THE NORTHERLY LINE OF REPUBLIC ENGINEERED STEELS, INC.; THENCE SOUTH 59 DEGREES 48 MINUTES 04 SECONDS WEST 1584.98 FEET ALONG THE NORTHWESTERLY LINE OF REPUBLIC ENGINEERED STEELS, INC.; THENCE NORTH 07 DEGREES 51 MINUTES 15 SECONDS WEST 641.95 FEET ALONG THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER; THENCE NORTH 01 DEGREE 06 MINUTES 41 SECONDS EAST 569.35 FEET ALONG SAID EASTERLY CHANNEL LINE; THENCE NORTH 58 DEGREES 41 MINUTES 01 SECOND EAST 740.33 FEET; THENCE NORTH 13 DEGREES 32 MINUTES 22 SECONDS WEST 124.01 FEET; THENCE NORTH 61 DEGREES 50 MINUTES 14 SECONDS EAST 613.80 FEET; THENCE SOUTH 77 DEGREES 54 SECONDS 07 MINUTES EAST 165.39 FEET; THENCE SOUTH 24 DEGREES 08 MINUTES 50 SECONDS EAST 297.67 FEET; THENCE NORTH 63 DEGREES 56 MINUTES 50 SECONDS EAST 326.13 FEET TO THE POINT OF BEGINNING, CONTAINING 48.778 ACRES, MORE OR LESS, ALL IN COOK COUNTY, ILLINOIS.

CONTAINING AN APPROXIMATE AREA OF 2,124,752 SQ.FT. OR 48.778 ACRES, MORE OR LESS.

PARCEL 2: (PARCEL 1 IN TITLE COMMITMENT 19000243NOWF) PIN: 26-19-102-016-0000
THAT PART OF THE WEST 1/2 OF THE NORTHEAST 1/4 AND THE EAST 1/2 OF THE NORTHWEST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, AS ESTABLISHED BY SURVEY OF THE UNITED STATES ENGINEER'S OFFICE, WAR DEPARTMENT (AS SHOWN ON SHEET NUMBER 6 DATED MARCH 1939 AND SHEET NUMBER 7 DATED MARCH 1938) TITLED CONTROL SURVEY CALUMET RIVER BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE CENTER LINE OF EAST 111TH STREET (NOW VACATED) AND THE WEST LINE OF SOUTH BURLEY AVENUE; THENCE SOUTH 00 DEGREES 23 MINUTES 09 SECONDS WEST ON THE WEST LINE OF SOUTH BURLEY AVENUE, 1852.08 FEET TO A POINT 33 FEET NORTH OF THE SOUTH LINE OF SECTION 18; THENCE SOUTH 00 DEGREES 23 MINUTES 40 SECONDS WEST, 1309.13 FEET TO A MONUMENT; THENCE SOUTH 60 DEGREES 55 MINUTES 26 SECONDS WEST, A DISTANCE OF 133.70 FEET TO A POINT, SAID POINT BEING ON THE WEST RIGHT OF WAY LINE OF THE 116.40 FOOT WIDE RIGHT OF WAY OF THE SOUTH CHICAGO AND SOUTHERN RAILROAD; THENCE NORTH 00 DEGREES 23 MINUTES 40 SECONDS EAST ON THE WEST LINE OF SAID RAILROAD, 17.23 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 60 DEGREES 55 MINUTES 26 SECONDS WEST, 1743.09 FEET; THENCE SOUTH 85 DEGREES 03 MINUTES 18 SECONDS WEST, 173.49 FEET TO A POINT ON THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, ESTABLISHED AS AFORESAID; THENCE NORTH 6 DEGREES 43 MINUTES 53 SECONDS WEST, 139.55 FEET; THENCE NORTH 60 DEGREES 55 MINUTES 26 SECONDS EAST, 1584.98 FEET TO A POINT ON A LINE 1283.00 FEET SOUTH OF AND PARALLEL TO THE NORTH LINE OF THE NORTHEAST 1/4 OF SECTION 19; THENCE SOUTH 89 DEGREES 14 MINUTES 15 SECONDS EAST ON THE LAST DESCRIBED LINE 327.70 FEET TO A POINT ON THE WEST RIGHT OF WAY LINE OF SAID RAILROAD; THENCE SOUTH 00 DEGREES 23 MINUTES 40 SECONDS WEST ON THE WEST LINE OF SAID RAILROAD 42.44 FEET TO THE POINT OF BEGINNING IN COOK COUNTY, ILLINOIS.

CONTAINING AN APPROXIMATE AREA OF 351,882 SQ.FT. OR 8.08 ACRES, MORE OR LESS.

LEGEND
- INDICATES MANHOLE
- INDICATES FIRE HYDRANT
- INDICATES CATCH BASIN
- INDICATES WATER VALVE
- INDICATES INLET
- INDICATES HANDHOLE
- INDICATES POWER POLE
- INDICATES GAS VALVE
- INDICATES FLARED END SECTION
- INDICATES TELEPHONE BOX
- INDICATES LIGHT POLE
- INDICATES ELECTRIC MANHOLE
- CMP INDICATES CORRUGATED METAL PIPE
- CONC. INDICATES CONCRETE
- ASPH. INDICATES ASPHALT
- M= INDICATES MEASURED BEARING/DISTANCE
- R= INDICATES RECORD BEARING/DISTANCE
- INDICATES GRAVEL PAVEMENT
- INDICATES CONCRETE PAVEMENT
- INDICATES BRICK PAVEMENT
- INDICATES ASPHALT PAVEMENT
- PVC INDICATES PVC PIPE
- F/F INDICATES FINISHED FLOOR ELEVATION
- BLDG. INDICATES BUILDING
- A INDICATES OVERHEAD WIRES
- INDICATES GUY WIRE
- INDICATES RAILROAD SWITCH



SITE LOCATION DETAIL
N.T.S.

GENERAL NOTES:
1. ALL DIMENSIONS ARE GIVEN IN FEET AND DECIMAL PARTS THEREOF.
2. COMPARE DEED DESCRIPTION AND SITE CONDITIONS WITH THE DATA SHOWN HEREON AND REPORT ANY DISCREPANCIES AT ONCE.
3. NO DIMENSIONS SHALL BE DERIVED FROM SCALED MEASUREMENT.
4. ONLY THOSE BUILDING SETBACK LINES AND EASEMENTS WHICH ARE SHOWN ON THE RECORDED PLAT OF SUBDIVISION ARE SHOWN HEREON, UNLESS INDICATED OTHERWISE. REFER TO DEED, TITLE INSURANCE POLICY AND LOCAL ORDINANCES FOR OTHER RESTRICTIONS WHICH MAY OR MAY NOT EXIST.

SURVEYOR'S NOTES:
1. BEARINGS BASED ON ILLINOIS STATE PLANE EAST ZONE, NAD83 (2011), GPS DERIVED.
2. VERTICAL DATUM IS NAVD'88, GPS DERIVED.
3. ONLY THE IMPROVEMENTS THAT WERE VISIBLE FROM ABOVE GROUND AT TIME OF SURVEY AND THROUGH A NORMAL SEARCH AND WALK THROUGH OF THE SITE ARE SHOWN ON THE FACE OF THIS PLAT.
4. VISIBLE SURFACE INDICATIONS OF UTILITIES ON THE SURVEYED PARCEL AND HAVE BEEN SHOWN. UNDERGROUND AND OFFSITE OBSERVATIONS HAVE NOT BEEN MADE TO DETERMINE THE EXTENT OF UTILITIES SERVING OR EXISTING ON THE PROPERTY. OVERHEAD WIRES, IF ANY, ARE EXISTING AND THEIR POLES HAVE BEEN SHOWN, HOWEVER THEIR FUNCTION AND DIMENSIONS HAVE NOT BEEN NOTED.
5. OTHER THAN VISIBLE OBSERVATIONS NOTED HEREON, THIS SURVEY MAKES NO STATEMENT REGARDING THE ACTUAL PRESENCE OR ABSENCE OF ANY SERVICE OR UTILITY LINE. CONTROLLED UNDERGROUND EXPLORATORY EFFORT TOGETHER WITH J.U.L.I.E. LOCATIONS IS RECOMMENDED TO DETERMINE THE FULL EXTENT OF UNDERGROUND SERVICE AND UTILITY LINES. CONTACT J.U.L.I.E. AT: 1-800-892-0123.
6. LEGAL DESCRIPTIONS AS SHOWN HEREON CONFORMS TO THOSE CONTAINED IN CHICAGO TITLE INSURANCE COMPANY'S COMMITMENT FOR TITLE INSURANCE, FILE NO. 19000243NOWF WITH AN EFFECTIVE DATE OF DECEMBER 24, 2018 AND FILE NO. 19000245NOWF WITH AN EFFECTIVE DATE OF DECEMBER 27, 2018. THE FOLLOWING SCHEDULE B EXCEPTIONS FROM FILE NO. 19000243NOWF ARE NOTED:
a. EXCEPTION I (21) IN THE ABOVE REFERENCED NOTE NO. 6, FILE NO. 19000243NOWF REFERS TO THE PERPETUAL EASEMENT RESERVED BY GRANTOR IN THE MORTGAGE FROM REPUBLIC STEEL CORPORATION, A CORPORATION OF NEW JERSEY TO RECONSTRUCTION FINANCE CORPORATION IN MORTGAGE DOCUMENT 14034978 AND RECORDED AS DOCUMENT LR 1448711. SHOWN ON SURVEY.
b. EXCEPTION J (22) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE PERPETUAL EASEMENT RESERVED BY GRANTOR IN TEH DEED FROM REPUBLIC STEEL CORPORATIO, A CORPORATION OF NEW JERSEY TO DEFENSE PLANT CORPORATION DATED FEBRUARY 17, 1943 AND RECORDED MARCH 23, 1943 AS DOCUMENT 13047028. SHOWN ON SURVEY.
c. EXCEPTION K (23) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE PERPETUAL RIGHT AND EASEMENT CREATED BY GRANT FROM DEFENSE PLANT CORPORATION TO UNITED STATES OF AMERICA, DATED JUNE 18, 1943 AND RECORDED JULY 28, 1943 AS DOCUMENT 13114724 OF THE RIGHT TO ENTER UPON, DIG, OR CUT AWAY ANY AND REMOVE ANY OR ALL OF THE DESCRIBED PART OF THE PREMISES. SHOWN ON SURVEY.
d. EXCEPTION M (25) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENTS, TERMS AND PROVISIONS AS CONTAINED IN EASEMENT DATED NOVEMBER 28, 1989 AND RECORDED DECEMBER 1, 1989 AS DOCUMENT 89572950 MADE BY AND BETWEEN LTV STEEL COMPANY, INC., AND NEW JERSEY CORPORATION, AND REPUBLIC ENGINEERED STEELS, INC., A DELAWARE CORPORATION. SHOWN ON SURVEY.

THE FOLLOWING SCHEDULE B EXCEPTIONS FROM FILE NO. 19000245NOWF ARE NOTED:
a. EXCEPTION J (19) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT FOR NAVIGATION PURPOSES CREATED BY INDENTURE DATED DECEMBER 23, 1964 AND RECORDED JANUARY 4, 1965 AS DOCUMENT 19347553 BY REPUBLIC STEEL CORPORATION TO THE UNITED STATES OF AMERICA. SHOWN ON SURVEY.
b. EXCEPTION L (21) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT FOR SEWER WITH RIGHT OF ACCESS RECORDED DECEMBER 13, 1940 AS DOCUMENT 12593713 BY REPUBLIC STEEL CORPORATION TO THE CITY OF CHICAGO. SHOWN ON SURVEY.
c. EXCEPTION M (22) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE PERPETUAL EASEMENT RECORDED MARCH 23, 1943 AS DOCUMENT 13047028 RESERVED BY GRANTOR IN THE DEED FROM REPUBLIC STEEL CORPORATION TO DEFENSE PLANT CORPORATION DATED FEBRUARY 17, 1943 FOR TRACK MAINTENANCE. SHOWN ON SURVEY.
d. EXCEPTION N (23) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE PERPETUAL RIGHT AND EASEMENT CREATED BY GRANT FROM DEFENSE PLANT CORPORATION TO UNITED STATES OF AMERICA, DATED JUNE 18, 1943 AND RECORDED JULY 28, 1943 AS DOCUMENT 13114724. SHOWN ON SURVEY.
e. EXCEPTION O (24) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT OF SOUTH CHICAGO AND SOUTHERN RAILROAD COMPANY IN LOTS 1, 2 AND 5 TO 12 IN BLOCK 4 AND OTHER PROPERTY BY VIRTUE OF JUDGMENT AND CONDEMNATION ENTERED IN CASE 7100 COUNTY COUR TOF COOK COUNTY, ILLINOIS. NOT PLOTTABLE, DOCUMENT NOT PROVIDED TO SURVEYOR. PERTAINS TO PART OF PARCEL 10.
f. EXCEPTION P (25) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE PERPETUAL EASEMENT TO ENTER UPON, EXCAVATE AND DREDGE, TO REMOVE THEREFROM ANY AND ALL MATERIALS NECESSARY TO PROVIDE A CHANNEL OF SUCH WIDTH AND DEPTH AS IS AUTHORIZED BY EXISTING LAW TO MAINTAIN SAID CHANNEL AS CREATED BY JUDGMENT OF CONDEMNATION ENTERED JUNE 29, 1943 IN CASE 43 US 541. PERTAINS TO PARCELS 1, 1A, 9, 11, 11A & 25.
g. EXCEPTION Q (26) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT FOR THE PURPOSE OF CONSTRUCTING, USING, MAINTAINING, REPAIRING AND REPLACING CERTAIN RAILROAD TRACKS OVER THAT PART OF LAND LOCATED IN PARCEL 11 RECORDED MARCH 23, 1943 AS DOCUMENT 13047028. NO SHOWN ON SURVEY.
h. EXCEPTION R (27) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT APPURTENANT TO AND FOR THE BENEFIT OF PARCEL "A" AS DESCRIBED IN INSTRUMENT OF TRANSFER FROM REPUBLIC STEEL CORPORATION TO ILLINOIS POLLUTION CONTROL FINANCING AUTHORITY RECORDED AUGUST 28, 1975 AS DOCUMENT 23202944 AND FILED SEPTEMBER 8, 1975 AS DOCUMENT LR2628072 FOR SUPPORT, EASEMENT AND EGRESS AND OTHER PURPOSES AS CREATED BY SAID INSTRUMENT OF TRANSFER. NOT SHOWN ON SURVEY
i. EXCEPTION W (32) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENTS, TERMS AND PROVISIONS AS CONTAINED IN EASEMENT DATED NOVEMBER 28, 1989 AND RECORDED DECEMBER 1, 1989 AS DOCUMENT 89572949 MADE BETWEEN LTV STEEL COMPANY, INC., A NEW JERSEY CROPORATION, AND REPUBLIC ENGINEERED STEELS, INC, A DELAWARE CORPORATION. NOT SHOWN ON SURVEY
j. EXCEPTION X (33) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENTS, TERMS AND PROVISIONS AS CONTAINED IN EASEMENT DATED NOVEMBER 28, 1989 AND RECORDED DECEMBER 1, 1989 AS DOCUMENT 89572950 MADE BETWEEN LTV STEEL COMPANY, INC, A NEW JERSEY CROPORATION, AND REPUBLIC ENGINEERED STEELS, INC, A DELAWARE CORPORATION. NOT SHOWN ON SURVEY.
k. EXCEPTION Y (34) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO TERMS AND PROVISIONS OF ASSIGNMENT OF EASEMENT DATED MAY 3, 1994 AS DOCUMENT NUMBER 94423591 MADE BY AND BETWEEN ALLIED SIGNAL INC AND PVS CHEMICALS. NOT SHOWN ON SURVEY.
l. EXCEPTION AA (37) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE DECLARATION OF EASEMENTS MADE BY REPUBLIC TECHNOLOGIES INTERNATIONAL, LLC, DATED JULY 10, 2000 AND RECORDED JULY 18, 2000 AS DOCUMENT NUMBER 00536969, IN CONNECTION WITH A CERTAIN PURCHASE. NOT SHOWN ON SURVEY
j. EXCEPTION AC (39) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT MADE BY REPUBLIC STEEL CORPORATION, A CORPORATION OF NEW JERSEY TO THE PEOPLES GAS LIGHT AND COKE COMPANY, A CORPORATION OF ILLINOIS DATED DECEMBER 21, 1965 AND RECORDED APRIL 19, 1979 AS DOCUMENT 24925628. NOT SHOWN ON SURVEY.
k. EXCEPTION AD (41) IN THE ABOVE REFERENCED NOTE NO. 6 REFERS TO THE EASEMENT BY REPUBLIC STEEL CORPORATION, A CORPORATION OF ILLINOIS OF NEW JERSEY TO UNITED STATES OF AMERICA, DATED JULY 13, 1943 AND RECORDED AUGUST 5, 1943 AS DOCUMENT 13119807 AS MODIFIED BY INSTRUMENT BETWEEN SAID PARTIES DATED APRIL 12, 1944 AND RECORDED MARCH 12, 1944 AS DOCUMENT 13282470. NOT PLOTTABLE.
7. BASED ON CAREFUL INSPECTION OF FEMA FLOOD INSURANCE RATE MAP, COMMUNITY PANEL 17031C0670 J, DATED AUGUST 19, 2008, THE PROPERTY SHOWN HEREON LIES WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
8. THERE WAS NO EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED DURING THE PROCESS OF THE SURVEY FIELD WORK.
9. NO ZONING REPORT WAS PROVIDED TO THE SURVEYOR FOR REVIEW.
10. UTILITY LOCATIONS FROM J.U.L.I.E. DESIGN STAGE LOCATE TICKET NUMBER 60616 X1302279--00X SHOWN PER ATLASES PROVIDED BY CORRESPONDING UTILITY COMPANY. LOCATIONS ARE APPROXIMATE.
12. ADJOINING OWNERSHIP INFORMATION TAKEN FROM LAND TITLE SURVEY PREPARED BY COLE ASSOCIATES INC. ON APRIL 11, 1997.
13. RECORD DESCRIPTIONS OF ADJOINERS NOT PROVIDED TO SURVEYOR.

TO: --CHICAGO TITLE INSURANCE COMPANY
--SOUTH CHICAGO PROPERTY MANAGEMENT COMPANY, LTD. AN OHIO LIMITED LIABILITY COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6(a), 6(b), 7(b1), 8, 11, 13, 14, 15, 16, 17, 18, 19 AND 20 OF TABLE A THEREOF.
THE FIELD WORK WAS COMPLETED ON JANUARY 28, 2019.

DATE OF PLAT OR MAP: _____

PRELIMINARY

STEVEN BARCZAK, IPLS NO. 035-003269
LICENSE EXPIRES: 11/30/2020
SBARCZAK@KNIGHTEA.COM

THIS PROFESSIONAL SERVICE CONFORMS TO THE ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY

PROFESSIONAL LAND SURVEYOR STEVEN BARCZAK NO. 3269 CHICAGO STATE OF ILLINOIS

SHEET NO. 2 OF 2 SHEETS
DATE: 03/22/19
JOB NO. 7563.01

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11554 S. AVENUE O
PREPARED FOR:
GENERAL III, LLC
11600 S. BURLEY AVENUE
CHICAGO, IL 60617

Drawn By: JV Designed By: SB Scale: 1"=100'

ALTA/NSPS LAND TITLE SURVEY

REVISIONS

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LUKASZ P. SLODZ
062-068653
LICENSED PROFESSIONAL ENGINEER OF ILLINOIS
04-01-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

2 4-1-2020 ISSUE FOR REVISION TO PERMIT
1 01-10-2020 ISSUE FOR BID

TOPOGRAPHIC AND UTILITY SURVEY

PROJECT #: 7563
DATE: 04-01-2020

C-0.3

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LUKASZ P. SLODZ
062-068653
LICENSED PROFESSIONAL ENGINEER
OF
ILLINOIS
04-01-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

TOPOGRAPHIC AND UTILITY SURVEY

PROJECT #:	DATE:
7563	04-01-2020

C-0.4

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RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment E
USGS Site Location Map

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USGS 7.5 Minute Quadrangle Map


Wolfe Park
1-MILE RADIUS
Baseball Diamond
CHICAGO
Annunciata School
South Deering
George Washington High School
SITE
E-2
George Washington Elementary School
Rowan Park
City Colleges of Chicago-Olive-Harvey
Calumet Park Beach
East Side
Munson Beach
Big Marsh
Indian Ridge Marsh
Calumet River
Lake Calumet
Gun Club Ponds
Dead Stick Pond
Hyde Lake Wetlands
Hegewisch Marsh
Hegewisch
Flatfoot Lake
E 98TH ST
E 99TH ST
E 100TH ST
E 101ST ST
E 102ND ST
E 103RD ST
E 104TH ST
E 105TH ST
E 106TH ST
E 107TH ST
E 108TH ST
E 110TH ST
E 111TH ST
E 112TH ST
E 113TH ST
E 116TH ST
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E 118TH ST
E 122ND ST
E 125TH ST
E 126TH ST
E 128TH ST
E 129TH ST
E 130TH ST
E 131ST ST
E 132ND ST
E 133RD ST
E 134TH ST
E 135TH ST
134TH ST
S DORCHES
S VAN VLISSINGEN RD
S YATES BLVD
S CRANDON AVE
S OGLESBY AVE
S CALHOUN AVE
S HOXIE AVE
S TORRENCE AVE
S MUSKEGON AVE
S ESCANABA AVE
S EXCHANGE AVE
S INDIANAPOLIS AVE
S BENSLEY AVE
S BUFFALO AVE
S MACKINAW AVE
S GREEN BAY AVE
S STONY ISLAND AVE
S AVE E
S AVE F
S AVE G
S AVE H
S AVE J
S AVE L
S AVE M
S AVE N
S AVE O
S EWING AVE
S WOLF LAKE BLVD
S BUTLER DR
S GREENWOOD AVE
S ELLIS AVE
W DOTY AVE S
S DOTY AVE
S BRAINARD AVE
S BRANDON AVE
S HOUSTON AVE
S BALTIMORE AVE
S CARONDOLET AVE
S SAGINAW AVE
S MARQUETTE AVE
S MANISTEE AVE

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment F
Aerial Photograph Drawing

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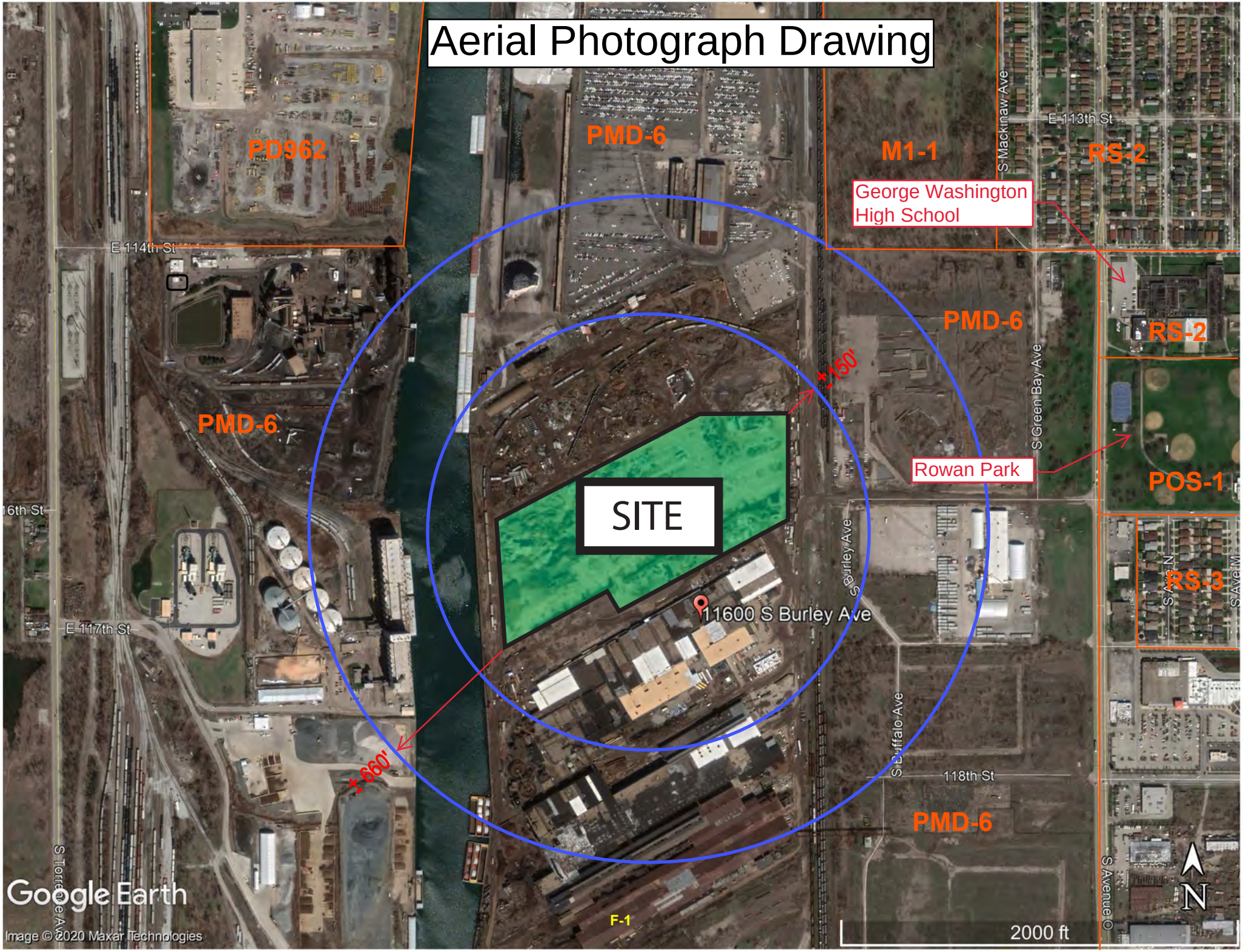
Aerial Photograph Drawing
PD962
PMD-6
M1-1
RS-2
George Washington High School
E 114th St
PMD-6
PMD-6
RS-2
+150'
S Green Bay Ave
Rowan Park
POS-1
SITE
S Burley Ave
11600 S Burley Ave
RS-3
E 117th St
+660'
S Buffalo Ave
118th St
PMD-6
S Avenue O
S Torrence Ave
Google Earth
Image © 2020 Maxar Technologies
F-1
2000 ft
N

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RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment G
Lake Michigan

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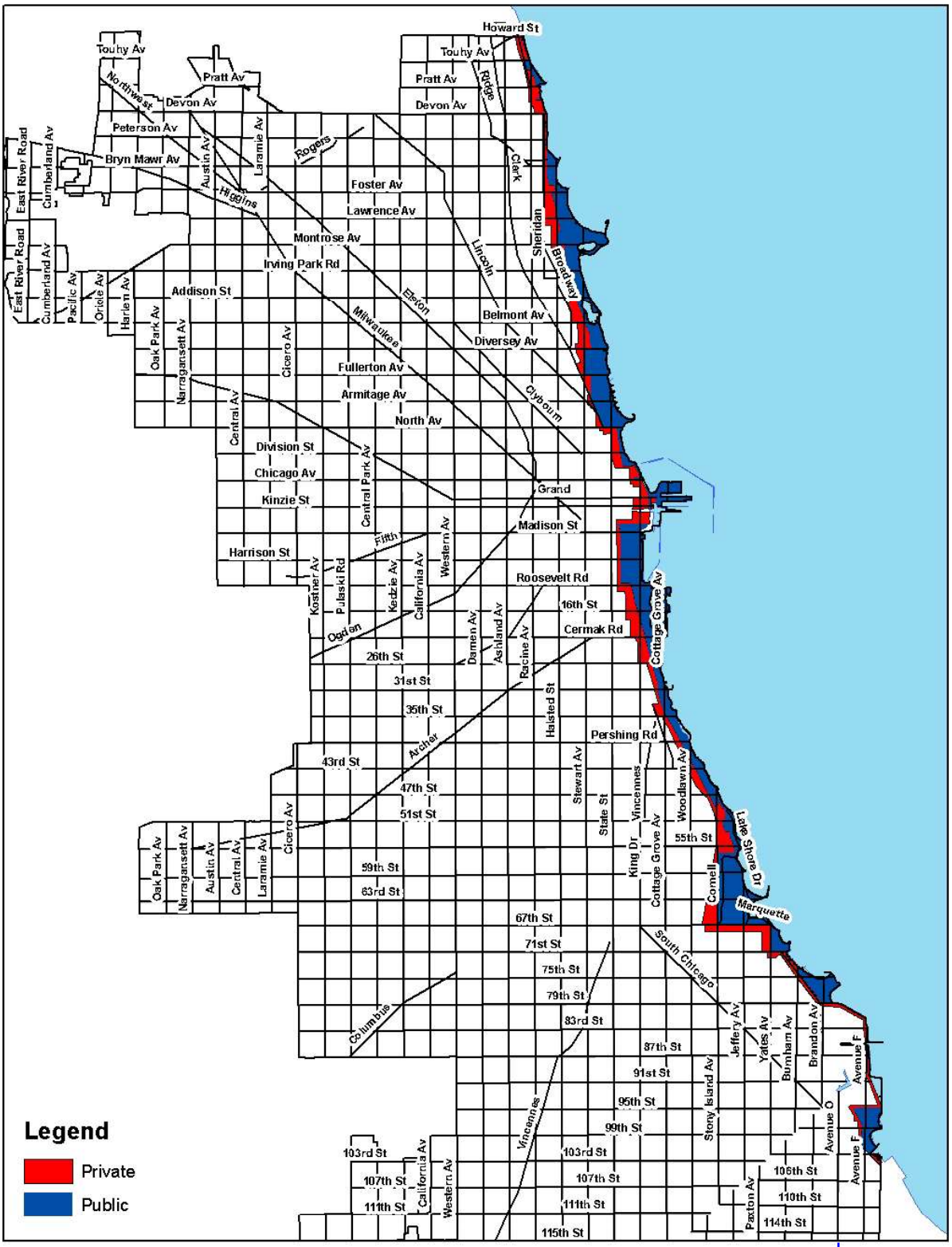
LAKEFRONT PROTECTION DISTRICT



116th St

Site Location

Avenue O

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RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment H
One Hundred Year Flood Plain

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National Flood Hazard Layer FIRMette

FEMA

87°33'12"W 41°41'17"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

87°32'34"W 41°40'50"N

H-1

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/19/2020 at 12:26 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment I
Wetlands

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U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands

September 19, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

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November 2020

Attachment J
Historical and Natural Areas

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Chicago Landmarks and NRHP

Chicago Landmarks

All items

NRHP

All items

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Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment K
General Layout of the Facility

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MATCH LINE STA. 17+25

BUILDING DOWNSPOUT OUTLET TO SURFACE

FFE 16.80

BUILDING DOWNSPOUT OUTLET TO SURFACE

BUILDING DOWNSPOUT OUTLET TO SURFACE

RETAINING WALL

TOP OF WALL 16.80
BOT. OF WALL 11.80
EX GR. (11.78)

TOP OF WALL 16.80
BOT. OF WALL 11.80
EX GR. (11.78)

TOP OF WALL 16.80
BOT. OF WALL 16.00
EX GR. (16.27)

TOP OF WALL 16.80
BOT. OF WALL 14.40
EX GR. (11.95)

GRADE DOWN TO EXISTING WITH 4% SLOPE

GRADE DOWN TO EXISTING WITH 3:1 SLOPE

GRADE DOWN TO EXISTING WITH 3:1 SLOPE

GRADE DOWN TO EXISTING WITH 3:1 SLOPE

GRADE DOWN TO EXISTING WITH 3:1 SLOPE

GRADE DOWN TO EXISTING WITH 3:1 SLOPE

MATERIAL WALL

MATERIAL WALL

RIVERWALL

FLOODPLAIN LIMIT BY FIRM MAP
FLOODWAY LIMIT BY FIRM MAP

FLOODPLAIN LIMIT BY ELEVATION 5.52 CCD

CALUMET RIVER

EXISTING RAILROAD TRACK

EXISTING BUILDING N.I.C.

NOTES;

1. FIRM PANEL NUMBER 670 OF 832
   FIRM MAP NUMBER 17031C0670J
   EFFECTIVE DATE AUGUST 19, 2008

2. BASE FLOOD ELEVATION = 585 NGVD 29
   585.00 (NGVD 29) - 579.48 = 5.52 CCD

3. NO WORK SHALL BE PERFORMED IN THE
   FLOODPLAIN OR FLOODWAY.

30 0 30 60
HORIZONTAL SCALE IN FEET

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OF
ILLINOIS
04-01-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

GRADING PLAN

PROJECT #:	DATE:
7563	04-01-2020

C-2.1

MATCH LINE STA. 23+75

BUILDING DOWNSPOUT OUTLET TO LANDSCAPE AREA

BUILDING DOWNSPOUT OUTLET TO LANDSCAPE AREA

FFE 15.50

1' WIDE CONCRETE WALL

211' - 12" @ 0.32% GUTTER DRAIN PIPE ESVCP 8 GUTTER CONNECTIONS

CLEAN OUT

TOP OF CURB 16.00
BOT. OF CURB 15.50

TOP OF CURB 15.25
BOT. OF CURB 14.75

6" CONCRETE CURB

TOP OF CURB 13.50
BOT. OF CURB 13.00

6" CONCRETE CURB

GRADE DOWN TO EXISTING WITH 4% SLOPE

GRADE DOWN TO EXISTING WITH 4% SLOPE

EXISTING BUILDING
N.I.C.

GRADE DOWN TO EXISTING WITH 3:1 SLOPE

GRADE DOWN TO EXISTING WITH 3:1 SLOPE

GRADE DOWN TO EXISTING WITH 3:1 SLOPE

BUILDING DOWNSPOUT OUTLET TO SURFACE

BUILDING DOWNSPOUT OUTLET TO SURFACE

BUILDING DOWNSPOUT OUTLET TO SURFACE

FFE 16.00

FFE 16.80

FFE 16.80

FFE 16.80

FFE 16.50

115' - 12" @ 0.32% GUTTER DRAIN PIPE ESVCP 4 GUTTER CONNECTIONS

5' WIDE SIDEWALK @1.5% ALONG FACE OF BUILDING

BUILDING RAMP

RETAINING WALL FOR RAMP

TOP OF WALL 11.75
BOT. OF WALL 11.75

TOP OF WALL 16.30
BOT. OF WALL 12.00

31' - 8" @ 0.54% GUTTER DRAIN PIPE ESVCP 2 GUTTER CONNECTIONS

CLEAN OUT

CLEAN OUT

CLEAN OUT

FFE 16.30
PR GR. 12.00

FFE 16.30
PR GR. 11.50
EX GR. (11.11)

FFE 16.30

FFE 16.30
PR GR. 12.00
EX GR. (11.57)

18' - 8" @ 0.54% GUTTER DRAIN PIPE ESVCP 1 GUTTER CONNECTIONS

TOP OF WALL 16.80
BOT. OF WALL 12.00
EX GR. (11.41)

126' - 12" @ 0.32% GUTTER DRAIN PIPE ESVCP 5 GUTTER CONNECTIONS

30 0 30 60
HORIZONTAL SCALE IN FEET

MATCH LINE STA. 17+25

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GRADING PLAN

PROJECT #:	DATE:
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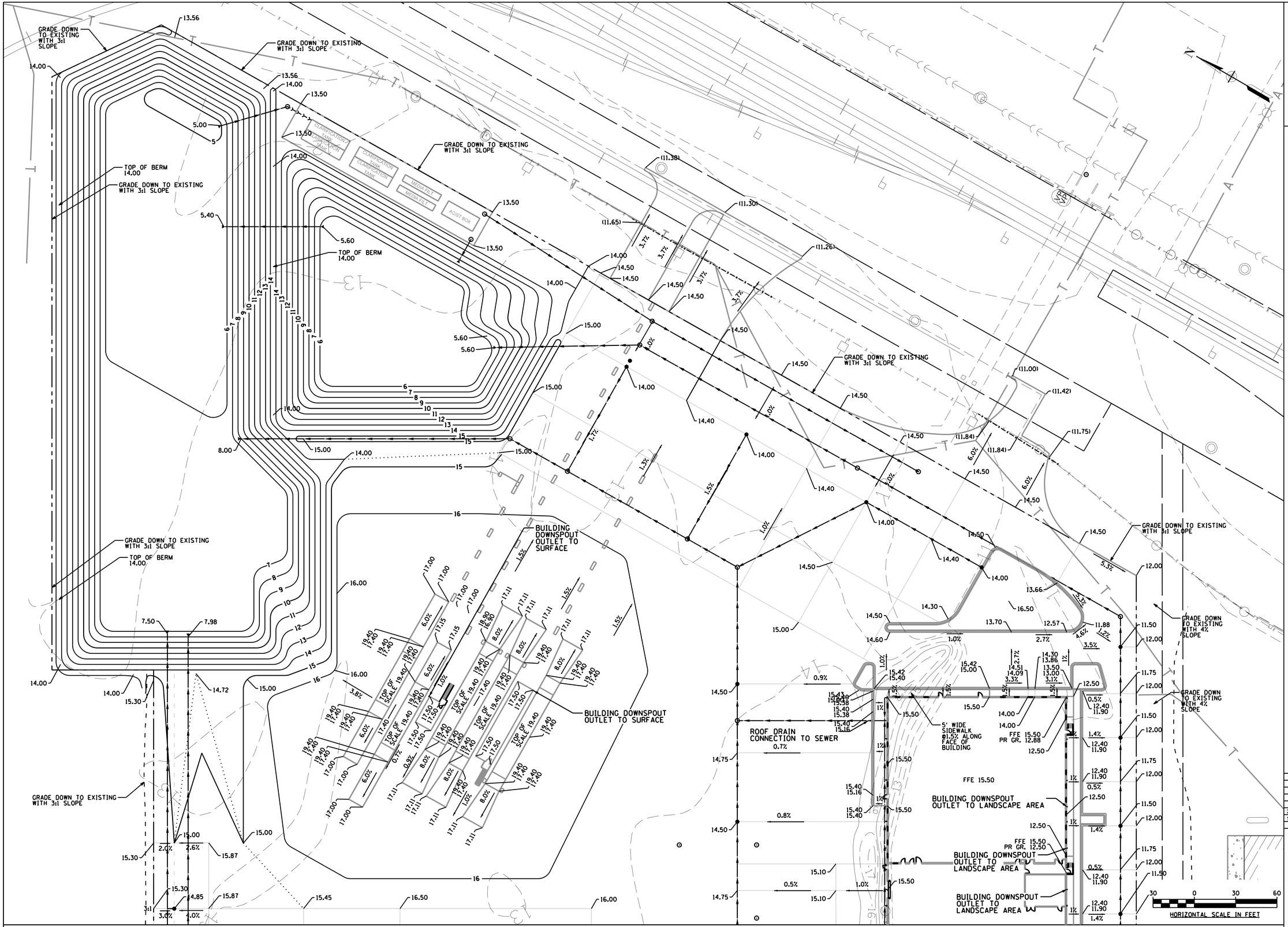
C-2.2



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GRADING PLAN

PROJECT #:	DATE:
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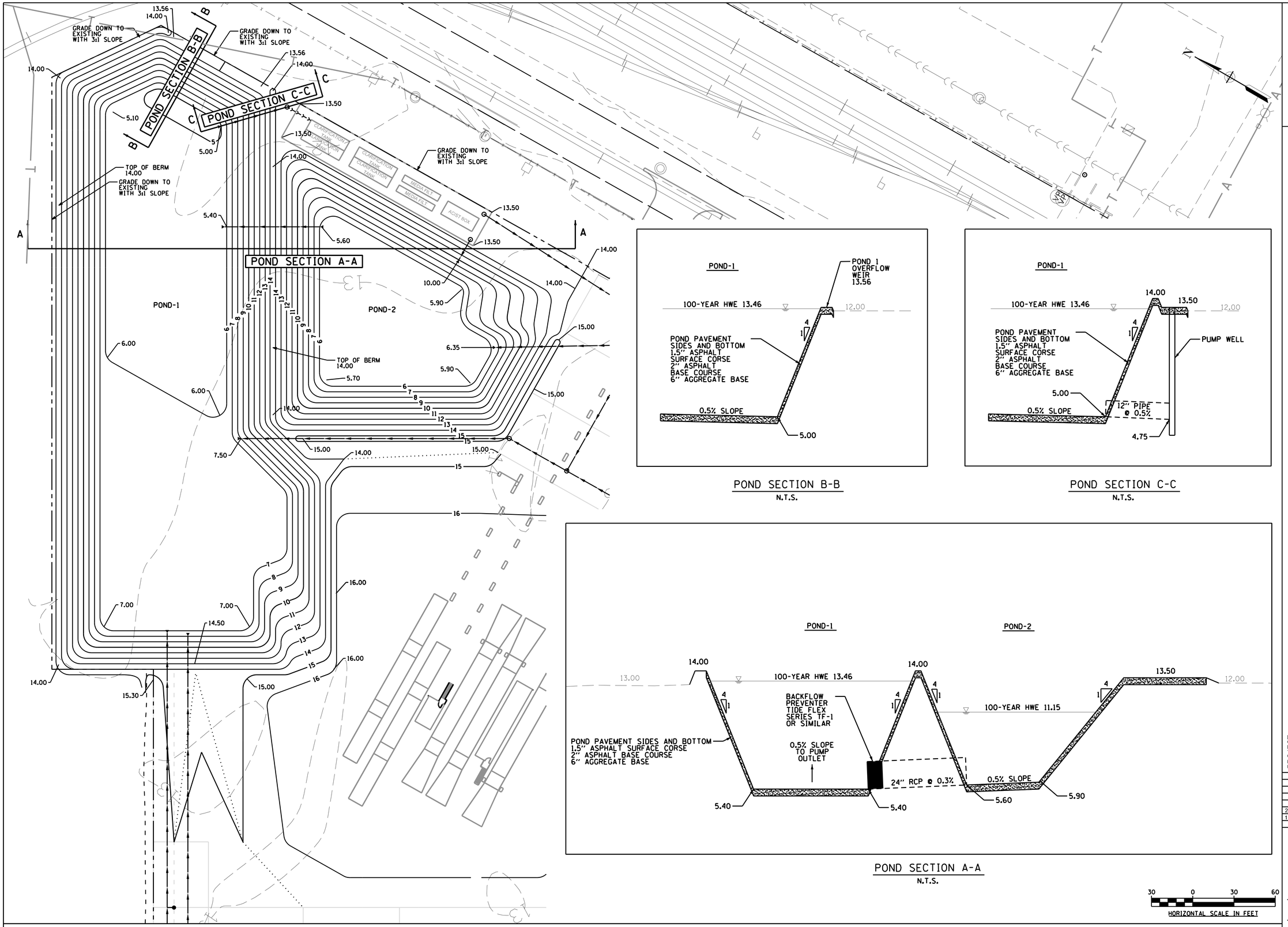
C-2.3



POND SECTION B-B
N.T.S.

POND SECTION C-C
N.T.S.

POND SECTION A-A
N.T.S.

30 0 30 60
HORIZONTAL SCALE IN FEET

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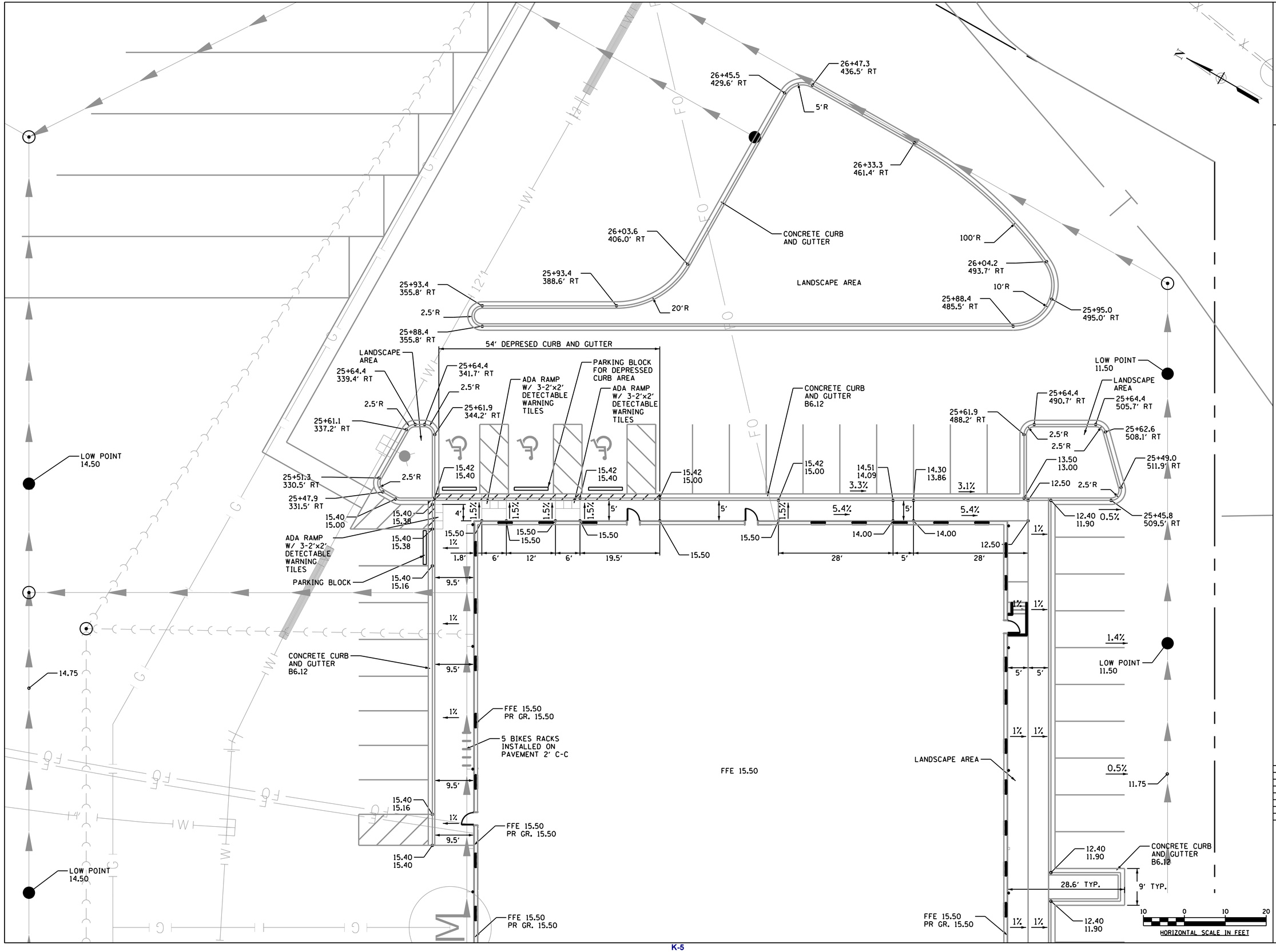
GRADING PLAN
POND SECTION

PROJECT #:	DATE:
7563	04-01-2020

C-2.4



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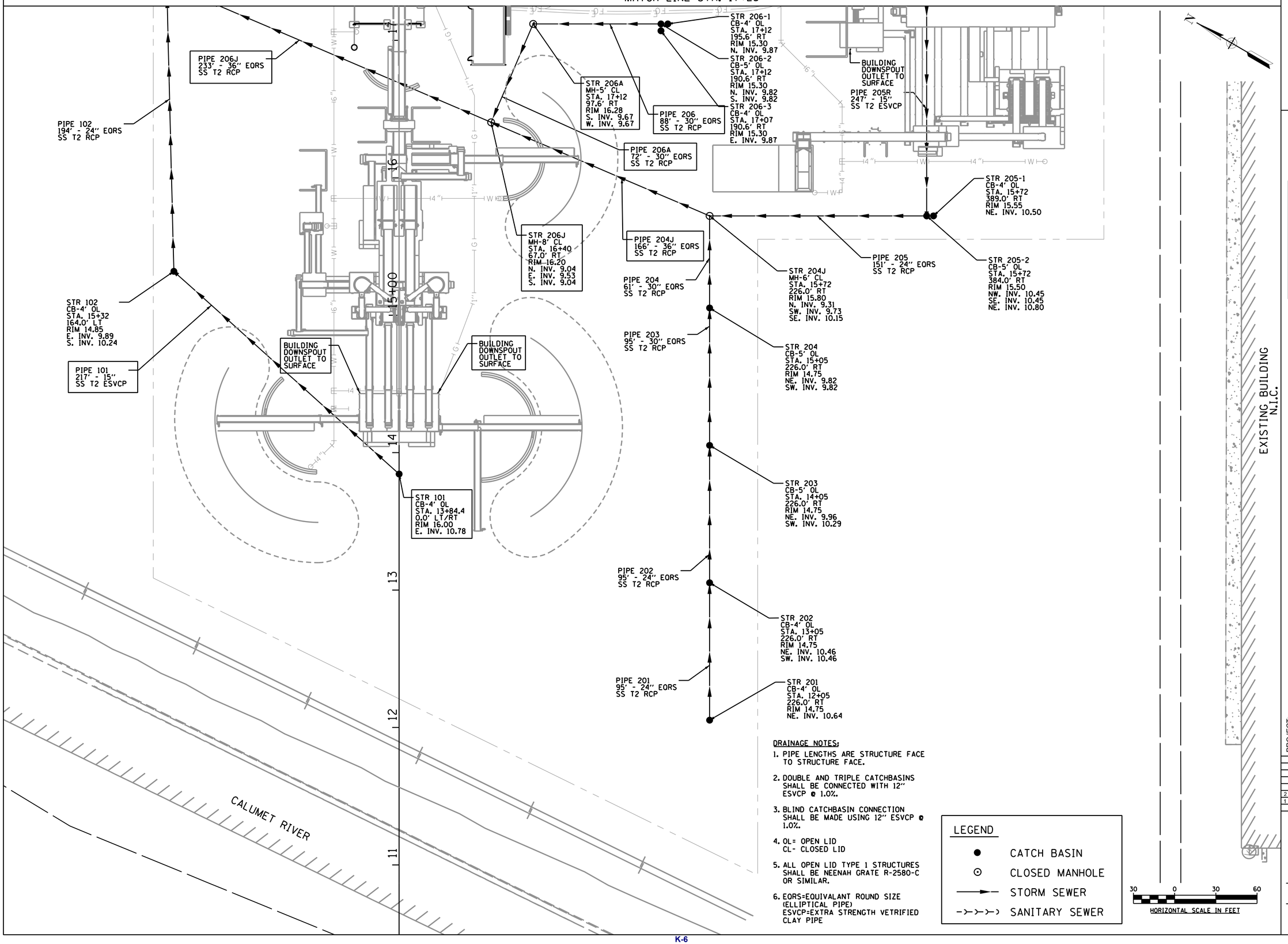
GRADING PLAN
DETAILS

PROJECT #:	DATE:
7563	04-01-2020

C-2.5

MATCH LINE STA. 17+25



DRAINAGE NOTES:

1. PIPE LENGTHS ARE STRUCTURE FACE TO STRUCTURE FACE.
2. DOUBLE AND TRIPLE CATCHBASINS SHALL BE CONNECTED WITH 12" ESVCP @ 1.0%.
3. BLIND CATCHBASIN CONNECTION SHALL BE MADE USING 12" ESVCP @ 1.0%.
4. OL= OPEN LID
   CL= CLOSED LID
5. ALL OPEN LID TYPE 1 STRUCTURES SHALL BE NEENAH GRATE R-2580-C OR SIMILAR.
6. EORS=EQUIVALANT ROUND SIZE (ELLIPTICAL PIPE)
   ESVCP=EXTRA STRENGTH VETRIFIED CLAY PIPE

LEGEND

- CATCH BASIN
- CLOSED MANHOLE
- STORM SEWER
- SANITARY SEWER

30 0 30 60
HORIZONTAL SCALE IN FEET

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1	01-10-2020	ISSUE FOR BID

DRAINAGE PLAN

PROJECT #:	DATE:
7563	04-01-2020

C-3.1

MATCH LINE STA. 23+75

STR 106J
MH-A-5'-T1 CL
STA. 21+78
164.0' LT
RIM 14.85
NE. INV. 7.98
SW. INV. 7.98

STR 210J
MH-A-7'-T1 CL
STA. 22+93
153.9' LT
RIM 15.50
NE. INV. 7.79
SW. INV. 7.79

STR 105
CB-4' OL
STA. 21+78
164.0' LT
RIM 14.85
NE. INV. 8.72
SW. INV. 8.72

PIPE 209J
305' - 42" EORS
SS T2 RCP

PIPE 104
325' - 30" EORS
SS T2 RCP

STR 104-2
CB-4' OL
STA. 19+82
164.0' LT
RIM 14.85
NE. INV. 9.42

STR 104-1
CB-4' OL
STA. 19+82
226.0' RT
RIM 14.95
NE. INV. 9.42

STR 209J
MH-A-8'-T1 CL
STA. 19+82
153.9' LT
RIM 15.50
NE. INV. 8.10
SW. INV. 8.52
SE. INV. 8.94

PIPE 208J
306' - 30" EORS
SS T2 RCP

STR 104
MH-A-5'-T1 CL
STA. 19+82
169.0' LT
RIM 14.85
NE. INV. 8.92
SW. INV. 8.92

PIPE 207J
240' - 36" EORS
SS T2 RCP

PIPE 103
245' - 24" EORS
SS T2 RCP

STR 103-2
CB-4' OL
STA. 17+37
168.9' LT
RIM 14.95
SE. INV. 10.00

STR 103-1
CB-4' OL
STA. 17+32
164.0' LT
RIM 14.85
SW. INV. 10.00

STR 103
MH-A-5'-T1 CL
STA. 17+32
169.0' LT
RIM 14.85
NE. INV. 9.50
SW. INV. 9.50

STR 207J
MH-A-7'-T1 CL
STA. 17+35
153.9' LT
RIM 15.34
NE. INV. 8.81
S. INV. 8.81

23
22
21
20+00
19
18

N.F.R AREA

DRAINAGE NOTES;

1. PIPE LENGTHS ARE STRUCTURE FACE TO STRUCTURE FACE.
2. DOUBLE AND TRIPLE CATCHBASINS SHALL BE CONNECTED WITH 12" ESVCP @ 1.0%.
3. BLIND CATCHBASIN CONNECTION SHALL BE MADE USING 12" ESVCP @ 1.0%.
4. OL= OPEN LID
   CL- CLOSED LID
5. ALL OPEN LID TYPE 1 STRUCTURES SHALL BE NEENAH GRATE R-2580-C OR SIMILAR.
6. EORS=EQUIVALANT ROUND SIZE (ELLIPTICAL PIPE)
   ESVCP=EXTRA STRENGTH VETRIFIED CLAY PIPE

STR 303-2
CB-4' OL
STA. 23+50
226.0' RT
RIM 14.50
SE. INV. 9.70

PIPE 302
95' - 30" EORS
SS T2 RCP

STR 302
MH-6' OL
STA. 22+50
245.0' RT
RIM 14.50
NE. INV. 9.35
SW. INV. 9.78

PIPE 301
159' - 24" EORS
SS T2 RCP

STR 210
CB-4' OL
STA. 21+23
158.2' RT
RIM 15.80
E. INV. 10.19

STR 209
CB-4' OL
STA. 20+23
158.2' RT
RIM 10.51
NE. INV. 10.00
SW. INV. 10.00

PIPE 209
37' - 24" EORS
SS T2 RCP

STR 208J
MH-A-6'-T1 CL
STA. 19+82
158.2' RT
RIM 15.90
NW. INV. 9.49
SE. INV. 10.91
SW. INV. 9.92

PIPE 208
53' - 24" EORS
SS T2 RCP

STR 208
CB-4' OL
STA. 19+23
158.2' RT
RIM 15.80
SE. INV. 10.03
SW. INV. 10.03

PIPE 207
96' - 24" EORS
SS T2 RCP

STR 207
CB-4' OL
STA. 18+23
158.2' RT
RIM 15.80
SE. INV. 10.23

STR 301-1
CB-5' OL
STA. 20+86
245.0' RT
RIM 15.00
NE. INV. 10.10
SW. INV. 10.10

PIPE 210
96' - 24" EORS
SS T2 RCP

STR 301-2
CB-4' OL
STA. 20+81
245.0' RT
RIM 15.00
NE. INV. 10.10

PIPE 901
5' - 6"
SANITARY SEWER
SAN T1 DIP
@ 0.79%

STR 901
MH-A-4'-T1 CL
STA. 17+64
170.4' RT
RIM 14.25
E. INV. 6.96
N. INV. 6.96

BUILDING DOWNSPOUT
OUTLET TO SURFACE

INV. 7.08

STR 303-1
MH-6' OL
STA. 23+50
245.0' RT
RIM 14.50
NE. INV. 8.78
SW. INV. 9.20

211' - 12" @ 0.32%
GUTTER DRAIN
PIPE ESVCP
8 GUTTER
CONNECTIONS

CLEAN OUT
RIM 15.50
INV. 12.00

BUILDING DOWNSPOUT
OUTLET TO
LANDSCAPE AREA

BUILDING DOWNSPOUT
OUTLET TO
LANDSCAPE AREA

PIPE 906
266' - 8" SANITARY SEWER
SAN ESVCP
@ 0.54%

STR 904
MH-A-4'-T1 CL
STA. 21+10
259.0' RT
RIM 14.25
NE. INV. 5.03
SW. INV. 5.03

BUILDING DOWNSPOUT
OUTLET TO SURFACE

PIPE 402J
40' - 15"
SS T2 ESVCP

PIPE 904
46' - 6"
SANITARY SEWER
SAN ESVCP
@ 0.79%

STR 402J
MH-4' CL
FLAT TOP
STA. 20+86
480.0' RT
RIM 12.26
SE. INV. 7.86
SW. INV. 8.02

ELEC. ELEV. 9.80-10.50
SS ELEV. 8.00-9.10
MIN. CLERANCE 12"

PIPE 401
129' - 12"
SS T2 ESVCP

GAS ELEV. 8-8.25
SS ELEV. 9.75-10.75
MIN. CLEARANCE 18"

STR 401
MH-4' CL
FLAT TOP
STA. 19+59
480.0' RT
RIM 14.46
NE. INV. 9.97
NW. INV. 9.97
SE. INV. 9.97

115' - 12" @ 0.32% GUTTER
DRAIN PIPE ESVCP
4 GUTTER CONNECTIONS

CLEAN OUT
RIM 16.30
INV. 10.34

BUILDING DOWNSPOUT
OUTLET TO SURFACE

PIPE 905
254' - 8" SAN SEWER
SAN ESVCP
@ 0.54%

STR 903
MH-A-4'-T1 CL
STA. 18+52
259.0' RT
RIM 14.25
NE. INV. 6.39
SW. INV. 6.39
SE. INV. 6.39

WM ELEV. 8.8-9.8
SAN ELEV. 6.4-7.0
CLEARANCE 18"

PIPE 904
100' - 6"
SAN SEWER
SAN MJ DIP
@ 0.79%

PIPE 903
105' - 8"
SAN SEWER
SAN MJ DIP
@ 0.54%

WM ELEV. 9-10
SAN ELEV. 6.7-7.5
CLEARANCE 18"

STR 205R
MH-4' CL
STA. 18+19
384.0' RT
RIM 16.30
SW. INV. 11.44
SE. INV. 11.44
NW. INV. 11.44

BUILDING DOWNSPOUT
OUTLET TO SURFACE

BUILDING DOWNSPOUT
OUTLET TO SURFACE

BUILDING DOWNSPOUT
OUTLET TO SURFACE

BUILDING DOWNSPOUT
OUTLET TO SURFACE

PIPE 502
60' - 30" EORS
SS T2 RCP

STR 502
CB-4' OL
FLAT TOP
STA. 23+19
523.3' RT
RIM 11.50
NE. INV. 7.28
NW. INV. 7.28

PIPE 501
60' - 24" EORS
SS T2 RCP

STR 501
CB-4' OL
FLAT TOP
STA. 22+55
523.3' RT
RIM 11.50
NE. INV. 7.39
NW. INV. 7.39

PIPE 403
38' - 24" EORS
SS T2 RCP

STR 403
CB-4' OL
FLAT TOP
STA. 22+12
523.3' RT
RIM 11.50
NE. INV. 7.48
NW. INV. 7.48

PIPE 402
113' - 24" EORS
SS T2 RCP

STR 402A
MH-4' CL
FLAT TOP
STA. 20+96
529.8' RT
RIM 12.26
NE. INV. 7.70
NW. INV. 7.70

STR 402-1
CB-4' OL
FLAT TOP
STA. 20+86
523.3' RT
RIM 11.50
NE. INV. 8.52
NW. INV. 8.52

STR 402-2
CB-4' OL
FLAT TOP
STA. 20+82
523.3' RT
RIM 11.50
NE. INV. 8.52

31' - 8" @ 0.54% GUTTER
DRAIN PIPE ESVCP
2 GUTTER CONNECTIONS

CLEAN OUT
RIM 16.30
INV. 10.07

INV. 7.18

CLEAN OUT
RIM 16.30
INV. 11.50

18' - 8" @ 0.54% GUTTER
DRAIN PIPE ESVCP
1 GUTTER CONNECTIONS

CLEAN OUT
RIM 16.30
INV. 11.84

126' - 12" @ 0.32% GUTTER
DRAIN PIPE ESVCP
5 GUTTER CONNECTIONS

BUILDING DOWNSPOUT
OUTLET TO SURFACE

EXISTING BUILDING
N.I.C.

LEGEND

- CATCH BASIN
- CLOSED MANHOLE
- STORM SEWER
- SANITARY SEWER

30 0 30 60
HORIZONTAL SCALE IN FEET

MATCH LINE STA. 17+25

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DRAINAGE PLAN

PROJECT #:	DATE:
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C-3.2

PIPE 1002
8" SCH 80 PVC
TO BE VERIFIED
WITH WATERTECTONICS.
CONNECTION OF
OWNER/WATERTECTONICS
PROVIDED PUMP
TO WATERTECTONICS
TREATMENT SYSTEM
ACIST BOX.

STR 1002
PRECAST PUMP WELL W/ SLIDE RAIL
FOR PUMP AND HOSE CONNECTION
FROM PUMP TO PVC INFLUENT PIPE
STA. 29+69
81.7' LT
RIM 13.50
NW. INV. 4.75

STR 1001
PRC-FES-12"
STA. 29+55
131.2' LT
SE. INV. 5.00

PIPE 1001
50' - 12"
SS T2 ESVCP

STR 702
24" BACKFLOW PREVENTER
STA. 28+82
127.2' LT
SE. INV. 5.40

PIPE 701
65' - 24"
SS T2 RCP

STR 701
PRC-FES-24"
STA. 28+82
58.7' LT
NW. INV. 5.60

CLARIFICATION TANK
CLARIFICATION TANK
CLARIFICATION TANK
MEDIA FILT
MEDIA FILT
ACIST BOX

STR 801
MH-A-4'-T1 CL
STA. 28+73
51.6' RT
RIM 13.50
E. INV. 10.50

PIPE 801
15' - 12"
SS T2 ESVCP

STR 802
PRC-FES-12"
STA. 28+56
42.4' RT
NW. INV. 10.00

STR 601
MH-A-4'-T1 CL
STA. 28+91
61.4' RT
RIM 13.50
INV. 3.76

PIPE 601
141' - 8"
SS T3 ESVCP

STR 602
MH-A-4'-T1 CL
STA. 28+13
226.0' RT
RIM 14.50
N. INV. 2.48
S. INV. 2.48

PIPE 602
218' - 8"
SS T3 ESVCP

PIPE 507J
178' - 36" EORS
SS T2 RCP

PIPE 508J
102' - 36" EORS
SS T2 RCP

STR 500
PRC-FES-EORS-24"
STA. 27+94
68.9' RT
SW. INV. 6.35

STR 310-1
MH-A-4'-T8 OL
STA. 27+85
117.0' RT
RIM 10.51
E. INV. 10.14

STR 310-2
MH-A-4'-T8 OL
STA. 27+80
164.5' RT
RIM 14.00
E. INV. 9.64

STR 508J
MH-4' CL
STA. 27+96
174.0' RT
RIM 14.25
NW. INV. 6.47
S. INV. 6.47

PIPE 603
45' - 12"
SANITARY
SEWER
SAN ESVCP

PIPE 604
196' - 12"
SANITARY
SEWER
SAN DIP
0.32%

CONNECTION TO
EX CDWM 27"
COMBINED
SEWER SYSTEM

PIPE 605
8' - 8"
SANITARY
SEWER
SAN ESVCP
@ 0.79%

STR 605
TYPE-A MANHOLE CL
STA. 102+46
12.5' LT
RIM 7.00
E. INV. -1.84
W. INV. -1.84
SEE CDWM DETAIL

LEGEND

- CATCH BASIN
- CLOSED MANHOLE
- STORM SEWER
- SANITARY SEWER

DRAINAGE NOTES:

1. PIPE LENGTHS ARE STRUCTURE FACE TO STRUCTURE FACE.
2. DOUBLE AND TRIPLE CATCHBASINS SHALL BE CONNECTED WITH 12" ESVCP @ 1.0%.
3. BLIND CATCHBASIN CONNECTION SHALL BE MADE USING 12" ESVCP @ 1.0%.
4. OL= OPEN LID
   CL- CLOSED LID
5. ALL OPEN LID TYPE 1 STRUCTURES SHALL BE NEENAH GRATE R-2580-C OR SIMILAR.
6. EORS=EQUIVALANT ROUND SIZE (ELLIPTICAL PIPE)
   ESVCP=EXTRA STRENGTH VETRIFIED CLAY PIPE

STR 604
MH-A-4'-T1 CL
STA. 27+46
400.3' RT
RIM 11.50
E. INV. -0.87
W. INV. 0.16

STR 603
MH-A-4'-T1 CL
STA. 27+04
376.5' RT
RIM 14.39
N. INV. 1.60
E. INV. -1.06
W. INV. 1.48

PIPE 310J
198' - 42" EORS
SS T2 RCP

STR 310J
MH-6' CL
STA. 27+28
79.5' RT
RIM 15.00
S. INV. 7.74
NW. INV. 7.74

STR 300
PRC-FES-EORS-48"
STA. 27+28
122.0' LT
SW. INV. 7.50

PIPE 310
82' - 15" ESVCP
SS T2 ESVCP

STR 309
MH-A-4'-T1 OL
STA. 27+31
226.0' RT
RIM 14.00
E. INV. 9.75

STR 507J
MH-4' CL
STA. 27+07
226.0' RT
RIM 14.25
N. INV. 6.67
S. INV. 6.67

PIPE 310A
42' - 42" EORS
SS T2 RCP

STR 310A
MH-6' CL
STA. 27+04
121.7' RT
RIM 14.63
N. INV. 7.80
S. INV. 7.80
E. INV. 9.39

PIPE 309
82' - 15" ESVCP
SS T2 ESVCP

STR 308
MH-4' OL
STA. 26+82
226.0' RT
RIM 14.00
NW. INV. 8.99
S. INV. 9.37

WM ELEV. 3.4-4.6
SS ELEV. 6.60-9.25
CLEARANCE 20"

WM ELEV. 3.4-4.6
SS ELEV. 9.40-10.85
CLEARANCE 4.6'

PIPE 309J
36' - 42" EORS
SS T2 RCP

PIPE 309A
94' - 42" EORS
SS T2 RCP

STR 309A
MH-6' CL
STA. 26+55
208.7' RT
RIM 14.63
N. INV. 7.92
S. INV. 7.92
E. INV. 9.51

PIPE 306J
79' - 36" EORS
SS T2 RCP

STR 309J
MH-6' CL
STA. 26+35
245.0' RT
RIM 15.00
N. INV. 7.97
SE. INV. 8.81
SW. INV. 8.39

STR 305
MH-6' OL
STA. 25+50
245.0' RT
RIM 14.50
NE. INV. 8.50
SW. INV. 8.50

PIPE 308
101' - 24"
SS T2 RCP

STR 307
CB-4' OL
STA. 26+35
226.0' RT
RIM 14.00
N. INV. 9.60

PIPE 307
92' - 15"
SS T2 RCP

PIPE 506J
215' - 36" EORS
SS T2 RCP

STR 506J
MH-4' CL
STA. 25+99
523.3' RT
RIM 11.80
N. INV. 6.91
SW. INV. 6.91

PIPE 506
18' - 36" EORS
SS T2 RCP

STR 506
CB-4' OL
FLAT TOP
STA. 25+77
523.3' RT
RIM 11.50
NE. INV. 6.94
NW. INV. 6.94

STR 100
PRC-FES-EORS-30"
STA. 25+88
164.0' LT
SW. INV. 7.50

STR 200
PRC-FES-EORS-48"
STA. 25+85
153.9' LT
SW. INV. 7.50

PIPE 306J
22' - 36" EORS
SS T2 RCP

STR 306J
MH-6' CL
STA. 25+23
245.0' RT
RIM 14.50
NE. INV. 8.54
SW. INV. 8.54
SE. INV. 10.50

PIPE 913
219' - 8"
SANITARY
SEWER
SAN ESVCP
@ 0.54%

WM ELEV. 8-9
SS ELEV. 11.00-12.50
CLEARANCE 2.25'

PIPE 306
106' - 12"
SS MJ DIP

BUILDING DOWNSPOUT
OUTLET TO SURFACE

N.F.R AREA

PIPE 106J
272' - 30" EORS
SS T2 RCP

PIPE 210J
289' - 42" EORS
SS T2 RCP

PIPE 911
77' - 8"
SAN SEWER
SAN ESVCP
@ 0.54%

INV. 11.37

WM ELEV. 8-9
SAN ELEV. 5.0-6.0
MIN. CLEARANCE 18"

INV. 5.06

PIPE 505
215' - 30" EORS
SS T2 RCP

STR 505
CB-4' OL
FLAT TOP
STA. 25+11
523.3' RT
RIM 11.50
NE. INV. 7.03
NW. INV. 7.03

PIPE 912
93' - 8" DIP
SANITARY SEWER
SAN @ 0.54%

STR 908
MH-A-4'-T1 CL
STA. 25+34
259.0' RT
RIM 14.25
NE. INV. 2.67
SW. INV. 2.67
SE. INV. 4.55

PIPE 504
215' - 30" EORS
SS T2 RCP

STR 504
CB-4' OL
STA. 24+47
523.3' RT
RIM 11.50
NE. INV. 7.11
NW. INV. 7.11

PIPE 304
67' - 36" EORS
SS T2 RCP

WM ELEV. 8-9
SAN ELEV. 2.8-3.8
CLEARANCE 4.2'

INV. 7.82

WM ELEV. 6.30-7.30
SS ELEV. 8.89-13.38
MIN. CLEARANCE 18"

STR 907
MH-A-4'-T1 CL
STA. 24+53
259.0' RT
RIM 14.25
E. INV. 3.09
SW. INV. 3.09
NW. INV. 6.30

BUILDING DOWNSPOUT
OUTLET TO
LANDSCAPE AREA

PIPE 909
145' - 6"
SAN SEWER
SAN ESVCP
@ 0.76%

STR 304
MH-6' OL
STA. 24+50
245.0' RT
RIM 14.50
NE. INV. 8.64
SW. INV. 8.64

STR 906
MH-A-4'-T1 CL
STA. 24+53
202.8' RT
RIM 14.25
N. INV. 6.72
SE. INV. 6.72

PIPE 908
93' - 8"
SAN SEWER
SAN ESVCP
@ 0.54%

STR 905
MH-A-4'-T1 CL
STA. 23+80
259.0' RT
RIM 14.25
NE. INV. 3.59
SW. INV. 3.59
SE. INV. 4.49

BUILDING DOWNSPOUT
OUTLET TO
LANDSCAPE AREA

PIPE 503
215' - 30" EORS
SS T2 RCP

STR 503
CB-4' OL
STA. 23+83
523.3' RT
RIM 11.50
NE. INV. 7.19
NW. INV. 7.19

STR 106
CB-5' OL
STA. 23+87
164.0' LT
RIM 14.85
NE. INV. 8.29

PIPE 910
55' - 6"
SAN SEWER
SAN ESVCP
@ 0.76%

SS ELEV. 9.00-12.20
SAN ELEV. 6.50-7.50
MIN. CLEARANCE 18"

WM ELEV. 8-9
SAN ELEV. 5.0-6.0
MIN. CLEARANCE 18"

INV. 5.00

BUILDING DOWNSPOUT
OUTLET TO
LANDSCAPE AREA

PIPE 303
96' - 36" EORS
SS T2 RCP

PIPE 907
93' - 8" SANITARY SEWER
SAN DIP @ 0.54%

30 0 30 60
HORIZONTAL SCALE IN FEET

MATCH LINE STA. 23+75

K-8

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062-068653
LICENSED
PROFESSIONAL
ENGINEER
OF
ILLINOIS
04-01-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

DRAINAGE PLAN

PROJECT #:	DATE:
7563	04-01-2020

C-3.3

MATCH LINE STA. 17+25

1-6"X4" MJ TEE
4" MJ DIP
6" MJ DIP
#2 ECLIPSE POST HYDRANT STA. 17+06.2 31.0 LT SEE DETAIL
1-6"X4" MJ TEE
4" MJ DIP
#2 ECLIPSE POST HYDRANT STA. 15+65.0 52.5 LT SEE DETAIL
1-6"X4" MJ TEE STA. 15+70.2 47.5 LT
4" MJ DIP
DUST BOSS INSTALLED ON POLE STA. 15+84.9 74.3 RT SEE ARCH. PLANS FOR POLE DETAIL
#2 ECLIPSE POST HYDRANT STA. 15+84.9 72.5 RT SEE DETAIL
298'-1" UNDERGROUND GAS LINE
#2 ECLIPSE POST HYDRANT STA. 14+45.0 0.0 RT/LT SEE DETAIL
6" MJ DIP
4" MJ DIP
1-6"X4" MJ TEE
4" MJ DIP
2" MJ DIP
DUST BOSS INSTALLED ON COLUMN STA. 14+42.3 0.0 RT/LT SEE STR. PLANS FOR DETAIL
1-4"x2" MJ TEE STA. 14+32.0 47.5 LT
4" MJ DIP
1-4" 1/8 MJ BEND
4" MJ DIP
#2 ECLIPSE POST HYDRANT STA. 13+89.8 64.4 LT SEE DETAIL

6" MJ DIP
1-6" 1/8 MJ BEND
6" MJ DIP
1-6" 1/8 MJ BEND
6" MJ DIP
1-4"x6" MJ TEE
#2 ECLIPSE POST HYDRANT STA. 16+11.9 470.1 RT SEE DETAIL
4" MJ DIP
1-4" 1/4 MJ BEND
4" MJ DIP
#2 ECLIPSE POST HYDRANT STA. 15+89.2 302.5 RT SEE DETAIL
4" MJ DIP

EXISTING BUILDING N.I.C.

LEGEND

- SITE HYDRANT - #2 ECLIPSE
- DUST BOSS

SITE PROCESS WATER DOMESTIC PIPING NOTES;

1. LOCATION OF SITE WATER MAIN, SITE GAS LINES, HYDRANTS, AND DUST BOSS SHALL BE VERIFIED IN FIELD TO CLEAR ALL OWNERS PROVIDED INDUSTRIAL EQUIPMENT, EQUIPMENT ENCLOSURES, UNDERGROUND UTILITIESAND BUILDINGS.
2. ALL SITE WATER PIPING SHALL BE MIN. 5' BELOW PROPOSED GRADE.

30 0 30 60
HORIZONTAL SCALE IN FEET

K-9

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PRIVATE SITE PIPING PLAN

PROJECT #:	DATE:
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C-5.1

MATCH LINE STA. 23+75

6" MJ DIP

#2 ECLIPSE POST HYDRANT STA. 20+41.1 143.3 LT SEE DETAIL

DUST BOSS INSTALLED ON COLUMN STA. 18+86.8 9.5 LT SEE STR. PLANS FOR DETAIL

#2 ECLIPSE POST HYDRANT STA. 18+85.0 9.5 LT SEE DETAIL

4" MJ DIP

4" MJ DIP

1-6"X4" MJ TEE

6" MJ DIP

DUST BOSS INSTALLED ON POLE STA. 18+25.8 58.3 LT SEE STR. PLANS FOR DETAIL

#2 ECLIPSE POST HYDRANT STA. 18+21.7 58.3 LT SEE DETAIL

4" MJ DIP

1-4" 1/4 MJ BEND

4" MJ DIP

1-6"X4" MJ TEE

6" MJ DIP

1-6"X4" MJ TEE STA. 18+12.2 31.7 LT

PUMP- SEE PLUMBING SHEETS

#2 ECLIPSE POST HYDRANT STA. 17+58.0 29.3 LT SEE DETAIL

#2 ECLIPSE POST HYDRANT STA. 17+35.4 82.4 RT SEE DETAIL

4" MJ DIP

6" MJ DIP

1-6" MJ TEE

6" MJ DIP

1-8" 1/4 MJ BEND

FIRE MAIN 8" MJ DIP

1-8" 1/16 MJ BEND

FIRE MAIN 8" MJ DIP

1-8" 1/4 MJ BEND

FIRE MAIN 8" MJ DIP

1-8" 1/4 MJ BEND

1-6" 1/4 MJ BEND

6" MJ DIP

FIRE MAIN 8" MJ DIP

DUST BOSS INSTALLED ON POLE STA. 20+31.9 182.8 RT SEE ARCH. PLANS FOR POLE DETAIL

#2 ECLIPSE POST HYDRANT STA. 20+28.2 182.8 RT SEE DETAIL

4" MJ DIP

4" MJ DIP

1-4" 1/4 MJ BEND

4" MJ DIP

4" MJ DIP

1-4" 1/4 MJ BEND

#2 ECLIPSE POST HYDRANT STA. 23+64.9 349.4 RT SEE DETAIL

#2 ECLIPSE POST HYDRANT STA. 23+25.5 420.5 RT SEE DETAIL

DUST BOSS INSTALLED ON BUILDING STA. 23+25.5 352.2 RT SEE ARCH. PLANS FOR DETAIL

#2 ECLIPSE POST HYDRANT STA. 23+25.5 349.4 RT SEE DETAIL

1-6" 1/16 MJ BEND

6" MJ DIP

1-6" 1/16 MJ BEND

6" MJ DIP

1-6" 1/4 MJ BEND

FIRE MAIN 8" MJ DIP

6" MJ DIP

1-8" 1/4 MJ BEND

1-6" 1/4 MJ BEND

6" MJ DIP

FIRE MAIN 8" MJ DIP

6" MJ DIP

FIRE MAIN 6" MJ DIP

1-6" 1/4 MJ BEND

1-8" 1/4 MJ BEND

6" MJ DIP

FIRE MAIN 8" MJ DIP

1-6"x4" MJ TEE

1-8" 1/4 MJ BEND

FIRE MAIN 8" MJ DIP

1-8" 1/4 MJ BEND

FIRE MAIN 8" MJ DIP

1-6"x4" MJ TEE

DUST BOSS INSTALLED ON BUILDING STA. 19+55.0 364.7 RT SEE ARCH. PLANS FOR DETAIL

#2 ECLIPSE POST HYDRANT STA. 19+55.4 361.9 RT SEE DETAIL

4" MJ DIP

6" MJ DIP

1-6" MJ TEE

6" MJ DIP

1-6"x4" MJ TEE

DUST BOSS INSTALLED ON COLUMN STA. 18+24.2 105.9 RT SEE STR. PLANS FOR DETAIL

#2 ECLIPSE POST HYDRANT STA. 18+19.8 105.9 RT SEE DETAIL

1-6" 1/4 MJ BEND

6" MJ DIP

4" MJ DIP

#2 ECLIPSE POST HYDRANT STA. 18+25.4 367.3 RT SEE DETAIL

#2 ECLIPSE POST HYDRANT STA. 17+82.5 456.7 RT SEE DETAIL

4" MJ DIP

6" MJ DIP

1-6" MJ TEE

6" MJ DIP

4" MJ DIP

4" MJ DIP

#2 ECLIPSE POST HYDRANT STA. 17+50.0 367.3 RT SEE DETAIL

30 0 30 60

HORIZONTAL SCALE IN FEET

MATCH LINE STA. 17+25

K-10

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PRIVATE SITE PIPING PLAN

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C-5.2

POND 1

POND 2

CLARIFICATION TANK

CLARIFICATION TANK

CLARIFICATION TANK

CLARIFICATION TANK

MEDIA FILT.

MEDIA FILT.

ACIST BOX

SCALE HOUSE

SCALE HOUSE

OFFICE/MAINTENANCE

DUST BOSS
INSTALLED ON POLE
STA. 24+15.8
140.5 LT
SEE ARCH. PLANS
FOR POLE DETAIL

"2 ECLIPSE
POST HYDRANT
STA. 24+15.8
143.3 LT
SEE DETAIL

1-6"X4" MJ TEE
STA. 23+38.2
140.0 LT

35'

6" MJ DIP

4" MJ DIP

DUST BOSS
INSTALLED ON POLE
STA. 24+15.8
98.1 RT
SEE ARCH. PLANS
FOR POLE DETAIL

"2 ECLIPSE
POST HYDRANT
STA. 24+15.8
95.4 RT
SEE DETAIL

35'

1-6"X4" MJ TEE
STA. 24+00.0
0.0 RT/LT

6" MJ DIP

1-6" 1/4
MJ BEND

6" MJ DIP

MATCH LINE STA. 23+75

K-11

30 0 30 60
HORIZONTAL SCALE IN FEET

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PIPING PLAN

PROJECT #:	DATE:
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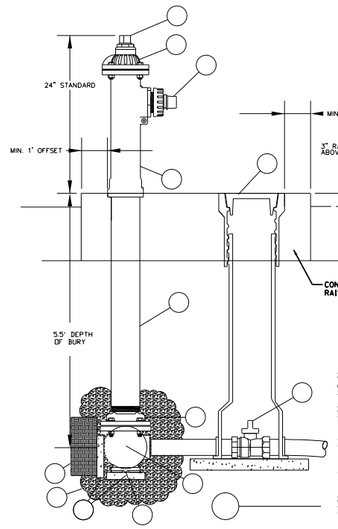
C-5.3

#2 ECLIPSE POST HYDRAND DETAIL MODIFIED FOR GENERAL III SITE



#2 ECLIPSE POST HYDRANT SHALL BE SELF-DRAINING, NON-FREEZING, COMPRESSION TYPE WITH 2-3/16" MAIN VALVE OPENING. INLET CONNECTION SHALL BE (2" FIP, 2-1/2" FIP, 3" FIP, 2" MJ, 3" MJ OR 4" MJ). OUTLET SHALL BE (1-1/4", 1-1/2", 2" OR 2-1/2" IP OR NST). STANDARD DEPTH OF BURY IS 3'.

ALL WATER FLOW SHALL PASS THRU A 3-1/2" FBE COATED STEEL PIPE AND CAST IRON TOP STOCK WATERWAY.

ALL WORKING PARTS SHALL BE SERVICEABLE FROM ABOVE GROUND WITH NO DIGGING OR REPLACEMENT NEEDED.

HYDRANT SHALL BE SET IN 4 CUBIC FEET OF CRUSHED STONE TO ALLOW FOR PROPER DRAINAGE OF HYDRANT. RECOMMENDATION OF THE AWWA SHOULD BE FOLLOWED WHEN INSTALLING THE HYDRANT.

THE #2 ECLIPSE POST HYDRANT AS MANUFACTURED BY THE KUPFERLE FOUNDRY, ST. LOUIS MO. 63102 OR APPROVED EQUAL.

ITEM	ITEM / DESCRIPTION	NOTES
1	OPERATING SCREW	
2	TOP CAP	
3	SIDE CAP	
4	TOP STOCK	
5	3-1/2" FBE COATED STEEL PIPE	
6	DRAIN HOLE	
7	COUPLING	
8	INLET VALVE BODY	
9	UNDISTURBED EARTH	BY OTHERS
10	VALVE BOX	BY OTHERS
11	THRUST BLOCKS	BY OTHERS
12	CRUSHED ROCK	BY OTHERS
13	HYDRANT SHUT-OFF VALVE	BY OTHERS

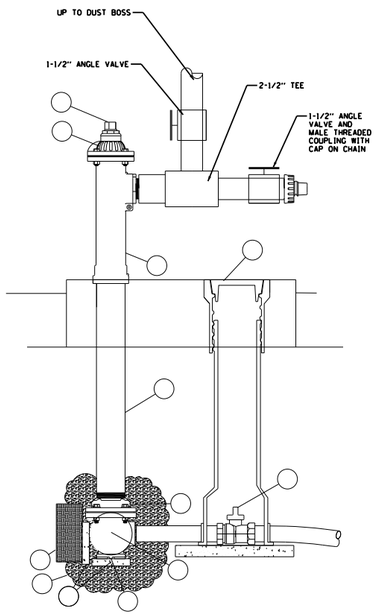
	INITIALS	DATE
DRAWN		
APPROVED		
MODIFIED		
SCALE		

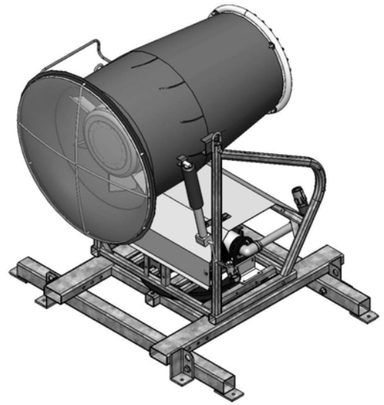
KUPFERLE Since 1857

2511 NORTH 9TH STREET
ST. LOUIS, MO 63102
1-800-231-3990
FAX 314-231-2820
www.hydrants.com

SHEET OF

#2 ECLIPSE POST HYDRAND DETAIL WITH DUST BOSS CONNECTION MODIFIED FOR GENERAL III SITE





File Location: W:\SolidWorks\SMI Assembly Library\Dust Control\Skid Mounted DB 60 CE

dust BOSS DB-60

SPECIFICATIONS

GENERAL SPECIFICATIONS

- Throw: 200 feet (60 meters).
- Fan: 30,000 CFM (849.50 CMM) generated by 25 HP fan.
- Coverage with standard 0°–40° oscillation: 14,000 square feet (1,300 square meters).
- Coverage with optional 359° user-definable oscillation: 125,000 square feet (11,612 square meters).
- Adjustable throw angle: 0°-50°.
- Nozzles: 30, brass (also available in stainless and nylon).
- Droplet size: of 50–200 microns.
- Premium efficiency direct-drive motor.

ELECTRICAL SPECIFICATIONS

- U.S.: 3 Phase / 25 HP fan / 480 Volt / 60 Hertz. Full load current: 46 amps. 60 Kw gen set is recommended.
- Other motor options available, including all international electrical motors.
- 10 HP (7.5 Kw) high-pressure booster pump with no lift.
- Oscillator: 1/8 HP (0.10 Kw).
- 150 foot (45.72 meters) 8/4 type W electrical cord.
- Bare wired electrical cord (no male plug).
- NEMA 3R cabinet with control panel.

WATER REQUIREMENTS

- 10 PSI (0.69 BAR) constant pressure must be delivered to booster pump.
- Maximum inlet water pressure should not exceed 100 PSI (6.89 BAR) when operating the booster pump.
- Maximum PSI delivered by booster pump is 250 PSI (17.24 BAR).
- In-line 30 mesh (595 micron) filter system is included and should be used at all times.
- Contact us for recommendations if using non-potable water.
- Connection: 1-1/2" (38.10 mm) cam-and-groove quick disconnect female coupling for fire hose provided on machine.

MAINTENANCE

- If using potable water, nozzles need to be inspected once a year.
- Fan motor and high pressure pump should be greased every 10,000 hours.
- Turntable bearing should be greased on a regular maintenance schedule, or as needed.

NOISE

- Between 86 and 100 decibels at 0 feet.

OPTIONS

- Unit is available with optional user-definable oscillation to allow up to 359° of movement. Standard oscillation provides 0°–40° of movement.
- Available on frame with skid mount or on a tower. Standard unit comes on three-wheeled carriage.
- Dosing pump can be added to unit for chemical applications.

DIMENSIONS

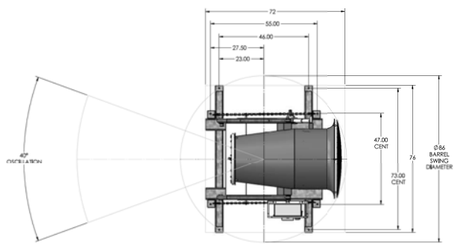
(standard carriage mount)

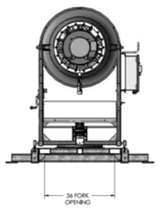
- 6.75 feet (81 inches or 2.06 meters) wide.
- 9.75 feet (117 inches or 2.97 meters) long.
- 7.17 feet (86 inches or 2.19 meters) tall.
- 1,800 lbs. (816.50 kilograms).

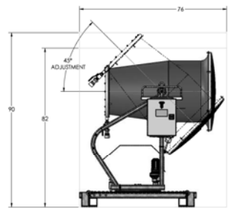
ENGLISH UNITS				
Supplied Water Pressure, psi	40	60	80	100
Water Flow with Booster Pump, gpm	22.2	23.9	25.4	26.7
Water Flow, no Booster Pump, gpm	12	14.6	16.9	18.9
METRIC UNITS				
Supplied Water Pressure, bar	2.8	4.14	5.5	6.89
Water Flow with Booster Pump, lpm	84	90.5	96.1	101.1
Water Flow, no Booster Pump, lpm	45.4	55.3	64	71.5
				1½" Fire Hose Water Supply

OUR WARRANTY
3-year/3,000-hour warranty.

BOSSTEK
309.693.8600 | 1607 W. Chanute Road | Peoria, IL 61615 | BossTek.com







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04-01-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

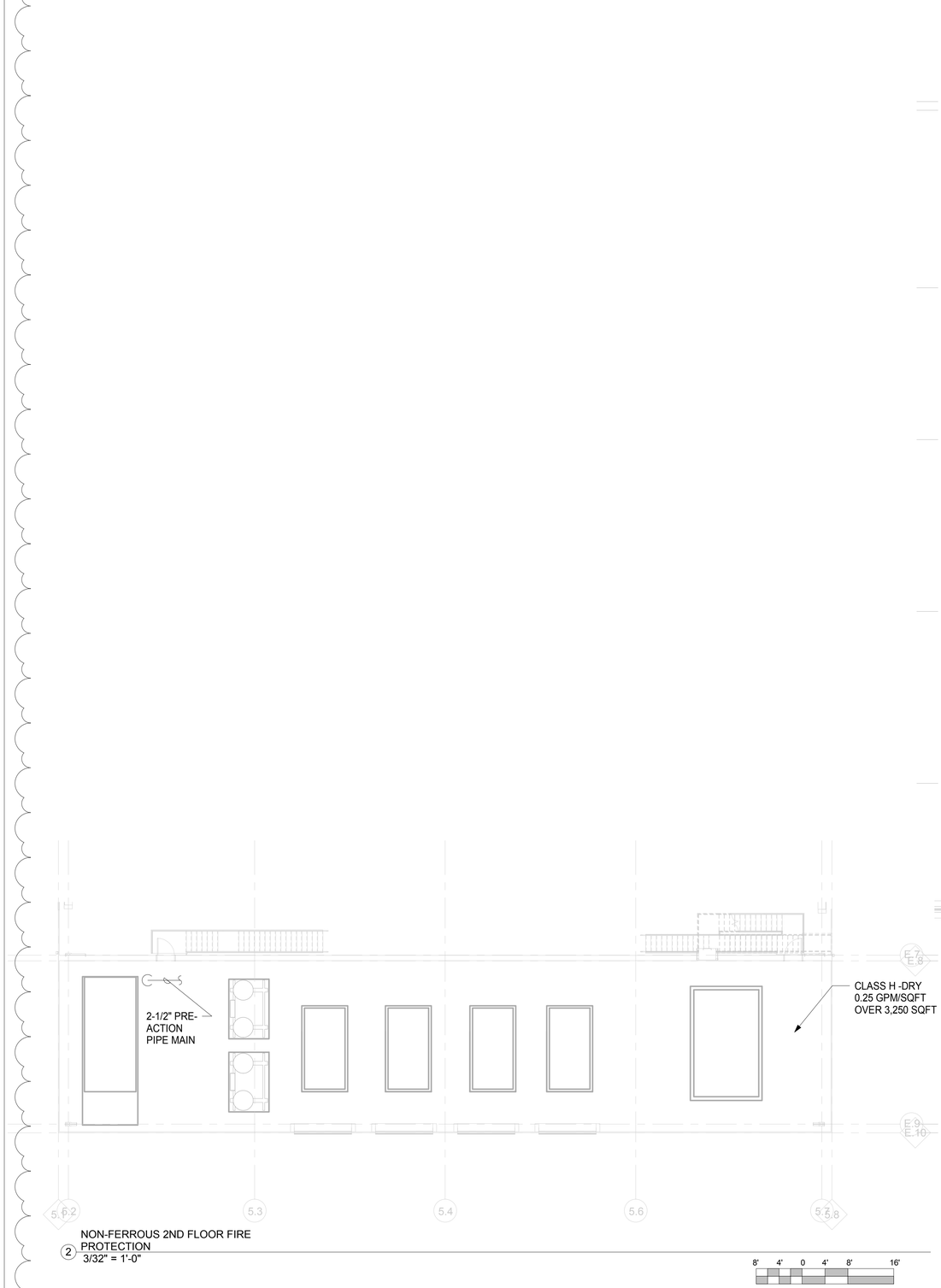
2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

PRIVATE SITE
PIPING PLAN DETAILS

PROJECT #:	DATE:
7563	04-01-2020

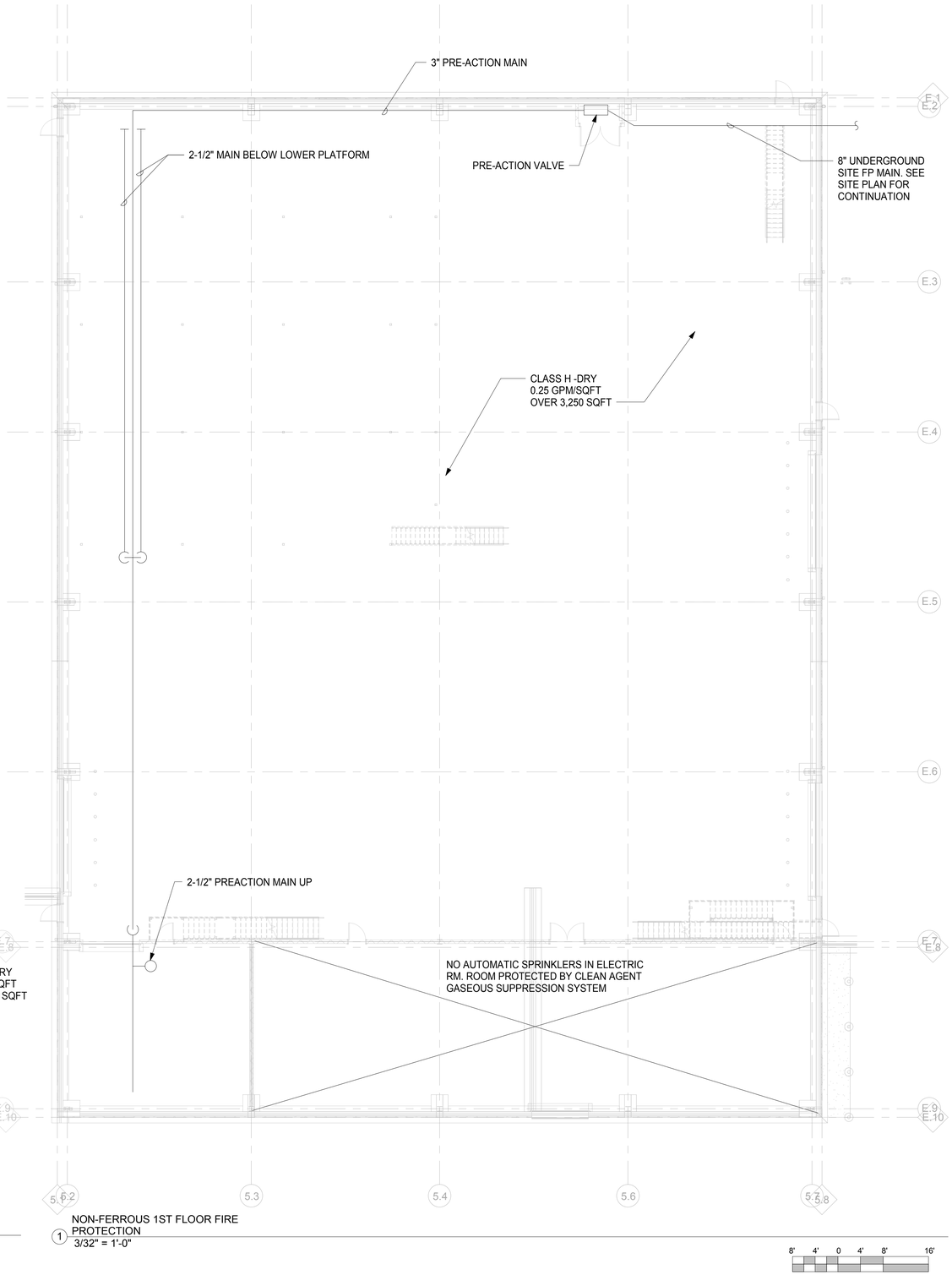
C-5.4

K-12



NON-FERROUS 2ND FLOOR FIRE PROTECTION
3/32" = 1'-0"

8' 4' 0 4' 8' 16'



NON-FERROUS 1ST FLOOR FIRE PROTECTION
3/32" = 1'-0"

8' 4' 0 4' 8' 16'

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STATE OF ILLINOIS
JEFFREY B. BEDWELL
#062-054843
LICENSED PROFESSIONAL ENGINEER
SEAL

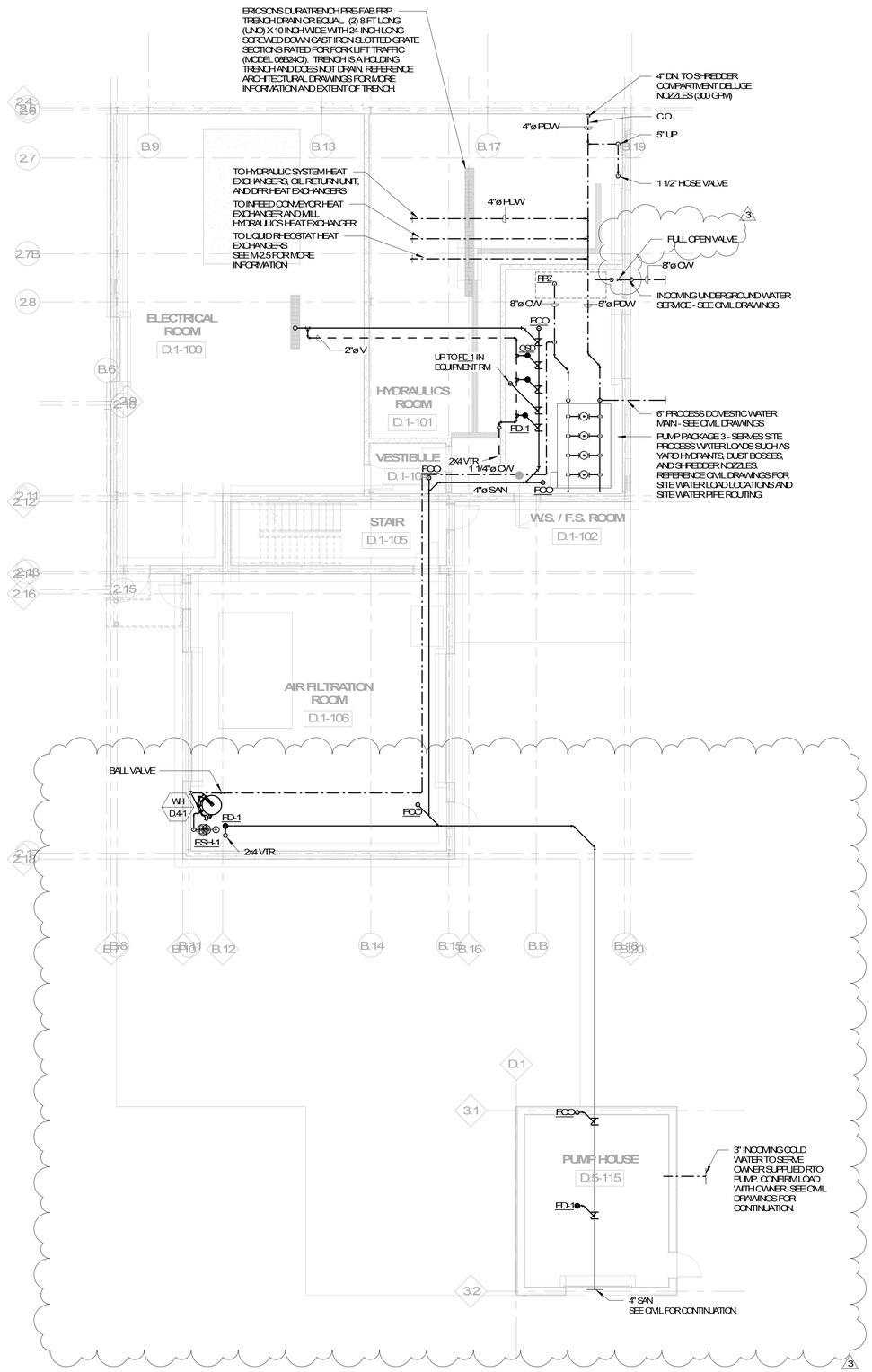
PROJECT:
GENERAL III, LLC
STRUCTURE C - NON-FERROUS BUILDINGS
11551 S. AVENUE O
CHICAGO, IL., 60617

#	DATE	ISSUE
3	06/22/2020	REVISION TO PERMIT
2	01/06/2020	ISSUE FOR BID
1	09/27/2019	ISSUE FOR PERMIT REVIEW

NON-FERROUS BUILDING FIRE PROTECTION PLAN

PROJECT #:	DATE:
7563.01	06/22/20

FP-1.1



1 1ST FLOOR SHREDDER PLUMBING PLAN
1/8" = 1'-0"

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STATE OF ILLINOIS
JEFFREY B. BEDWELL
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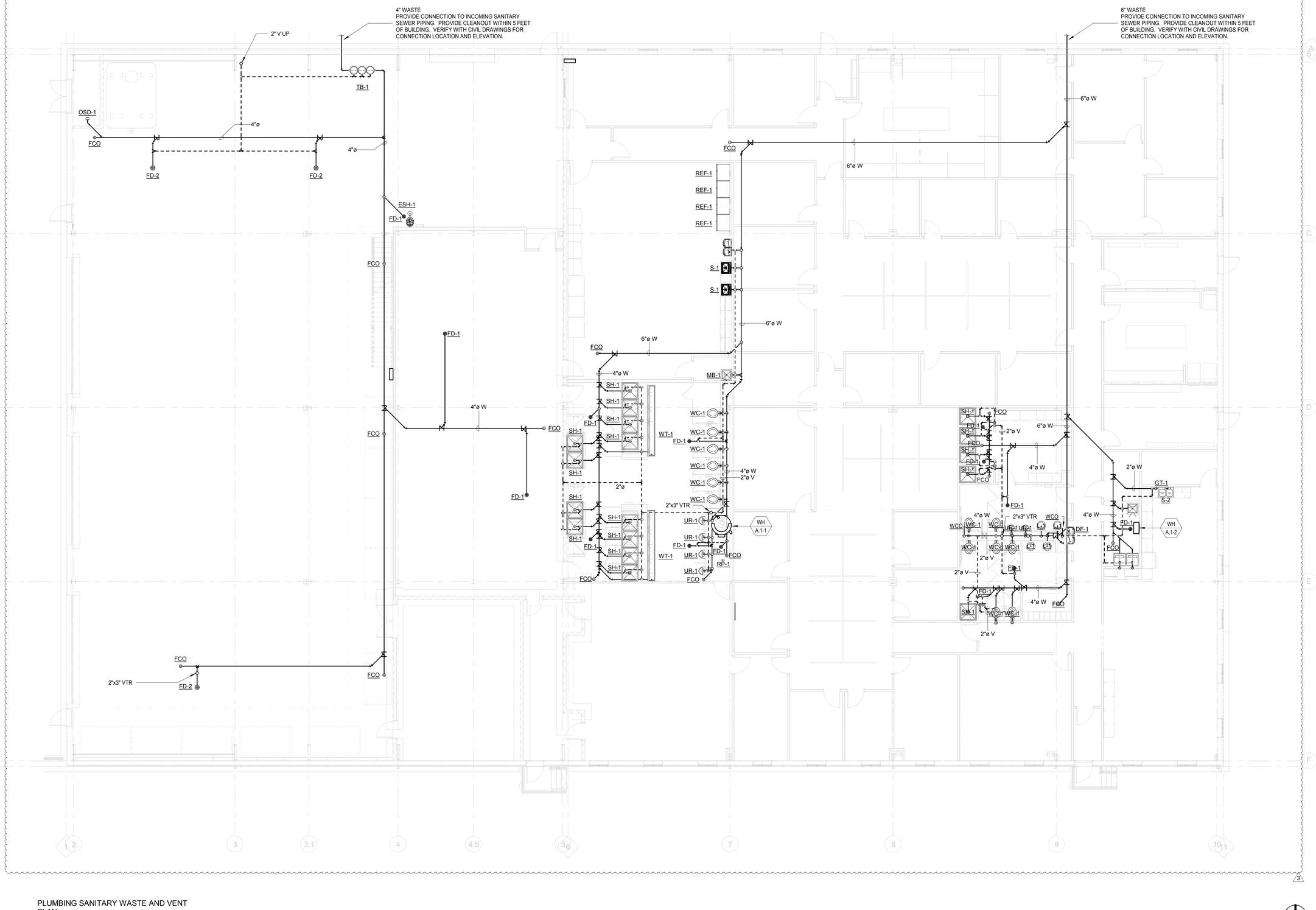
GENERAL III, LLC
STRUCTURED - SHREDDER BUILDING
11651 S. AVENUE O
CHICAGO, IL, 60617

#	DATE	ISSUE
3	06/22/2020	ISSUE FOR PERMIT REVISION
2	01/06/2020	ISSUE FOR BID
1	09/27/2019	ISSUE FOR PERMIT REVIEW

1ST FLOOR SHREDDER PLUMBING PLANS

PROJECT #	DATE
7563.01	07/24/19

P-1.1



1 PLUMBING SANITARY WASTE AND VENT PLAN
1/8" = 1'-0"

8' 4' 0 4' 8' 16'
SCALE: 1/8" = 1' 0"

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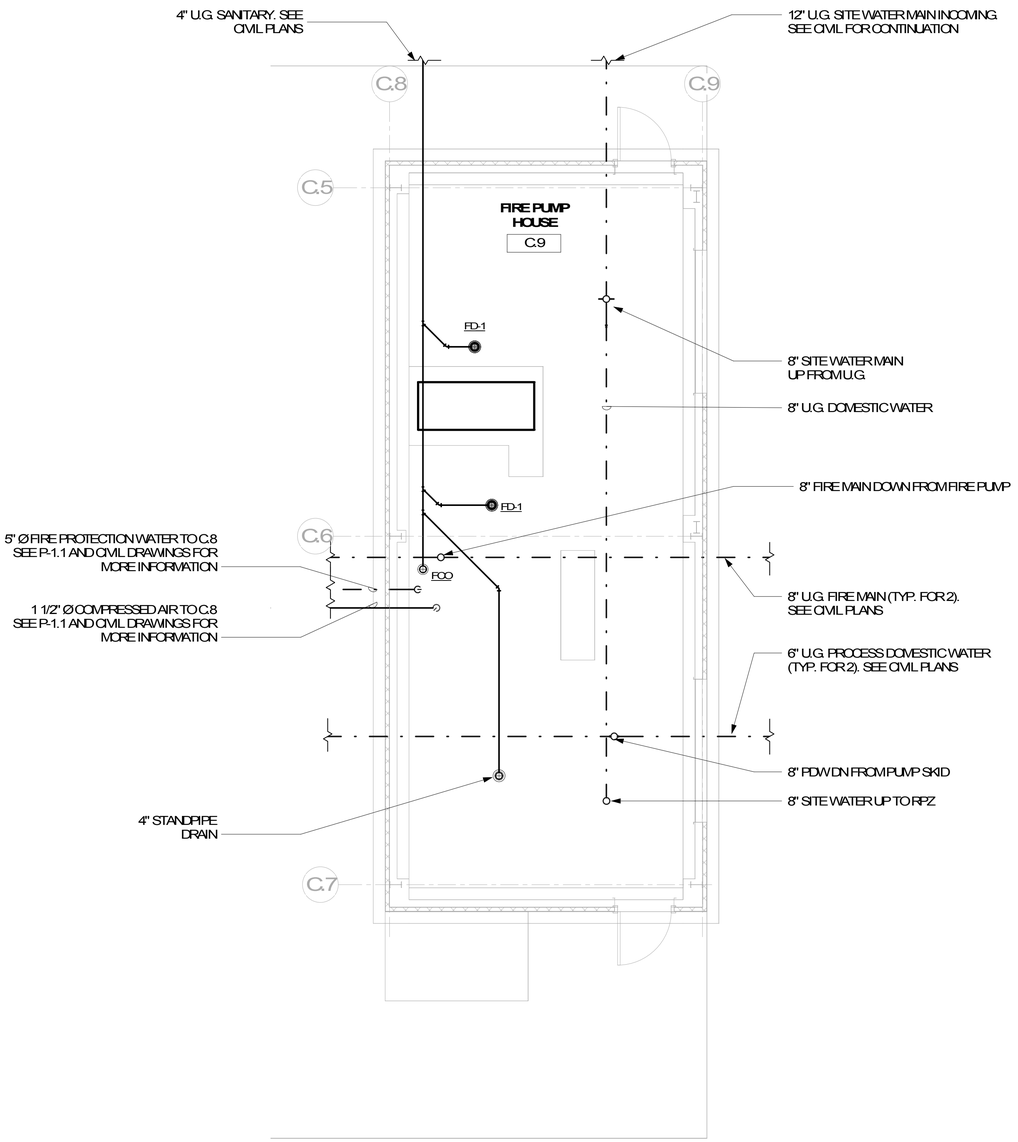
PROJECT:
GENERAL III, LLC
STRUCTURE A - OFFICE / MAINTENANCE
11551 S. AVENUE O
CHICAGO, IL., 60617

#	DATE	ISSUE
3	06/30/2020	REVISION TO PERMIT
1	07/16/2019	ISSUE FOR PERMIT REVIEW

PLUMBING SANITARY WASTE AND VENT PLAN

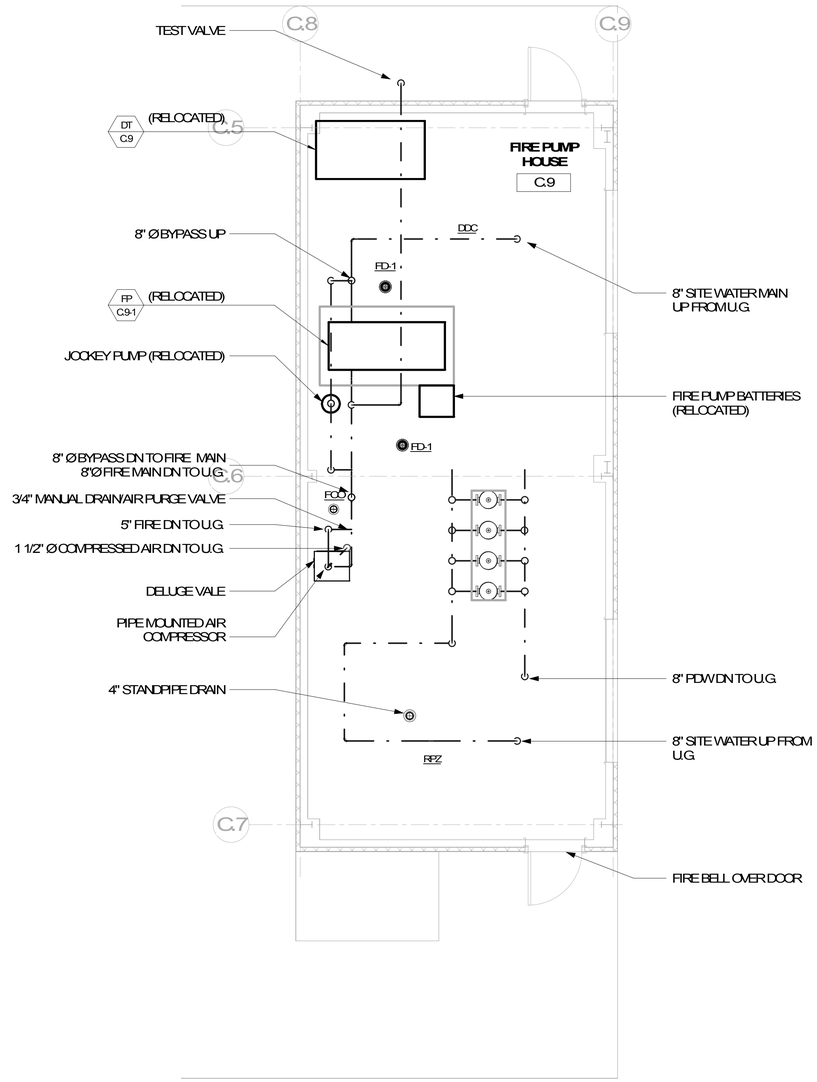
PROJECT #:	DATE:
7563	06-30-2020

P-1.1



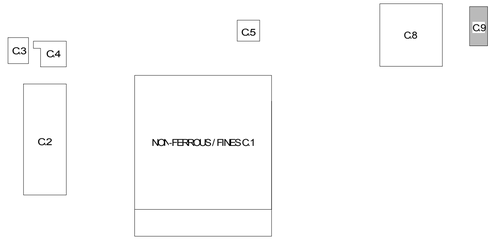
2 C.9 FIRE PUMP HOUSE UNDERGROUND PLUMBING
1/4" = 1'-0"

SCALE: 1/4" = 1' 0"



1 C.9 FIRE PUMP HOUSE ABOVE GROUND PLUMBING
1/4" = 1'-0"

SCALE: 1/4" = 1' 0"



3 KEY PLAN PLUMBING C.9
1" = 80'-0"

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STATE OF ILLINOIS
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GENERAL III, LLC
STRUCTURE C - NON-FERROUS BUILDINGS
11551 S. AVENUE O
CHICAGO, IL, 60617

#	DATE	ISSUE
3	06/22/2020	REVISION TO PERMIT

FIRE PUMP HOUSE PLUMBING PLANS

PROJECT #:	DATE:
7563.01	07/24/19

P-1.2

NOTES;

1. WATERMAIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH CDWM STANDARDS & SPECIFICATIONS.
2. USE CDWM STANDARD DETAIL FOR ALL WM CONSTRUCTION.
3. ALL FIRE HYDRANTS ON PRIVATE MAIN SHALL BE PAINTED FEDERAL SAFETY GREEN.
4. RESTRAINED JOINT PIPE SHALL BE INSTALLED TO THE DIMENSION LIMITS SHOWN ON PLANS.
5. A REPRESENTATIVE OF THE DWM MUST BE ON SITE DURING THE WATER SERVICE INSTALLATION CROSSING THE EXISTING 24-INCH FEEDER MAIN AND 12-INCH FEEDER MAIN ON GREEN BAY AVENUE. PLEASE CONTACT THE FORCE ACCOUNT CONSTRUCTION MANAGER AT FACM@CTRWATER.NET TWO WEEKS PRIOR TO THE ANTICIPATED CONSTRUCTION DATE SO A DWM REPRESENTATIVE CAN BE ASSIGNED TO THE PROJECT. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY RESULT IN ADDITIONAL EXPENSES TO THE PROPOSED PROJECT TO VERIFY THAT ALL WORK CONFORMS TO DWM'S STANDARD.
6. TYPE II TEMPORARY SUPPORTS REQUIRED FOR ALL EX WM CROSSINGS PRIOR TO CONSTRUCTION, CONTRACTOR TO SUBMIT SIGNED AND SEALED STRUCTURAL DETAILS AND CALCULATIONS FOR TEMPORARY SUPPORTS.
7. BACKFLOW PREVENTER AND METER SHALL BE APPROVED BY CDWM PRIOR TO INSTALLATION.

114TH ST.

NSRR

IN PLANT ROAD

GREEN BAY AVE. (PRIVATE)

AVENUE O

N

1-12"1/8 2BMJ BEND
738' N OF N 117TH,
226' W OF W BURLEY

45' CASING

1-12"1/8 2BMJ BEND 737' N OF N 117TH, 277' W OF W AVE O
1-12"1/8 2BMJ BEND 737' N OF N 117TH, 282' W OF W AVE O

1-12"1/16 2BMJ BEND
733' N ON N 117TH,
458' W OF W BURLEY

2 SCALE HOUSES

1.5" WATER DOMESTIC WATER SERVICE TAP

1" WATER SERVICE TAP
724' N OF N 117TH
477' W OF W BURLEY

1° 30" BEND
1° 30" BEND
0° 30" BEND

1-12" 1/32 2BMJ BEND
654' N ON N 117TH,
604' W OF W BURLEY

1-12" 1/32 2BMJ BEND
624' N ON N 117TH,
696' W OF W BURLEY

1-4 1/2" PP FIRE HYDRANT
528' N OF N 117TH,
1133' W OF W BURLEY
1-8" MJ VALVE (IN 5' BASIN)
1-10"X8" 3BMJ TEE AT
530' N OF N 117TH,
1129' W OF W BURLEY

1-8"1/8 2BMJ
601' N OF N 117TH
1169' W OF W BURLEY

1-8"1/8 2BMJ
605' N OF N 117TH
1184' W OF W BURLEY

SHREDDER BUILDING

1-12"x12" TEE 3BMJ

3" WATER
DOMESTIC WATER
SERVICE TAP

22' CASING

3" WATER
DOMESTIC WATER
SERVICE TAP

1-10"1/8 2BMJ
425' N OF N 117TH
1069' W OF W BURLEY

1-10"1/8 2BMJ
420' N OF N 117TH
1052' W OF W BURLEY

NON-FERROUS
PROCESSING
BUILDING

MAINTENANCE
BUILDING

2° BEND
25' CASING
1° 30" BEND

1-4 1/2" PP FIRE HYDRANT
732' N OF N 117TH,
376' W OF W BURLEY
1-8" MJ VALVE (IN 5' BASIN)
1-12"X8" 3BMJ TEE AT
737' N OF N 117TH,
376' W OF W BURLEY

PR 10" WM
PR 12" WM

1-12"1/8 2BMJ BEND 762' N OF N 117TH, 202' W OF W BURLEY

215' CASING

1-12"1/8 2BMJ BEND 763' N OF N 117TH, 8' E OF W BURLEY
1-12"1/8 2BMJ BEND 763' N OF N 117TH, 9' E OF W BURLEY

1-12"1/8 2BMJ BEND 763' N OF N 117TH, 13' E OF E BURLEY
1-12"1/8 2BMJ BEND 763' N OF N 117TH, 12' E OF E BURLEY

1-12"1/32 2BMJ BEND 764' N OF N 117TH, 60' E OF E BURLEY

1-12"1/32 2BMJ BEND 755' N OF N 117TH, 105' E OF E BURLEY

1-4 1/2" PP FIRE HYDRANT
750' N OF N 117TH,
202' E OF E BURLEY
1-8" MJ VALVE (IN 5' BASIN)
1-12"X8" 3BMJ TEE
755' N OF N 117TH,
202' E OF E BURLEY

1-4 1/2" PP FIRE HYDRANT
749' N OF N 117TH,
692.' W OF W AVE O
1-8" MJ VALVE (IN 5' BASIN)
1-12"X8" 3BMJ TEE
754' N OF N 117TH,
692' W OF W AVE O

1-4 1/2" PP FIRE HYDRANT
749' N OF N 117TH,
339' W OF W AVE O
1-8" MJ VALVE (IN 5' BASIN)
1-12"X8" 3BMJ TEE
754' N OF N 117TH,
339' W OF W AVE O

EX PRAXAIR NITROGEN
GAS LINE USE EXTREME
CAUTION AND HAND DIG
IN AREA OF GAS MAIN

116TH ST. (PRIVATE)

1-12"1/8 2BMJ BEND 754' N OF N 117TH, 289' W OF W BURLEY
1-12"1/8 2BMJ BEND 754' N OF N 117TH, 292' W OF W BURLEY

TYPE II TEMPORARY SUPPORTS REQUIRED FOR EX WM CROSSINGS PRIOR TO CONSTRUCTION, CONTRACTOR TO SUBMIT SIGNED AND SEALED STRUCTURAL DETAILS AND CALCULATIONS FOR TEMPORARY SUPPORTS.

1-12"1/8 2BMJ BEND 754' N OF N 117TH, 245' W OF W AVE O
1-12"1/8 2BMJ BEND 754' N OF N 117TH, 248' W OF W AVE O

1-12"1/32 2BMJ BEND 754' N OF N 117TH, 162' W OF W AVE O

1-12"1/32 2BMJ BEND 744' N OF N 117TH, 111' W OF W AVE O

HOT BOX & 12" DC BACKFLOW PREVENTER 744' N OF N 117TH ST 84' W OF W AVE O
DC BACKFLOW PREVENTER SHALL BE WATT SERIES 2000 OR DWM APPROVED EQUIVALANT
HOT BOX TO BE SAFE-T-COVER MODEL 1000 WITH HEATING ELEMENT OR SIMILAR

WATER METER IN VAULT, 744' N OF N 117TH ST 17' E OF W AVE O
WATER METER SHALL BE BADGER RECORDALL COMBO METER OR
DWM APPROVED EQUIVALANT

1-12"X12" 3BMJ TEE
744' N OF N 117TH,
27' E OF W AVE O

EX 24" WM
EX 12" WM

117TH ST.

100 0 100 200
HORIZONTAL SCALE IN FEET

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OF
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04-01-2020
LICENSE EXPIRES 11-30-2021

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GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

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WATER MAIN PLAN

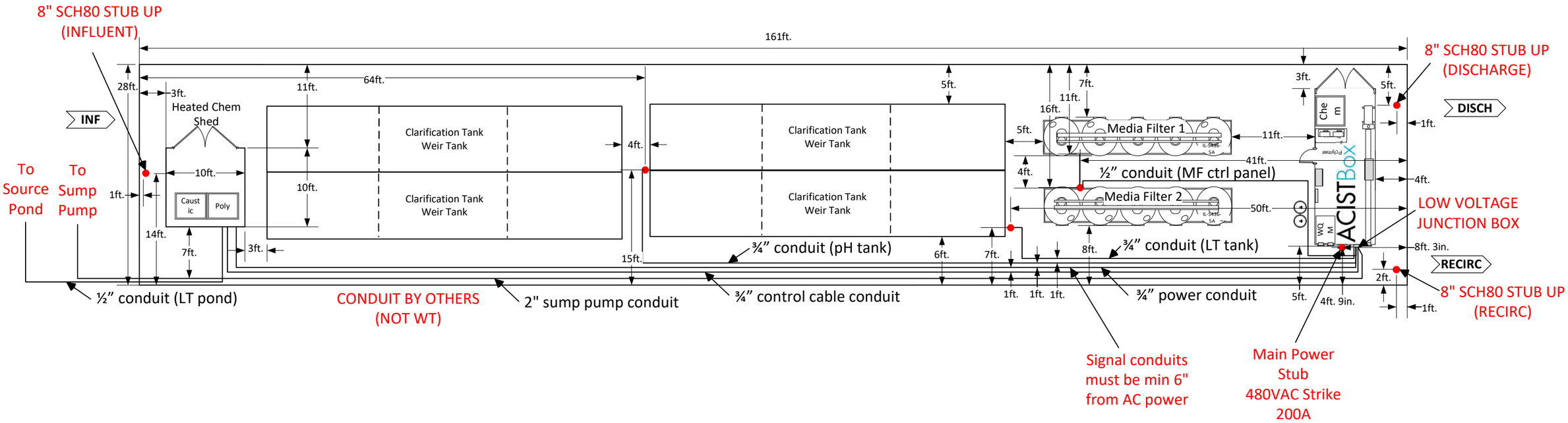
PROJECT #:	DATE:
7563	04-01-2020

C-4.1

General III LLC AB725 Layout

WATERTECTONICS

REVISIONS			
REV	DESCRIPTION	DATE	INITIALS
1	AB725 Layout	06/01/20	KOH
2	Revision 2	06/04/20	KOH
3	Revision 3	06/08/20	KOH
4	Revision 4	06/23/20	NAM



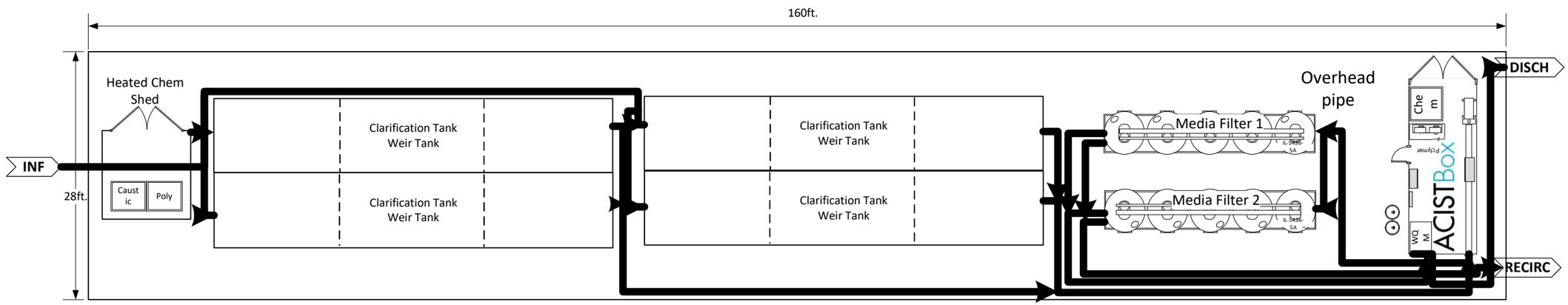
REVIEWED	BDM	WATERTECTONICS		PG SIZE	DWG NO	PROJECT NAME / REV
REVIEWED	NAM	DRAWN	K. Hansen	11x17		General III AB725 Site Layout / 4
APPROVED	EH	ISSUED	6/23/2020	SCALE	3/32"=1' 0"	SHEET 1 OF 2

K-18

General III LLC AB725 Layout

WATERTECTONICS

REVISIONS			
REV	DESCRIPTION	DATE	INITIALS
1	AB725 Layout	06/01/20	KOH
2	Revision 2	06/04/20	KOH
3	Revision 3	06/08/20	KOH
4	Revision 4	06/23/20	NAM



REVIEWED	BDM	WATERTECTONICS	PG SIZE	DWG NO	PROJECT NAME	REV
REVIEWED	NAM	DRAWN K. Hansen	11x17		General III AB725 Site Layout	4
APPROVED	EH	ISSUED 6/23/2020	SCALE 3/32"=1' 0"		SHEET 2 OF 2	

K-19

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RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment L
Pavements

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PCC PAVEMENT JOINT NOTES:

1. CONTRACTOR SHALL PROVIDE PAVEMENT JOINTING PLAN TO BE REVIEWED BY ENGINEER THAT ARE IN CONFORMANCE WITH STANDARD DETAILS.

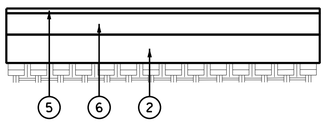
2. PAVEMENT JOINTS SHALL BE IN ACCORDANCE WITH IDOT STANDARD DETAIL 420001-09 AND 420111-04. SEE SHEET C-9.16 AND C-9-17 FOR STANDARD DETAIL. ALL JOINTS SHALL BE TRANSVERSE CONTRACTION JOINTS AS SHOWN ON DETAIL ON STANDARD DETAIL 420001-09.

3. ALL JOINTS SHALL BE SPACED NO MORE THAN 15 FEET APART. 18 INCH LONG DOWEL BARS AT 12 INCH CENTERS SHALL BE PLACED AT JOINTS. DOWELS SHALL BE NO LESS THAN 5 INCHES HIGH (6 INCHES PREFERRED).

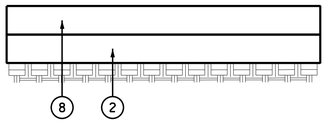
4. CONCRETE SLABS SHALL NOT BE LESS THAN 2 FEET IN WIDTH.

5. JOINT ANGLES SHALL BE GRATER THAN 60° (90° IS PREFERRED) USE "DOG LEG" JOINTS THROUGH CURVE RADIUS POINTS.

6. ISOLATION JOINTS SHALL BE PROVIDED FOR ALL STRUCTURES INCLUDING ALL PROPOSED BUILDINGS. CONTRACTOR SHALL COORDINATE LOCATION OF OWNER PROVIDED STRUCTURES WITH VENDERS IN FIELD, AND PROVIDE ISOLATION JOINTS FOR THESE STRUCTURES.

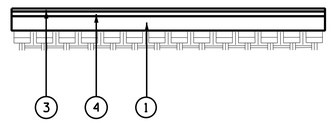


ASPHALT
PAVEMENT SECTION



CONCRETE
PAVEMENT SECTION

GRAVEL
PAVEMENT SECTION



DETENTION POND
PAVEMENT SECTION

PROPOSED LEGEND:

1. SUBBASE GRANULAR MATERIAL TYPE B, 6"
2. SUBBASE GRANULAR MATERIAL TYPE B, 12"
3. HOT-MIX ASPHALT SURFACE COURSE, MIX "D", IL-9.5, N 501 1/2"
4. POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, STONE MATRIX ASPHALT, 12.5, N80 2"
5. POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, STONE MATRIX ASPHALT, 12.5, MIX "F", N80 2"
6. POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, STONE MATRIX ASPHALT, 12.5, N80 8 3/4"
7. GRAVEL PAVEMENT 12"
8. CONCRETE PAVEMENT 9", 12", 14"

MIX DESIGN TABLE

ITEM	DESCRIPTION	MIX TYPE	AC TYPE	DESIGN AIR VOIDS	MIN. LIFT THICKNESS
POND ASPHALT	HOT-MIX ASPHALT SURFACE COURSE, MIX "D", IL-9.5, N50 1 1/2"	IL 9.5mm	PG 64-22	4% @ 50 GYR.	1 1/2"
	POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, STONE MATRIX ASPHALT, 12.5, N80 2"	SMA 12.5mm	SBS/SBR PG 76-22	3.5% @ 80 GYR.	2"
SITE ASPHALT	POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, STONE MATRIX ASPHALT, 12.5, MIX "F", N80 2"	SMA 12.5mm	SBS/SBR PG 76-22	3.5% @ 80 GYR.	2"
	POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, STONE MATRIX ASPHALT, 12.5, N80 8 3/4"	SMA 12.5mm	SBS/SBR PG 76-22	3.5% @ 80 GYR.	2"

THE UNIT WEIGHT USED TO CALCULATE ALL HOT-MIX ASPHALT MIXTURES IS 112 LBS/SQ YD/IN.

ASPHALT MATERIAL AND INSTALLATION SHALL BE IN CONFORMANCE WITH SECTION 402, 403, 406 OF THE IDOT SSRBC
CONCRETE MATERIAL AND INSTALLATION SHALL BE IN CONFORMANCE WITH SECTION 420, 424 OF THE IDOT SSRBC
SUBBASE GRANULAR MATERIAL (COARSE AGGREGATE) SHALL BE IN CONFORMANCE WITH SECTION 1004 OF THE IDOR SSRBC

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PROJECT:
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TYPICAL SECTION
PAVEMENT DESIGN

PROJECT #:	DATE:
7563	04-01-2020

C-1.7

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Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment M
Utilities

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CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	PANEL SHRED-DP-4	3"	600V CABLE	
2	SHRED-XFMR-6	2"	600V CABLE	
3	SHRED-MCC-4	4"	600V CABLE	
4	SHRED-MCC-4	4"	600V CABLE	
5	SHRED-MCC-4	4"	600V CABLE	
6	SHRED-MCC-4	4"	600V CABLE	
7	SHRED-MCC-4	4"	600V CABLE	
8	SHRED-MCC-4	4"	600V CABLE	
9	SPARE	4"	N/A	NOTE 6
10	SPARE	3"	N/A	NOTE 6
11	FIBER	2"	FIBER OPTIC	
12	BACKUP FIBER	2"	FIBER OPTIC	NOTE 13

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	PANEL BGE-DP	3"	600V CABLE	
2	SPARE	3"	N/A	NOTE 6
3	FIBER	2"	FIBER OPTIC	
4	BACKUP FIBER	2"	FIBER OPTIC	NOTE 13

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	SHAKER MOTOR	4"	600V	
2	SHRED-XFMR-1,-2,-3	4"	15 KV CABLE	
3	SHRED-XFMR-1,-2,-3	4"	15 KV CABLE	
4	SPARE	4"	N/A	NOTE 6
5	SPARE	4"	N/A	NOTE 6 & 11
6	MAINFIBER TRUNK	2"	FIBER OPTIC	
7	BACKUP FIBER	2"	FIBER OPTIC	NOTE 11

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	LIGHTING	2"	600V CABLE	
2	SPARE	2"	N/A	NOTE 6

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	PANEL NF-PP-2B	2"	600V CABLES	
2	SPARE	2"	N/A	NOTE 6
3	FIBER	2"	FIBER OPTIC	
4	BACKUP FIBER	2"	FIBER OPTIC	NOTE 13

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	PANEL NF-PP-2C	2"	600V CABLE	
2	SPARE	2"	N/A	NOTE 6
3	FIBER	2"	FIBER OLPTIC	
4	BACKUP FIBER	2"	FIBER OLPTIC	NOTE 13

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	PANEL NF-PP-2A	2"	600V CABLE	
2	SPARE	2"	N/A	NOTE 6
3	MAIN FIBER TRUNK	2"	FIBER OPTIC	
4	BACKUP FIBER	2"	FIBER OPTIC	NOTE 6

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	NF-MCC-2	3 1/2"	600V CABLE	
2	NF-MCC-2	3 1/2"	600V CABLE	
3	NF-MCC-2	3 1/2"	600V CABLE	
4	NF-MCC-2	3 1/2"	600V CABLE	
5	NF-MCC-2	3 1/2"	600V CABLE	
6	NF-MCC-2	3 1/2"	600V CABLE	
7	PANEL NF-DP-2	3"	600V CABLE	
8	SPARE	3 1/2"	N/A	NOTE 6

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	PANEL SHRED-SP-2A	2"	600V CABLE	
2	PANEL SHRED-DP-3	3"	600V CABLE	
3	PANEL SHRED-DP-3	3"	600V CABLE	
4	SHRED-MCC-3	4"	600V CABLE	
5	SHRED-MCC-3	4"	600V CABLE	
6	SHRED-MCC-3	4"	600V CABLE	
7	SHRED-MCC-3	4"	600V CABLE	
8	SHRED-MCC-3	4"	600V CABLE	
9	SHRED-MCC-3	4"	600V CABLE	
10	SPARE	4"	N/A	NOTE 6
11	FIBER	2"	FIBER OPTIC	
12	BACKUP FIBER	2"	FIBER OPTIC	NOTE 13

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	LIGHTING	2"	600V CABLE	
2	SPARE	2"	N/A	NOTE 6

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	PANEL SHRED-SP-1B	2"	600C CABLE	
2	SPARE	2"	N/A	NOTE 6
3	FIBER	2"	FIBER OPTIC	
4	BACKUP FIBER	2"	FIBER OPTIC	NOTE 13

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	LIGHTING	2"	600V CABLE	
2	DUSTBOSS	2"	600V CABLE	
3	SPARE	2"	N/A	NOTE 6

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	LIGHTING	2"	600V CABLE	
2	DUSTBOSS	2"	600V CABLE	
3	SPARE	2"	N/A	NOTE 6

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	PANEL NF-PP-2D	2"	600V CABLE	
2	SPARE	2"	N/A	NOTE 6
3	FIBER	2"	FIBER OPTIC	
4	BACKUP FIBER	2"	FIBER OPTIC	NOTE 13

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	LIGHT POLE	2"	600V CABLE	
2	SPARE	2"	N/A	NOTE 6

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	NF-MCC-1	3 1/2"	600V CABLE	
2	NF-MCC-1	3 1/2"	600V CABLE	
3	NF-MCC-1	3 1/2"	600V CABLE	
4	NF-MCC-1	3 1/2"	600V CABLE	
5	NF-MCC-1	3 1/2"	600V CABLE	
6	NF-MCC-1	3 1/2"	600V CABLE	
7	SPRE	4"	N/A	NOTE 6

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	MAIN FIBER TRUNK	2"	FIBER OPTIC	
2	BACKUP FIBER	2"	FIBER OPTIC	
3	SPARE	2"	N/A	NOTE 6

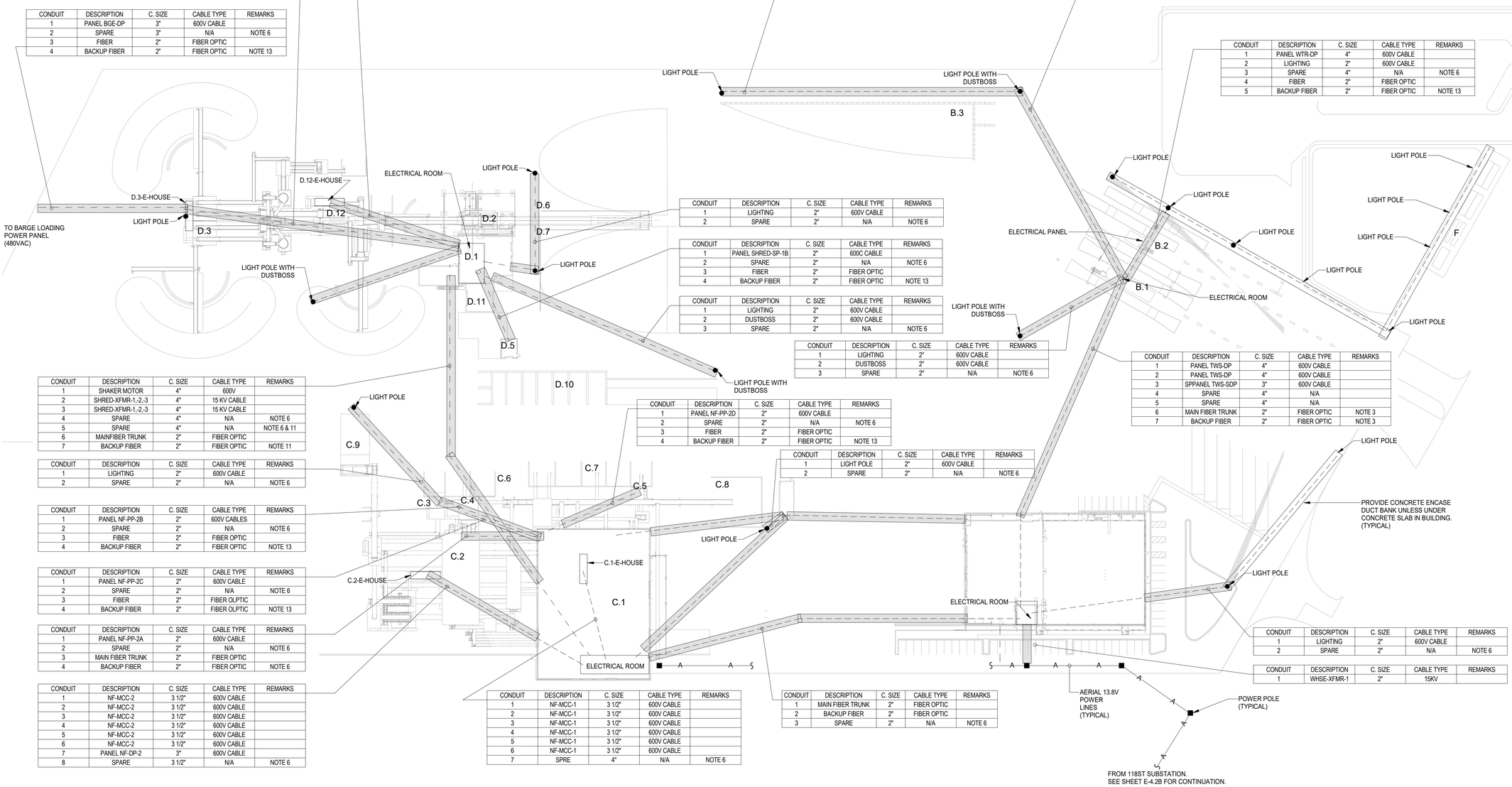
CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	LIGHTING	2"	600V CABLE	
2	DUSTBOSS	2"	600V CABLE	
3	SPARE	2"	N/A	NOTE 6

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	PANEL WTR-DP	4"	600V CABLE	
2	LIGHTING	2"	600V CABLE	
3	SPARE	4"	N/A	NOTE 6
4	FIBER	2"	FIBER OPTIC	
5	BACKUP FIBER	2"	FIBER OPTIC	NOTE 13

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	PANEL TWS-DP	4"	600V CABLE	
2	PANEL TWS-DP	4"	600V CABLE	
3	SPPANEL TWS-SDP	3"	600V CABLE	
4	SPARE	4"	N/A	
5	SPARE	4"	N/A	
6	MAIN FIBER TRUNK	2"	FIBER OPTIC	NOTE 3
7	BACKUP FIBER	2"	FIBER OPTIC	NOTE 3

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	LIGHTING	2"	600V CABLE	
2	SPARE	2"	N/A	NOTE 6

CONDUIT	DESCRIPTION	C. SIZE	CABLE TYPE	REMARKS
1	WHSE-XFMR-1	2"	15KV	



1 **ELECTRICAL POWER SITE PLAN**
1" = 60'-0"

REMARKS:
1. VERTICAL DISTANCES ARE NOT INCLUDED IN ESTIMATIONS. DESIGNED LOCATION OF ELECTRICAL EQUIPMENT ROOM IS STILL IN PROGRESS AND FINAL LOCATION OF EQUIPMENT MAY CHANGE AS THE SITE IS DEVELOPED.ASSUMES 90°C CABLES
2. ASSUMES 90°C CABLES
3. GENERAL III TO PROVIDE TYPE (SM OR MM) AND # OF FIBERS (12F / 24F / ETC) AND NUMBER OF FIBER CABLES (1 X 12F / 2 X 12F / ETC)
4. ASSUMES LIGHTS ARE EATON STREETWORKS @ 640 W EACH - 4 USED IN THIS CIRCUIT (2,560W)
5. NOT USED.
6. GENERAL III HAS NOT PROVIDED DIRECTION IF SPARE CONDUITS ARE TO BE INSTALLED. ESTIMATOR TO PRICE WITH AND WITHOUT SPARES FOR EACH CONFIGURATION
7. PVC SCH 40 DUCTBANK ENCASED IN CONCRETE MEETING HS-20 AASTO RATING
8. ASSUMES PUMP STATION IS 50 HP (53,976 W) MOTOR + LIGHTING (640W X 4)
9. VOLTAGE DROP FOR LONGER RUNS HAS NOT BEEN ACCOUNTED FOR AT THIS TIME. MAY CAUSE CABLE SIZE TO BUMP UP
10. NOT USED.
11. BACKUP FIBER MAY NOT BE REQUIRED IF INNERDUCT IS USED IN CONJUNCTION WITH FIBER CONDUIT.
12. DUCTBANK ASSUMES 3" MINIMUM CONCRETE COVER IN ALL DIRECTIONS (TOP / BOTTOM / EACH SIDE). THE NECESSITY OF REBAR IN THE DUCTBANK TO BE DETERMINED BY STRUCTURAL.
13. GENERAL IIIQW MAY REQUEST INNERDUCTS TO BE INSTALLED FOR BACKUP FIBER CONDUIT.

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STATE OF ILLINOIS
PETER STEPHENSON
#062-064608
LICENSED PROFESSIONAL ENGINEER
SEAL

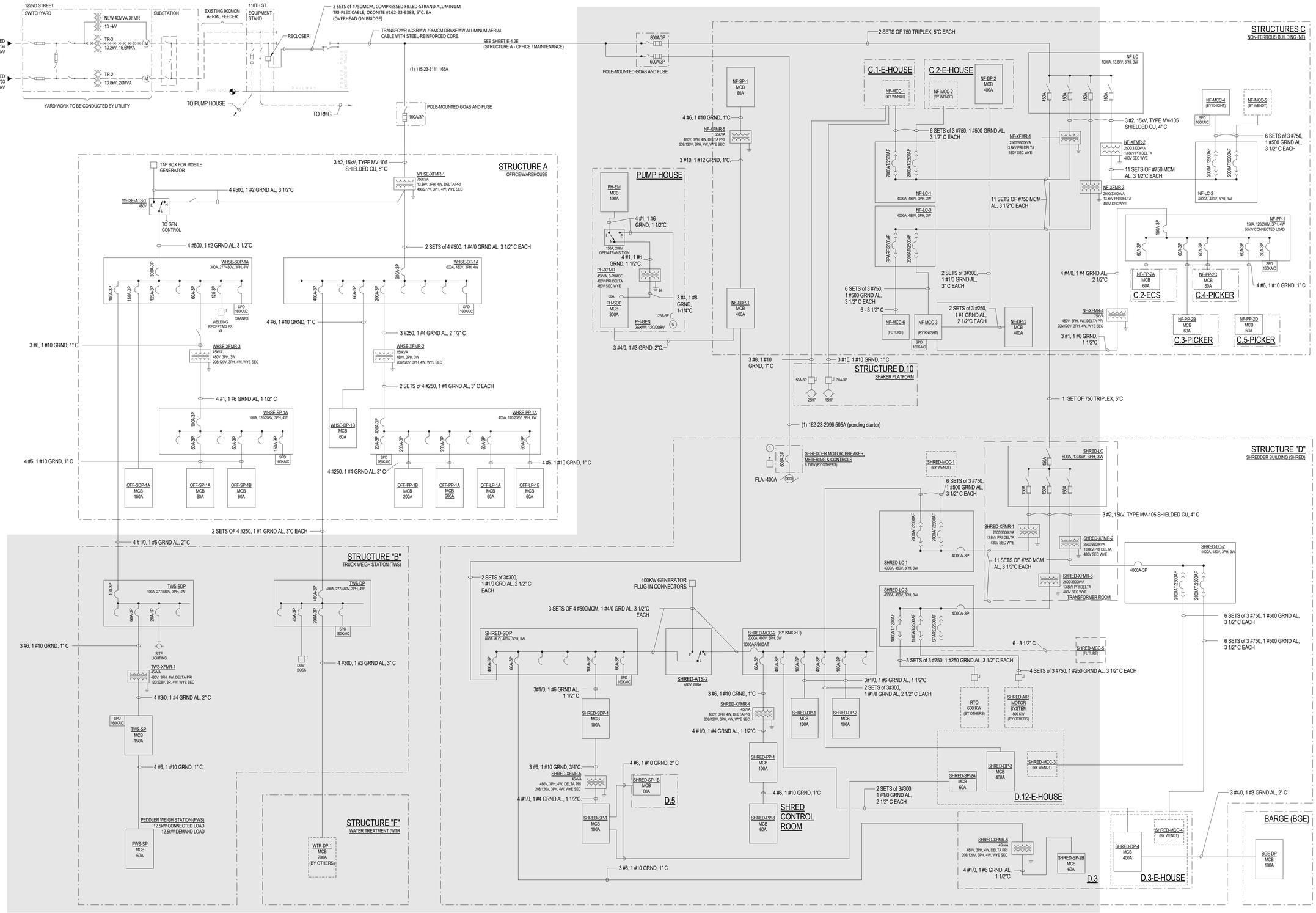
PROJECT:
GENERAL III, LLC
STRUCTURE A - OFFICE / MAINTENANCE
11600 S. BURLEY AVE
CHICAGO, IL 60617

#	DATE	ISSUE
3	06/26/2020	REVISION TO PERMIT
2	04/01/2020	ISSUE FOR PERMIT REVIEW
	01/10/2020	ISSUE FOR BID

SITE - POWER PLAN

PROJECT #:	DATE:
7563	12/04/18

E-4.2



LEGEND

- STRUCTURE/BUILDING AREA
- PROVIDED BY OTHERS
- EXISTING EQUIPMENT

KEYNOTES

1. ADDITIVE ALTERNATE: VERIFY WITH MANUFACTURER ALLOWANCE REQUIRED A FOR STATIC SYNCHRONOUS COMPENSATOR (CAPACITOR) CAPABLE OF SUPPLYING UP TO 7.15MVAR, OR AS REQUIRED BY SHREDDER MANUFACTURER, COORDINATE WITH UTILY FOR POWER FLOW AND TRANSIENT STABILITY.

GENERAL ONE-LINE NOTES

A. CONTRACTOR SHALL PROVIDE ARC FLASH LABELS CLEARLY VISIBLE ON EQUIPMENT PER NEC ARTICLE 110.16
B. GREYED-OUT AREAS SHOWN FOR REFERENCE.
C. CABLES WITH THIS NOTE TO BE COPPER @ 90°C.
D. FEEDERS 100A AND/OR HIGHER TO BE ALUMINUM.

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STATE OF ILLINOIS — PETER STEPHENSON #062-064658 — LICENSED PROFESSIONAL ENGINEER — SEAL

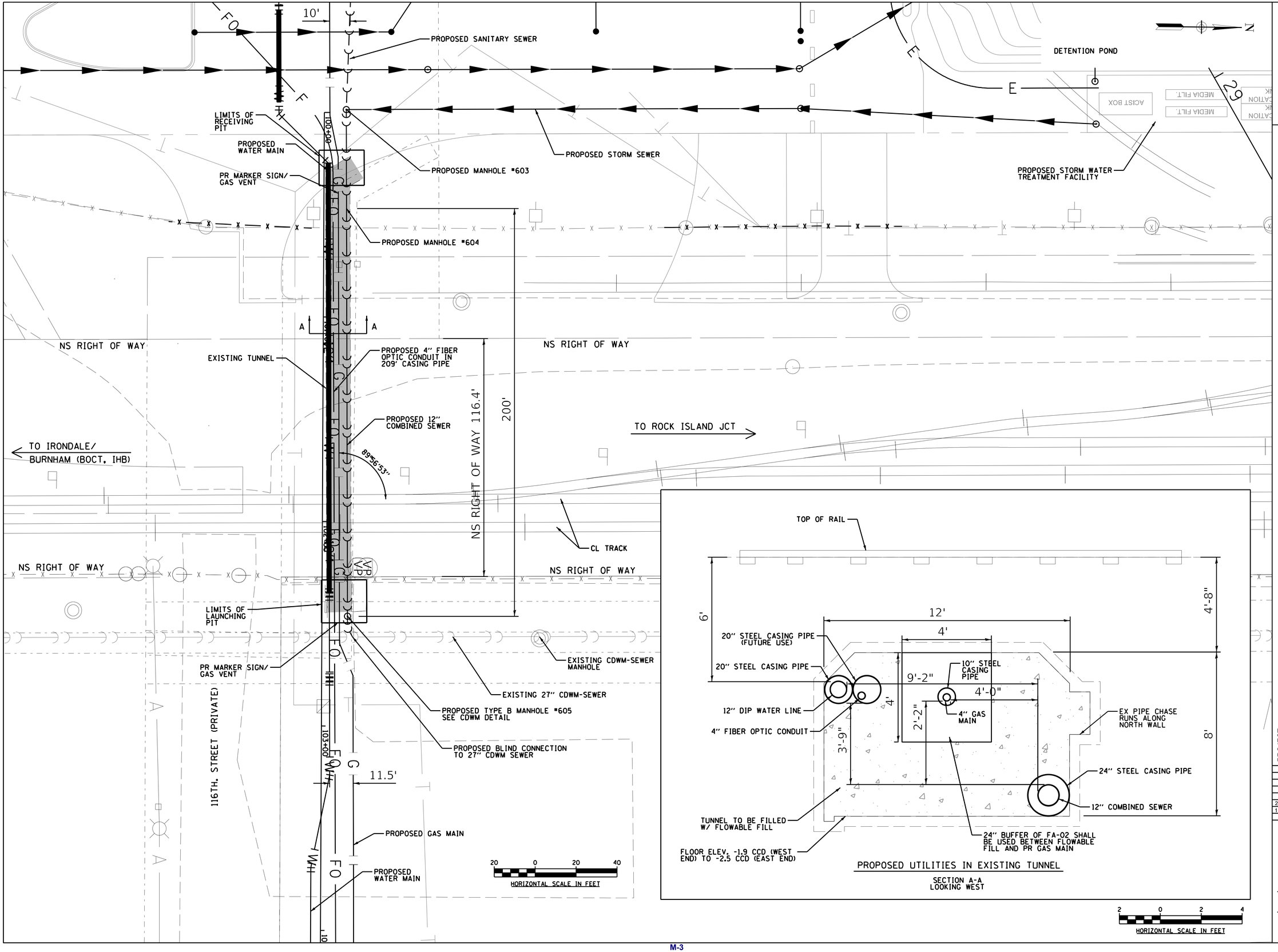
PROJECT:
GENERAL III, LLC
STRUCTURE A - OFFICE / MAINTENANCE
11600 S. BURLEY AVE
CHICAGO, IL 60617

#	DATE	ISSUE
3	06/26/2020	REVISION TO PERMIT
2	04/01/2020	ISSUE FOR PERMIT REVIEW
	01/10/2020	ISSUE FOR BID
	9/13/2019	PLAN REVIEW RESPONSE
	07/16/2019	ISSUE FOR PERMIT REVIEW

ONE-LINE DIAGRAM

PROJECT #:	DATE:
7563	7/16/2019

E-7.0



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LUKASZ P. SLODZ
062-068653
LICENSED PROFESSIONAL ENGINEER
OF
ILLINOIS
04-01-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

EXISTING TUNNEL UTILITY DETAIL

PROJECT #:	DATE:
7563	04-01-2020

C-9.1

NOTES;

1. WATERMAIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH CDWM STANDARDS & SPECIFICATIONS.
2. USE CDWM STANDARD DETAIL FOR ALL WM CONSTRUCTION.
3. ALL FIRE HYDRANTS ON PRIVATE MAIN SHALL BE PAINTED FEDERAL SAFETY GREEN.
4. RESTRAINED JOINT PIPE SHALL BE INSTALLED TO THE DIMENSION LIMITS SHOWN ON PLANS.
5. A REPRESENTATIVE OF THE DWM MUST BE ON SITE DURING THE WATER SERVICE INSTALLATION CROSSING THE EXISTING 24-INCH FEEDER MAIN AND 12-INCH FEEDER MAIN ON GREEN BAY AVENUE. PLEASE CONTACT THE FORCE ACCOUNT CONSTRUCTION MANAGER AT FACM@CTRWATER.NET TWO WEEKS PRIOR TO THE ANTICIPATED CONSTRUCTION DATE SO A DWM REPRESENTATIVE CAN BE ASSIGNED TO THE PROJECT. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY RESULT IN ADDITIONAL EXPENSES TO THE PROPOSED PROJECT TO VERIFY THAT ALL WORK CONFORMS TO DWM'S STANDARD.
6. TYPE II TEMPORARY SUPPORTS REQUIRED FOR ALL EX WM CROSSINGS PRIOR TO CONSTRUCTION, CONTRACTOR TO SUBMIT SIGNED AND SEALED STRUCTURAL DETAILS AND CALCULATIONS FOR TEMPORARY SUPPORTS.
7. BACKFLOW PREVENTER AND METER SHALL BE APPROVED BY CDWM PRIOR TO INSTALLATION.

114TH ST.

NSRR

IN PLANT ROAD

GREEN BAY AVE. (PRIVATE)

AVENUE O

1-12"1/8 2BMJ BEND
738' N OF N 117TH,
226' W OF W BURLEY

45' CASING

1-12"1/8 2BMJ BEND 737' N OF N 117TH, 277' W OF W AVE O
1-12"1/8 2BMJ BEND 737' N OF N 117TH, 282' W OF W AVE O

1-12"1/16 2BMJ BEND
733' N ON N 117TH,
458' W OF W BURLEY

2 SCALE HOUSES

1.5" WATER DOMESTIC WATER SERVICE TAP

1" WATER SERVICE TAP
724' N OF N 117TH
477' W OF W BURLEY

1° 30" BEND
1° 30" BEND
0° 30" BEND

1-12" 1/32 2BMJ BEND
654' N ON N 117TH,
604' W OF W BURLEY

1-12" 1/32 2BMJ BEND
624' N ON N 117TH,
696' W OF W BURLEY

1-4 1/2" PP FIRE HYDRANT
528' N OF N 117TH,
1133' W OF W BURLEY
1-8" MJ VALVE (IN 5' BASIN)
1-10"X8" 3BMJ TEE AT
530' N OF N 117TH,
1129' W OF W BURLEY

1-8"1/8 2BMJ
601' N OF N 117TH
1169' W OF W BURLEY

1-8"1/8 2BMJ
605' N OF N 117TH
1184' W OF W BURLEY

SHREDDER BUILDING

1-12"x12" TEE 3BMJ

3" WATER
DOMESTIC WATER
SERVICE TAP

22' CASING

3" WATER
DOMESTIC WATER
SERVICE TAP

MAINTENANCE
BUILDING

2° BEND

25' CASING

1° 30" BEND

1-10"1/8 2BMJ
425' N OF N 117TH
1069' W OF W BURLEY

1-10"1/8 2BMJ
420' N OF N 117TH
1052' W OF W BURLEY

1-4 1/2" PP FIRE HYDRANT
732' N OF N 117TH,
376' W OF W BURLEY
1-8" MJ VALVE (IN 5' BASIN)
1-12"X8" 3BMJ TEE AT
737' N OF N 117TH,
376' W OF W BURLEY

NON-FERROUS
PROCESSING
BUILDING

PR 10" WM

PR 12" WM

1-12"1/8 2BMJ BEND 762' N OF N 117TH, 202' W OF W BURLEY

215' CASING

1-12"1/8 2BMJ BEND 763' N OF N 117TH, 8' E OF W BURLEY
1-12"1/8 2BMJ BEND 763' N OF N 117TH, 9' E OF W BURLEY

1-12"1/8 2BMJ BEND 763' N OF N 117TH, 13' E OF E BURLEY
1-12"1/8 2BMJ BEND 763' N OF N 117TH, 12' E OF E BURLEY

1-12"1/32 2BMJ BEND 764' N OF N 117TH, 60' E OF E BURLEY

1-12"1/32 2BMJ BEND 755' N OF N 117TH, 105' E OF E BURLEY

1-4 1/2" PP FIRE HYDRANT
750' N OF N 117TH,
202' E OF E BURLEY
1-8" MJ VALVE (IN 5' BASIN)
1-12"X8" 3BMJ TEE
755' N OF N 117TH,
202' E OF E BURLEY

1-4 1/2" PP FIRE HYDRANT
749' N OF N 117TH,
692.' W OF W AVE O
1-8" MJ VALVE (IN 5' BASIN)
1-12"X8" 3BMJ TEE
754' N OF N 117TH,
692' W OF W AVE O

1-4 1/2" PP FIRE HYDRANT
749' N OF N 117TH,
339' W OF W AVE O
1-8" MJ VALVE (IN 5' BASIN)
1-12"X8" 3BMJ TEE
754' N OF N 117TH,
339' W OF W AVE O

EX PRAXAIR NITROGEN
GAS LINE USE EXTREME
CAUTION AND HAND DIG
IN AREA OF GAS MAIN

116TH ST. (PRIVATE)

1-12"1/8 2BMJ BEND 754' N OF N 117TH, 289' W OF W BURLEY
1-12"1/8 2BMJ BEND 754' N OF N 117TH, 292' W OF W BURLEY

TYPE II TEMPORARY SUPPORTS REQUIRED FOR EX WM CROSSINGS PRIOR TO CONSTRUCTION, CONTRACTOR TO SUBMIT SIGNED AND SEALED STRUCTURAL DETAILS AND CALCULATIONS FOR TEMPORARY SUPPORTS.

1-12"1/8 2BMJ BEND 754' N OF N 117TH, 245' W OF W AVE O
1-12"1/8 2BMJ BEND 754' N OF N 117TH, 248' W OF W AVE O

1-12"1/32 2BMJ BEND 754' N OF N 117TH, 162' W OF W AVE O

1-12"1/32 2BMJ BEND 744' N OF N 117TH, 111' W OF W AVE O

HOT BOX & 12" DC BACKFLOW PREVENTER 744' N OF N 117TH ST 84' W OF W AVE O
DC BACKFLOW PREVENTER SHALL BE WATT SERIES 2000 OR DWM APPROVED EQUIVALANT
HOT BOX TO BE SAFE-T-COVER MODEL 1000 WITH HEATING ELEMENT OR SIMILAR

WATER METER IN VAULT, 744' N OF N 117TH ST 17' E OF W AVE O
WATER METER SHALL BE BADGER RECORDALL COMBO METER OR
DWM APPROVED EQUIVALANT

1-12"X12" 3BMJ TEE
744' N OF N 117TH,
27' E OF W AVE O

EX 24" WM

EX 12" WM

117TH ST.

100 0 100 200
HORIZONTAL SCALE IN FEET

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LICENSED PROFESSIONAL ENGINEER
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PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

WATER MAIN PLAN

PROJECT #:	DATE:
7563	04-01-2020

C-4.1

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment N
Water Sources

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FIRE PROTECTION NOTES

1. ALL FIRE PROTECTION WORK TO BE EXECUTED IN ACCORDANCE WITH THE MOST RECENT VERSION OF ALL APPLICABLE LOCAL, STATE, NATIONAL CODES, INCLUDING NFPA AND LOCAL BUILDING CODE AS WELL AS THE DRAWINGS. MOST STRINGENT REQUIREMENT OF ANY OF THE ABOVE SHALL APPLY.
2. OBTAIN AND PAY FOR ALL PERMITS AND INSPECTION FEES AS REQUIRED FOR THIS WORK.
3. VISIT THE SITE TO VERIFY THE FULL EXTENT OF THE WORK, AND THE EXACT LOCATION, ELEVATION, ETC., OF EXISTING PIPING. COORDINATE ALL NEW WORK WITH THE EXISTING WORK AND THE RESPECTIVE TRADES.
4. PROVIDE ALL REQUIRED CUTTING, DRILLING AND PATCHING FOR THE NEW WORK. NO STRUCTURAL WORK TO BE CUT WITHOUT PREVIOUS APPROVAL OF THE ARCHITECT. PATCH ALL DISTURBED WALLS, CEILINGS AND FLOORS TO MATCH ADJACENT SURFACES AS NECESSARY AND/OR REQUIRED.
5. ALL MATERIALS REQUIRED FOR THE NEW WORK SUCH AS PIPING, SLEEVES, SPRINKLER HEADS, SUPPORTS, ETC., SHALL BE SIMILAR TO EXISTING BUILDING STANDARDS AND SHALL BE INSTALLED IN A SIMILAR MANNER.
6. FIREPROOF AND SEAL ALL OPENINGS IN FLOORS, WALLS AND PARTITIONS IN ORDER TO MAINTAIN AND IN ACCORDANCE WITH U.L. FIRE STOP RATINGS.
7. MAINTAIN MINIMUM CLEARANCE OF 18" INCHES OR GREATER BETWEEN SPRINKLER HEAD DEFLECTOR AND THE TOP OF STORAGE.
8. ALL NEW WORK TO BE TESTED UNDER OPERATING CONDITIONS AS REQUIRED. ALL NEW WORK FOUND TO BE DEFICIENT BY THE ARCHITECT OR CODE AUTHORITY SHALL BE CORRECTED AND RETESTED AS NECESSARY FOR ACCEPTANCE WITHOUT ANY COST TO THE OWNER.
9. GUARANTEE ALL WORK FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF WORK BY THE OWNER.
10. THIS CONTRACTOR IS RESPONSIBLE FOR SLEEVE INSTALLATION AND SEALING AIR TIGHT PENETRATIONS INTO THE COMPUTER ROOM.
11. SPRINKLER PIPE SIZING SHALL BE HYDRAULICALLY CALCULATED.
12. SUBMIT FIRE PROTECTION PRODUCT AND LAYOUT SHOP DRAWINGS SIGNED APPROVED BY THE AUTHORITIES HAVING JURISDICTION AND OWNER'S INSURANCE AGENCY, TO THE ARCHITECT/ENGINEER FOR THEIR REVIEW PRIOR TO FABRICATION AND INSTALLATION OF THE FIRE PROTECTION SYSTEM.
13. FIRE PROTECTION CONTRACTOR TO COORDINATE WITH THE LATEST ARCHITECTURAL REFLECTED CEILING PLANS AS DETERMINED BY THE ARCHITECT AND SUBMIT AS-BUILT DRAWINGS UPON COMPLETION FOR APPROVAL.
14. FIRE EXTINGUISHER (FE): SHALL BE "POTTER-ROEMER" #3010, 10# ABC MULTI-PURPOSE DRY CHEMICAL U/L-FM, EXTINGUISHER, RED ENAMEL FINISH.
15. CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE AUTOMATIC PRE-ACTION SPRINKLER SYSTEM FOR COMPUTER AND EXISTING UPS ROOM. DOUBLE INTERLOCK CONCEALED TYPE HEADS SHALL BE FURNISHED AND INSTALLED FOR ALL CEILING AREAS. REFER TO THE ARCHITECTURAL REFLECTED CEILING DRAWINGS TO DETERMINE TYPES OF SUSPENDED CEILING AREAS AND EXPOSED CEILING AREAS. UPRIGHT HEADS SHALL BE PROVIDED FOR NON-CEILING AREAS. THE ENTIRE SYSTEM SHALL BE IN FULL COMPLIANCE WITH NFPA 13 AND THE LOCAL FIRE MARSHALS REQUIREMENTS.
16. NO BRANCH PIPE TO A SPRINKLER HEAD SHALL BE LESS THAN 1".
17. CONTRACTOR SHALL MEET AND COORDINATE WITH ALL TRADES BEFORE PREPARING SHOP DWGS.
18. THESE FIRE PROTECTION DRAWINGS ARE TO BE USED AS A GUIDE FOR THE FIRE PROTECTION CONTRACTOR IN COORDINATING BETWEEN TRADES. THEY ARE NOT MEANT TO BE SHOP DWGS. OR EVEN REFLECT AN ENTIRE AUTOMATIC SPRINKLER SYSTEM. THE FIRE PROTECTION CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING COMPLETE SHOP DWGS. AND HYDRAULIC CALCULATIONS TO THE ARCHITECT AND TO THE LOCAL CODE AUTHORITIES FOR PERMIT.

FIRE PROTECTION SYMBOL LIST

- EXISTING CONCEALED PENDENT SPRINKLER HEAD
- EXISTING EXPOSED UPRIGHT OR PENDENT SPRINKLER
- EXISTING HEAD TO BE REMOVED
- NEW CONCEALED PENDENT SPRINKLER HEAD
- NEW UPRIGHT OR PENDENT SPRINKLER
- WC — "WATER CURTAIN" SPRINKLER HEAD. TYCO MODEL. WS OR EQUAL, INSTALLED PER MANUFACTURERS REQUIREMENTS
- SIDE WALL SPRINKLER
- RELOCATED UPRIGHT OR PENDENT SPRINKLER
- RELOCATED CONCEALED PENDENT SPRINKLER HEAD
- EXISTING SP MAIN PIPE TO REMAIN
- EXISTING BRANCH PIPE TO REMAIN
- EXISTING PIPING TO BE REMOVED
- NEW PIPING
- FSP — FIRE STANDPIPE
- CSP — COMB. FIRE STANDPIPE/SPRINKLER RISER
- FDV — FIRE DEPT. STANDPIPE & HOSE VALVE
- FE — FIRE EXTINGUISHER
- FEC — FIRE EXTINGUISHER CABINET
- FEC/FHV — COMBINATION FIRE EXTINGUISHER & FIRE HOSE VALVE CABINET
- POINT OF NEW CONNECTION TO EXISTING
- (E) — EXISTING TO REMAIN
- (ED) — EXISTING TO BE REMOVED/DEMOLISHED
- (ER) — EXISTING DEVICE RELOCATED FROM ADJACENT POSITION, U.N.O.
- (EC) — EXISTING J-BOX/CONDUIT TO BE CAPPED
- (EM) — EXISTING TO BE MODIFIED

NOTE: ALL SYMBOLS MAY NOT BE APPLICABLE TO THIS PROJECT. REFER TO DRAWINGS.

FIRE PUMP SCHEDULE

ITEM TAG	MANUFACTURER AND MODEL	GPM	PRESSURE (PSI)	ELECTRICAL DATA			NOTES:
				VOLT-PH-HZ	HP OR NOTED	RPM	
FP	OWNER PROVIDED	1,500	100	120/3/60	157	1780	-
JP	OWNER PROVIDED	10	110	480/3/60	2	3500	-

REMARKS:

1. POTENTIAL 35 FEET STORAGE IN ONE OF THE NON-FERROUS BUILDINGS IS THE HIGHEST HAZARD.
2. PER CBC 9(15-16-600) & 3(13-56-17) THE OCCUPANCY CLASS IS CLASS H WITH CEILING HEIGHT OVER 14 FEET:
   SPRINKLERS: 0.25 GPM/SQ FT OVER 2,500 SQ FT
   DUE TO THE SYSTEM BEING DRY PIPE - COVERAGE MUST BE INCREASED BY 30% TO 3,250 SQ FT
   SPRINKLER DESIGN FLOW RATE: 0.25 X 3,250 = 813 GPM
   "OVERAGE FACTOR" FOR INCREASE IN SYSTEM PRESSURE DUE TO FRICTION LOSS = 20%
   813 GPM X 120% = 976 GPM
3. PER NFPA 13 TABLE 11.2.3.1.2: HOSE DEMAND = 250 GPM.
4. REQUIRED FIRE PUMP FLOW: 976 GPM + 250 GPM = 1,226 GPM. NEXT NOMINAL FIRE PUMP SIZE IS RATED AT 1,500 GPM.

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Chicago, IL 60601
Phone: (312) 744-6595
knightea.com

STATE OF ILLINOIS — JEFFREY B. BEDWELL #062-058843 — LICENSED PROFESSIONAL ENGINEER
SEAL

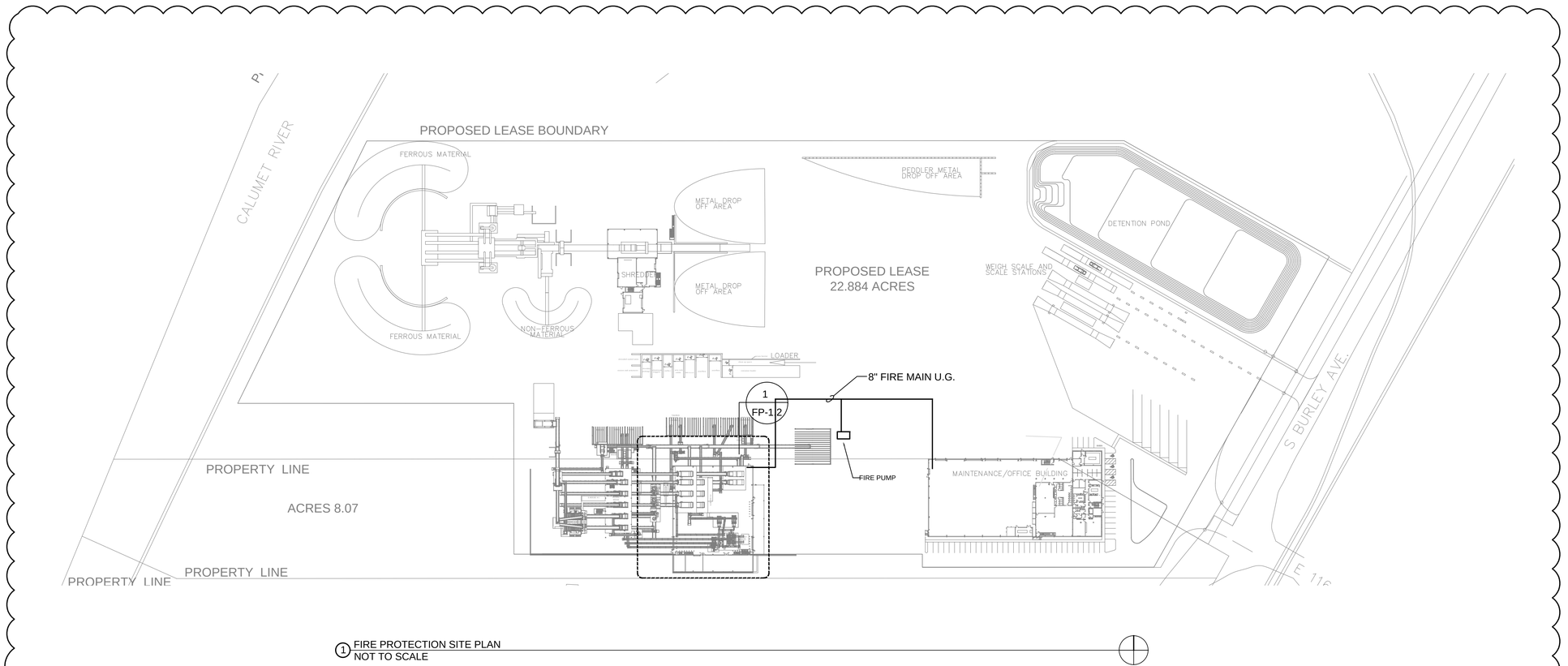
PROJECT:
GENERAL III, LLC
STRUCTURE C - NON-FERROUS BUILDINGS
11551 S AVENUE O
CHICAGO, IL 60617

#	DATE	ISSUED FOR
3	06/22/2020	REVISION TO PERMIT
2	01/06/2020	ISSUE FOR BID
1	09/27/2019	ISSUED FOR PERMIT REVIEW

FIRE PROTECTION NOTES AND SYMBOLS

PROJECT #:	DATE:
7563	06-22-20

FP-0.1



1 FIRE PROTECTION SITE PLAN
NOT TO SCALE

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Chicago, IL 60601
Phone: (312) 744-6595
knighted.com

STATE OF ILLINOIS
JEFFREY B. BEDWELL
#062-054843
LICENSED PROFESSIONAL ENGINEER
SEAL

PROJECT:
GENERAL III, LLC
STRUCTURE C - NON-FERROUS BUILDINGS
11551 S AVENUE O
CHICAGO, IL 60617

#	DATE	ISSUED FOR
3	06/22/2020	REVISION TO PERMIT
2	01/06/2020	ISSUE FOR BID
1	09/27/2019	ISSUED FOR PERMIT REVIEW

FIRE PROTECTION SITE PLAN

PROJECT #:	DATE:
7563	06-22-20

FP-3.1

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment O
Structures and Fixed Equipment

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3.10.3 Devices, Apparatus and Processes

Health and safety plan that includes all job hazard assessments and a description of the OSHA-required safety devices or procedures employed for all processing equipment (i.e. guarding, lockout devices, etc.)

General III, LLC is committed to conducting all operations in a safe and responsible manner that respects the environment, our employees, customers and the community where we operate. We will comply with all applicable regulatory requirements at a minimum, and implement programs and processes to achieve greater protection, where appropriate.

General III, LLC will work to eliminate unsafe conditions and actions in our workplaces so as to prevent the occurrence of all work-related injuries, illnesses and property losses.

Employees are responsible for performing their job activities in a safe and reasonable manner in accordance with local safety rules, any safety related instructions given to them, and the training they have received. The training an employee receives is specific to his/her job responsibilities and may include, but not be limited to: Control of Hazardous Energy, Powered Industrial Truck Operation, Hazard Communication and Right to Know, Hearing Conservation, Machine Guarding, etc.

General III, LLC will conduct job safety analyses of its operations at the commencement of its operations and will use the information attained during this process to improve its Health and Safety Plan.

Description and results of any OSHA-required worker air and noise exposure sampling for Facility activities (i.e. welding, torching, etc.)

In accordance with OSHA 29 CFR 1910.95, Occupational Noise, General III, LLC, will conduct a noise monitoring evaluation at the commencement of its operations to implement an accurate Hearing Conservation Program.

General III, LLC, will conduct an air monitoring evaluation at the commencement of it operations to determine if its needs to implement OSHA 29 1910.134; Respiratory Protection Program.

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City of Chicago

Department of Buildings - Permits

Building Permit

Permit: 100849993 **Issued:** 2/25/20

For Work at: 11554 S AVENUE O

Description of permitted work:

DIRECT DEVELOPER SERVICES - NEW CONSTRUCTION 2 STORY ACCESSIBLE OFFICE SPACE FOR THE ADMINISTRATIVE OPERATIONS. THE OFFICE FUNCTION IS CONNECTED AT THE WEST TO THE MAINTENANCE FUNCTION CLASSIFIED AS HAZARDOUS USE AS IT HOUSES THE PARTS STORAGE FOR THE EQUIPMENT ON THE CAMPUS AS WELL AS BEING THE VEHICLE SERVING AREA. STRUCTURE IS ACCESSORY USES TO SERVE AN EXISTING CLASS IV-4 RECYCLING FACILITY.

O-3

In an Emergency Contact: RAY SOWA JR. (773)491-3157

Owner:
HAL TOLIN
11551 S AVENUE O
CHICAGO IL 60617
(773)382-0123 x

Contractor:
THE GEORGE SOLLITT CONSTRUCTIO
790 N CENTRAL AVE
WOOD DALE IL 60191-
(630)860-7333 x

Lori E Lightfoot
Mayor

Judith Frydland
Commissioner

Fees Paid and Application Submitted for Review on:	11/20/2019	Total Permit Processing Time: 97 days Time for City Review: 33 days
Permit Issued on:	2/25/2020	Time With Applicant for Document Submittal and Corrections: 64 days

Permit must be displayed on job site at all times. Permit is NOT transferable. Plans must be kept on site during construction. Any changes in contractor or deviation from approved plans must be authorized by the Department of Buildings. Permit may be revoked for violation of any of the above provisions and/or all other applicable laws.

DCAP17SO RD050211

City of Chicago

Department of Buildings - Permits

Building Permit

Permit: 100851448 **Issued:** 2/25/20

For Work at: 11554 S AVENUE O

Description of permitted work:

DIRECT DEVELOPER SERVICES - NEW CONSTRUCTION OF ONE STORY TYPE II - ACCESSORY SCALE HOUSE TO SERVE AN EXISTING CLASS IV-4 RECYCLING FACILITY.

O-4

In an Emergency Contact: HAL TOLIN (773)382-0123 x

Owner:
HAL TOLIN
11551 S AVENUE O
CHICAGO IL 60617
(773)382-0123 x

Contractor:
THE GEORGE SOLLITT CONSTRUCTIO
790 N CENTRAL AVE
WOOD DALE IL 60191-
(630)860-7333 x

Lori E Lightfoot
Mayor

Judith Frydland
Commissioner

Fees Paid and Application Submitted for Review on:	11/20/2019	Total Permit Processing Time: 97 days Time for City Review: 49 days
Permit Issued on:	2/25/2020	Time With Applicant for Document Submittal and Corrections: 48 days

Permit must be displayed on job site at all times. Permit is NOT transferable. Plans must be kept on site during construction. Any changes in contractor or deviation from approved plans must be authorized by the Department of Buildings. Permit may be revoked for violation of any of the above provisions and/or all other applicable laws.

DCAP17SO RD050211

City of Chicago

Department of Buildings - Permits

Building Permit

103841

Permit No. 100866826 **Issued** 03/25/2020

For Work at: 11554 S AVENUE O

Description of permitted work:

*DIRECT DEVELOPER SERVICES
* NEW CONSTRUCTION - PREFABRICATED METAL FRAME BUILDING BUILDING ON CONCRETE FOUNDATION FOR PROCESS EQUIPMENT; CLASS IV-A RECYCLING FACILITY.

In an Emergency Contact: HAL TOLIN (773)382-0123 x

Lori E. Lightfoot
Mayor

Owner:
HAL TOLIN
11600 S BURLEY AVE
CHICAGO, IL 60617
(773)382-0123 x

Contractor:
JAMES MCHUGH CONSTRUCTION CO
1737 SOUTH MICHIGAN AVENUE
CHICAGO, IL 60616-
(312)986-8000 x

Judith Frydland
Commissioner

Permit must be displayed on job site at all times. Permit is NOT transferrable. Plans must be kept on site during construction. Any changes in contractor or deviation from approved plans must be approved by the Department of Buildings. Permit may be revoked for violation of any of the above provisions and/or all other applicable laws.

City of Chicago

Department of Buildings - Permits

Building Permit

Permit No. 100873689 **Issued** 05/08/2020

For Work at: 11554 S AVENUE O

Description of permitted work:

DIRECT DEVELOPER SERVICES NEW CONSTRUCTION BUILDING PERMIT FOR A PROPOSED TWO STORY 9000HP SHREDDER-MOTOR ROOM AND ELECTRICAL ENCLOSURE. THE 2STORY ENCLOSURE IS CONNECTED AT THE NORTH TO THE SHREDDER ENCLOSURE RECYCLING FUNCTION.

In an Emergency Contact: HAL TOLIN (773)382-0123 x

Lori E. Lightfoot
Mayor

Owner:
HAL TOLIN
11600 S BURLEY AVE
CHICAGO, IL 60617
(773)382-0123 x

Contractor:
JAMES MCHUGH CONSTRUCTION CO
1737 SOUTH MICHIGAN AVENUE
CHICAGO, IL 60616-
(312)986-8000 x

Judith Frydland
Commissioner

108377

Permit must be displayed on job site at all times. Permit is NOT transferrable. Plans must be kept on site during construction. Any changes in contractor or deviation from approved plans must be approved by the Department of Buildings. Permit may be revoked for violation of any of the above provisions and/or all other applicable laws.

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment P
Tipping Floor and Storage Capacity

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Tipping Floor & Staging Capacity Calculations

Volume available for unloading inbound materials:

80,855 ft^2 (tipping floor area) X 30 ft (height of raw material) ÷ 27 ft^3/ yd^3 =

89,839 yds^3

Volume available for processed ferrous materials:

12,500 ft^2 (tipping floor area) X 20 ft (height of raw material) ÷ 27 ft^3/ yd^3 =

9,259 yds^3

Volume available for processed shredder residue:

7,500 ft^2 (tipping floor area) X 20 ft (height of raw material) ÷ 27 ft^3/ yd^3 =

5,556 yds^3

Volume available for processed nonferrous materials:

13 storage bins X 416 ft^3 / storage bin = ***5,408 yds^3***

Volume available for shredder fluff:

[2,310 ft^2 (covered fluff bin area) X 21 ft (height of fluff) ÷ 27 ft^2/ yd^3] + 250 yds^3 (area of cone) = ***2,047 yds^3***

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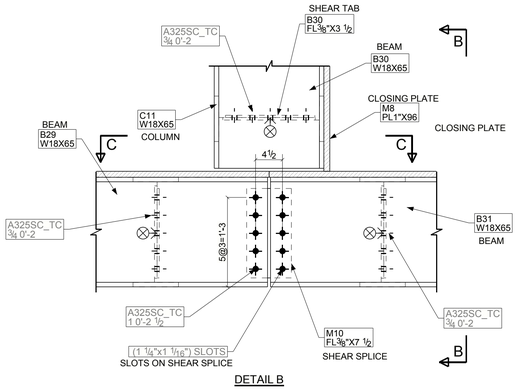

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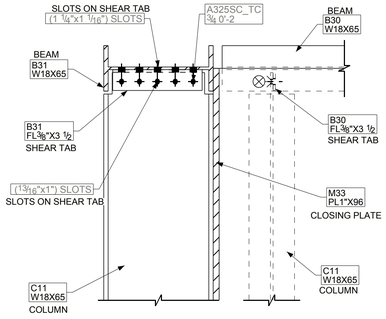

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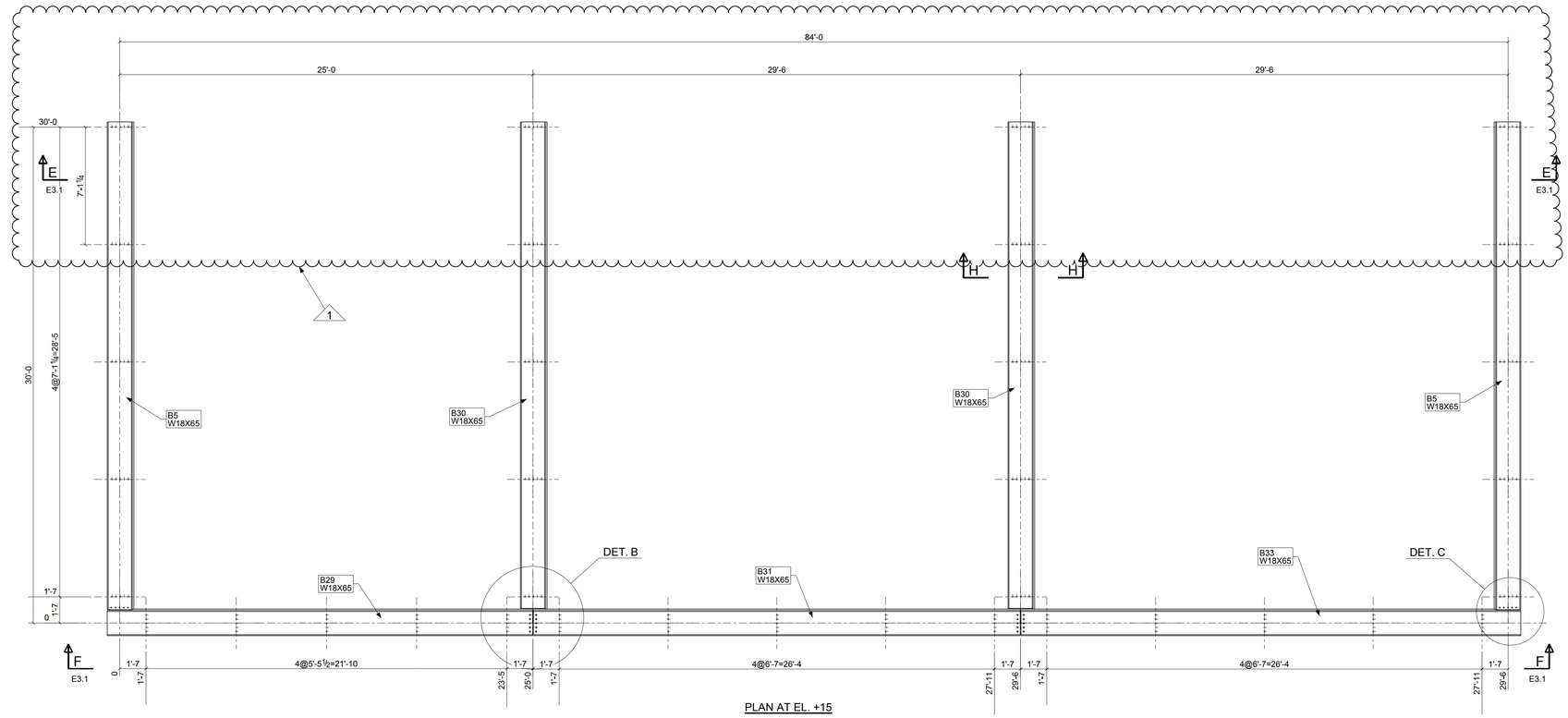
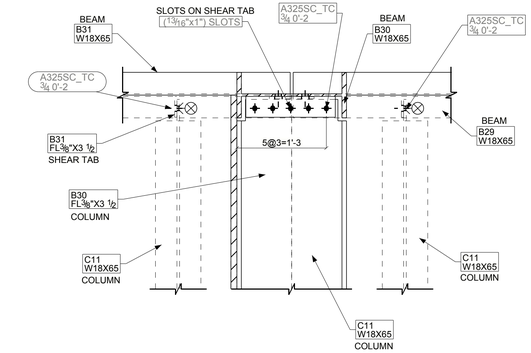


PLAN AT EL. +15



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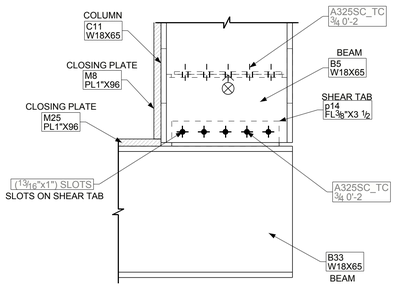

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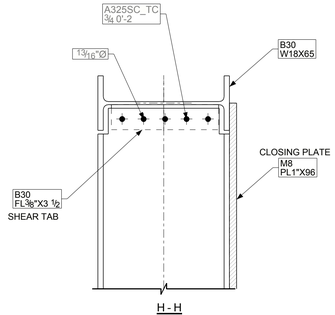

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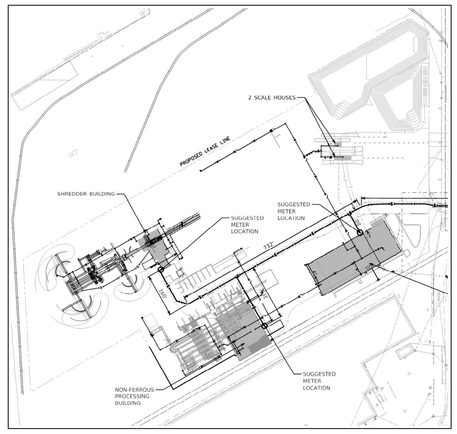

KEY PLAN

APPROVER VERIFY ALL DIMENSIONS

PROVIDE GRID REFERENCE AT THESE STEEL BINS.

FINISH PRIMED.

1" PLATES SIZES WILL VARY DEPENDING ON SIZE'S AVAILABLE.

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TRASH BIN- PLAN VIEW
3- MODULE BATTERY

DATE	NO	DESCRIPTION	BY	CHECK
09/03/2020	1	After Return drawings 09-03-2020	HH	

Great Lakes Stair & Steel, Inc.
10130 Virginia Ave. Phone 708-430-2323
Chicago Ridge, IL. 60415 Fax 708-430-2929
www.GLstair.com

GREAT LAKES STAIR & STEEL

Architect:
Knight

Contractor:
George Sollitt

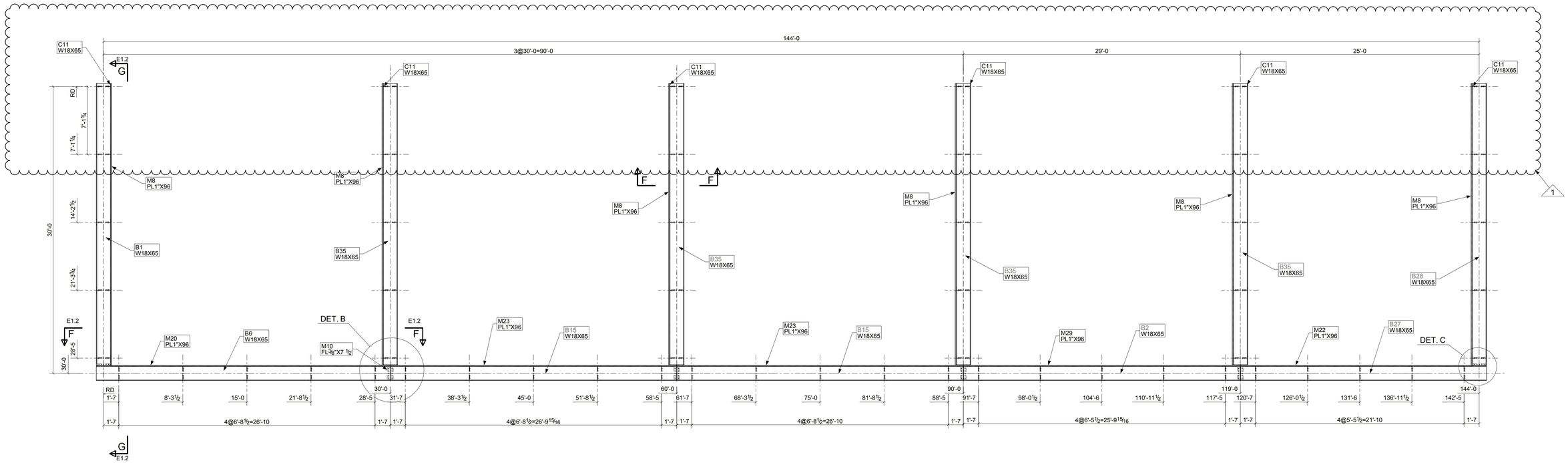
PROJECT :
20026 General Iron G3
11551 S Ave. O Chicago IL 60617

DESCRIPTION :
TRASH BINS (3)

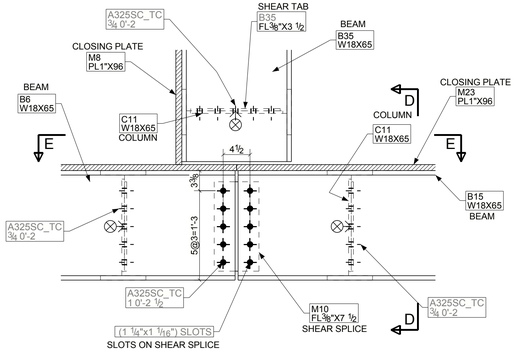
DRAWN BY:
HH/WK

ORIGINAL DATE:
09/08/2020

DRG No:
E3.0



PLAN AT EL. +16'



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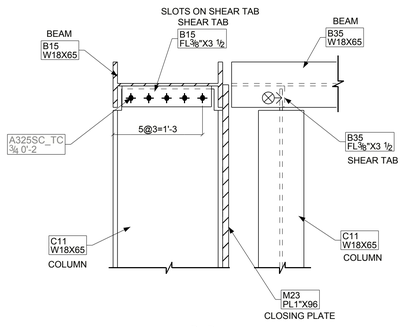

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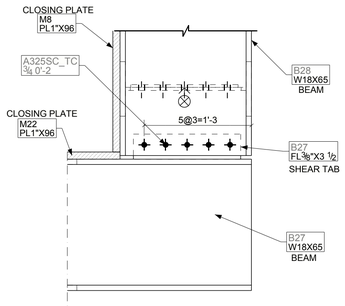

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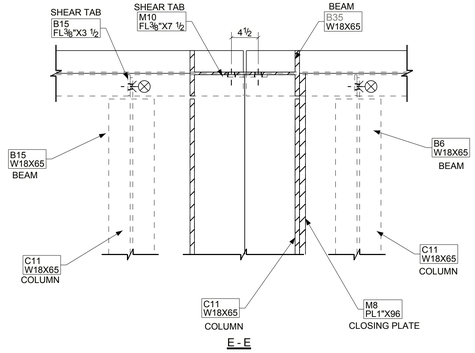

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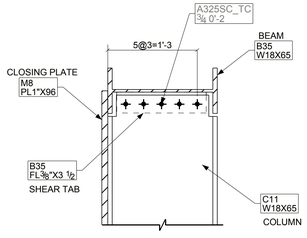

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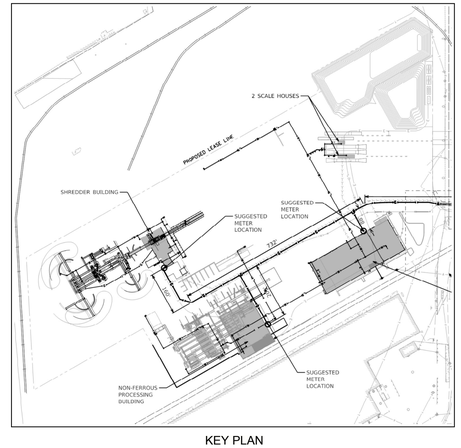

KEY PLAN

APPROVER VERIFY ALL DIMENSIONS

PROVIDE GRID REFERENCE AT THESE STEEL BINS.

FINISH PRIMED.

1" PLATES SIZES WILL VARY DEPENDING ON SIZE'S AVAILABLE.

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Cannot load file: C:\Users\Hugo\Documents\Job Log 2018\MATERIALS 1.rtf

TRASH BIN- PLAN VIEW 5- MODULE BATTERY

DATE	NO	DESCRIPTION	BY	CHECK
09/03/2020	1	After return drawings 09-03-2020	HH	

Great Lakes Stair & Steel, Inc.
10130 Virginia Ave. Phone 708-430-2323
Chicago Ridge, IL. 60415 Fax 708-430-2929
www.GLstair.com

GREAT LAKES STAIR & STEEL

Architect: Knight

Contractor: George Sollitt

PROJECT : 20026 General Iron G3
11551 S Ave. O Chicago IL 60617

DESCRIPTION : TRASH BINS

DRAWN BY: HH/WK

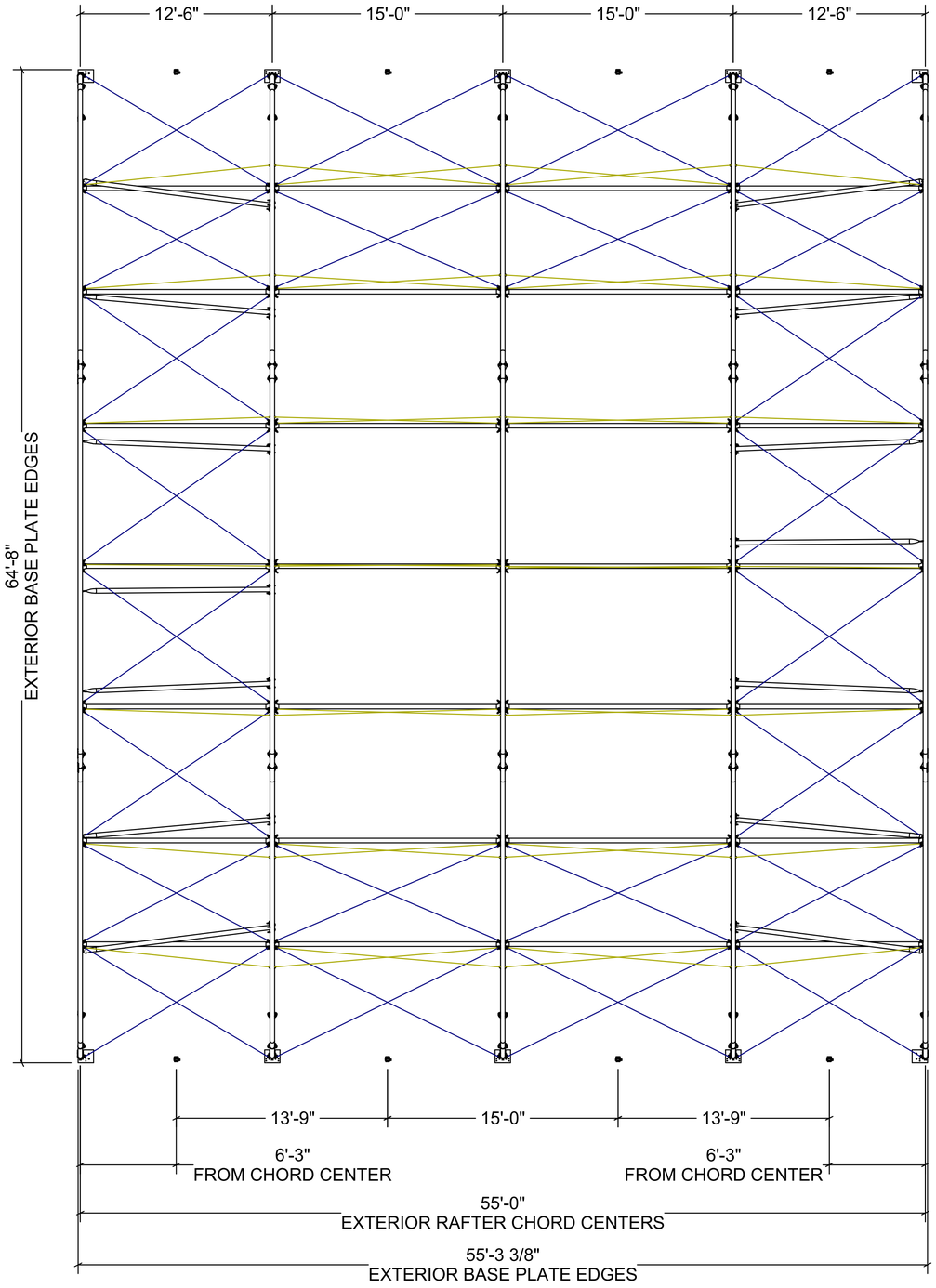
ORIGINAL DATE: 09/08/2020

DRG No: E1.0

FRONT ENDWALL (OPEN)

LEFT SIDE - SEE SHEET [F1-1.0] FOR ELEVATION VIEW

RAFTER SPACING



WINCH LAYOUT

RIGHT SIDE - SEE SHEET [F1-1.0] FOR ELEVATION VIEW

BUILDING PLAN VIEW

- CABLE PATTERN
- SWAY CABLE PATTERN
- BUILDING DIMENSIONS
- RAFTER SPACING
- WINCH LAYOUT

BACK ENDWALL: EW065RDS2250DNF
SEE SHEET [M1-1.0] FOR ELEVATION VIEW

DEVELOPED BY
ClearSpan
A DIVISION OF
ENGINEERING SERVICES & PRODUCTS CO.
1440 18TH AVENUE SW
DYERSVILLE, IA 52040
P: 563.875.6113
F: 563.875.2317
WWW.ESAPCO.COM

ORDER #: **5178415**

CUSTOMER #: **5781347**

CUSTOMER INFORMATION:
GENERAL IRON INDUSTRIES INC
1909 N CLIFTON AVE
CHICAGO, IL 606144803

CUSTOMER CONTACT:
KEVIN TRANT

CONTACT PHONE:
773-327-1118

STRUCTURE SKU #:
T065RDM0170055NF

STRUCTURE SIZE:
65' X 55'

STRUCTURE DESCRIPTION:
65X55 RDM TRS 12FR GRN 2PKT+6"

SHEET TITLE:
BUILDING PLAN VIEW

DRAWING DETAILS

DRAWN BY:	CREATION DATE:
CKM	7/19/2012

REVISIONS:

NO.	BY:	REVISION DATE:
1	TS	7/26/2012
2		
3		
4		

NOT TO SCALE | SHEET SIZE: 11X17

SHEET:
C1-1.0

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RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment Q
Water Drainage

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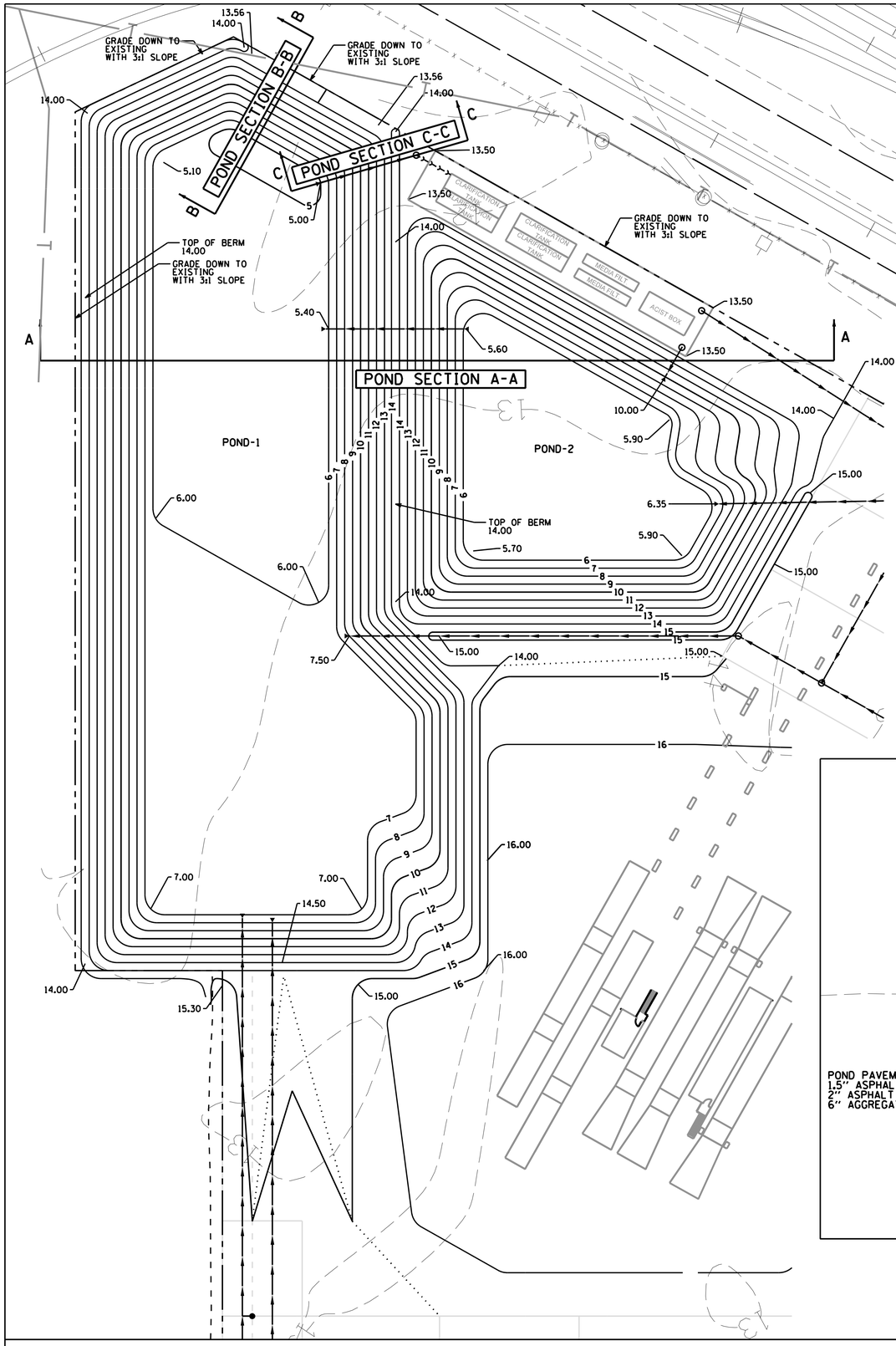

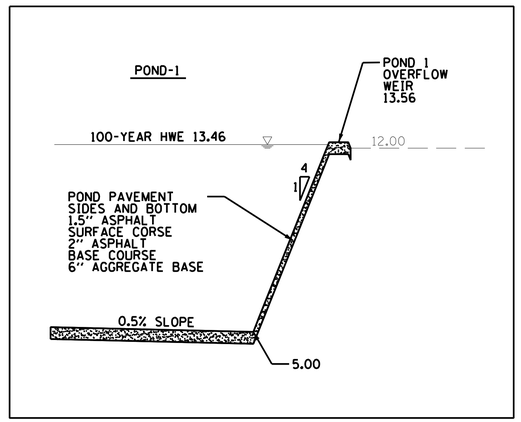

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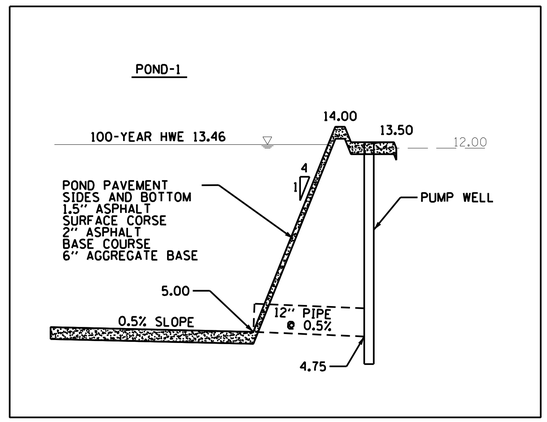

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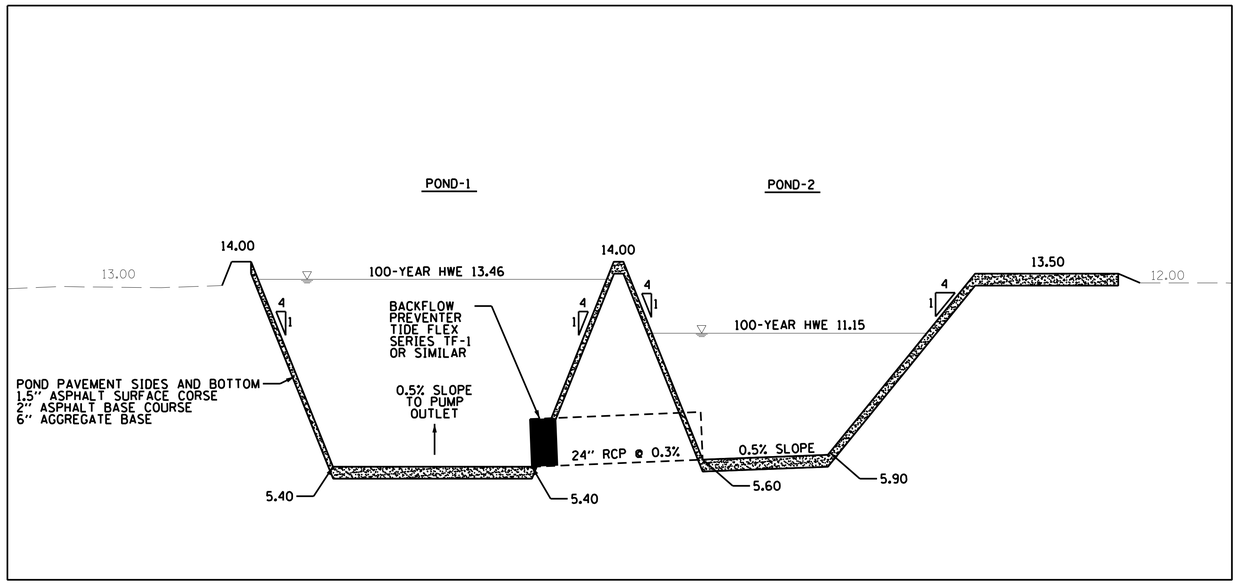

POND SECTION A-A
N.T.S.

30 0 30 60
HORIZONTAL SCALE IN FEET

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

LUKASZ P. SLOZ
062-068653
LICENSED PROFESSIONAL ENGINEER
OF
ILLINOIS
04-01-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

GRADING PLAN
POND SECTION

PROJECT #:	DATE:
7563	04-01-2020

C-2.4

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DEPARTMENT OF BUILDINGS

CITY OF CHICAGO

DATE: 1/9/2020

TO: Patrick Maloney, PE, Assistant Chief Engineer

FROM: Andrew Billing, PE, Lead Stormwater Reviewer

SUBJECT: Approval of Design Plans, dated: **12/27/2019**

Project Name: **General III Recycling Facility**
Project Address: **11554 S Avenue O**
Tracking Number: **N/A**
Designer/Developer: **Knight Engineers & Architects**

☒ **Plan Approval.** The following size(s) of drain connection(s) to the main sewer(s) is/are acceptable for the subject property. Please check the plans for other permit requirements inside private property including covenants for joint maintenance.

☐ **Conditional Plan Approval.** The following size(s) of drain connection(s) to the main sewer(s) is/are acceptable for the subject property. However, the attached comments/mark-ups as noted **must** be incorporated into the final plans. Please verify that the plans have been revised as noted and check other permit requirements inside private property including covenants for joint maintenance.

Connection size and location:

One 8-inch combined connection to 27-inch sewer in vacated Burley Ave

Restrictor size and catch basin number and location:

Pump sized to release maximum allowable release rate of 1.62 cfs.

Rate Control BMPs:

A total of 491,611 cubic feet of storage is provided in two asphalt-lined detention basins. 22,128 cubic feet is provided in storm sewer. A total of 513,739 cubic feet is provided. 513,391 cubic feet is required (includes 45,557 cubic feet of volume control storage).

Volume Control BMPs:

The required 45,557 cubic feet of storage is provided in asphalt-lined detention basins (23,784 cubic feet) and storm sewer (22,128 cubic feet).

Plan modifications described below (or shown on attached sheets) are required on the following sheet numbers:

Sheet(s) _____ _____

_____

Notes:

_____

_____

_____

Stormwater Management Plan Review Fees:

The following stormwater review fee has been paid prior to this stormwater approval. (See Stormwater Ordinance, Article 11-18-080, for review fees.)

☐	$1,000.00	for regulated developments < 50,000 sq. ft.
☒	$3,000.00	for regulated developments >= 50,000 sq. ft.
☐	$1,500.00	for a variance request < 50,000 sq. ft.
☐	$4,500.00	for a variance request >= 50,000 sq. ft.
☐	$350.00	for a plan amendment submitted within one year of plan approval
☐	$500.00	for a plan amendment submitted over one year after plan approval
☐	No Fee Required, reason:	

Departmental requirements are subject to change. This record of approval is **valid for one year** from the date of issue indicated above. It is the designer's/developer's responsibility to field check the size, location, and invert elevation of existing sewers and other city-owned or private utilities prior to the start of construction.

Please be advised: this document is a stormwater design approval; **this is not a permit** to perform the work shown on the plans. The contractor must obtain all required permits prior to beginning construction including, but not limited to, the sewer permit, street opening permit, driveway permit, etc.

Originated by: BTS **Benjamin Stammis, PE, V3 Companies, Consultant Reviewer**
cc-Designer: **Lukasz Sledz, PE, Knight Engineers & Architects**

PD Approval

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment R
Traffic

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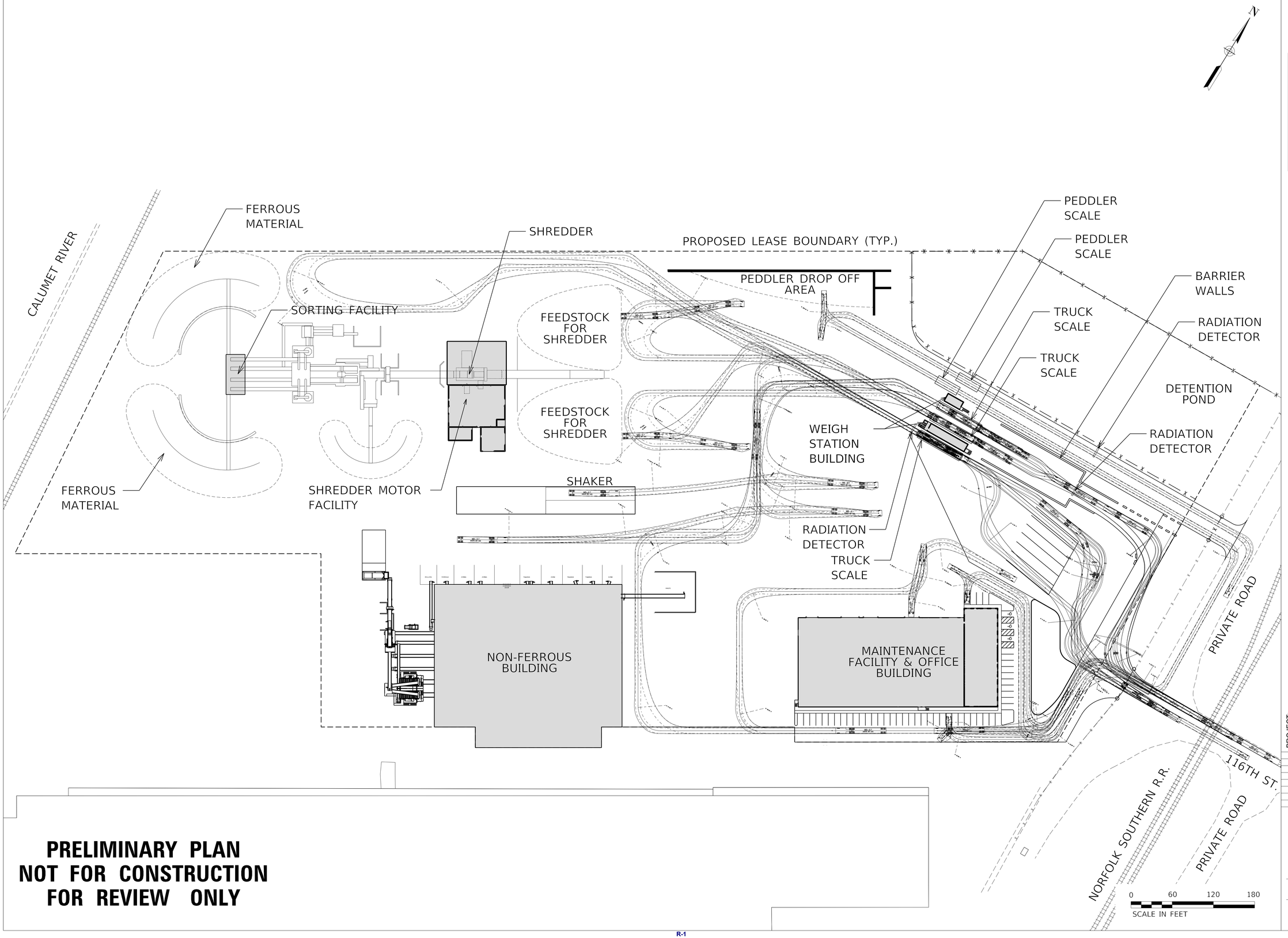

PRELIMINARY PLAN
NOT FOR CONSTRUCTION
FOR REVIEW ONLY

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knighttea.com

ON-SITE VEHICLE MOVEMENTS

PROJECT:
GENERAL III
11600 S BURLEY AVE
CHICAGO, IL 60617

XX-XX-XX	ISSUE FOR REVIEW

GENERAL III
PROPOSED SITE PLAN
ON-SITE VEHICLE MOVEMENTS

PROJECT #:	DATE:
7563	01-18-2018

TM-01

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Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment S
Employee Facilities

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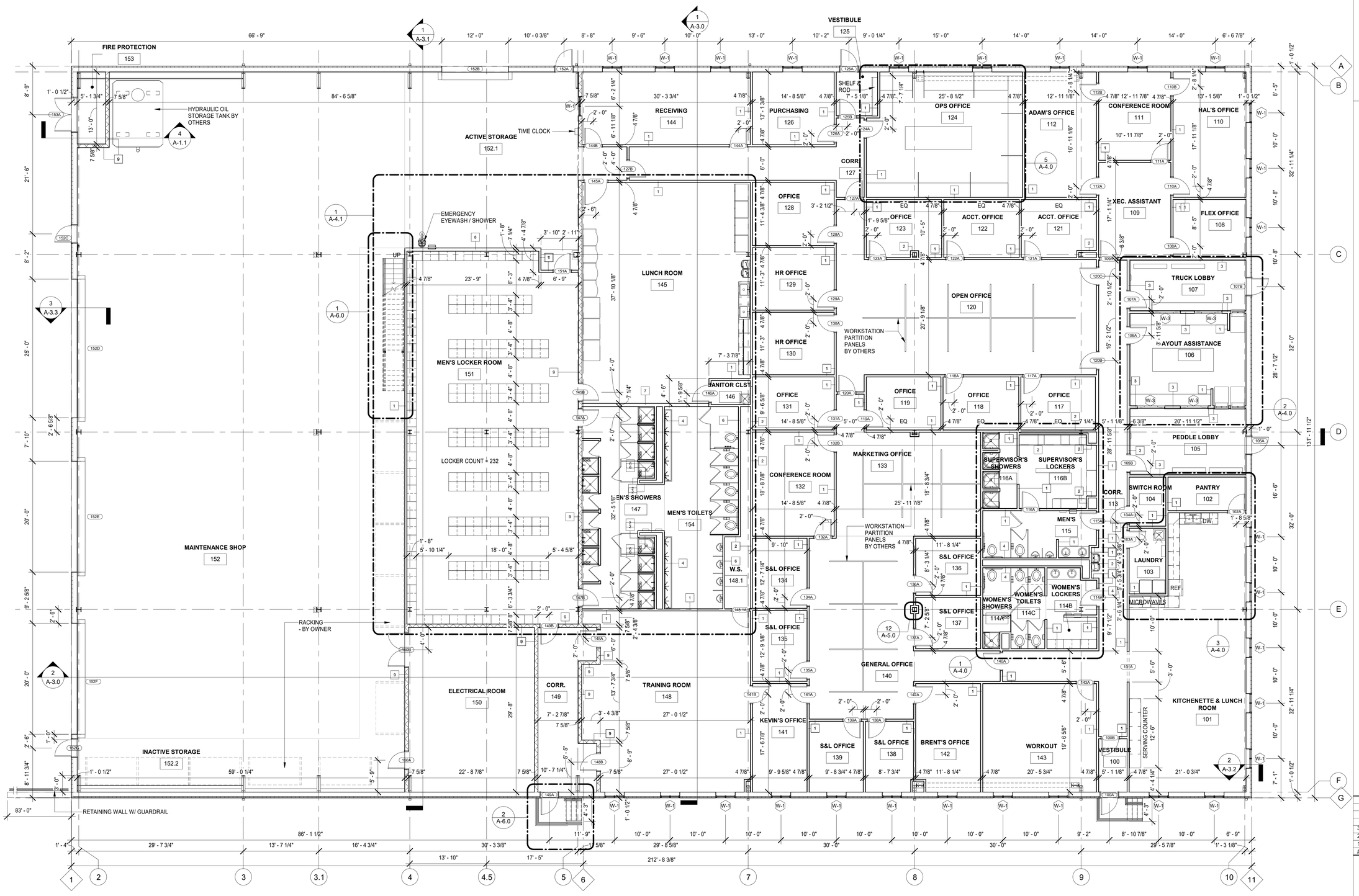

1 **OFFICE & MAINTENANCE - FLOOR PLAN**
1/8" = 1'-0"

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 N. LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knighted.com

PROJECT:
GENERAL III, LLC
STRUCTURE A - OFFICE / MAINTENANCE
11551 S. AVE. O
CHICAGO, IL., 60617

#	DATE	ISSUE
3	06/26/2020	ISSUE FOR PERMIT REVISION
2	04/01/2020	REVISION TO PERMIT
1	07/16/2019	ISSUE FOR PERMIT REVIEW

FLOOR PLAN

PROJECT #:	DATE:
7563	7/16/19

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Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment T
Noise Impact Assessment

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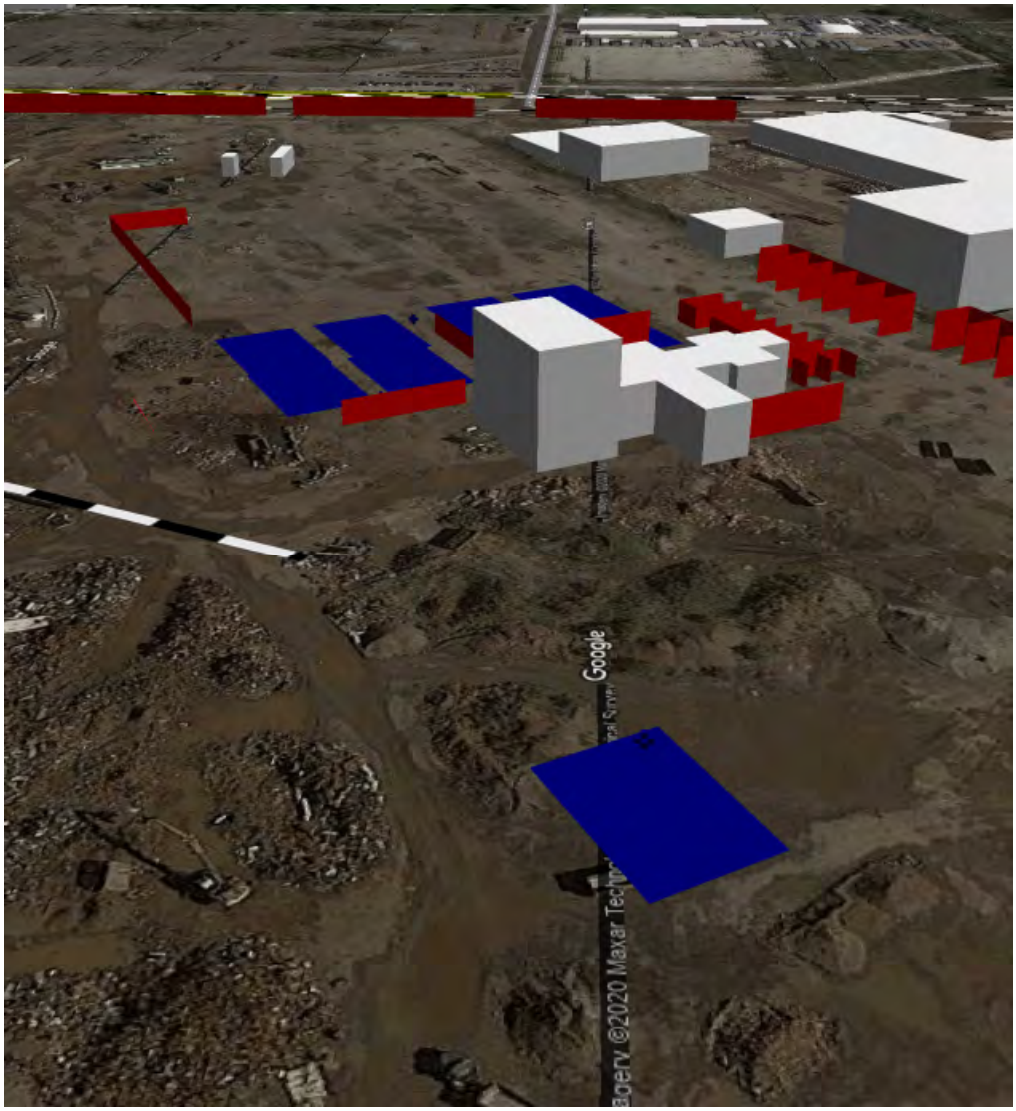
Shiner Acoustics, LLC
Acoustical Engineers
225 W Washington St. - Suite 1625, Chicago, Illinois 60606
Phone 312 849-3340 Fax 312 849-3344 www.shineracoustics.com

Southside Recycling Environmental Noise Assessment



SAI project 1201003

Revision B
November 12, 2020

Shiner Acoustics, LLC
225 West Washington Street, Suite 1625
Chicago, Illinois 60606

Prepared for
Southside Recycling
11554 S. Avenue O
Chicago, Illinois, 60617

Table of Contents

Table of Figures

1. Summary

Shiner Acoustics, LLC conducted a noise evaluation for the proposed Southside Recycling facility. The evaluation concerned predictions of the project's outdoor sound levels at noise-sensitive receivers. The project consisted of measurements at the existing GII, LLC Lincoln Park facility, reviewing documents, developing an acoustical model of the Southside Recycling facility, and predicting environmental noise levels.

The Chicago noise ordinance requires meeting 55 dBA at the nearest adjacent public way or nearest adjacent property, whichever is closer to the source.

Facility noise sources and outdoor sound propagation to the receivers were modeled with acoustical software. The facility's design includes noise mitigation such as locating noise equipment away from residences, enclosing noise sources such as the shredder and fans, multiple obstacles to sound propagation within the site, and a sound barrier at the east and northeast site boundary.

We analyzed environmental noise with the preceding equipment and general arrangement. The site is predicted to comply with the Chicago noise ordinance. No additional mitigation is recommended.

2. Equipment and Site Description

A large recycling facility with a shredder and material handling operations is currently located at GII in the Lincoln Park neighborhood of Chicago. A new, similarly-sized facility (Southside Recycling) will be located at the former Republic Steel site on the southeast side of the city in the South Deering neighborhood at 11600 S. Burley Ave. The new property will be about 700 ft by 1,700 ft.

For sound mitigation, the GII Lincoln Park shredder has rubber curtains and a partial roof. The Southside Recycling shredder will have an acoustical enclosure with a roof. There will be multiple pieces of noise-generating equipment on the site: material handlers or grapples, front end loaders, dump trucks, a shearing machine, conveyors, and large industrial fans for pollution control. The shredder will be located in an insulated industrial building.

The plant site and surrounding parcels are essentially flat in every direction. The properties in the vicinity of the facility are as follows and are shown in Figure 1:

1. To the north: industrial land in the same manufacturing district (PMD-6) as the proposed facility;
2. To the east: industrial land in PMD-6, noise-sensitive properties, including a residential neighborhood about 1,150 ft to the northeast and the high school about 1,700 ft to the east, and commercial facilities;
3. To the south: industrial properties in PMD-6; and
4. To the west: Calumet River, industrial properties in PMD-6 to the west of the river, and a wetland marsh about 2,200 ft away.

3. Criteria

Facility noise limits are derived from the City of Chicago noise ordinance. The ordinance states that sound levels due to mechanical stationary sources must meet 55 dBA at 100 ft or more from the source.

The measurement location is specified as the nearest adjacent public way or nearest adjacent property, whichever is closer to the source. The limitation applies from 8:00 p.m. to 8:00 a.m. unless the mechanical stationary source is subject to other operating hours pursuant to a permit or other written authorization issued by the Chicago Department of Public Health.

The Southside Recycling facility will be located in the manufacturing district PMD-6, as shown in Figure 1. There is an important exemption in that the limit does not apply to sound measured within the manufacturing district.

Based on the preceding, the site must meet 55 dBA at properties north of E. 114 St. and east of S. Avenue O.

4. Noise Sources

Shiner Acoustics personnel took sound measurements of equipment at the GII Lincoln Park facility on October 21 and 22, 2020. The measurements were taken for the sources shown in Table 1 at a variety of distances, as shown in the table. For intermittent sources, GII provided the number of operations in a typical working day and these were normalized to the number of minutes of operation per hour.

Appendix B shows the equipment noise emissions in terms of sound power levels. Sound power levels are independent of measurement distance and enable the acoustic emissions of different sources to be compared.

Table 1. Noise Sources

Operation	Source type	Sound Pressure Level (Leq, dB re 20 µPa, A-weighted)	Measurement Distance (ft)	Operating Time (min/hr)
Material handler unloading a truck	Intermittent	71	95	22.5
Truck dumping highest noise	Intermittent	80	95	4.3
Truck dumping - remainder of operation	Intermittent	70	95	9.0
Front end loader pushing material	Intermittent	76	50	5.3
Front end loader loading dump truck	Intermittent	89	30	2.0
Material handler feeding infeed	Continuous	76	148	60.0
Shearing	Continuous	79	64	60.0
Shredder infeed	Continuous	66	47	60.0
RTO and filter fan	Continuous	69	130	60.0
Scrap being dumped	Continuous	79	95	60.0

5. Noise-Sensitive Receivers and Modeling Methodology

Noise-sensitive receivers were chosen to quantify noise from the plant at parcels surrounding the site, as shown in Figure 2.

Outdoor sound propagation calculations are based on the International Organization for Standardization (ISO) standard 9613-2. The standard considers sound sources, receivers, and factors that influence sound propagation, such as distance, ground attenuation, and screening. CadnaA software from DataKustik GmbH implements the standard and our acoustical model uses this software and standard acoustical calculations. The methodology is described in more detail in Appendix B.

The receiver grid is at a height of 1.5m (5') and all receivers are at a height of 1.5m (5').

6. Modeling Results

Shiner Acoustics predicted sound pressure levels at noise-sensitive receivers for the site layout shown in Figure 2.

This scenario is based on the following site plan and mitigation:

A. Noise-producing operations in the western half of the site, as far as possible from the residences and high school to the east and northeast;

B. Shredder with an acoustical enclosure and roof. Whereas the existing GII Lincoln Park shredder has rubber curtains and a partial roof, the proposed Southside Recycling shredder enclosure will be constructed from panels that absorb sound within the enclosure and isolate shredder noise. The panels will be 160 mm [6.3 in] thick and their construction will be a steel outer panel, batt insulation, and an inner perforated panel with 50% open area. The manufacturer (ILG) claims that the panel sound isolation is R_w 48, which is approximately equivalent to sound transmission

class (STC) 48. The panels should provide good sound isolation. This source is included in the acoustical model as part of infeed noise;

C. Multiple buildings, bins, barriers and other sound obstructions located between sound sources and receivers;

D. The 800 hp filter fan will be enclosed; and

E. Shipping containers used as sound barriers located to the northeast and east of the site. The containers will be stacked two to three high for a total height of 16 ft or 24 ft, respectively. There will be only two openings in the shipping container sound wall to allow for truck ingress and egress from the site.

Table 2 shows the facility's predicted sound levels at noise-sensitive receivers. Figure 2 shows the facility site plan, noise sources, sound barriers, receivers, and sound level contours overlaid on an aerial photo.

Table 2. Predicted Facility Sound Levels

Receiver	Sound Pressure Levels (dB re 20 µPa), A-weighted	Receiver	Sound Pressure Levels (dB re 20 µPa), A-weighted
Residence 1	48	Residence 6	50
Residence 2	48	Residence 7	50
Residence 3	47	Residence 8	49
Residence 4	48	Residence 9	50
Residence 5	49	Residence 10	49

7. Discussion

The predictions show compliance with the Chicago noise ordinance at noise-sensitive receivers located to the east and northeast of the proposed facility.

There will likely be multiple scrap piles up to 30 ft high located to the north and east of the Southside Recycling site. Since these obstacles to sound propagation were not modelled, the predictions are conservative.

As noted in Appendix B, there is prediction uncertainty due to source noise levels, the propagation standard (ISO 9613-2), and assumptions. In addition, there are measurement uncertainties due to actual meteorological conditions, instrumentation, etc. In most cases, the predicted sound levels will be higher than measured sound levels. In other words, the prediction is generally conservative.

8. Recommendations

The proposed site plan and sound mitigation described in section 6, items A through E, is predicted to comply with the Chicago noise ordinance. No additional mitigation is recommended.

9. Conclusion

The Chicago noise ordinance sets a criterion for outdoor sound levels. The analysis predicts that noise levels due to the facility with the proposed design will comply with the noise ordinance.


Fig. 1 Zoning
PD962
PMD-6
M1-1
Nearest residence
S Mackinaw Ave
E 113th St
RS-2
E. 114th St.
E 114th St
George Washington High School
RS-2
PMD-6
S Green Bay Ave
Rowan Park
POS-1
SITE
S Burley Ave
11600 S Burley Ave
RS-3
E 117th St
S. Avenue O
S Buffalo Ave
118th St
PMD-6
S Torrence Ave
S Avenue O
T-8
Google Earth
Image © 2020 Maxar Technologies
2000 ft
N

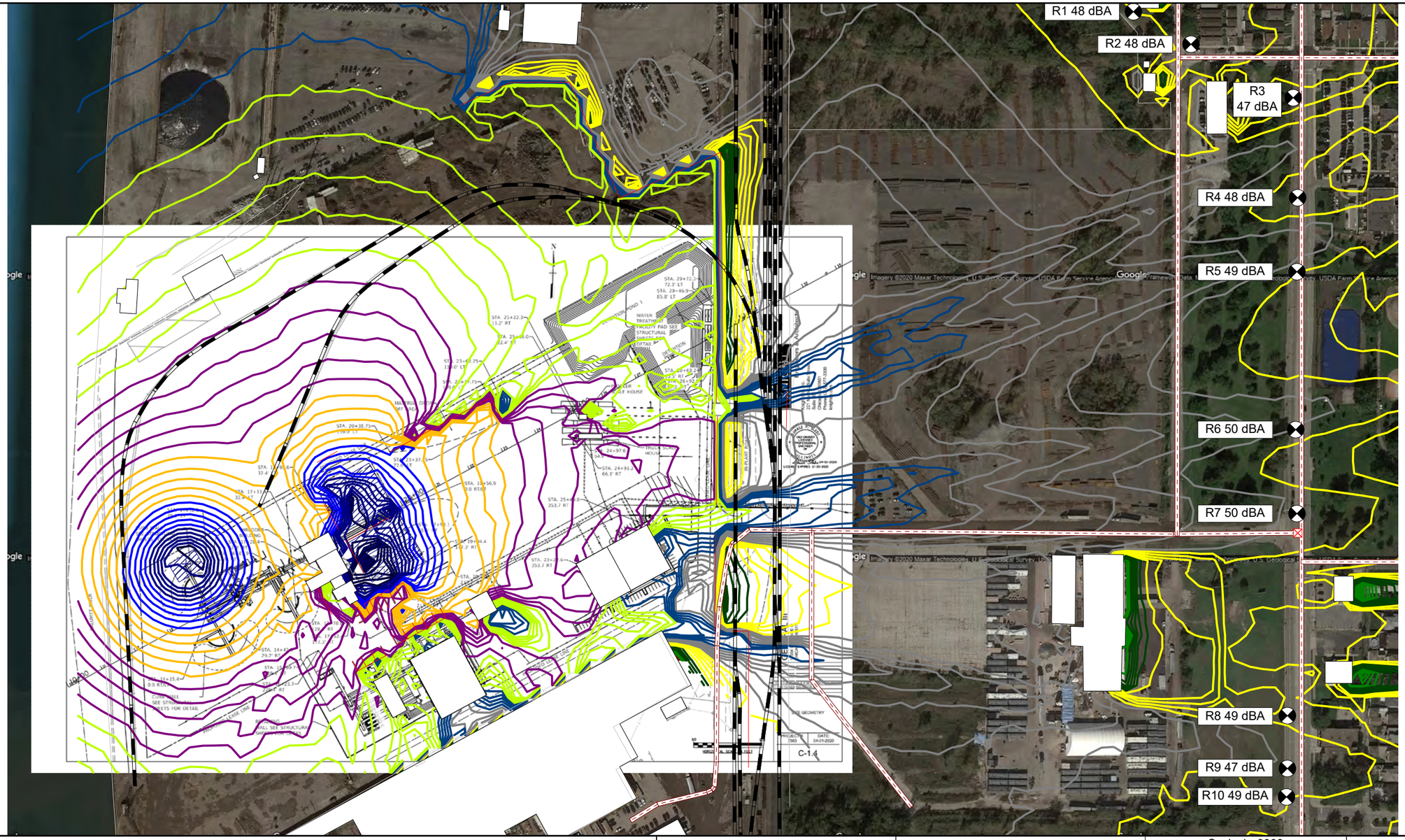


Figure 2. Southside Recycling Predicted Sound Levels
One-hour typical operation

Noise Limit: 55 dBA

35 <= ... < 40 dBA
40 <= ... < 45 dBA
45 <= ... < 50 dBA
50 <= ... < 55 dBA
55 <= ... < 60 dBA
60 <= ... < 65 dBA
65 <= ... < 70 dBA
70 <= ... < 75 dBA
75 <= ... < 80 dBA
80 <= ... < 85 dBA
85 <= ... dBA

Point Source
Area Source
Road
Crossing
Railway
Building
Barrier
Ground Absorption
Receiver
Calculation Area

Scale 1 : 3003
Units in meters
UTM Zone 16
Datum WGS84

Rev	Date
A	11/12/20
0	11/10/20

Shiner Acoustics, LLC

Appendix A. Equipment Noise Emissions

Operation	Source type	Operating Time (min/hr)	Sound Power Level (Leq, dB re 10^{-12} W, A-weighted)	
			Continuous Operation	Intermittent Operation
Material handler unloading a truck	Intermittent	22.5	108	104
Truck dumping highest noise	Intermittent	4.3	117	105
Truck dumping - remainder of operation	Intermittent	9.0	107	99
Front end loader pushing material	Intermittent	5.3	107	97
Front end loader loading dump truck	Intermittent	2.0	116	102
Material handler feeding infeed	Continuous	60.0	117	117
Shearing	Continuous	60.0	113	113
Shredder infeed	Continuous	60.0	97	97
RTO and filter fan	Continuous	60.0	109	109
Scrap being dumped	Continuous	60.0	119	119

Appendix B. Outdoor Sound Modeling Methodology

Outdoor sound propagation calculations are based on the International Organization for Standardization (ISO) 9613-2. The standard predicts sound pressure levels under conditions favorable to sound propagation. The standard considers sound sources, receivers and factors that influence sound propagation: distance, screening by obstacles, ground effects, atmospheric absorption, source directivity, and reflection from surfaces. CadnaA software from DataKustik GmbH implements the standard and our acoustical model is based on this software and standard acoustical calculations.

Three sound ray reflections were used in the model to account for reflections from buildings and obstacles. The terrain surrounding the plant was modeled. We entered the essential acoustical features of the plant, such as significant obstructions and noise sources, into the program, as well as noise-sensitive receivers.

Atmospheric attenuation was based on conservative atmospheric conditions of 10°C [50°F] and 70% relative humidity. We set the ground attenuation factor G at a conservative value of 0.4 for mixed gravel inside the plant, 0.1 for concrete and asphalt paved inside the plant, and 0.3 for porous ground outside the plant; this factor can vary from 0 for water to 1 for soft, porous ground.

ISO 9613-2 specifies methods to calculate long-term average receiver sound levels under conditions favorable to sound propagation, namely downwind from the source or clear and calm nighttime conditions, to a distance of 1,000m/3,280 ft. There may be deviation between the CadnaA prediction and measured levels, however, in most cases, CadnaA will yield conservative results. The prediction uncertainty is much smaller than the uncertainty associated with source noise levels and actual meteorological conditions.

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& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment U
Storage Tanks

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Tier I Qualified Facility SPCC Plan

This template constitutes the SPCC Plan for the facility, when completed and signed by the owner or operator of a facility that meets the applicability criteria in §112.3(g)(1). This template addresses the requirements of 40 CFR Part 112. Maintain a complete copy of the Plan at the facility if the facility is normally attended at least four hours per day, or for a facility attended fewer than four hours per day, at the nearest field office. When making operational changes at a facility that are necessary to comply with the rule requirements, the owner/operator should follow state and local requirements (such as for permitting, design and construction) and obtain professional assistance, as appropriate.

Facility Description

Facility Name: Southside Recycling

Facility Address: 11554 S. Avenue O

City: Chicago State: IL ZIP: 60617

County: Cook Tel. Number: (847) 508-9170

Owner or Operator Name: General III, LLC

Owner or Operator Address: 11554 S. Avenue O

City: Chicago State: IL ZIP: 60617

County: Cook Tel. Number: (773) 382-0123

Owner or operator Name: Same as above

Owner or Operator Address: Same as above

City: State: ZIP:

County: Tel. Number:

I. Self-Certification Statement (§112.6(a)(1))

The owner or operator of a facility certifies that each of the following is true in order to utilize this template to comply with the SPCC requirements:

I James Kallas certify that the following is accurate:

1. I am familiar with the applicable requirements of 40 CFR part 112;
2. I have visited and examined the facility;
3. This Plan was prepared in accordance with accepted and sound industry practices and standards;
4. Procedures for required inspections and testing have been established in accordance with industry inspection and testing standards or recommended practices;
5. I will fully implement the Plan;
6. This facility meets the following qualification criteria (under §112.3(g)(1)):
    a. The aggregate aboveground oil storage capacity of the facility is 10,000 U.S. gallons or less; and
    b. The facility has had no single discharge as described in §112.1(b) exceeding 1,000 U.S. gallons and no two discharges as described in §112.1(b) each exceeding 42 U.S. gallons within any twelve month period in the three years prior to the SPCC Plan self-certification date, or since becoming subject to 40 CFR part 112 if the facility has been in operation for less than three years (not including oil discharges as described in §112.1(b) that are the result of natural disasters, acts of war, or terrorism); and
    c. There is no individual oil storage container at the facility with an aboveground capacity greater than 5,000 U.S. gallons.
7. This Plan does not deviate from any requirement of 40 CFR part 112 as allowed by §112.7(a)(2) (environmental equivalence) and §112.7(d) (impracticability of secondary containment) or include any measures pursuant to §112.9(c)(6) for produced water containers and any associated piping;
8. This Plan and individual(s) responsible for implementing this Plan have the full approval of management and I have committed the necessary resources to fully implement this Plan.

I also understand my other obligations relating to the storage of oil at this facility, including, among others:

1. To report any oil discharge to navigable waters or adjoining shorelines to the appropriate authorities. Notification information is included in this Plan.
2. To review and amend this Plan whenever there is a material change at the facility that affects the potential for an oil discharge, and at least once every five years. Reviews and amendments are recorded in an attached log. [See Five Year Review Log and Technical Amendment Log in Attachments 1.1 and 1.2.]
3. Optional use of a contingency plan. A contingency plan:
    a. May be used in lieu of secondary containment for qualified oil-filled operational equipment, in accordance with the requirements under §112.7(k), and;
    b. Must be prepared for flowlines and/or intra-facility gathering lines which do not have secondary containment at an oil production facility, and;
    c. Must include an established and documented inspection or monitoring program; must follow the provisions of 40 CFR part 109; and must include a written commitment of manpower, equipment and materials to expeditiously remove any quantity of oil discharged that may be harmful. If applicable, a copy of the contingency plan and any additional documentation will be attached to this Plan as Attachment 2.

I certify that I have satisfied the requirement to prepare and implement a Plan under §112.3 and all of the requirements under §112.6(a). I certify that the information contained in this Plan is true.

Signature _____ Title: Environmental Manager
Name James Kallas Date: 09/29/20

II. Record of Plan Review and Amendments

Five Year Review (§112.5(b)):

Complete a review and evaluation of this SPCC Plan at least once every five years. As a result of the review, amend this Plan within six months to include more effective prevention and control measures for the facility**,** if applicable. Implement any SPCC Plan amendment as soon as possible**,** but no later than six months following Plan amendment. Document completion of the review and evaluation, and complete the Five Year Review Log in Attachment 1.1. If the facility no longer meets Tier I qualified facility eligibility, the owner or operator must revise the Plan to meet Tier II qualified facility requirements, or complete a full PE certified Plan.

Table G-1 Technical Amendments (§§112.5(a), (c) and 112.6(a)(2))	
This SPCC Plan will be amended when there is a change in the facility design, construction, operation, or maintenance that materially affects the potential for a discharge to navigable waters or adjoining shorelines. Examples include adding or removing containers, reconstruction, replacement, or installation of piping systems, changes to secondary containment systems, changes in product stored at this facility, or revisions to standard operating procedures.	☒
Any technical amendments to this Plan will be re-certified in accordance with Section I of this Plan template. *[§112.6(a)(2)]* **[See Technical Amendment Log in Attachment 1.2]**	☒

III. Plan Requirements

1. Oil Storage Containers (§112.7(a)(3)(i)):

Table G-2 Oil Storage Containers and Capacities	
This table includes a complete list of all oil storage containers (aboveground containers[a] and completely buried tanks[b]) with capacity of 55 U.S. gallons or more, unless otherwise exempt from the rule. For mobile/portable containers, an estimated number of containers, types of oil, and anticipated capacities are provided.	☒

Oil Storage Container *(indicate whether aboveground (A) or completely buried (B))*	**Type of Oil**	**Shell Capacity (gallons)**
A – Horizontal, steel tank #1	New motor oil	550
A – Horizontal, steel tank #2	New motor oil	550
A – Horizontal, steel tank #3	Used oil	275
A – Horizontal, steel tank #4	Used oil	275
A – Horizontal, steel tank #5	Hydraulic oil	500
A – Steel drums (55 gallon)	New motor oil	550 total
A – Oil filled equipment	Hydraulic/motor oil	500 total
A – Mobile fuel truck	Diesel fuel	3,800 total

Total Aboveground Storage Capacity [c] 7,000 gallons
Total Completely Buried Storage Capacity 0 gallons
Facility Total Oil Storage Capacity 7,000 gallons

[a] Aboveground storage containers that must be included when calculating total facility oil storage capacity include: tanks and mobile or portable containers; oil-filled operational equipment (e.g., transformers); other oil-filled equipment, such as flow-through process equipment. Exempt containers that are not included in the capacity calculation include: any container with a storage capacity of less than 55 gallons of oil; containers used exclusively for wastewater treatment; permanently closed containers; motive power containers; hot-mix asphalt containers; heating oil containers used solely at a single-family residence; and pesticide application equipment or related mix containers.

[b] Although the criteria to determine eligibility for qualified facilities focuses on the aboveground oil storage containers at the facility, the completely buried tanks at a qualified facility are still subject to the rule requirements and must be addressed in the template; however, they are not counted toward the qualified facility applicability threshold.

[c] Counts toward qualified facility applicability threshold.

2. Secondary Containment and Oil Spill Control (§§112.6(a)(3)(i) and (ii), 112.7(c) and 112.9(c)(2)):

Table G-3 Secondary Containment and Oil Spill Control	
Appropriate secondary containment and/or diversionary structures or equipment[a] is provided for all oil handling containers, equipment, and transfer areas to prevent a discharge to navigable waters or adjoining shorelines. The entire secondary containment system, including walls and floor, is capable of containing oil and is constructed so that any discharge from a primary containment system, such as a tank or pipe, will not escape the containment system before cleanup occurs.	☒

[a] Use one of the following methods of secondary containment or its equivalent: (1) Dikes, berms, or retaining walls sufficiently impervious to contain oil; (2) Curbing; (3) Culverting, gutters, or other drainage systems; (4) Weirs, booms, or other barriers; (5) Spill diversion ponds; (6) Retention ponds; or (7) Sorbent materials.

Table G-4 below identifies the tanks and containers at the facility with the potential for an oil discharge; the mode of failure; the flow direction and potential quantity of the discharge; and the secondary containment method and containment capacity that is provided.

Table G-4 Containers with Potential for an Oil Discharge					
Area	Type of failure (discharge scenario)	Potential discharge volume (gallons)	Direction of flow for uncontained discharge	Secondary containment method[a]	Secondary containment capacity (gallons)
Bulk Storage Containers and Mobile/Portable Containers[b]					
550 gal motor oil (AST #1 and AST #2)	Tank overfill, fitting leak, seam failure	<1 – 550	Radial	Containment structure	>550
275 gal used oil (AST #3 and AST #4)	Tank overfill, fitting leak, seam failure	<1 – 275	Radial	Containment structure	>275
500 gal hydraulic oil (AST #5)	Tank overfill, fitting leak, seam failure	<1 – 500	Radial	Containment structure	>500
55 gal oil/fluid drums	Fitting leak, seam failure	<1 – 55	Radial	Containment pallets	>55
Mobile diesel fuel truck	Tank overfill, fitting leak, seam failure	<1 – 3,800	Radial	Retaining walls, absorbent materials	>3,800
Oil-filled Operational Equipment (e.g., hydraulic equipment, transformers)[c]					
None with container ≥ 55 gallons					
Piping, Valves, etc.					
Oil dispensing hoses and appurtenances	Fitting leak or failure, hose failure	< 1	Radial	Spill kit and absorbents	Absorbs up to 30
Product Transfer Areas (location where oil is loaded to or from a container, pipe or other piece of equipment.)					
Oil/fluid dispensing areas	Handling drips and spills, transfer hose failure	<1 pt – 0.5	Radial	Catch pans and spill kit	Absorbs up to 30/pans contain up to 2
Other Oil-Handling Areas or Oil-Filled Equipment (e.g. flow-through process vessels at an oil production facility)					
None					

[a] Use one of the following methods of secondary containment or its equivalent: (1) Dikes, berms, or retaining walls sufficiently impervious to contain oil; (2) Curbing; (3) Culverting, gutters, or other drainage systems; (4) Weirs, booms, or other barriers; (5) Spill diversion ponds; (6) Retention ponds; or (7) Sorbent materials.

[b] For storage tanks and bulk storage containers, the secondary containment capacity must be at least the capacity of the largest container plus additional capacity to contain rainfall or other precipitation.

[c] For oil-filled operational equipment: Document in the table above if alternative measures to secondary containment (as described in §112.7(k)) are implemented at the facility.

3. Inspections, Testing, Recordkeeping and Personnel Training (§§112.7(e) and (f), 112.8(c)(6) and (d)(4), 112.9(c)(3), 112.12(c)(6) and (d)(4)):

Table G-5 Inspections, Testing, Recordkeeping and Personnel Training	
An inspection and/or testing program is implemented for all aboveground bulk storage containers and piping at this facility. *[§§112.8(c)(6) and (d)(4), 112.9(c)(3), 112.12(c)(6) and (d)(4)]*	☒
The following is a description of the inspection and/or testing program (e.g., reference to industry standard utilized, scope, frequency, method of inspection or test, and person conducting the inspection) for all aboveground bulk storage containers and piping at this facility: 1) An assigned knowledgeable employee performs quarterly visual inspections of the aboveground oil storage containers and secondary containment structures using Attachment 3.1 to document inspections. Visual inspections of oil storage containers follow the inspection schedule in Attachment 3.2 of this plan. 2) An assigned knowledgeable employee inspects spill kits quarterly to check equipment serviceability and ensure fully stocked kits. 3) The liquid level gauges on the ASTs are inspected at least biennially. Attachment 3.1 documents these inspections. 4) Employees visually inspect the ASTs during normal work day activities for indications of deterioration and discharges. 5) Employees inspect the AST containment structures periodically for signs of deterioration or discharges. 6) If an employee encounters a spill during an inspection of the oil storage or transfer equipment, the employee will immediately take the necessary actions outlined in Table G-7.	
Inspections, tests, and records are conducted in accordance with written procedures developed for the facility. Records of inspections and tests kept under usual and customary business practices will suffice for purposes of this paragraph. *[§112.7(e)]*	☒
A record of the inspections and tests are kept at the facility or with the SPCC Plan for a period of three years. *[§112.7(e)]* **[See Inspection Log and Schedule in Attachment 3.1]**	☒
Inspections and tests are signed by the appropriate supervisor or inspector. *[§112.7(e)]*	☒
Personnel, training, and discharge prevention procedures [§112.7(f)]	
Oil-handling personnel are trained in the operation and maintenance of equipment to prevent discharges; discharge procedure protocols; applicable pollution control laws, rules, and regulations; general facility operations; and, the contents of the facility SPCC Plan. *[§112.7(f)]*	☒
A person who reports to facility management is designated and accountable for discharge prevention. *[§112.7(f)]* Name/Title: Jim Kallas/Environmental Manager	☒
Discharge prevention briefings are conducted for oil-handling personnel annually to assure adequate understanding of the SPCC Plan for that facility. Such briefings highlight and describe past reportable discharges or failures, malfunctioning components, and any recently developed precautionary measures. *[§112.7(f)]* **[See Oil-handling Personnel Training and Briefing Log in Attachment 3.4]**	☒

4. Security (excluding oil production facilities) §112.7(g):

Table G-6 Implementation and Description of Security Measures	
Security measures are implemented at this facility to prevent unauthorized access to oil handling, processing, and storage area.	☒

The following is a description of how you secure and control access to the oil handling, processing and storage areas; secure master flow and drain valves; prevent unauthorized access to starter controls on oil pumps; secure out-of-service and loading/unloading connections of oil pipelines; address the appropriateness of security lighting to both prevent acts of vandalism and assist in the discovery of oil discharges:

1) All tank fill pipes are capped when not in use.
2) The facility is open 24 hours per day, 7 days per week.
3) The facility is equipped with fencing, security detail and security cameras.

5. Emergency Procedures and Notifications (§112.7(a)(3)(iv) and 112.7(a)(5)):

Table G-7 Description of Emergency Procedures and Notifications

The following is a description of the immediate actions to be taken by facility personnel in the event of a discharge to navigable waters or adjoining shorelines *[§112.7(a)(3)(iv) and 112.7(a)(5)]*:

1) Shutdown pumping in event of a spill during any fuel/oil transfer operation.
2) Eliminate potential sources of ignition such as open flames or sparks.
3) If possible, safe, and trained to do so, identify and secure source of the discharge and contain the discharge with sorbents, sandbags, or other material from the spill kits.
4) Contact regulatory authorities and other response personnel and organizations (see next page).

6. Contact List (§112.7(a)(3)(vi)):

Table G-8 Contact List	
Contact Organization / Person	**Telephone Number**
National Response Center (NRC)	1-800-424-8802
Cleanup Contractor(s) Hazchem Environmental Corp.	 630-458-1910
Key Facility Personnel	
Designated Person Accountable for Discharge Prevention: Jim Kallas	Office: 773-327-9600
	Emergency: (cell phone) 847-508-9170
Kevin Trant	Office: 773-327-9600
	Emergency: (cell phone) 773-332-8583
	Office:
	Emergency:
	Office:
	Emergency:
State Oil Pollution Control Agencies	
Other State, Federal, and Local Agencies	
Local Fire Department	911
Local Police Department	911
Hospital	
Other Contact References (e.g., downstream water intakes or neighboring facilities)	

7. NRC Notification Procedure (§112.7(a)(4) and (a)(5)):

Table G-9 NRC Notification Procedure	
In the event of a discharge of oil to navigable waters or adjoining shorelines, the following information identified in Attachment 4 will be provided to the National Response Center immediately following identification of a discharge to navigable waters or adjoining shorelines **[See Discharge Notification Form in Attachment 4]**: *[§112.7(a)(4)]*	☒
• The exact address or location and phone number of the facility; • Date and time of the discharge; • Type of material discharged; • Estimate of the total quantity discharged; • Estimate of the quantity discharged to navigable waters; • Source of the discharge; • Description of all affected media; • Cause of the discharge; • Any damages or injuries caused by the discharge; • Actions being used to stop, remove, and mitigate the effects of the discharge; • Whether an evacuation may be needed; and • Names of individuals and/or organizations who have also been contacted.	

8. SPCC Spill Reporting Requirements (Report within 60 days) (§112.4):

Submit information to the EPA Regional Administrator (RA) and the appropriate agency or agencies in charge of oil pollution control activities in the State in which the facility is located within 60 days from one of the following discharge events:

- A single discharge of more than 1,000 U.S. gallons of oil to navigable waters or adjoining shorelines or
- Two discharges to navigable waters or adjoining shorelines each more than 42 U.S. gallons of oil occurring within any twelve month period

You must submit the following information to the RA

(1) Name of the facility;
(2) Your name;
(3) Location of the facility;
(4) Maximum storage or handling capacity of the facility and normal daily throughput;
(5) Corrective action and countermeasures you have taken, including a description of equipment repairs and replacements;
(6) An adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary;
(7) The cause of the reportable discharge, including a failure analysis of the system or subsystem in which the failure occurred;
(8) Additional preventive measures you have taken or contemplated to minimize the possibility of recurrence; and
(9) Such other information as the Regional Administrator may reasonably require pertinent to the Plan or discharge.

A. Onshore Facilities (excluding production) (§§112.8(b) through (d), 112.12(b) through (d)):

The owner or operator must meet the general rule requirements as well as requirements under this section. Note that not all provisions may be applicable to all owners/operators. For example, a facility may not maintain completely buried metallic storage tanks installed after January 10, 1974, and thus would not have to abide by requirements in §§112.8(c)(4) and 112.12(c)(4), listed below. In cases where a provision is not applicable, write "N/A".

Table G-10 General Rule Requirements for Onshore Facilities		N/A
Drainage from diked storage areas is restrained by valves to prevent a discharge into the drainage system or facility effluent treatment system, except where facility systems are designed to control such discharge. Diked areas may be emptied by pumps or ejectors that must be manually activated after inspecting the condition of the accumulation to ensure no oil will be discharged. *[§§112.8(b)(1) and 112.12(b)(1)]*	☒	☐
Valves of manual, open-and-closed design are used for the drainage of diked areas. *[§§112.8(b)(2) and 112.12(b)(2)]*	☐	☒
The containers at the facility are compatible with materials stored and conditions of storage such as pressure and temperature. *[§§112.8(c)(1) and 112.12(c)(1)]*	☒	☐
Secondary containment for the bulk storage containers (including mobile/portable oil storage containers) holds the capacity of the largest container plus additional capacity to contain precipitation. Mobile or portable oil storage containers are positioned to prevent a discharge as described in §112.1(b). *[§112.6(a)(3)(ii)]*	☒	☐
If uncontaminated rainwater from diked areas drains into a storm drain or open watercourse the following procedures will be implemented at the facility: *[§§112.8(c)(3) and 112.12(c)(3)]*		
• Bypass valve is normally sealed closed	☐	☒
• Retained rainwater is inspected to ensure that its presence will not cause a discharge to navigable waters or adjoining shorelines	☐	☒
• Bypass valve is opened and resealed under responsible supervision	☐	☒
• Adequate records of drainage are kept **[See Dike Drainage Log in Attachment 3.3]**	☒	☐
For completely buried metallic tanks installed on or after January 10, 1974 at this facility *[§§112.8(c)(4) and 112.12(c)(4)]*:		
• Tanks have corrosion protection with coatings or cathodic protection compatible with local soil conditions.	☐	☒
• Regular leak testing is conducted.	☐	☒
For partially buried or bunkered metallic tanks *[§112.8(c)(5) and §112.12(c)(5)]*:		
• Tanks have corrosion protection with coatings or cathodic protection compatible with local soil conditions.	☐	☒
Each aboveground bulk container is tested or inspected for integrity on a regular schedule and whenever material repairs are made. Scope and frequency of the inspections and inspector qualifications are in accordance with industry standards. Container supports and foundations are regularly inspected. **[See Inspection Log and Schedule and Bulk Storage Container Inspection Schedule in Attachments 3.1 and 3.2]** *[§112.8(c)(6) and §112.12(c)(6)(i)]*	☒	☐
Outsides of bulk storage containers are frequently inspected for signs of deterioration, discharges, or accumulation of oil inside diked areas. **[See Inspection Log and Schedule in Attachment 3.1]** *[§§112.8(c)(6) and 112.12(c)(6)]*	☒	☐
For bulk storage containers that are subject to 21 CFR part 110 which are shop-fabricated, constructed of austenitic stainless steel, elevated and have no external insulation, formal visual inspection is conducted on a regular schedule. Appropriate qualifications for personnel performing tests and inspections are documented. **[See Inspection Log and Schedule and Bulk Storage Container Inspection Schedule in Attachments 3.1 and 3.2]** *[§112.12(c)(6)(ii)]*	☐	☒

Table G-10 General Rule Requirements for Onshore Facilities		N/A
Each container is provided with a system or documented procedure to prevent overfills for the container. Describe: Tank truck delivery procedures: 1) Manually gauge receiving tank to confirm liquid level in tank and quantity to be delivered to prevent tank overfill; tanks will not be filled beyond 90% of their capacity. 2) Set parking brake and use chock blocks to prevent movement; inspect fittings and fueling hose for damage before starting fuel transfer operation. The fuel delivery person makes all hook-ups. 3) Place drip pans under valve-hose fitting connections. 4) The person responsible for monitoring the delivery will remain attentive and observe the entire fuel delivery, be prepared to stop the flow of fuel from the truck to the tank at any time, and respond to any unusual condition, leak, or spill which may occur during delivery. Secure all valves on tank truck before truck departure and inspect for leakage. 5) Following complete delivery, the fuel delivery person is responsible for disconnecting all hook-ups. 6) Record accurate readings for product and water in tank after fuel delivery, verify the amount of fuel received and make sure fill ports are properly secured. 7) If an oil spill occurs, the spill kit will be used to contain the spill. Oil dispensing procedures: 1) Do not top off container when filling. 2) If an oil spill occurs, the spill kit will be used to contain the spill. Transfers into waste oil container: 1) Gauge container to confirm liquid level to prevent overfill.	☒	☐
Liquid level sensing devices are regularly tested to ensure proper operation **[See Inspection Log and Schedule in Attachment 3.1]**. *[§112.6(a)(3)(iii)]*	☒	☐
Visible discharges which result in a loss of oil from the container, including but not limited to seams, gaskets, piping, pumps, valves, rivets, and bolts are promptly corrected and oil in diked areas is promptly removed. *[§§112.8(c)(10) and 112.12(c)(10)]*	☒	☐
Aboveground valves, piping, and appurtenances such as flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces are inspected regularly. **[See Inspection Log and Schedule in Attachment 3.1]** *[§§112.8(d)(4) and 112.12(d)(4)]*	☒	☐
Integrity and leak testing are conducted on buried piping at the time of installation, modification, construction, relocation, or replacement. **[See Inspection Log and Schedule in Attachment 3.1]** *[§§112.8(d)(4) and 112.12(d)(4)]*	☐	☒

ATTACHMENT 1 – Five Year Review and Technical Amendment Logs

ATTACHMENT 1.1 – Five Year Review Log

By signing below, I am certifying that I have completed a review and evaluation of the SPCC Plan for this facility, and will/will not amend this Plan as a result.

Table G-13 Review and Evaluation of SPCC Plan for Facility			
Review Date	Plan Amendment		Name and signature of person authorized to review this Plan
	Will Amend	Will Not Amend	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

Any technical amendments to this Plan will be re-certified in accordance with Section I of this Plan template.

Table G-15 Description and Certification of Technical Amendments		
Review Date	Description of Technical Amendment	Name and signature of person certifying this technical amendment

ATTACHMENT 1.2 – Technical Amendment Log

ATTACHMENT 2 – Oil Spill Contingency Plan and Checklist;

An oil spill contingency plan and written commitment of resources is required for:

- Flowlines and intra-facility gathering lines at oil production facilities; and
- Qualified oil-filled operational equipment which has no secondary containment. NOT APPLICABLE

An oil spill contingency plan meeting the provisions of 40 CFR part 109, as described below, and a written commitment of manpower, equipment and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful is attached to this Plan.	☐

Complete the checklist below to verify that the necessary operations outlined in 40 CFR part 109 - Criteria for State, Local and Regional Oil Removal Contingency Plans - have been included.

Table G-15 Checklist of Development and Implementation Criteria for State, Local and Regional Oil Removal Contingency Plans (§109.5)[a]	
(a) Definition of the authorities, responsibilities and duties of all persons, organizations or agencies which are to be involved in planning or directing oil removal operations.	☐
(b) Establishment of notification procedures for the purpose of early detection and timely notification of an oil discharge including:	
(1) The identification of critical water use areas to facilitate the reporting of and response to oil discharges.	☐
(2) A current list of names, telephone numbers and addresses of the responsible persons (with alternates) and organizations to be notified when an oil discharge is discovered.	☐
(3) Provisions for access to a reliable communications system for timely notification of an oil discharge, and the capability of interconnection with the communications systems established under related oil removal contingency plans, particularly State and National plans (e.g., NCP).	☐
(4) An established, prearranged procedure for requesting assistance during a major disaster or when the situation exceeds the response capability of the State, local or regional authority.	☐
(c) Provisions to assure that full resource capability is known and can be committed during an oil discharge situation including:	
(1) The identification and inventory of applicable equipment, materials and supplies which are available locally and regionally.	☐
(2) An estimate of the equipment, materials and supplies which would be required to remove the maximum oil discharge to be anticipated.	☐
(3) Development of agreements and arrangements in advance of an oil discharge for the acquisition of equipment, materials and supplies to be used in responding to such a discharge.	☐
(d) Provisions for well defined and specific actions to be taken after discovery and notification of an oil discharge including:	
(1) Specification of an oil discharge response operating team consisting of trained, prepared and available operating personnel.	☐
(2) Predesignation of a properly qualified oil discharge response coordinator who is charged with the responsibility and delegated commensurate authority for directing and coordinating response operations and who knows how to request assistance from Federal authorities operating under existing national and regional contingency plans.	☐
(3) A preplanned location for an oil discharge response operations center and a reliable communications system for directing the coordinated overall response operations.	☐
(4) Provisions for varying degrees of response effort depending on the severity of the oil discharge.	☐
(5) Specification of the order of priority in which the various water uses are to be protected where more than one water use may be adversely affected as a result of an oil discharge and where response operations may not be adequate to protect all uses.	☐
(6) Specific and well defined procedures to facilitate recovery of damages and enforcement measures as provided for by State and local statutes and ordinances.	☐

[a] The contingency plan must be consistent with all applicable state and local plans, Area Contingency Plans, and the National Contingency Plan (NCP)

ATTACHMENT 3 – Inspections, Dike Drainage and Personnel Training Logs

ATTACHMENT 3.1 – Inspection Log and Schedule

Table G-16 Inspection Log and Schedule

This log is intended to document compliance with §§112.6(a)(3)(iii), 112.8(c)(6), 112.8(d)(4), 112.9(b)(2), 112.9(c)(3), 112.9(d)(1), 112.9(d)(4), 112.12.(c)(6), and 112.12(d)(4), as applicable.

Date of Inspection	Container / Piping / Equipment	Describe Scope (or cite Industry Standard)	Observations	Name/ Signature of Inspector	Records maintained separately [a]
	ASTs • 550 gal motor oil ASTs • 275 gal used oil ASTs • 500 gal hydraulic oil AST • 55 gal steel drums	Quarterly visual inspections as all containers meet Category 1 criteria.			☐
	Liquid level gauges	Biennial inspections.			☐
	Spill kits	Quarterly visual inspections and equipment/supply inventory.			☐
	Mobile fuel truck	Quarterly visual inspections.			☐

[a] Indicate in the table above if records of facility inspections are maintained separately at this facility.

ATTACHMENT 3.2 – Bulk Storage Container Inspection Schedule – onshore facilities (excluding production):

To comply with integrity inspection requirement for bulk storage containers, inspect/test each shop-built aboveground bulk storage container on a regular schedule in accordance with a recognized container inspection standard based on the minimum requirements in the following table.

Table G-17 Bulk Storage Container Inspection Schedule	
Container Size and Design Specification	**Inspection requirement**
Portable containers (including drums, totes, and intermodal bulk containers (IBC)): - 55 gal steel drums	Visually inspect quarterly for signs of deterioration, discharges or accumulation of oil inside containment pallets.
55 to 1,100 gallons with sized secondary containment: - AST #1, AST #2, AST #3, AST #4 and AST#5	Visually inspect quarterly for signs of deterioration, discharges or accumulation of oil inside containment area plus any annual inspection elements per industry inspection standards.
1,101 to 5,000 gallons with sized secondary containment and a means of leak detection[a]: - Mobile fuel truck	

[a] Examples of leak detection include, but are not limited to, double-walled tanks and elevated containers where a leak can be visually identified.

ATTACHMENT 3.3 – Dike Drainage Log

Table G-18 Dike Drainage Log						
Date	Bypass valve sealed closed	Rainwater inspected to be sure no oil (or sheen) is visible	Open bypass valve and reseal it following drainage	Drainage activity supervised	Observations	Signature of Inspector
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		

ATTACHMENT 3.4 – Oil-handling Personnel Training and Briefing Log

Table G-19 Oil-Handling Personnel Training and Briefing Log		
Date	**Description / Scope**	**Attendees**

In the event of a discharge of oil to navigable waters or adjoining shorelines, the following information will be provided to the National Response Center **[also see the notification information provided in Section 7 of the Plan]**:

Table G-20 Information provided to the National Response Center in the Event of a Discharge			
Discharge/Discovery Date		Time	
Facility Name			
Facility Location (Address/Lat-Long/Section Township Range)			
Name of reporting individual		Telephone #	
Type of material discharged		Estimated total quantity discharged	Gallons/Barrels
Source of the discharge		Media affected	☐ Soil ☐ Water (specify) ☐ Other (specify)
Actions taken			
Damage or injuries	☐ No ☐ Yes (specify)	Evacuation needed?	☐ No ☐ Yes (specify)
Organizations and individuals contacted	☐ National Response Center 800-424-8802 Time ☐ Cleanup contractor (Specify) Time ☐ Facility personnel (Specify) Time ☐ State Agency (Specify) Time ☐ Other (Specify) Time		

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment V
Air Quality Impact Assessment

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Air Dispersion Modeling Report for Assessment of Particulate PM_{10} Impact

General III, LLC (d/b/a/ Southside Recycling) – Chicago, Illinois

November 11, 2020

R17421-7.1

Prepared for:

Southside Recycling
11600 S. Burley Avenue
Chicago, Illinois 60617

Prepared by:

Darina Demirev
Senior Engineer
RK & Associates, Inc.

RK & Associates, Inc.

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Warrenville, Illinois 60555
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RK & Associates, Inc.

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RK & Associates, Inc.

1.0 INTRODUCTION

General III, LLC (GIII), d/b/a/ Southside Recycling, has received a construction permit from the Illinois Environmental Protection Agency (IEPA), Permit Number 19090021, to construct a new scrap metal recycling facility (Facility) in Cook County at 11600 South Burley Avenue in Chicago, Illinois. A Site Location Map and Facility Layout Map are presented in Figures 1-1 and 1-2.

Southside Recycling's facility will be a state-of-the-art metal recycling facility located in the heart of an industrial district well buffered from residential properties. The proposed new metal shredder and material processing operations will utilize the latest technology to create a clean, efficient, and environmentally sensitive plant.

Southside Recycling will receive and shred mixed recyclables in various forms to produce uniform grades of ferrous and non-ferrous metals. Proposed scrap handling and processing activities include receiving, sorting, shredding, metal separation, and recovery of ferrous and non-ferrous metals.

City of Chicago Department of Public Health (CDPH) has published Rules for Large Recycling Facilities effective June 5, 2020 (corrected June 19, 2020). Section 3.9.21.1. Air Quality Impact Assessment requires an air dispersion modeling study to evaluate the impact of facility PM_{10} emissions and the following metal emissions: antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, nickel, and selenium.

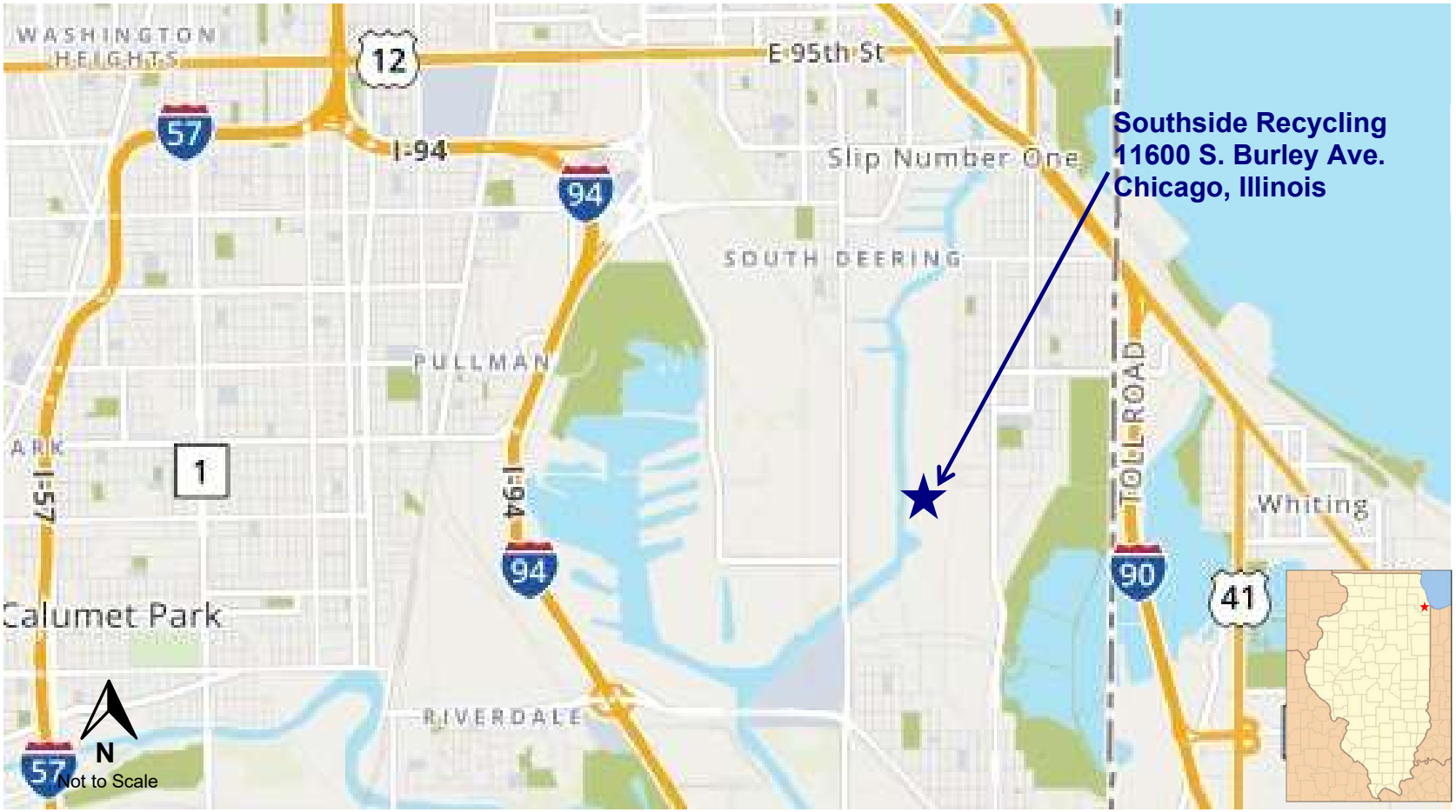
Southside Recycling has previously performed air dispersion modeling for the above listed metals as part of the construction permit application with the IEPA. The following documents previously submitted to IEPA were provided to CDPH for review with the regards to the metal modeling:

- Air Dispersion Modeling Report for Assessment of Metal Emission Impacts — Submitted: January 24, 2020
- Supplement No.1 to the January 24, 2020 Air Dispersion Modeling Report for Assessment of Metal Emission Impacts — Submitted: February 12, 2020
- Written Comments on Draft Construction Permit 19090021 — Submitted: June 15, 2020

In this study, Southside Recycling performed a dispersion modeling of facility PM_{10} emissions. Results from both modeling analyses demonstrate that the impact of Southside Recycling operations is within acceptable published health-based standards.

1.1 Facility Location and Contact Information

Business Name:	Southside Recycling
Source Location:	11600 South Burley – Chicago, Illinois 60617 Hyde Park Township, Cook County Illinois
Latitude/Longitude	41.685201° N / -87.545847" W – Approximate Location of Front Gate
Office/Mailing Address:	1909 N. Clifton Avenue – Chicago, Illinois 60614
Southside Recycling	Mr. Jim Kallas - Environmental Manager 847-508-9170 – jimkallas@general-iron.com
IEPA Site ID No.:	031600SFX
IEPA Draft Construction Permit:	19090021
SIC Code:	5093 – Scrap and Waste Materials
NAICS Code:	423930 – Recyclable Material Merchant Wholesalers
RKA Contact for This Document	John Pinion - Principal Engineer 2S631 Route 59, Suite B - Warrenville, Illinois 60555 630-393-9000 - jpinion@rka-inc.com



RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	COMMENTS: Air Dispersion Modeling Report for the Assessment of PM_{10} Emission Impacts	**Site Location Map** Southside Recycling 11600 S. Burley, Chicago, Illinois		FIGURE 1-1
	DRAWN BY::	APPROVED BY:: JGP	PROJECT NUMBER R19439-7.10	DATE DRAWN: 10-2020 / REVISED DATE

RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	COMMENTS: Air Dispersion Modeling Report for the Assessment of PM_{10} Emission Impacts	**Facility Map** Southside Recycling 11600 S. Burley, Chicago, IL		FIGURE 1-2
	DRAWN BY:	APPROVED BY: JGP	PROJECT NUMBER: R19439-7.10	DATE DRAWN: 10-2020	REVISED DATE

2.0 EMISSION SOURCES

The proposed Southside Recycling facility will consist of the following operations:

- Raw material receiving and handling;
- Hammermill shredder;
- Ferrous separation and material processing; and,
- Non-ferrous separation and material processing.

Southside Recycling particulate emission sources will include:

- Metal shredder controlled by a cyclone, roll-media particulate filter, Regenerative Thermal Oxidizer (RTO), quench, and packed tower scrubber;
- Ferrous Material Processing System –conveyor transfer points, magnetic separators, stockpiles, and material loadout;
- Non-Ferrous Material Processing System - feed hopper, conveyor transfer points, magnetic separators, screens, vibratory feed tables, stockpiles and material loadout, a small slow speed shredder, induction sortation systems, eddy current systems and a baghouse for control of emission sources located in the fines processing building; and,
- Vehicular emissions from Paved and Unpaved Areas (fugitive emissions)

PM_{10} emission calculations are discussed in the following sections. The modeled PM_{10} emission rates in this study are consistent with the permitted PM_{10} emission limits in IEPA Construction Permit 19070006.

2.1 Shredder Emissions

Southside Recycling shredder emissions will be captured by the capture hood and discharged through a cyclone, roll-media particulate filter, RTO, quench, and packed tower scrubber. The scrubber discharge stack is modeled as a point source having the following parameters:

Stack Height:	41 ft
Stack Diameter:	6 ft
Exhaust Flow Rate:	73,500 acfm
Exhaust Temperature:	100˚F

Particulate emission rates from the proposed Southside Recycling shredder are estimated based upon the results of November 14, 2019, metal emission testing performed at the existing GII metal shredder controlled by the cyclone, roll-media particulate filter, RTO, quench, and packed tower scrubber. The same particulate emission factor (in units of pounds of PM emitted per ton of shredder feed) was applied to the proposed shredder feed rate for the new Southside Recycling shredder. Emissions are shown in Table 2-1.

Table 2-1 PM_{10} Emission Rate for Shredder

Shredder PM/PM_{10} Emission Estimate			
Parameter	**Units**	**Values**	**Comment**
Controlled Emission Factor[a]	lb PM/ton fed	0.0047	Emission Factor from November 14, 2019, emission testing at GII.
Average Hourly Feed Rate	tons/hour	500	Monthly average hourly feed rate.
Safety Factor		2.00	
PM/PM_{10} Emissions	Pounds/hour	4.70	Permitted filterable PM/PM_{10} emission rates. (Assumes that all PM is PM_{10})

a. Filterable PM emission rate measured by USEPA Methods 1 through 4 and Method 29.
b. Assumes that uncaptured PM emissions are negligible.

2.2 Ferrous Material Processing

The Ferrous Material Processing System consists of multiple conveyors, magnetic separators, stockpiles, and material loadout.

For the purpose of modeling, emission sources that are spatially close together are combined into separate volume sources. The Ferrous Material Processing System emission sources have been grouped into thirteen (13) volume sources, V-1 through V-13. A layout drawing of the Ferrous Material Processing System and grouping of sources is included in the metals modeling report submitted to IEPA.

PM_{10} emissions from ferrous material processing are shown in Table A-1, in Appendix A. PM_{10} emissions from stockpile sources are shown in Table A-2. Emissions from stockpiles are different during the time piles are active and when piles are inactive. Total emissions for each volume source, including material processing emissions, stockpile emissions, are shown in Table A-3a for barge loading and in Table A-3b for non-barge loading.

2.3 Non-Ferrous Material Processing

The Non-Ferrous Material Processing System consists of multiple feed hoppers, conveyor transfer points, magnetic separators, screens, vibratory feed tables, stockpiles, and material loadout. Emission sources have been grouped into six (6) volume sources, VN-1 through VN-6. A layout drawing of the Non-Ferrous Material Processing System and grouping of sources is included in the metals modeling report submitted to IEPA.

PM_{10} emissions from non-ferrous material processing are shown in Table B-1, in Appendix B. PM_{10} emissions from stockpile sources are shown in Table B-2. Emissions from stockpiles are different during the time piles are active and when piles are inactive. Total emissions for each volume source, including material processing emissions sand stockpile emissions, are shown in Table B-3.

The Non-Ferrous Material Processing System includes a Fines Processing System that is located in a building. Emissions from the fines processing equipment are ducted to one of four identical dust collectors. Three of the dust collectors exhaust treated air back into the building and the fourth dust collector exhausts treated air to the outside atmosphere. Emissions from the single dust collector that exhausts to the atmosphere will be modeled as a point source with the following parameters:

Stack Height:	47 ft
Stack Diameter:	2 ft
Exhaust Flow Rate:	12,000 acfm
Exhaust Temperature:	Ambient

Baghouse manufacturer guaranteed concentration of PM/PM10 is 0.005 gr/dscf. Therefore, PM_{10} emission rate is estimated to be 0.0086 lb/hr.

2.4 Vehicle Traffic

The vast majority of material received at the proposed facility will be delivered by semi-trailers and the remaining portion will enter the facility in pickup truck sized vehicles driven by peddlers. Vehicles will enter the facility through a controlled gate and travel over a weigh scale before being routed to a designated unloading area. Proposed vehicle routes and emission calculations are discussed in the metal modeling report submitted to IEPA.

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3.0 DISPERSION MODELING

Dispersion modeling was performed to predict the maximum impact from Southside Recycling sources. AERMOD dispersion model Version 19191, AIRMET Version 19191, AERMINUTE Version 15272, AERMAP Version 18081, and AIRSURFACE Version 13016 was used in this modeling analysis.

3.1 Meteorological Data

Surface meteorological data used in the modeling was obtained from the National Weather Service at the Midway Airport Station for the years 2012 through 2016. Wind data was downloaded as 1-minute average ASOS data and processed using AERMINUTE. Upper air data for the same period was obtained from the coincident upper air sounding station at Davenport, Iowa. Surface and upper air data were preprocessed with AERMET using surface parameters from AIRSURFACE.

3.2 Terrain Data

Receptor elevations, source elevations, and building elevations were obtained by running AERMAP, using National Elevation Dataset (NED) files downloaded from USGS website.

3.3 Ambient Air Boundaries

There is security fencing on the north boundary and the northern part of the east boundary of the RMG industrial campus property that leads to a guard shack with gates (open when occupied or closed when unoccupied). The southern boundary of the RMG industrial campus property is a combination of fencing and berm, while the west boundary is the Calumet River.

Based on the above, ambient air boundaries have been set at the RMG industrial campus property boundaries shown in Figure 1-2.

3.4 Receptor Network

A Cartesian receptor grid is placed around the property lines up to 5 km from the property line as follows:

- 50 m apart along the property line
- 100 m extending from the fence line to 2 km
- 500 m apart from 2 km to 5 km

3.5 Building Downwash

Downwash parameters were developed based on information provided by Reserve Management Group (RMG) for existing buildings and Southside Recycling for proposed buildings. Structure coordinates were obtained for existing buildings from Google Earth and for proposed buildings from Southside Recycling site plans. Building heights for existing buildings were obtained from direct measurements taken by RMG representatives and for the proposed building from facility site plans.

3.6 PM_{10} Modeling

PM_{10} modeling was performed to identify off site impacts for comparison to the National Ambient Air Quality Standard (NAAQS) for PM_{10}, which is a 24-hour average of 150 $\mu g/m^3$, not to be exceeded more than once per year on average over 3 years.

The method to model PM_{10} consists of calculating the highest 6^{th}-high 24-hour average concentration for the five year period of 2012 through 2016.

4.0 MODELING RESULTS

The results of this modeling assessment demonstrate that the predicted worst case off-site ambient impact is below the National Ambient Air Quality Standard (NAAQS) for PM_{10}.

4.1 Predicted PM_{10} Impacts

Modeling for PM_{10} was performed following US EPA modeling guidance.

Southside Recycling's predicted highest 6th high 24-hour average concentration over a period of five years is 29.37 ug/m^3. This compares to an estimated background concentration of 77 ug/m^3 measured at IEPA's ambient air monitor located at Washington High School.

Table 4-1 – Summary of PM_{10} Predicted Impacts

Pollutant	Meteorological Data	Averaging Period	Rank	AERMOD Predicted Concentration ($\mu g/m^3$)	Coordinates	
					East (m)	West (m)
PM_{10}	2012 - 2016	24-HR	6TH	29.37	454091	4614866

Comparison of Modeling Results to NAAQS Standard for PM_{10}

Parameter	Units	24-Hour Average
PM_{10} NAAQS Standard	µg/m3	150.00
Maximum Predicted PM_{10} Impact	µg/m3	29.37
Predicted Impact Meets Standard	Yes/No	YES

A map showing the model receptor grid, AERMOD predicted Southside Recycling PM_{10} concentrations, and PM_{10} concentration isopleths is shown in Appendix C.

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RK
& Associates, Inc.

Air Dispersion Modeling Report
for Assessment of Particulate PM_{10} Impact
Southside Recycling – Chicago, Illinois

November 2020

Appendix A

Ferrous Material Processing

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Table A-1 - Ferrous Material Processing - PM_{10} Emissions

General III, LLC - Chicago, Illinois

												Barge Loading			Non-Barge Loading		
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr
V-1	55		Truck Dumping of Raw Feed	Unprepared	5.4 [a2]	Outside	N		0%	0%	Drop	300	0.00060 [c]	0.1796	300	0.00060 [c]	0.1796
V-1	56		Raw Feed from Ground after Truck Dumping	Unprepared	5.4 [a2]	Outside	N		0%	0%	Drop	300	0.00060 [c]	0.1796	300	0.00060 [c]	0.1796
V-1	59	Magnet/	Drop Raw Scrap to Infeed Conveyor	Unprepared	N [a4]	Outside	N		NA	0%	D	500	0.00010 [f]	0.0500	500	0.00010 [f]	0.0500
											Total Filterable PM10 Emissions			**0.4092**			**0.4092**
V-2	37	E-01	Drop Raw Scrap onto Shredder Feed Chute	Unprepared	Y [a4]	Outside	N		NA	0%	A	500	0.00005 [d]	0.0230	500	0.00005 [d]	0.0230
V-2	40	E-05	Shredder Under Mill Vibratory Conveyor	Shred	Y	Inside	N		NA	0%	A	500	0.00005 [d]	0.0230	500	0.00005 [d]	0.0230
V-2	79	E-02	Shredder Bottom Discharge	Shred	Y	shredder emissions			0%	0%	A						
V-2	81	E-02	Shredder Chute	Unprepared	Y	shredder emissions			0%	0%	A						
											Total Filterable PM10 Emissions			**0.0460**			**0.0460**
V-3	4	C-001	Shredded Material Transfer Conveyor	Shred	Y	Outside	N		NA	0%	A	500	0.00005 [d]	0.0230	500	0.00005 [d]	0.0230
V-3	5	C-002	Shredded Material Transfer Conveyor	Shred	Y	Outside	N		NA	0%	A	1	0.00005 [d]		1	0.00005 [d]	
V-3	6	C-002	Mat'l Not Removed by Poker Picker	Shred	Y	Outside	N		NA	0%	A	499	0.00005 [d]	0.0230	499	0.00005 [d]	0.0230
											Total Filterable PM10 Emissions			**0.0460**			**0.0460**
V-4	58	-	Poker Loadout	Pokers	N	Outside	N		0%	0%	D	1	0.00010 [f]	0.0001	1	0.00010 [f]	0.0001
V-4	62	E-06	Poker Picker Chute to Stockpile	Shred	1.5% [a1]	Outside	N		0%	0%	Drop	1	0.00360 [c]	0.0036	1	0.00360 [c]	0.0036
											Total Filterable PM10 Emissions			**0.0037**			**0.0037**

Table A-1 - Ferrous Material Processing - PM_{10} Emissions
General III, LLC - Chicago, Illinois

											Barge Loading			Non-Barge Loading		
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr
V-5	7	C-003	Ferrous Transfer Conveyor	Residue	Y	Outside	N		NA	0%	A	130	0.00005 [d]	0.0060	130	0.00005 [d]	0.0060
V-5	8	C-003	Ferrous Transfer Conveyor	Ferrous	Y	Outside	N		NA	0%	A	369	0.00005 [d]	0.0170	369	0.00005 [d]	0.0170
V-5	31	C-032	ASR Transfer Conveyor	Residue	Y	Outside	N		NA	0%	A	4	0.00005 [d]	0.0002	4	0.00005 [d]	0.0002
V-5	32	C-033	Magnetic Material	Shred	Y	Outside	N		NA	0%	A	5	0.00005 [d]	0.0002	5	0.00005 [d]	0.0002
V-5	33	C-033	ASR Not Removed by Magnet E-12	Residue	Y	Outside	N		NA	0%	A	129	0.00005 [d]	0.0059	129	0.00005 [d]	0.0059
V-5	34	C-034	Ferrous Transfer Conveyor	Shred	Y	Outside	N		NA	0%	A	5	0.00005 [d]	0.0002	5	0.00005 [d]	0.0002
V-5	35	C-035	Ferrous Transfer Conveyor	Shred	Y	Outside	N		NA	0%	A	5	0.00005 [d]	0.0002	5	0.00005 [d]	0.0002
V-5	36	C-036	ASR Transfer Conveyor	Residue	Y	Outside	N		NA	0%	A	129	0.00005 [d]	0.0059	129	0.00005 [d]	0.0059
V-5	41	E-07	Magnet Discharge to Chute	Shred	Y	Outside	N		NA	0%	A	187	0.00005 [d]	0.0086	187	0.00005 [d]	0.0086
V-5	42	E-07	Magnet Discharge to Chute	Shred	Y	Outside	N		NA	0%	A	187	0.00005 [d]	0.0086	187	0.00005 [d]	0.0086
V-5	49	E-12	Ferrous Removed by Magnet	Ferrous	Y	Outside	N		NA	0%	A	5	0.00005 [d]	0.0002	5	0.00005 [d]	0.0002
V-5	53	E-7	ASR Not Removed by Magnet	Shred	Y [a3]	Outside	N		NA	0%	A	2	0.00005 [d]	0.0001	2	0.00005 [d]	0.0001
V-5	54	E-7	Ferrous Removed by Magnet E-7	Residue	Y	Outside	N		NA	0%	A	185	0.00005 [d]	0.0085	185	0.00005 [d]	0.0085
											Total Filterable PM10 Emissions			**0.0616**			**0.0616**
V-6	61	C-037	ASR Transfer Conveyor to Stockpile	Residue	10 [a3]	Outside	N		0%	0%	Drop	129	0.00025 [c]	0.0326	129	0.00025 [c]	0.0326

Table A-1 - Ferrous Material Processing - PM_{10} Emissions

General III, LLC - Chicago, Illinois

												Barge Loading			Non-Barge Loading		
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr
V-7	9	C-006	Ferrous Transfer Conveyor	Shred	Y	Outside	Y	Z-Box Air Loop	100%	100%	A	183	0.00005 [d]	0.0000	183	0.00005 [d]	0.0000
V-7	10	C-007	Ferrous Transfer Conveyor	Shred	Y	Outside	Y	Z-Box Air Loop	100%	100%	A	183	0.00005 [d]	0.0000	183	0.00005 [d]	0.0000
V-7	21	C-022	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	55	0.00005 [d]	0.0025	55	0.00005 [d]	0.0025
V-7	22	C-023	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	55	0.00005 [d]	0.0025	55	0.00005 [d]	0.0025
V-7	23	C-024	Non-metallic transfer conveyor	Ferrous	Y	Outside	N		NA	0%	A	4	0.00005 [d]	0.0002	4	0.00005 [d]	0.0002
V-7	30	C-031	ASR Transfer Conveyor	Residue	Y	Outside	N		NA	0%	A	4	0.00005 [d]	0.0002	4	0.00005 [d]	0.0002
V-7	38	E-015	Z-Box Separator Cyclone	Ferrous	Y	Outside	N		NA	0%	A	2	0.00005 [d]	0.0001	2	0.00005 [d]	0.0001
V-7	39	E-016	Z-Box Separator Cyclone	Ferrous	Y	Outside	N		NA	0%	A	2	0.00005 [d]	0.0001	2	0.00005 [d]	0.0001
V-7	43	E-08	ASR Not Removed by Magnet	Shred	Y	Outside	N		NA	0%	A	2	0.00005 [d]	0.0001	2	0.00005 [d]	0.0001
V-7	44	E-08	Ferrous Removed by Magnet E-7	Residue	Y	Outside	N		NA	0%	A	185	0.00005 [d]	0.0085	185	0.00005 [d]	0.0085
V-7	45	E-10	Ferrous Removed by Magnet	Shred	Y [a2]	Outside	N		NA	0%	A	128	0.00005 [d]	0.0059	128	0.00005 [d]	0.0059
V-7	46	E-11	Ferrous Removed by Magnet	Shred	Y [a2]	Outside	N		NA	0%	A	128	0.00005 [d]	0.0059	128	0.00005 [d]	0.0059
V-7	47	E-11	Ferrous Removed by Magnet	Shred	Y [a2]	Outside	N		NA	0%	A	55	0.00005 [d]	0.0025	55	0.00005 [d]	0.0025
V-7	48	E-11	Ferrous Removed by Magnet	Shred	Y [a2]	Outside	N		NA	0%	A	55	0.00005 [d]	0.0025	55	0.00005 [d]	0.0025
V-7	64	SC-001	Supplemental Conveyor	Shred	Y	Outside	N		NA	0%	A	183	0.00005 [d]	0.0084	183	0.00005 [d]	0.0084
V-7	66	SC-002	Supplemental Conveyor	Shred	Y	Outside	N		NA	0%	A	183	0.00005 [d]	0.0084	183	0.00005 [d]	0.0084
V-7	70	C-004	Ferrous Transfer Conveyor	Shred	Y	Outside	N	-	NA	0%	A						
V-7	72	C-005	Ferrous Transfer Conveyor	Shred	Y	Outside	N	-	NA	0%	A						
												Total Filterable PM10 Emissions		**0.0478**			**0.0478**

Table A-1 - Ferrous Material Processing - PM_{10} Emissions

General III, LLC - Chicago, Illinois

											Barge Loading			Non-Barge Loading		
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr
V-8	24	C-025	Non-metallic not removed by magnet E-13	Ferrous	Y	Outside	N		NA	0%	A	2	0.00005 [d]	0.0001	2	0.00005 [d]	0.0001
V-8	25	C-025	material removed by first magnet to second magnet	Ferrous	Y [a2]	Outside	N		NA	0%	A	1	0.00005 [d]		1	0.00005 [d]	
V-8	26	C-026	Ferrous Transfer Conveyor	Ferrous	Y [a2]				0%	0%	A	1	0.00005 [d]		1	0.00005 [d]	
V-8	27	C-027	Ferrous Transfer Conveyor	Ferrous	Y [a2]	Outside	N		NA	0%	A	1	0.00005 [d]		1	0.00005 [d]	
V-8	28	C-028	Non-metallic Transfer Conveyor	Ferrous	Y	Outside	N		NA	0%	A	1	0.00005 [d]		1	0.00005 [d]	
V-8	29	C-029	Non-metallic Transfer Conveyor	Ferrous	Y				0%	0%	A	1	0.00005 [d]		1	0.00005 [d]	
V-8	50	E-13	Ferrous Removed by E-13	Ferrous	Y [a2]	Outside	N		NA	0%	A	1	0.00005 [d]		1	0.00005 [d]	
V-8	51	E-13	Ferrous Removed by E-13	Ferrous	Y	Outside	N		NA	0%	A	1	0.00005 [d]		1	0.00005 [d]	
V-8	52	E-14	Mat'l Not removed by Separator	Ferrous	Y	Outside	N		NA	0%	A	0.25	0.00005 [d]	0.0000	0.25	0.00005 [d]	0.0000
V-8	60	C-030	Mat'l not Removed by Separator	Ferrous	1.5 [a1]	Outside	Y	Cover	0%	0%	Drop	2.25	0.00360 [c]	0.0081	2.25	0.00360 [c]	0.0081
V-8	63	E-14	Final Discharge from Mat'l Separator	Ferrous	1.5 [a1]	Outside	N		0%	0%	Drop	0.75	0.00360 [c]	0.0027	0.75	0.00360 [c]	0.0027
V-8	65	SC-009	Supplemental Conveyor	Ferrous	Y	Outside	N		NA	0%	A	2	0.00005 [d]	0.0001	2	0.00005 [d]	0.0001
V-8	67	SC-010	Supplemental Conveyor	Ferrous	Y	Outside	N		NA	0%	A	2	0.00005 [d]	0.0001	2	0.00005 [d]	0.0001
											Total Filterable PM10 Emissions			**0.0111**			**0.0111**
V-9	57	-	Non-metallic Loadout	Non-metallic	N	Outside	N		0%	0%	D	187	0.00020 [f]	**0.0382**	187	0.00020 [f]	**0.0382**

Table A-1 - Ferrous Material Processing - PM_{10} Emissions

General III, LLC - Chicago, Illinois

											Barge Loading			Non-Barge Loading		
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr
V-10	11	C-008	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	56	0.00005 [d]	0.0026	56	0.00005 [d]	0.0026
V-10	12	C-009	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	128	0.00005 [d]	0.0059	128	0.00005 [d]	0.0059
V-10	13	C-010	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	128	0.00005 [d]	0.0059	128	0.00005 [d]	0.0059
V-10	14	C-011	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	55	0.00005 [d]	0.0025	55	0.00005 [d]	0.0025
V-10	15	C-012	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	56	0.00005 [d]	0.0026	56	0.00005 [d]	0.0026
V-10	16	C-013	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	128	0.00005 [d]	0.0059	128	0.00005 [d]	0.0059
V-10	17	C-014	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	128	0.00005 [d]	0.0059	128	0.00005 [d]	0.0059
V-10	18	C-015	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	55	0.00005 [d]	0.0025	55	0.00005 [d]	0.0025
V-10	19	C-016	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	367	0.00005 [d]	0.0169	367	0.00005 [d]	0.0169
V-10	20	C-020	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	367	0.00005 [d]	0.0169	367	0.00005 [d]	0.0169
V-10	68	SC-005	Supplemental Conveyor	Shred	Y	Outside	N		NA	0%	A	128	0.00005 [d]	0.0059	128	0.00005 [d]	0.0059
V-10	69	SC-008	Supplemental Conveyor	Shred	Y	Outside	N		NA	0%	A	128	0.00005 [d]	0.0059	128	0.00005 [d]	0.0059
V-10	71	C-014	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A		No material to discharged to conveyor during barge loading.		184	0.00005 [d]	0.0084
V-10	73	C-012	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A		No material to discharged to conveyor during barge loading.		184	0.00005 [d]	0.0084
V-10	74	C-015	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A		No material to discharged to conveyor during barge loading.		184	0.00005 [d]	0.0084
V-10	75	C-019	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A		No material to discharged to conveyor during barge loading.		184	0.00005 [d]	0.0084
V-10	76	C-013	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A		No material to discharged to conveyor during barge loading.		184	0.00005 [d]	0.0084
V-10	77	C-017	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A		No material to discharged to conveyor during barge loading.		184	0.00005 [d]	0.0084
V-10	78	C-020	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A		No material to discharged to conveyor during barge loading.		184	0.00005 [d]	0.0084
											Total Filterable PM10 Emissions			**0.0794**			**0.1385**

Table A-1 - Ferrous Material Processing - PM_{10} Emissions

General III, LLC - Chicago, Illinois

											Barge Loading			Non-Barge Loading		
Volume Source Grouping	Row No.	Equipment Generating Emissions ID #	Equipment Generating Emissions Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Emission Factor Source	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr	Material Throughput Rates tph	PM10 Emission Factors lb/ton	Filterable PM10 Emissions lb/hr
V-11	82	C-018	Ferrous Transfer Conveyor to stockpile	Shred	5.4% [a2]	Outside	N		NA	0%	Drop		No material to discharged to stockpile during barge loading.		184	0.00060	0.1098
V-12	80	C-21	Ferrous Transfer Conveyor to stockpile	Shred	5.4% [a2]	Outside	N		NA	0%	Drop		No material to discharged to stockpile during barge loading.		184	0.00060	0.1098
V-13	1	Barge 1	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	367	0.00005 [d]	0.0169	No material routed to barge during non-barge loading.		
V-13	2	Barge 2	Ferrous Transfer Conveyor	Shred	Y [a2]	Outside	N		NA	0%	A	367	0.00005 [d]	0.0169	No material routed to barge during non-barge loading.		
V-13	3	Barge 3	Ferrous Transfer Conveyor to barge (stockpile)	Shred	5.4% [a2]	Outside	N		0%	0%	Drop	367	0.00060 [c]	0.2197	No material routed to barge during non-barge loading.		
													Total Filterable PM1010 Emissions	**0.2535**			**0.0000**

a1 Controlled particulate matter emission factors from AP-42, Table 11.19.2-2 for conveying used based on conservative assumption that moisture content is greater than 1.5% due to water added in the shredder.

a2 Material moisture was assumed to be the mean of material moisture contents identified in AP42, Table 13.2.4-1.

a3 Northern Metals (Minneapolis, MN) found moisture content of ASR in the range of 20 to 30%; from MPCA Construction Permit Technical Support Document for Northern Metals in Becker MN, Stream COMG-2. Calculations for the ASR stacking conveyor drop point conservatively assumes 10% moisture.

a4 Moisture content of raw materials is assumed to be >1.5% based on application of water from water atomization cannons used for fugitive dust control.

b Uncontrolled emission factor calculated according to material drop equation in AP-42, Section 13.2.4.3. Emissions calculated with control Eff. factor included for source being inside of a building.

c Uncontrolled emission factor calculated according to material drop equation in AP-42, Section 13.2.4.3.

d Uncontrolled particulate matter emission factors from AP-42, Table 11.19.2-2 for conveying. If moisture content is greater than 1.5% by weight, controlled emission factors are used.

e Uncontrolled particulate matter emission factors from AP-42, Table 11.19.2-2 for screening. If moisture content is greater than 1.5% by weight, controlled emission factors are used.

f Uncontrolled particulate matter emission factors from AP-42, Table 11.19.2-2 for truck loading of curshed stone. Use uncontrolled emisson factor to be conservative.

g Particulate matter emission factors from AP-42, Table 11.19.2-2 for conveying. For sources controlled by a dust collector the emission factor is multiplied by the identified capture Eff. and then by the quantity of 1-control Eff.. Dust collectors vent back into to the building. These emission calculations conservatively assume dust collector emission are vented to the atmosphere.

h Metal HAPs as percent of total PM measured at the discharge of the existing roll media filter in June 2018.

Table A-2 Ferrous Plant Stockpile - PM_{10} Emissions
General III, LLC - Chicago, Illinois

Volume Source Grouping	Stock Pile	Stock Pile Area Acres	Control Factor[b]	Inactive Emissions[a,d] PM10 lb/hr	Active Emissions[a,d] PM10 lb/hr
V-1	Raw Material Truck Dumping (Drop 1)	0.3630	1.00	0.0265	0.0998
V-1	Raw Material Movement from Truck Dumping Area to Stockpile (Drop 2)	0.1815	1.00	0.0132	0.0499
			Total	0.0397	0.1497
V-4	Poker North	0.0115	0.33	0.0003	0.0010
V-4	Poker South	0.0115	0.33	0.0003	0.0010
			Total	0.0006	0.0020
V-6	ASR	0.2541	1.00	0.0185	0.0699
V-9	Fluff (Bin)	0.0161	0.33	0.0004	0.0015
V-11	Ferrous North	0.3630	1.00	0.0265	0.0998
V-12	Ferrous South	0.3630	1.00	0.0265	0.0998

a. Stockpile emissions calculation from TCEQ for crushed stone downloaded August 2019.
https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emiss-calc-rock1.xlsx

b. Control Factor of 0.33 (67.5% control) for partial enclosure consisting of walls on three sides of bin. Control Factor of 1.0 for no control.

c. Assume number of active days to be 6 days per week and 52 weeks per year and inactive days to be 1 day per week and 52 weeks per year.

d. From TCEQ Guidance

Stockpile emission calculation:

PM Emission Rate (tpy) = [(inactive day PM EF x No. of inactive days) x stockpile area/2000 x control factor] +
[(active day PM EF x No. of active days) x (stockpile area/2000) x control factor]

Inactive Day PM10 Emission Factor = 1.75 lb-PM10/acre-day

Active Day PM10 Emission Factor = 6.60 lb-PM10/acre-day

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Table A-3a - Ferrous Material Processing
PM_{10} Emission Summary During Barge Loading
General III, LLC - Chicago, Illinois

Barge Loading

Volume Source	Filterable PM Emissions					
	Material Handling Emissions - Barge Loading		Stockpile		Total	
	Active lb/hr	Inactive lb/hr	Active lb/hr	Inactive lb/hr	Active lb/hr	Inactive lb/hr
V-1	0.4092		0.1497	0.0397	0.5589	0.0397
V-2	0.0460				0.0460	
V-3	0.0460				0.0460	
V-4	0.0037		0.002	0.0006	0.0057	0.0006
V-5	0.0616				0.0616	
V-6	0.0326		0.0699	0.0185	0.1025	0.0185
V-7	0.0478				0.0478	
V-8	0.0111				0.0111	
V-9	0.0382		0.0015	0.0004	0.0397	0.0004
V-10	0.0794				0.0794	
V-11	0.0000		0.0998	0.0265	0.0998	0.0265
V-12	0.0000		0.0998	0.0265	0.0998	0.0265
V-13	0.2535				0.2535	

Table A-3b - Ferrous Material Processing
PM_{10} Emission Summary - Non-Barge Loading
General III, LLC - Chicago, Illinois

Non-Barge Loading

Volume Source	Filterable PM Emissions					
	Material Handling Emissions - Non Barge Loading		Stockpile		Total	
	Active lb/hr	Inactive lb/hr	Active lb/hr	Inactive lb/hr	Active lb/hr	Inactive lb/hr
V-1	0.4092		0.1497	0.0397	0.5589	0.0397
V-2	0.0460				0.0460	
V-3	0.0460				0.0460	
V-4	0.0037		0.002	0.0006	0.0057	0.0006
V-5	0.0616				0.0616	
V-6	0.0326		0.0699	0.0185	0.1025	0.0185
V-7	0.0478				0.0478	
V-8	0.0111				0.0111	
V-9	0.0382		0.0015	0.0004	0.0397	0.0004
V-10	0.1385				0.1385	
V-11	0.1098		0.0998	0.0265	0.2096	0.0265
V-12	0.1098		0.0998	0.0265	0.2096	0.0265
V-13	0.0000				0.0000	

RK
& Associates, Inc.

Air Dispersion Modeling Report
for Assessment of Particulate PM_{10} Impact
Southside Recycling – Chicago, Illinois

November 2020

Appendix B

Non-Ferrous Material Processing Figures and Tables

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Table B-1 - Non-Ferrous Material Processing - PM_{10} Emissions
General III, LLC - Chicago, Illinois

Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM10 Emissions Factor lb/ton	Filterable PM10 Emissions lb/hr
VN-1	113	C-001	Conveyor	Residue	Y	Outside	Y	N	NA		0%	70	0.000046 [d]	0.0032
VN-1	114	C-002	Conveyor	Residue	N	Outside	Y	N	NA		0%	68	0.001100 [o]	0.0747
VN-1	115	C-002	Conveyor	Ferrous	N	Outside	Y	N	NA		0%	2	0.001100 [o]	0.0023
VN-1	116	C-003	Conveyor	Residue	N	Outside	Y	N	NA		0%	67.90	0.001100 [o]	0.0747
VN-1	117	C-004	Conveyor	Residue	N	Outside	Y	N	NA		0%	60.90	0.001100 [o]	0.0670
VN-1	118	C-005	Conveyor	Residue	N	Outside	Y	N	NA		0%	30.45	0.001100 [o]	0.0335
VN-1	119	C-006	Conveyor	Residue	N	Outside		N	NA		0%	30.45	0.001100 [o]	0.0335
VN-1	122	C-009	Conveyor	Residue	N	Outside		N	NA		0%	9.14	0.001100 [o]	0.0101
VN-1	123	C-010	Conveyor	Residue	N	Outside		N	NA		0%	9.14	0.001100 [o]	0.0101
VN-1	124	C-011	Conveyor	Residue	N	Outside	Y	N	NA		0%	8.40	0.001100 [o]	0.0092
VN-1	129	C-016	Conveyor	Residue	N	Outside	Y	N	NA		0%	2.7	0.001100 [o]	0.0030
VN-1	174	E-01	Vibratory Batch Feeder	Residue	Y	Outside		N	NA		0%	70	0.000046 [d]	0.0032
VN-1	175	E-03	Screener	Residue	Y	Outside		N	NA		0%	60.90	0.000740 [e]	0.0451
VN-1	176	E-03	Screener	Residue	Y	Outside		N	NA		0%	6.80	0.000740 [e]	0.0050
VN-1	177	E-03	Screener	Residue	Y	Outside		N	NA		0%	2.70	0.000740 [e]	0.0020
VN-1	178	E-04	Screener	Residue	Y	Outside		N	NA		0%	15.75	0.000740 [e]	0.0117
VN-1	179	E-04	Screener	Residue	Y	Outside		N	NA		0%	9.14	0.000740 [e]	0.0068
VN-1	180	E-04	Screener	Residue	Y	Outside		N	NA		0%	4.20	0.000740 [e]	0.0031
VN-1	190	E-11	Screener	Residue	N	Outside		N	NA		0%	15.75	0.008700 [d]	0.1370
VN-1	191	E-11	Screener	Residue	N	Outside		N	NA		0%	9.14	0.008700 [d]	0.0795
VN-1	192	E-11	Screener	Residue	N	Outside		N	NA		0%	4.20	0.008700 [d]	0.0365
VN-1	244	End Loader	Drop ASR into feed hopper	Residue into Hopper	N	Outside		Y	Cover		0%	70.00	0.000100 [d]	0.0070
VN-1	246	SC-001	Supplemental Conveyor	Residue							0%	15.75	0.001100	0.0173
VN-1	247	SC-002	Supplemental Conveyor	Residue							0%	16	0.001100	0.0173
													Total Filterable PM Emissions	**0.6928**

Table B-1 - Non-Ferrous Material Processing - PM_{10} Emissions
General III, LLC - Chicago, Illinois

Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM10 Emissions Factor lb/ton	Filterable PM10 Emissions lb/hr
VN-2	120	C-007	Conveyor	Residue	N	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	15.75	0.001100 [o]	0.0035
VN-2	121	C-008	Conveyor	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	15.75	0.001100 [o]	0.0035
VN-2	125	C-012	Conveyor	Residue	N	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	9.14	0.001100 [o]	0.0020
VN-2	126	C-013	Conveyor	Residue	N	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	9.14	0.001100 [o]	0.0020
VN-2	127	C-014	Conveyor	Residue	N	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	8.40	0.001100 [o]	0.0018
VN-2	128	C-015	Conveyor	Ferrous	N	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	.25	0.001100 [o]	0.0001
VN-2	130	C-017	Conveyor	Ferrous	N	Outside		N	NA		0%	1.75	0.001100 [o]	0.0019
VN-2	131	C-018	Conveyor	Ferrous	N	Outside	Y	N	NA		0%	1.75	0.001100 [o]	0.0019
VN-2	132	C-019	Conveyor	Lights	N	Outside	Y	N	NA		0%	0.25	0.001100 [o]	0.0003
VN-2	133	C-020	Conveyor	Residue	N	Outside	Y	N	NA		0%	11.12	0.001100 [o]	0.0122
VN-2	134	C-021	Conveyor	Residue	N	Outside	Y	N	NA		0%	11.12	0.001100 [o]	0.0122
VN-2	135	C-022	Conveyor to Wind Sifter	Mixed Non-Ferrous	N	Outside	Y	Y	Wind Sifter	100%	100%	0.80	0.001100 [o]	0.0000
VN-2	136	C-023	Conveyor to Wind Sifter	Residue	N	Outside	Y	Y	Wind Sifter	100%	100%	7.29	0.000046 [o]	0.0000
VN-2	137	C-024	Conveyor to Wind Sifter	Residue	N	Outside	Y	Y	Wind Sifter	100%	100%	7.29	0.000046 [o]	0.0000
VN-2	139	C-035	Conveyor	Residue	N	Inside	Y	N	ECS Enclosure	100%	Bldg Eff.	2.7	0.001100 [o]	0.0006
VN-2	147	C-044	Conveyor	Residue	N	Outside	Y	N	NA		0%	24.87	0.001100 [o]	0.0274
VN-2	181	E-05	Magnetic Separation	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	14.87	0.001100	0.0033
VN-2	182	E-05	Magnetic Separation	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	9.87	0.001100	0.0022
VN-2	183	E-05	Magnetic Separation	Ferrous	N	Inside		N	NA		0%	0.88	0.001100	0.0010
VN-2	184	E-05	Magnetic Separation	Ferrous	N	Inside		N	NA		0%	5.00	0.001100	0.0055
VN-2	185	E-06	Eddy Current Separator	Residue	N	Outside		N	NA		0%	6.12	0.001100 [d]	0.0067
VN-2	186	E-06	Eddy Current Separator	Mids	N	Outside		N	NA		0%	3.50	0.001100 [d]	0.0039
VN-2	187	E-06	Eddy Current Separator	Zorba	N	Outside		N	NA		0%	0.25	0.001100 [d]	0.0003
VN-2	188	E-07	Wind Sifter	Lights	N	Outside		Y	Cover		0%	0.25	0.000740 [d]	0.0002
VN-2	189	E-07	Wind Sifter	Heavies	1.5 [a]	Outside		Y	Wind Sifter	90%	100%	1.50	0.003597 [c]	0.0000
VN-2	193	E-12	Magnetic Separation	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	14.87	0.001100	0.0033
VN-2	194	E-12	Magnetic Separation	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	9.87	0.001100	0.0022
VN-2	195	E-12	Magnetic Separation	Ferrous	N	Inside		N	NA		0%	0.88	0.001100	0.0010

Table B-1 - Non-Ferrous Material Processing - PM_{10} Emissions
General III, LLC - Chicago, Illinois

Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM10 Emissions Factor lb/ton	Filterable PM10 Emissions lb/hr
VN-2	196	E-12	Magnetic Separation	Ferrous	N	Inside		N	NA		0%	5.00	0.001100	0.0055
VN-2	197	E-12	Magnetic Separation	Zorba	N	Outside		N	NA		0%	0.25	0.001100 [d]	0.0003
VN-2	198	E-13	Eddy Current Separator	Residue	N	Outside		N	NA		0%	6.12	0.001100 [d]	0.0067
VN-2	199	E-13	Eddy Current Separator	Mids	N	Outside		N	NA		0%	3.50	0.001100 [d]	0.0039
VN-2	200	E-14	Wind Sifter	Lights	N	Outside		Y	Cover		0%	0.20	0.000740 [d]	0.0001
VN-2	201	E-14	Wind Sifter	Heavies	1.5 [a]	Outside		Y	Wind Sifter	100%	100%	0.60	0.003597 [c]	0.0000
VN-2	202	E-15	Magnetic Separation	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	9.09	0.001100	0.0020
VN-2	203	E-15	Magnetic Separation	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	8.29	0.001100	0.0018
VN-2	204	E-15	Magnetic Separation	Ferrous	N	Outside		N	NA		0%	0.05	0.001100 [d]	0.0001
VN-2	205	E-15	Magnetic Separation	Mixed Non-Ferrous	N	Outside		N	NA		0%	0.40	0.001100 [d]	0.0004
VN-2	206	E-16	Eddy Current Separator	Residue	N	Outside		N	NA		0%	0.40	0.001100 [d]	0.0004
VN-2	207	E-16	Eddy Current Separator	Zorba	N	Outside		N	NA		0%	1.00	0.001100 [d]	0.0011
VN-2	208	E-17	Wind Sifter	Lights	N	Outside		Y	Cover		0%	1.09	0.000740 [d]	0.0008
VN-2	209	E-17	Wind Sifter	Residue	N	Outside		Y	Wind Sifter	100%	100%	6.20	0.000740 [d]	0.0000
VN-2	210	E-21	Magnetic Separation	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	8.29	0.001100	0.0018
VN-2	211	E-21	Magnetic Separation	Ferrous	N	Outside		N	NA		0%	0.05	0.001100 [d]	0.0001
VN-2	212	E-21	Magnetic Separation	Mixed Non-Ferrous	N	Outside		N	NA		0%	0	0.001100 [d]	0.0004
VN-2	213	E-22	Eddy Current Separator	Zorba	N	Outside		N	NA		0%	1.00	0.001100 [d]	0.0011
VN-2	214	E-22	Eddy Current Separator	Residue	N	Outside		N	NA		0%	7.29	0.001100 [d]	0.0080
VN-2	215	E-23	Wind Sifter	Lights	N	Outside		Y	Cover		0%	1	0.000740 [d]	0.0008
VN-2	216	E-23	Wind Sifter	Residue	N	Outside		Y	Wind Sifter	100%	100%	6.20	0.000740 [d]	0.0000
VN-2	217	E-27	Magnetic Separation	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	8.15	0.001100	0.0018
VN-2	219	E-28	Eddy Current Separator	Residue	N	Outside		N	NA		0%	7.15	0.001100 [d]	0.0079
VN-2	221	E-34	Magnetic Separation	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	6.55	0.001100	0.0014
VN-2	222	E-34	Magnetic Separation	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	6.55	0.001100	0.0014
VN-2	224	E-35	Eddy Current Separator	Residue	N	Outside		N	NA		0%	5.05	0.001100 [d]	0.0056
VN-2	231	E-43	Vibratory Feeder	Residue	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	2.70	0.001100 [f]	0.0006
VN-2	232	E-44	Eddy Current Separator drop to stockpile	Zorba	1.5 [a]	Inside		N	NA		0%	0.50	0.003600	0.0018

Table B-1 - Non-Ferrous Material Processing - PM_{10} Emissions
General III, LLC - Chicago, Illinois

Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM10 Emissions Factor lb/ton	Filterable PM10 Emissions lb/hr
VN-2	240	E-49	Transfer Conveyor	Residue onto ECS	N	Inside		N	ECS Enclosure	100%	Bldg Eff.	8.15	0.001100	0.0018
VN-2	242	ECS	Eddy Current Separator drop to container	Zorba	1.5 [a]	Inside		N	NA		0%	0.04	0.003600	0.0001
VN-2	243	ECS	Eddy Current Separator drop to container	Zorba	1.5 [a]	Inside		N	NA		0%	0.18	0.003600	0.0006
VN-2	248	SC-003	Supplemental Conveyor	Residue							0%	7.34	0.001100	0.0081
VN-2	249	SC-004	Supplemental Conveyor	Residue							0%	7.34	0.001100	0.0081
													Total Filterable PM Emissions	**0.1734**

Table B-1 - Non-Ferrous Material Processing - PM_{10} Emissions
General III, LLC - Chicago, Illinois

Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM10 Emissions Factor lb/ton	Filterable PM10 Emissions lb/hr
VN-3	138	C-034	Conveyor	Material Separator	N	Outside	Y	N	NA		0%	0.55	0.001100 [0]	0.0006
VN-3	140	C-039	Conveyor	Mixed Non-Ferrous	N	Outside		N	NA		0%	0.80	0.001100 [0]	0.0009
VN-3	141	C-040	Conveyor	Residue	N	Outside		N	NA		0%	2.80	0.001100 [0]	0.0031
VN-3	142	C-040	Conveyor	Mids	N	Outside		N	NA		0%	7	0.001100 [0]	0.0077
VN-3	143	C-040	Conveyor	Residue	N	Outside		N	NA		0%	4.20	0.001100 [0]	0.0046
VN-3	144	C-041	Conveyor	Zorba	N	Outside		N	NA		0%	0.50	0.001100 [0]	0.0006
VN-3	145	C-042	Conveyor	Zorba	N	Outside		N	NA		0%	1.50	0.001100 [0]	0.0017
VN-3	146	C-043	Conveyor	Zorba	N	Outside		N	NA		0%	3	0.001100 [0]	0.0033
VN-3	148	C-044	Conveyor	Lights Zuric	N	Outside	Y	N	NA		0%	0.30	0.001100 [0]	0.0003
VN-3	149	C-045	Conveyor	Residue	N	Outside	Y	N	NA		0%	24.87	0.001100 [0]	0.0274
VN-3	150	C-047	Conveyor	To SSI	N	Outside		N	NA		0%	0.55	0.001100 [0]	0.0006
VN-3	151	C-048	Conveyor	Out of SSI	N	Outside		N	NA		0%	0.55	0.001100 [0]	0.0006
VN-3	152	C-050	Conveyor	Residue	N	Outside	Y	N	NA		0%	25.07	0.001100 [0]	0.0276
VN-3	153	C-052	Conveyor	Residue	N	Outside		N	NA		0%	2	0.001100 [0]	0.0025
VN-3	154	C-055	Conveyor	Wire	N	Outside	Y	N	NA		0%	1.00	0.001100 [0]	0.0011
VN-3	155	C-058	Conveyor	Zuric drops	N	Outside	Y	N	NA		0%	0.30	0.001100 [0]	0.0003
VN-3	156	C-060	Conveyor	Zone	N	Outside	Y	N	NA		0%	1.20	0.001100 [0]	0.0013
VN-3	162	C-064	Conveyor drop to container	Zorba	1.5 [a]	Outside		N	NA		0%	0.70	0.003597 [c]	0.0025
VN-3	163	C-065	Conveyor	Residue	N	Outside	Y	N	NA		0%	2.2	0.001100 [d]	0.0024
VN-3	164	C-066	Conveyor	Residue	N	Outside	Y	N	NA		0%	54.39	0.001100 [d]	0.0598
VN-3	165	C-067	Conveyor	Residue	N	Outside	Y	N	NA		0%	54.39	0.001100 [d]	0.0598
VN-3	168	C-071	Conveyor	Lights	N	Outside	Y	Y	Cover		0%	0.03	0.000046 [d]	0.0000
VN-3	169	C-072	Conveyor	Lights	N	Outside	Y	Y	Cover		0%	0	0.000046 [d]	0.0000
VN-3	170	DC-01 Cyc	DC-01 fines discharge to covered conveyor	Lights	N	Outside		Y	Cover		0%	0.01	0.000046 [d]	0.0000
VN-3	171	DC-02 Cyc	DC-02 fines discharge to covered conveyor	Lights	N	Outside		Y	Cover		0%	0.01	0.000046 [d]	0.0000
VN-3	172	DC-03 Cyc	DC-03 fines discharge to covered conveyor	Lights	N	Outside		Y	Cover		0%	0.01	0.000046 [d]	0.0000
VN-3	173	DC-04 Cyc	DC-04 fines discharge to covered conveyor	Lights	N	Outside		Y	Cover		0%	0.01	0.000046 [d]	0.0000
VN-3	218	E-27	Magnetic Separation	Ferrous	N	Outside		N	NA		0%	0.25	0.001100 [d]	0.0003

Table B-1 - Non-Ferrous Material Processing - PM_{10} Emissions
General III, LLC - Chicago, Illinois

Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM10 Emissions Factor lb/ton	Filterable PM10 Emissions lb/hr
VN-3	220	E-28	Eddy Current Separator	Zorba	N	Outside		N	NA		0%	1.00	0.001100 [d]	0.0011
VN-3	223	E-35	Eddy Current Separator	Zorba	N	Outside		N	NA		0%	1.50	0.001100 [d]	0.0017
VN-3	225	E-40	Separator	Lights Zuric	N	Outside		N	NA		0%	0.24	0.008700 [d]	0.0021
VN-3	226	E-40	Separator	Heavies Zuric	N	Outside		N	NA		0%	0.96	0.008700 [d]	0.0084
VN-3	227	E-40	Separator	Lights Zuric	N	Outside		N	NA		0%	0.35	0.008700 [d]	0.0030
VN-3	228	E-41	Separator	Lights	N	Outside		N	NA		0%	0.95	0.008700 [d]	0.0083
VN-3	229	E-41	Separator drop to container	Heavies	1.5 [a]	Outside		N	NA		0%	0.05	0.003597 [c]	0.0002
VN-3	230	E-42	Low speed shredder for size reduction	Out of SSI	N	Outside		N	NA		0%	0.55	0.001100 [d]	0.0006
VN-3	234	E-46	Separator	Heavier Zorba	N	Outside		N	NA		0%	1.25	0.00870 [d]	0.0109
VN-3	235	E-46	Separator	Lights Zorba	N	Outside		N	NA		0%	0.25	0.00870 [d]	0.0022
VN-3	236	E-47	Separator	Zorba	N	Outside		N	NA		0%	2.70	0.00870 [d]	0.0235
VN-3	237	E-47	Separator	Heavies Zorba	N	Outside		N	NA		0%	0.85	0.00870 [d]	0.0074
VN-3	238	E-47	Separator	Lights Zorba	N	Outside		N	NA		0%	0.15	0.00870 [d]	0.0013
VN-3	239	E-47	Separator	Light Zorba	N	Outside		N	NA		0%	0.30	0.00870 [d]	0.0026
VN-3	241	E-50	Air Vibe	To Infeed SSI	N	Outside		Y	Cover		0%	0.55	0.00005 [d]	0.0000
VN-3	250	SC-005	Supplemental Conveyor	Residue							0%	54.39	0.00110	0.0598
VN-3	251	SC-006	Supplemental Conveyor	Residue							0%	54.39	0.00110	0.0598
													Total Filterable PM Emissions	**0.4019**

Table B-1 - Non-Ferrous Material Processing - PM_{10} Emissions
General III, LLC - Chicago, Illinois

Grouping	Row No.	Equipment Generating Emissions ID#	Description	Material Conveyed	Moisture > 1.5% Y/N	Transfer Point Location (Inside / Outside)	Conveyor Covered Y/N	Transfer Point Controlled (Y/N)	Type of Transfer Point Control	Dust Pickup Capture Eff. (%)	Dust Control Eff. (%)	Material Throughput Rates tph	PM10 Emissions Factor lb/ton	Filterable PM10 Emissions lb/hr
VN-4	159	C-062	Conveyor	Heavier Zorba	N	Outside		N	NA		0%	1.25	0.001100 [d]	0.0014
VN-4	160	C-063	Conveyor drop to stockpile	Zorba	1.5 [a]	Outside		N	NA		0%	2.70	0.003597 [c]	0.0097
VN-4	161	C-063	Conveyor drop to stockpile	Heavies Zorba	1.5% [a]	Outside		N	NA		0%	0.85	0.00360 [c]	0.0031
VN-4	233	E-44	Eddy Current Separator	Residue	N	Outside		N	NA		0%	2.2	0.00110 [d]	0.0024
													Total Filterable PM Emissions	**0.0166**
VN-5	157	C-061	Conveyor drop to stockpile	Heavies Zuric	1.5% [a]	Outside		N	NA		0%	0.96	0.00360 [c]	0.0035
VN-5	158	C-061	Conveyor drop to stockpile	Heavies Zuric	1.5% [a]	Outside		N	NA		0%	0.30	0.00360 [c]	0.0011
VN-5	167	C-070	Conveyor drop to stockpile	Waste to Stockpile	1.5% [a]	Outside		N	NA		0%	0.55	0.00360 [c]	0.0020
													Total	**0.0066**
VN-6	166	C-068	Conveyor drop to stockpile	Residue	1.5 [a]	Outside	Y	N	NA		0%	54.39	0.003597 [c]	0.1957
VN-6	245	End Loader	load waste to truck	Waste	N	Outside		N	NA		0%	54.39	0.00010	0.0054
													Total	**0.2011**

a Material moisture content (%) for light materials - AP-42, Table 13.2.4-1 for crushed limestone -

b Uncontrolled emission factor calculated according to material drop equation in AP-42, Section 13.2.4.3.
Emissions calculated with control Eff. factor included for source being inside of a building.

c Uncontrolled emission factor calculated according to material drop equation in AP-42, Section 13.2.4.3.

d Uncontrolled particulate matter emission factors from AP-42, Table 11.19.2-2 for conveying. If moisture is greater than 1.5% by weight, use controlled emission factors.

e Uncontrolled particulate matter emission factors from AP-42, Table 11.19.2-2 for screening. If moisture is greater than 1.5% by weight, use controlled emission factors.

f Sources located inside the Fines Building emit to the atmosphere through Dust Collection DC-01. Emissions are estimated by 12,000

g Metal HAPs as percent of total PM measured at the discharge of the existing roll media filter in June 2018.

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Table B-2 - Non-Ferrous Plant Stockpile - PM_{10} Emissions
General III, LLC - Chicago, Illinois

Volume Source Grouping	Stock Pile	Stock Pile Area Acres	Control Factor[b]	Inactive Emissions[a,d] PM10 lb/hr	Active Emissions[a,d] PM10 lb/hr
VN-1	FE from E-02	0.0047	0.33	0.0001	0.0004
VN-4	5" + Zorba	0.0189	0.33	0.0005	0.0017
VN-4	2-1/2" - 5" Zorba	0.0189	0.33	0.0005	0.0017
VN-4	5/8" - 2-1/2" Zorba	0.0189	0.33	0.0005	0.0017
			Total	0.0015	0.0051
VN-5	Tailings	0.0195	0.33	0.0005	0.0018
VN-5	Open	0.0195	0.33	0.0005	0.0018
VN-5	Wire	0.0195	0.33	0.0005	0.0018
VN-5	Wire Rich Solids	0.0195	0.33	0.0005	0.0018
VN-5	Zurick	0.0195	0.33	0.0005	0.0018
			Total	0.0025	0.0090
VN-6	Waste	0.0868	0.33	0.0021	0.0079

a. Stockpile emissions calculation from TCEQ for crushed stone downloaded August 2019.
https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emiss-calc-rock1.xlsx

b. Control Factor of 0.1 (90% control) for partial enclosure consisting of walls on three sides of bin. Control Factor of 1.0 for no control.

c. Assume number of active days to be 6 days per week and 52 weeks per year and inactive days to be 1 day per week and 52 weeks per year.

d. From TCEQ Guidance

Stockpile emission calculation:

PM Emission Rate (tpy) = [(inactive day PM EF x No. of inactive days) x stockpile area/2000 x control factor] +
[(active day PM EF x No. of active days) x (stockpile area/2000) x control factor]

Inactive Day PM10 Emission Factor = 1.75 lb-PM10/acre-day

Active Day PM10 Emission Factor = 6.60 lb-PM10/acre-day

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Table B-3 - Total Non-Ferrous Material Processing PM_{10} Emissions
General III, LLC - Chicago, Illinois

Sources	PM Emissions					
	Material Handling		Stockpile		Totals	
	Active	Inactive	Active	Inactive	Active	Inactive
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
VN-1	0.6928	0.6928	0.0004	0.0001	0.6932	0.6929
VN-2	0.1734	0.1734			0.1734	0.1734
VN-3	0.4019	0.4019			0.4019	0.4019
VN-4	0.0166	0.0166	0.0051	0.0015	0.0217	0.0181
VN-5	0.0066	0.0066	0.0090	0.0025	0.0156	0.0091
VN-6	0.2011	0.2011	0.0079	0.0021	0.2090	0.2032

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Air Dispersion Modeling Report for Assessment of Particulate PM_{10} Impact

Southside Recycling – Chicago, Illinois

November 2020

Appendix C

Modeling Results

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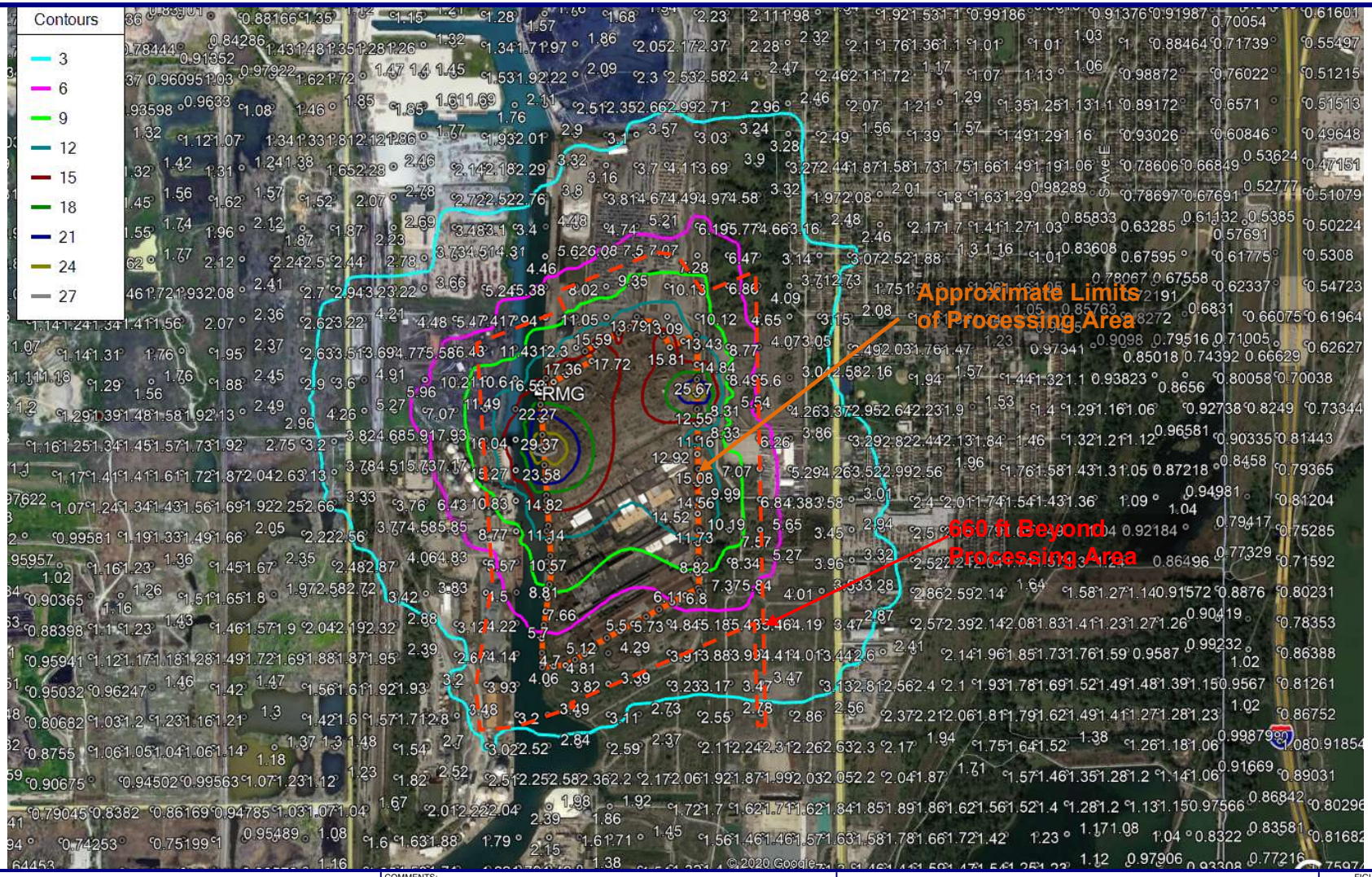

RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	COMMENTS: Air Dispersion Modeling Report for the Assessment of PM_{10} Emission Impacts		PM_{10} Isopleths Southside Recycling 11600 S. Burley, Chicago, Illinois	FIGURE C-1
	DRAWN BY::	APPROVED BY:: DD	PROJECT NUMBER R19439-7.10	DATE DRAWN: 10-2020	REVISED DATE

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Dust Monitoring Plan for a Large Recycling Facility General III, LLC (d/b/a Southside Recycling) Chicago, Illinois

November 11, 2020

R17421-7.1

Prepared for:

Southside Recycling
11600 S Burley Avenue
Chicago, Illinois 60617

Prepared by:

Darina Demirev
Senior Engineer
RK & Associates, Inc.

RK & Associates, Inc.

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Fax: 630-393-9111

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RK & Associates, Inc.

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FIGURES

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1.0 INTRODUCTION

General III, LLC (d/b/a/ Southside Recycling), has received a construction permit from the Illinois Environmental Protection Agency (IEPA), Permit Number 19090021, to construct and operate a new scrap metal recycling facility (Facility) in Cook County at 11600 S. Burley Avenue in Chicago, Illinois. A Site Location Map and Facility Layout Map are presented in Figures 1-1 and 1-2.

Southside Recycling's facility will be a state-of-the-art metal recycling facility located in the heart of an industrial district well buffered from residential properties. The proposed metal shredder and material processing operations will utilize the latest technology to create a clean, efficient, and environmentally sensitive plant.

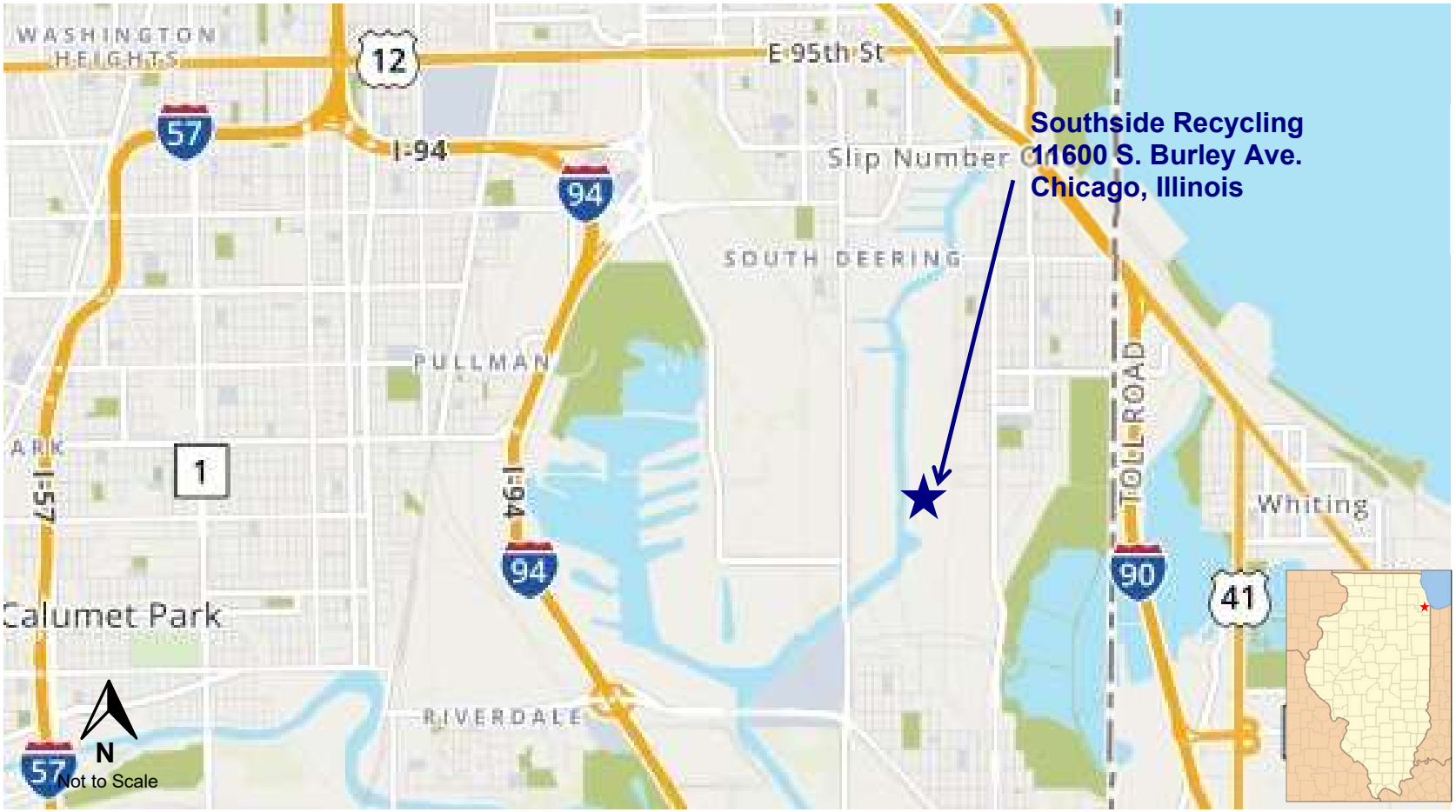
Southside Recycling will receive and shred mixed recyclables in various forms to produce uniform grades of ferrous and non-ferrous metals. Proposed scrap handling and processing activities include receiving, sorting, shredding, metal separation, and recovery of ferrous and non-ferrous metals.

City of Chicago Department of Public Health (CDPH) has published Rules for Large Recycling Facilities (Rule) effective June 5, 2020 (corrected June 19, 2020). Section 3.9.21.2. requires that a Dust Monitoring Plan (Plan) be prepared to describe the placement, operation, and maintenance of a weather station and monitors to continually measure the concentration of particulate matter less than 10 microns in diameter (PM_{10}) in the ambient air.

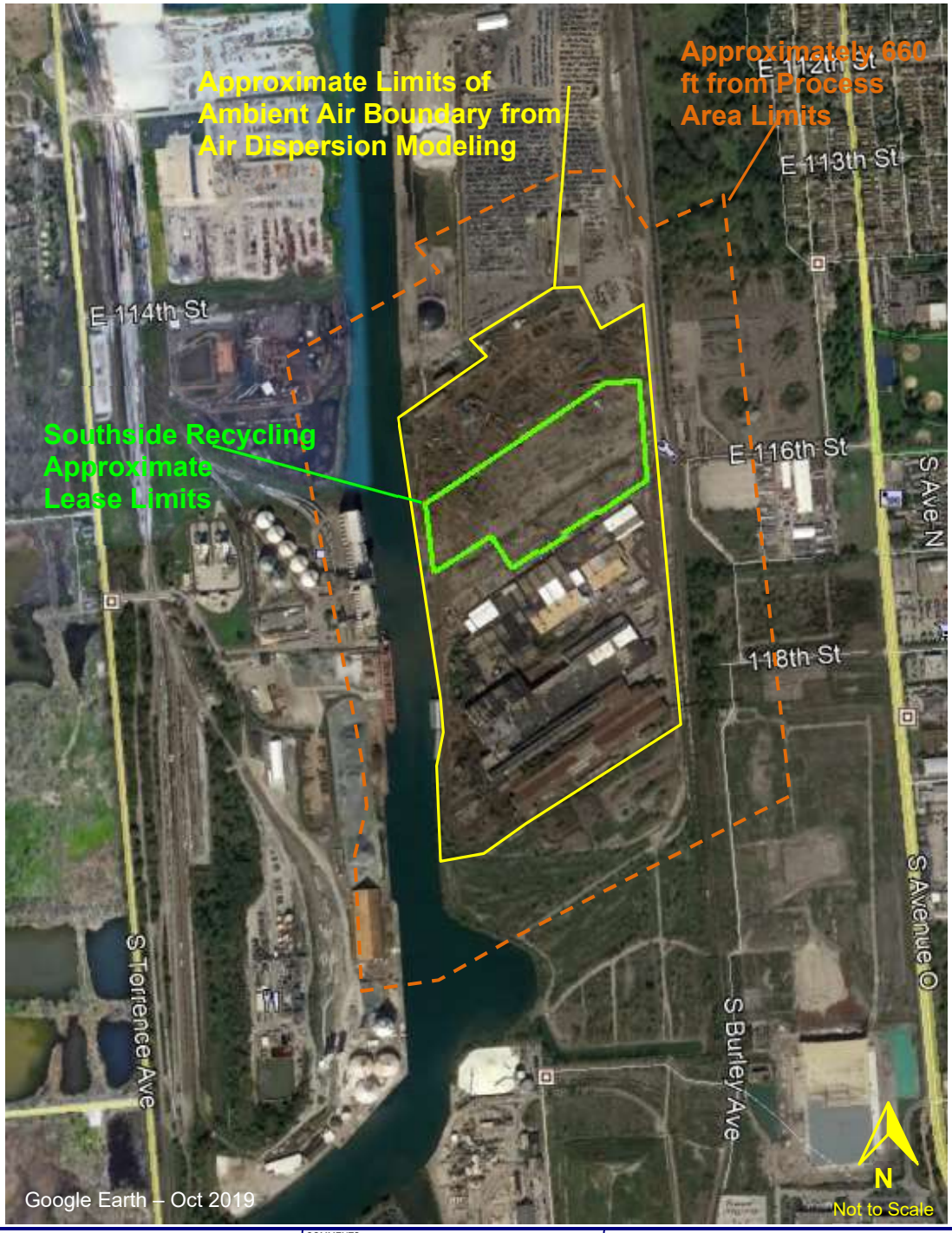
This Plan has been prepared to meet the requirements of Sections 3.9.21.2 through 3.9.21.4 of the Rule.

1.1 Facility Location and Contact Information

Business Name:	Southside Recycling
Source Location:	11600 S. Burley – Chicago, Illinois 60617 Hyde Park Township, Cook County Illinois
Latitude/Longitude	41.685201° N / -87.545847" W – Approximate Location of Front Gate
Office/Mailing Address:	1909 N. Clifton Avenue – Chicago, Illinois 60614
Southside Recycling	Mr. Jim Kallas - Environmental Manager 847-508-9170 – jimkallas@general-iron.com
IEPA Site ID No.:	031600SFX
IEPA Draft Construction Permit:	19090021
SIC Code:	5093 – Scrap and Waste Materials
NAICS Code:	423930 – Recyclable Material Merchant Wholesalers
RKA Contact for This Document	John Pinion - Principal Engineer 2S631 Route 59, Suite B - Warrenville, Illinois 60555 630-393-9000 - jpinion@rka-inc.com



RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	COMMENTS: Chicago Department of Public Health Dust Monitoring Plan for a Large Recycling Facility		Site Location Map Southside Recycling 11600 S. Burley, Chicago, Illinois		FIGURE 1-1
	DRAWN BY::	APPROVED BY:: JGP	PROJECT NUMBER R19439-7.10	DATE DRAWN: 10-2020	REVISED DATE



RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	COMMENTS: Chicago Department of Public Health Dust Monitoring Plan for a Large Recycling Facility	**Facility Map** Southside Recycling 11600 S. Burley, Chicago, IL		FIGURE 1-2
	DRAWN BY:	APPROVED BY: JGP	PROJECT NUMBER: R19439-7.10	DATE DRAWN: 10-2020 / REVISED DATE

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2.0 PM_{10} MONITORING AND REPORTING

The information presented below describes the number, location, operation, and maintenance of the continuous PM_{10} monitors for this site.

2.1 Number of PM_{10} Monitors and Proposed Locations

Pursuant to Section 3.9.21.2 of the Rule, two continuous PM_{10} monitors will be installed as shown in Figure 2-1, one downwind monitor and one upwind monitor.

The required number of PM_{10} monitors is based on the proximity of Sensitive Areas to the facility [Section 3.9.21.2(a)] and the results of an air dispersion modeling assessment for PM_{10} and Hazardous Air Pollutant (HAP) metals emissions [3.9.21.2(b)].

Sensitive Areas

The Rule defines a *Sensitive Area* as:

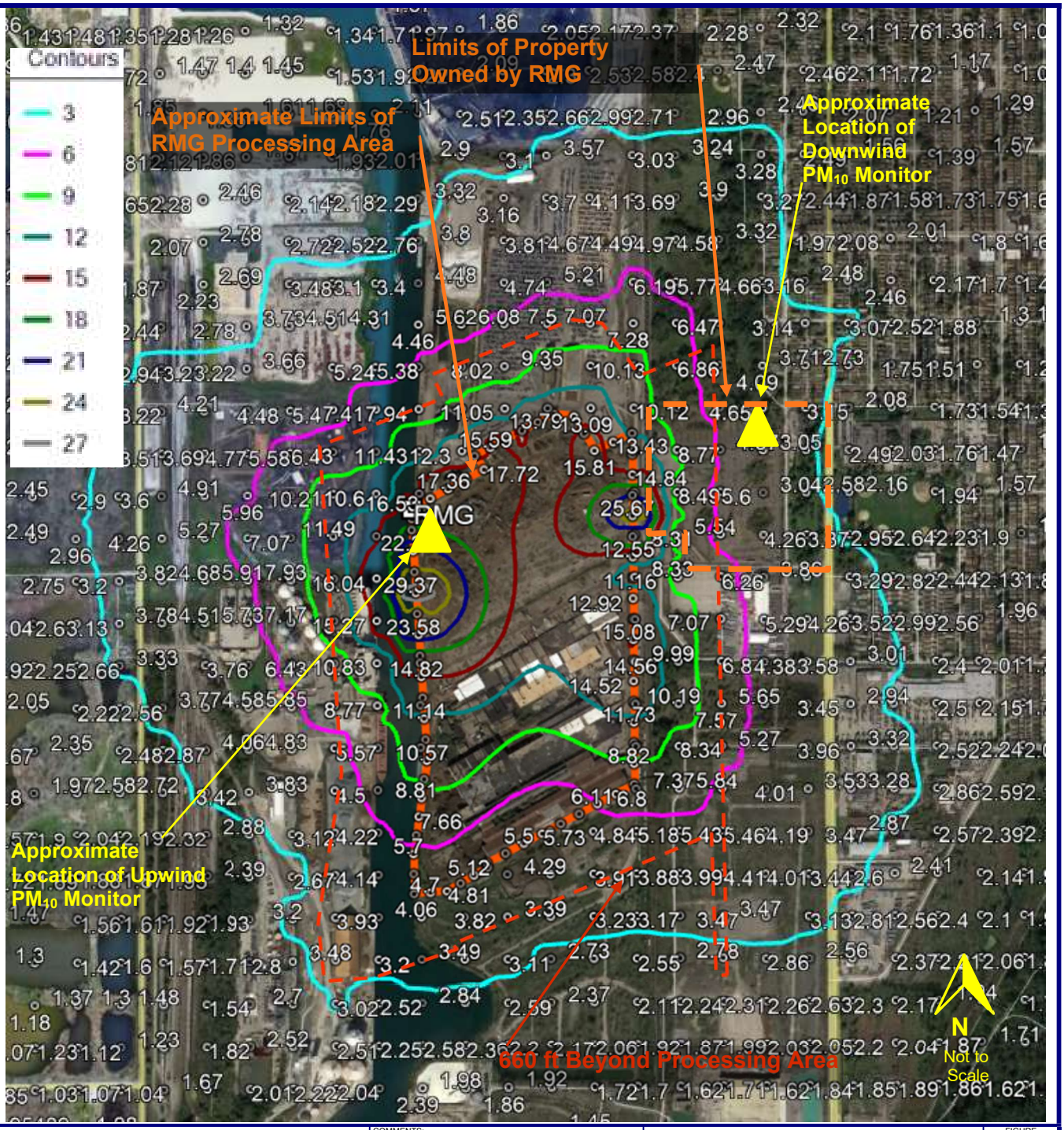
> *...any property with a residential use, a park, a hospital, a clinic, a church, a day-care center, or a school.*

Figure 1-2 shows the limits of active material processing and the approximate limits of the area extending 660 feet beyond the active material processing area. Review of Figure 1-2, which is based on an October 2019 aerial photograph obtained from Google Earth, confirms that there are no Sensitive Areas within 660 feet of the facility's active material processing area.

Predicted Exceedances of PM_{10} and Metal Standards

Southside Recycling separately submitted an Air Dispersion Modeling Report for Assessment of Metal Emission Impacts (Metals Modeling Report) and an Air Dispersion Modeling Report for Assessment of Particulate PM_{10} Impact (PM_{10} Modeling Report) to CDPH.

Figure 2-1 presents the results of the PM_{10} Modeling Report identifying the maximum predicted PM_{10} concentrations (ug/m^3) in the area surrounding Southside Recycling. The PM_{10} Modeling Report confirms that PM_{10} emissions from Southside Recycling did not result in any predicted PM_{10} concentration exceeding the applicable National Ambient Air Quality Standard (NAAQS), which is 150 ug/m^3 based on a 24-hour standard not to be exceeded more than once per year. In fact, the PM_{10} modeling Report showed that the maximum predicted PM_{10} concentration was less than 30 ug/m^3, which occurred along the western property boundary (Calumet River) near the barge loading operation.



RK & Associates, Inc.
2S631 ROUTE 59, SUITE B
WARRENVILLE, IL 60555
630-393-9000/630-393-9111

COMMENTS: Chicago Department of Public Health Dust Monitoring Plan for a Large Recycling Facility

Locations of Proposed PM10 Monitors on an Isopleth Map of Predicted PM10 Impacts

FIGURE 2-1

DRAWN BY:	APPROVED BY:	PROJECT NUMBER:	DATE DRAWN:	REVISED DATE
	JGP	R19439-7.10	10-2020	

A separate air dispersion modeling assessment of emissions of Hazardous Air Pollutants (HAP) metals (antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, nickel, and selenium) was prepared and submitted to the Illinois Environmental Protection Agency (IEPA) and later submitted to CDPH, shows that there were no predicted ambient metal HAP concentrations that exceeded relevant acute or chronic health screening limits.

Section 3.9.21.2 of the Rule specifies that in the event there are no sensitive areas within 660 feet of the facility and PM_{10} and Metals Modeling do not identify predicted exceedances of acceptable levels, a minimum of one monitor is required and the monitor shall be placed downwind of the prevailing wind direction. The prevailing wind direction, based on data from Midway Airport for 2016 through 2018 (see Appendix A), is from the South and West.

Based on the above, Southside Recycling proposed to locate one ambient air PM_{10} monitor in the Northeast portion of the property as illustrated in Figure 2-1 above. In addition to the required downwind monitor, Southside Recycling will also install one upwind monitor located on the western property boundary along the east side of the Calumet River, also shown in Figure 2-1 above.

2.2 PM_{10} Monitors

Southside Recycling will use Near-Reference PM_{10} monitors meeting the minimum requirements identified in Appendix B of the Rule. At a minimum, the monitors used by Southside Recycling will meet the following requirements:

- PM_{10} monitors will be continuous direct-reading near-real time monitors to monitor particulate matter less than 10 microns in diameter.
- PM_{10} monitors will be equipped with:
  - Omni-directional heated sampler inlet;
  - Sample pump
  - Volumetric flow controller
  - Enclosure; and,
  - Data logger capable of logging each data point with average concentration, time/date, and data point number.
- PM_{10} monitors will have the following minimum performance standards:
  - Range: 0 to 10,000 $u g/m^3$;
  - Accuracy: +/- 5% of reading precision
  - Resolution: 1.0 $u g/m^3$; and,

- Measurement Cycle: user selectable.

- In order to ensure the validity of the PM_{10} measurements performed, Southside Recycling will follow the manufacturer's recommended calibrations frequency, methods, and procedures, as specified in the User's Manual for the selected PM_{10} monitor. These recommendations will constitute the Calibration Plan as set forth in 3.9.21.1 of the Rule. The Calibration Plan will be supplemented to address the following critical features: instrument calibration, instrument maintenance, operator training, and daily instrument performance (span checks).

Southside Recycling is currently in the process of selecting and acquiring PM_{10} monitors to meet the minimum specifications identified in this Plan and in the Rule. For the purposes of this Plan, Southside Recycling proposes to use an 'E-Sampler' manufactured by Met One Instruments, or an equivalent monitor.

The monitoring technology will utilize a type of nephelometer which automatically measures and records real-time airborne PM_{10} concentration levels using the principle of near-forward laser light scattering. A sample pump will draw in ambient air at a rate of approximately 2-liters per minute through a PM_{10} sharp-cut cyclone to remove particulate matter greater than 10 microns in diameter prior to passing through the nephelometer.

In addition, each PM_{10} monitor will be equipped with an on-board filter which can optionally be used to collect a particulate sample for subsequent gravimetric mass or laboratory evaluation. This filter will be used for periodic gravimetric analysis to establish a correlation factor to correct the real time monitor output with site-specific particulate.

Each PM_{10} monitor will be installed in a NEMA4X enclosure and be configured to be mounted on a tripod or pole for permanent installation or optionally mounted on a trailer (powered with solar cells) to make the monitor portable.

Data from each PM_{10} monitor will automatically be uploaded to a site specific database using a program configured to allow automatic notification of CDPH and facility representatives of any 15-minute block average PM_{10} concentrations that exceeds the established Reportable Action Level (RAL) of 150 $\mu g/m^3$.

2.3 Meteorological Station

In addition to the PM_{10} monitors, a continuous weather monitoring station will be installed on-site pursuant to Section 4.7.7.4 of the Rule. The Meteorological Station (Met Station) will consist of one 34-ft (10-meter) tilt-over aluminum tower that includes lightning protection as well as grounding and guy wire connections. The Met Station will be configured to measure wind speed, wind direction, ambient temperature, relative humidity, barometric pressure, and precipitation as required by the Rule. Met data

collected will be logged by an electronic data logger. Quality assurance of all meteorological sensors will be in accordance with recommendations established in the *Quality Assurance Handbook for Air Pollutant Measurement Systems, Volume IV: Meteorological Measurements Version 2.0 (Final)* (EPA-454/B-08-002, March 2008) and in accordance with manufacturer specifications.

Although a specific location for the Met Station has not yet been identified, the Met Station will be located in an unobstructed, unsheltered area, centrally positioned in relation to the storage piles and material processing and handling activities.

2.4 Data-Logging

Pursuant to Section 4.7.7.5 of the Rule, each PM_{10} monitor and the Met Station will use a programmable data logger to collect and upload data to a central database. All data collected will be consistent with units in the National Ambient Air Quality Standards for PM_{10} and ambient monitoring practices will comply with current USEPA protocol and guidance for ambient air quality monitoring, including but not limited to those for data completeness, calibration, inspection, maintenance and site instrument logs.

2.5 Monthly Data Reporting

In accordance with Section 4.7.7.9 of the Rule, Southside Recycling will submit all data collected pursuant to Section 4.7.7.5 to CDPH within 14 days of the end of the month in which data was collected. Reports will be submitted via e-mail to envwastepermits@cityofchicago.org, in a format specified by CDPH.

2.6 PM_{10} Reportable Action Level

The PM_{10} Reportable Action Level (RAL) is the concentration of PM_{10} measured by any monitoring station location that will trigger response activities under the Contingency Plan required under 4.7.7.12 of the Rule. The RAL for PM_{10} will be 150 ug/m^3 averaged over a block 15-minute period, unless a different RAL or averaging time is specified by CDPH in the facility recycling permit.

An RAL exceedance shall be calculated by subtracting the upwind PM_{10} concentration (from the upwind PM_{10} monitor) from the downwind PM_{10} concentration (measured by the downwind PM_{10} monitor).

2.7 Reportable Action Level Notifications

Pursuant to Section 4.7.7.10 of the Rule, in the event of an exceedance of the PM_{10} RAL, telemetry shall be used to notify CDPH by e-mail at evnwastepermits@cityofchicago.org within 15 minutes or within the

time frame specified in the Recycling Permit. The RAL Notification shall be formatted as specified by CDPH and will include the following information:

- Date and time of RAL Exceedance:
- Average wind speed and wind direction recorded over the block 15 minute period corresponding to the exceedance;
- Concentrations of PM_{10} recorded by upwind and downwind monitors over the same 15-minute period; and,
- The latitude and longitude coordinates in decimal degrees of all monitoring stations.

Pursuant to Section 4.7.7.11 of the Rule, Southside Recycling shall maintain a facility Operating Log for each exceedance of the PM_{10} RAL. Within 24 hours of each PM_{10} RAL exceedance, Southside Recycling shall include the following information in the facility Operating Log:

- Date and time of RAL Exceedance;
- Recorded wind speed and PM_{10} concentration(s) at the time of the RAL exceedance;
- Suspected on-site and off-site source(s) of PM_{10} emissions potentially contributing to the PM_{10} RAL exceedance;
- Description of mitigative action(s) taken;
- Description of an operational impact as a result of the PM_{10} RAL exceedance; and,
- Description of any preventative measure(s) to reduce or eliminate future occurrences from the same source(s).

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3.0 MONITOR CALIBRATION

The following describes the proposed PM_{10} and Met Station instrument calibrations.

3.1 PM_{10} Monitors

Southside Recycling will maintain and calibrate PM_{10} monitors in strict accordance with the manufacturer's recommendations upon initial installation and at the recommended intervals.

A site specific PM_{10} correlation factor will be periodically measured to calibrate the light scattering nephelometer. The correlation factor will be developed by using an integrated PM_{10} filter element to collect a gravimetric sample of PM_{10} pursuant to EPA Method IO 3.5, NIOSH 7303, or other method(s) approved by CDPH. The correlation factor will be calculated using the methods and procedures recommended by the PM_{10} monitor manufacturer and will be repeated at least annually in conjunction calibration of the nephelometer.

3.2 Met Station Instruments

Met station instruments will be calibrated or replaced at a frequency and using methods and procedures recommended by the instrument manufacturer(s).

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4.0 METALS SAMPLING PLAN

The following describes the metals sampling methods and procedures proposed to estimate the concentration of the specified metals (the metals required to be modeled pursuant to Section 3.9.21.1 of the Rule) in PM_{10} collected at each PM_{10} monitor.

4.1 Metal Sampling

Southside Recycling will use the gravimetric sample from annual calibration of the nephelometer for metals evaluation. After determining the mass of PM_{10} on the filter, required for development of a site-specific PM_{10} correlation factor, the filter will be submitted to a qualified laboratory for metals analysis in accordance with USEPA approved methods. The results of the metals analysis will be reported in units of ug/m^3 and compared against the acceptable metal standards identified in the Metals Modeling Report.

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5.0 DUST MONITORING CONTINGENCY PLAN

Pursuant to Section 4.7.7.12, the information presented in this Section represents the Dust Monitoring Contingency Plan which described the mitigative actions that will be taken when the PM_{10} monitors record an exceedance of the PM_{10} RAL.

An exceedance of the PM_{10} RAL occurs when, during the same 15 minute period, the PM_{10} concentration measured at the downwind PM_{10} monitor minus the PM_{10} concentration measured at the upwind PM_{10} monitor exceeds the PM_{10} RAL (150 ug/m^3) for the same 15-minute block average period. Measured exceedances will be reported to facility representatives (and CDPH) via e-mail.

In response to each reported exceedance, the facility will investigate conditions and activities at the site that may have contributed to the elevated PM_{10} concentrations. This investigation will include, but not necessarily be limited to:

- Discussion with facility operations personnel to determine the activities being performed during the period immediately preceding the reported exceedance.
- Visual inspection of the area;
- Evaluation of records generated pursuant to the Fugitive Particulate Operating Program to identify dust mitigation measures that were active during the period immediately preceding the reported exceedance.
- Evaluation of the wind direction, wind speed and precipitation data from the facility meteorological station.
- Review of available video documentation from facility security cameras.

Based on the above information, Southside Recycling will determine what actions or activities likely resulted in, or contributed to, the reported PM_{10} exceedance.

Based on the cause(s) of the reported exceedance, Southside Recycling will take mitigative actions designed to minimize the potential for future exceedances. The mitigative actions will vary based on the potential causes or conditions that resulted in the exceedance. For the purposes of this Contingency Plan, mitigating actions include, but are not necessarily limited to, the following:

- Application of dust control measures to facility processes or roadways as described in the facility Fugitive Particulate Operating Program;
- Modification of facility observation frequency of processes or activities that contributed to the exceedance;
- Temporary reduction or suspension of activities determined to have contributed to the exceedance; and/or,

- Provide additional training to operations personnel to improve dust awareness and proactive dust mitigations strategies.

At the conclusion of the investigation and implementation of mitigative actions, Southside Recycling will update the facility operating log to include the exceedance-related information pursuant to Section 2.7 of this Plan.

6.0 DUST MONITORING PLAN AMENDMENT

This Dust Monitoring Plan will be amended and resubmitted to CDPH upon final selection and siting of the PM_{10} monitors and Met Station to identify specific instrument manufacturers , model numbers, and the recommended calibration frequencies and procedures.

In addition, this Plan will be periodically reviewed and updated as necessary to document any changes to the information presented herein.

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Dust Monitoring Plan

Southside Recycling
Chicago, Illinois

November 2020

Appendix A

Prevailing Wind Directions
Midway Airport – Chicago, Illinois
2016, 2017, and 2018

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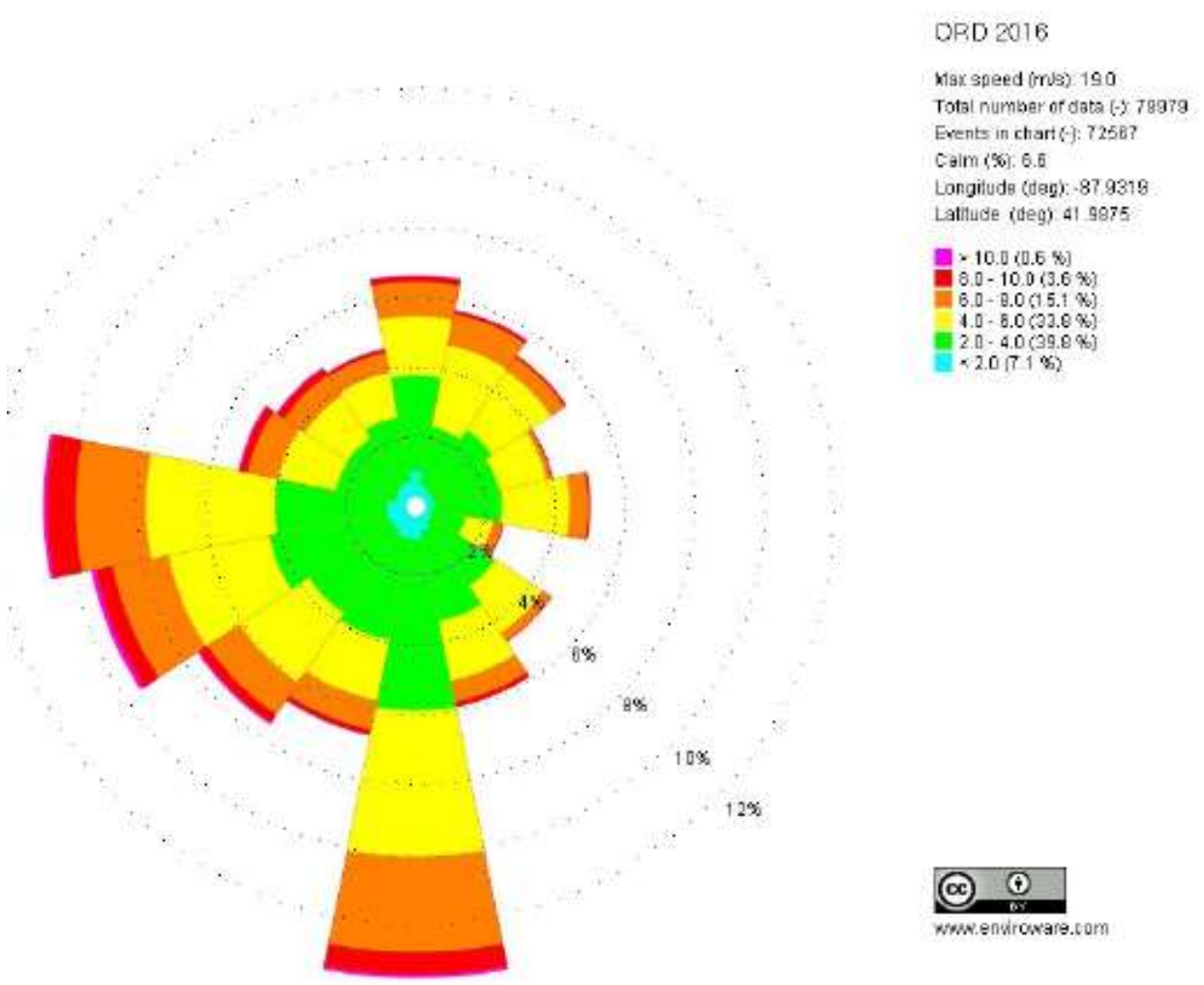


https://www.enviroware.com/METAR/METAR_WindRoses_2016_maps.html

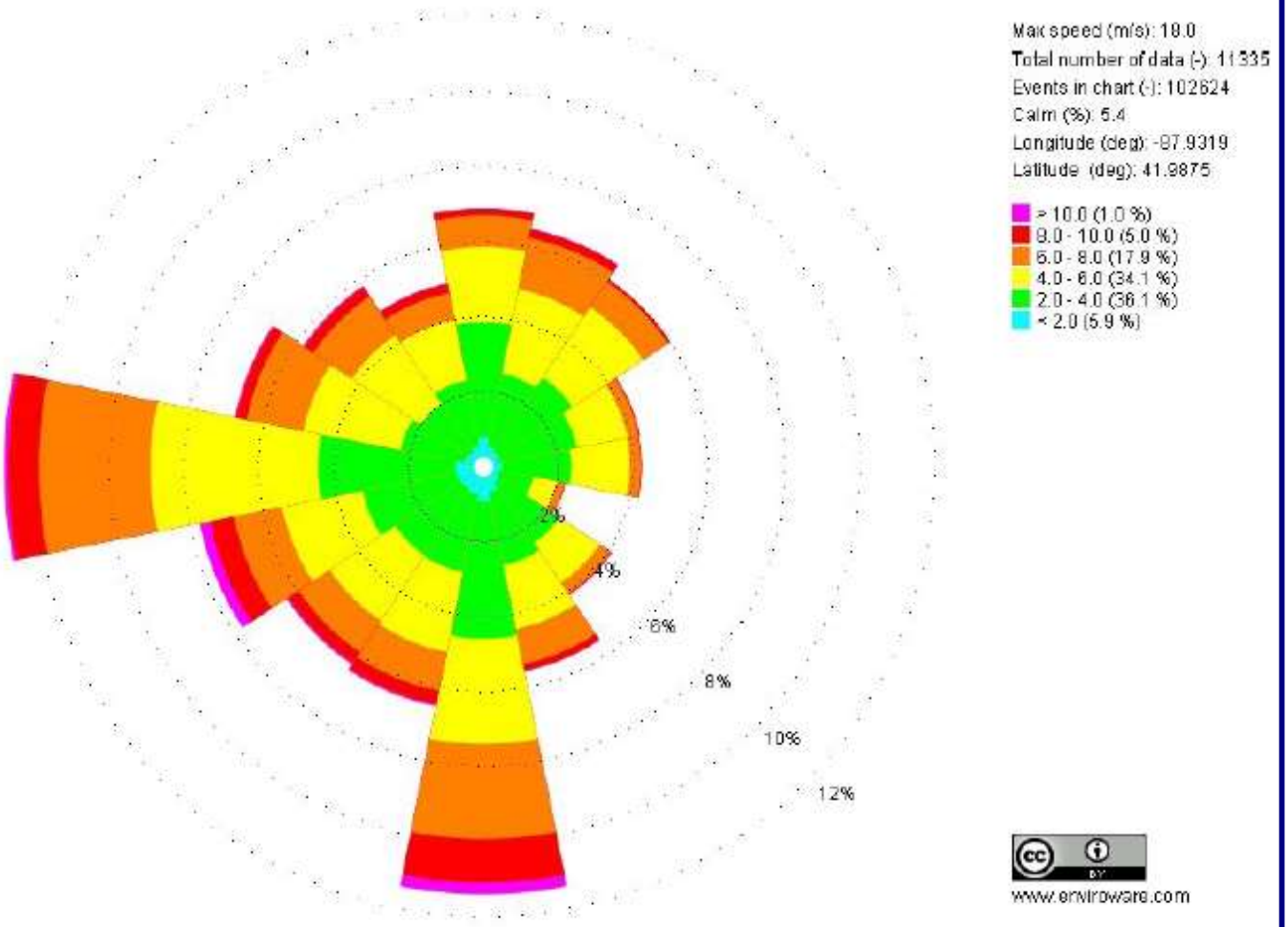
RK & Associates, Inc.
2S631 ROUTE 59, SUITE B
WARRENVILLE, IL 60555
630-393-9000/630-393-9111

COMMENTS:
Chicago Department of Public Health
Dust Monitoring Plan for a Large Recycling Facility

Prevailing Wind Directions for 2016
Midway Airport, Chicago, Illinois

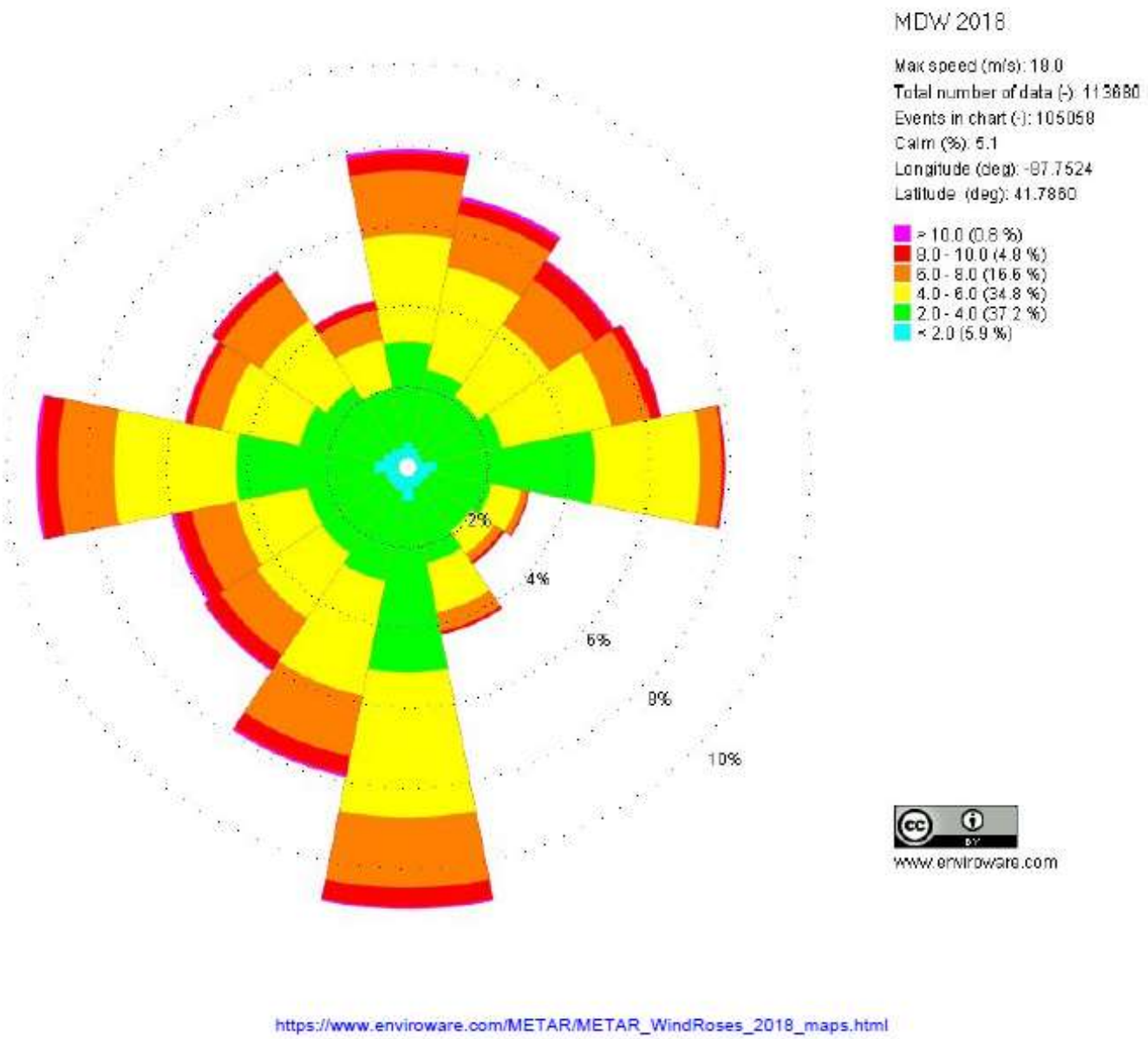
FIGURE
A-1

DRAWN BY:	APPROVED BY:	PROJECT NUMBER:	DATE DRAWN:	REVISED DATE
	JGP	R19439-7.10	10-2020	



https://www.enviroware.com/METAR/METAR_WindRoses_2017_maps.html

RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	COMMENTS: Chicago Department of Public Health Dust Monitoring Plan for a Large Recycling Facility	Prevailing Wind Directions for 2017 Midway Airport, Chicago, Illinois			FIGURE A-2
	DRAWN BY:	APPROVED BY: JGP	PROJECT NUMBER: R19439-7.10	DATE DRAWN: 10-2020	REVISED DATE



https://www.enviroware.com/METAR/METAR_WindRoses_2018_maps.html

RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	COMMENTS: Chicago Department of Public Health Dust Monitoring Plan for a Large Recycling Facility	Prevailing Wind Directions for 2018 Midway Airport, Chicago, Illinois			FIGURE A-3
	DRAWN BY:	APPROVED BY: JGP	PROJECT NUMBER: R19439-7.10	DATE DRAWN: 10-2020	REVISED DATE

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RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment W
Types of Recyclable Material

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Feedstock Management Plan

for

General III, LLC
(dba Southside Recycling)
11554 South Avenue O
Chicago, IL 60617

September 2020

The following Feedstock Management Plan for General III, LLC (d/b/a Southside Recycling) has been prepared in order to document Southside Recycling's acceptance policies and procedures for metallic recyclable material.

It must be noted that Southside Recycling has a policy of accepting various types of materials that require special handling (i.e. compressed gas cylinders, ballasts and capacitors, etc.) from incoming loads in order to ensure that they are segregated from the remainder of the load and that such items are handled and disposed of properly. To that end, Southside Recycling is continually striving to educate its suppliers regarding the hazards of certain materials and providing suppliers with incentives to segregate those materials from the rest of the load. As an example, suppliers are paid for items such as cylinders and PCB-containing ballasts, despite the fact that Southside Recycling must pay to dispose of those items. This system creates an incentive to help ensure that materials of concern are not buried or hidden in a load of scrap metal and that they are handled and disposed of properly and in accordance with applicable federal, state and local rules and regulations.

Following are the details of the Feedstock Management Plan:

1. Acceptance policy regarding materials that require special handling

   As outlined above, Southside Recycling has a policy of accepting certain materials that require special handling in order to help ensure that such materials are handled and disposed of properly and in an environmentally responsible manner.

   Examples of materials that require special handling include:

   - Compressed gas cylinders (i.e. propane, acetylene, etc.)

   - Containers that may have contained flammable or combustible materials (i.e. solvents, fuels, etc.)

   - Materials that could potentially cause a fire (i.e. lithium-ion batteries, ignition devices, etc.)

   - PCB-containing ballasts and capacitors

   - Mercury-containing devices (thermostats, thermometers, etc.)

   - Asbestos-containing materials

All materials accepted by Southside Recycling which require special handling are segregated and stored in designated areas prior to removal from the facility by contractors that are permitted/licensed to handle such materials. As an example, scrap propane cylinders are segregated and stored in an isolated area of the facility prior to being picked up by a qualified propane contractor (i.e. Ferrell Gas). As another example, containers that may have contained flammable or combustible materials are segregated and stored in another isolated area of the facility prior to being picked up by a licensed waste contractor that ships the materials offsite via waste manifest.

2. Education and notification of suppliers

   As part of the Feedstock Management Plan, Southside Recycling notifies its suppliers about materials that require special handling through various means including verbal notification, placement of posters throughout the facility, written and/or e-mail correspondence, etc.

   Exhibit A contains examples of informational posters that have been placed at strategic locations throughout the Southside Recycling facility in order to educate independent suppliers regarding Southside Recycling's acceptance policy for materials that require special handling. Exhibit B contains an example of a notice that is sent to larger material suppliers.

3. Vehicle supplier certification

   All suppliers of End-of-Life Vehicles (ELVs) are required to sign a Drain Statement certifying that all ELVs will be drained of fluids prior to delivery to Southside Recycling.

   Exhibit C contains a sample Drain Statement that is sent to all suppliers of ELVs.

4. Visual inspection of incoming material at truck scale

   All supplier trucks entering the Southside Recycling facility are weighed on a truck scale. The scale operator visually inspects each incoming load of metallic recyclable material. If any materials that require special handling are observed, the scale operator notifies the team of inspectors and the suspect materials are closely examined to determine a proper course of action.

5. Visual inspection during unloading of incoming material by yard inspectors

   All incoming material is inspected by yard inspectors during unloading. If any materials that require special handling are observed, the suspect materials are segregated from the load. During all times of unloading time there are multiple inspectors on duty inspecting loads throughout the facility.

6. Visual inspection during material handling by heavy equipment operators

   Crane and loader operators visually observe material throughout the material handling process. If any materials that require special handling are observed, the operator notifies the yard inspector and the suspect materials are segregated from the load.

7. Personnel training

   Southside Recycling scale operators, yard inspectors and heavy equipment operators are all trained upon employment, and at least annually thereafter, with respect to scrap material inspection procedures and identification of materials that require special handling. Annual training of designated personnel occurs at OSHA Hazard Communication/Right-to-Know training sessions.

Exhibit A

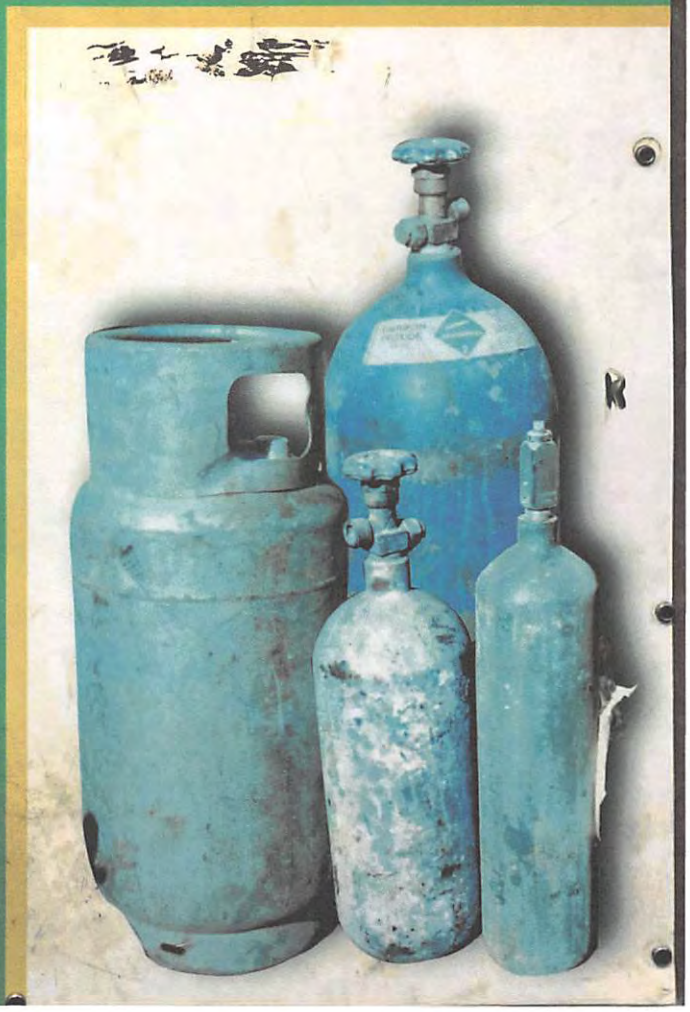
ATTENTION!
ATENCIÓN

You must tell the scale operator if your load includes any tanks like these.

Ud. debe decirle el operador de la balanza si su carga incluye cualquier tanques como estos.

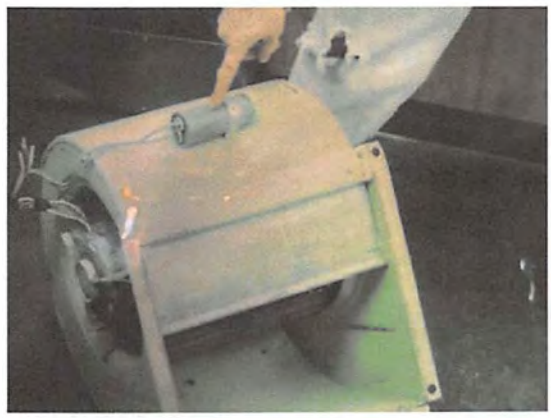
We will pay you for them, but we MUST separate these tanks from the rest of your load. Failure to comply will result in penalties, we thank you for your cooperation.

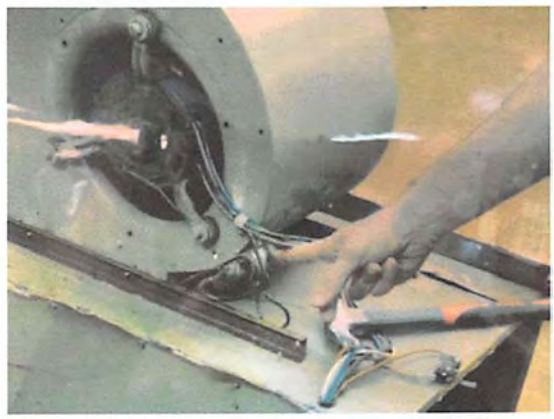
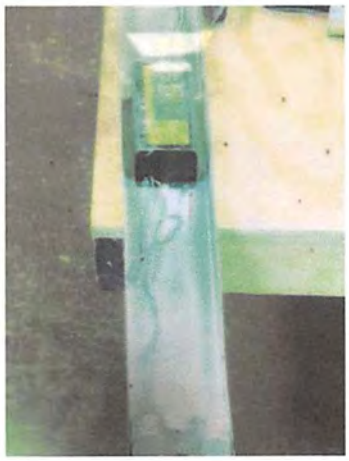
Nosotros le pagaremos por los tanques pero nosotros debemos separarlos del resto de su carga. Si no cumples con estas reglas, RESULTARÁ EN PENALIDADES, gracias por su cooperación.



Una manera de ganar mas dinero es.
Protegiendo nuestro sistema ambiental
$$$$$

Ustedes **DEBEN** separar las piezas completas de su carga y les pagaramos por esas piezas o pueden sacarle el PCB de el capacitador o de la balastra y venderlo en el departamento de Southside Recycling para recibir mas dinero.


You **MUST** either separate the whole piece of metal from your load and we will pay for it or you can take off the PCB capacitor and PCB ballast and sell it to Southside Recycling for more money.

We are helping to clean the environment and you make more money.
$$$$$

Usted **DEBE** infomar al personal de **S**outhside Recycling en la yarda si tiene contenedores que puedan contener materiales flamables o combustibles (ver los ejemplos a continuactión). **S**outhside Recycling **PUEDE** estar de acuerdo aceptar dichos materiales **SI S**outhside Recycling determina que los articulos se pueden manejar de forma segura y eliminarlos al acuerdo con las reglas federales, estatales y locales aplicables.

SOLVENTES
(SOLVENTS)

LIQUIDOS FLAMABLES
(LIQUID FUELS)

PINTURAS O QUIMICOS
(PAINTS OR COATINGS)

You **MUST** inform **S**outhside Recycling yard personnel if you have any containers that may contain flammable or combustible materials (See examples above). **S**outhside Recycling **MAY** agree to accept such containers **IF S**outhside Recycling determines that the item(s) can be handled safely and disposed of in accordance with applicable federal, state and local regulations.

Usted **DEBE** infomar al personal de **S**outhside Recycling en la yarda si tiene algún material que pueda provocar un incendio (ver los ejemplos a continuactión). **S**outhside Recycling **PUEDE** estar de acuerdo para aceptar dichos materiales **SI S**outhside Recycling determina que los articulos se pueden manejar de forma segura y eliminarlos al acuerdo con las reglas federales, estatales y locales aplicables.

BATERIAS CON ACIDO

(LITHIUM BATTERIES)

HERRAMIENTAS QUE CONTENGAN BATERIAS

(BATTERY OPERATED TOOLS & TOYS)

PARRILLAS CON GAS

(SELF STARTING GRILLS)

You **MUST** inform **S**outhside Recycling yard personnel if you have any materials that may cause a fire (See examples above). **S**outhside Recycling **MAY** agree to accept such materials **IF S**outhside Recycling determines that the item(s) can be handled safely and disposed of in accordance with applicable federal, state and local regulations.

Exhibit B

Dear _____:

As you know, some recyclable materials can pose a threat to human health and/or the environment if not recycled or disposed of properly. As such, the following materials **MAY** be accepted at Southside Recycling, but **ONLY IF** it is determined that such materials can be handled and disposed of in accordance with applicable federal, state and local rules and regulations.

Flammable/Combustible Materials

- Any scrap material that may have contained potential flammable or combustible materials must be segregated from all loads delivered to Southside Recycling (See examples below).

SOLVENTS

LIQUID FUELS

PAINTS OR COATINGS

Potential Fire Hazards

- Any scrap material that has the potential to cause a fire must be segregated from all loads delivered to Southside Recycling (See examples below).

LITHIUM & LEAD-ACID BATTERIES

BATTERY OPERATED TOOLS & TOYS

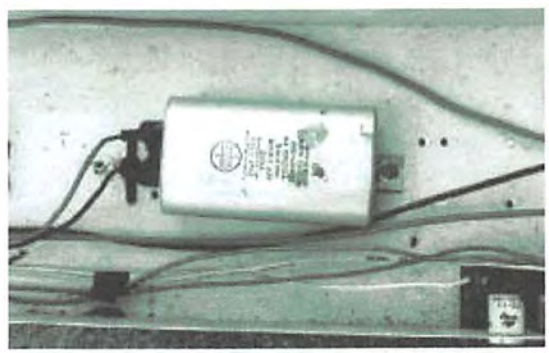
SELF STARTING GRILLS

Compressed Gas Cyliners

- Intact compressed gas cylinders must be segregated from all loads delivered to Southside Recycling (See examples below).

Ballasts and capacitors

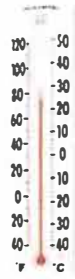
- Ballasts and capacitors must be segregated from all loads delivered to Southside Recycling (See examples below).



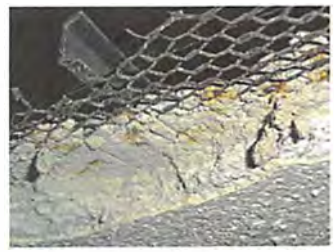
Hazardous Materials

The following materials must be segregated from all loads delivered to Southside Recycling:

- Mercury containing materials (i.e. thermostats, thermometers, baumanometers, switches, fluorescent or mercury vapor lights, etc.).



- Asbestos-containing materials (i.e. pipe insulation, surfacing materials, etc.).



- Aerosol cans that are not punctured and empty.

Electronics

- **The following items will only be accepted incidentally since Southside Recycling is not a registered Electronics Recycler:**






- Televisions of any kind including CRT, plasma, LCD, LED
- Computer Monitors
- Computers and Small-Scale Servers
- Electronic Keyboards & Mice
- Printers, Fax Machines, and Scanners
- DVD Players, DVD Recorders, and VCRs
- Digital Converter Boxes, Cable Receivers,and Satellite Receivers
- Portable Digital Music Players and Video Game Consoles

Appliances

- Appliances containing refrigerants will be accepted but **only** if supplier provides notification in accordance with the Southside Recycling Refrigerant Recovery Contract, which will allow Southside Recycling the opportunity to properly recover any remaining refrigerant from the appliance.


Closed Containers

- **Any container (tank, drum, etc.) that is sealed and/or cannot be inspected for interior contents will NOT be accepted under ANY circumstances.**

Exhibit C

VENDOR #_____

Southside Recycling
11600 S. Burley Avenue
Chicago, IL 60617

DRAIN STATEMENT

I hereby certify that all end-of-life vehicles supplied for recycling to Southside Recycling have been drained of fluids prior to delivery to Southside Recycling.

Supplier: _____

Name

Address: _____

Street

_____

City *State* *Zip Code*

By: _____

Signature

_____

(PRINT NAME HERE)

_____

(PRINT TITLE HERE)

Date: _____

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside RecyclingC
11554 S. Avenue O - Chicago, Illinois

November 2020

Attachment X
Devices, Apparatus, and Processes

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3.10.3 Devices, Apparatus and Processes

Health and safety plan that includes all job hazard assessments and a description of the OSHA-required safety devices or procedures employed for all processing equipment (i.e. guarding, lockout devices, etc.)

General III, LLC is committed to conducting all operations in a safe and responsible manner that respects the environment, our employees, customers and the community where we operate. We will comply with all applicable regulatory requirements at a minimum, and implement programs and processes to achieve greater protection, where appropriate.

General III, LLC will work to eliminate unsafe conditions and actions in our workplaces so as to prevent the occurrence of all work-related injuries, illnesses and property losses.

Employees are responsible for performing their job activities in a safe and reasonable manner in accordance with local safety rules, any safety related instructions given to them, and the training they have received. The training an employee receives is specific to his/her job responsibilities and may include, but not be limited to: Control of Hazardous Energy, Powered Industrial Truck Operation, Hazard Communication and Right to Know, Hearing Conservation, Machine Guarding, etc.

General III, LLC will conduct job safety analyses of its operations at the commencement of its operations and will use the information attained during this process to improve its Health and Safety Plan.

Description and results of any OSHA-required worker air and noise exposure sampling for Facility activities (i.e. welding, torching, etc.)

In accordance with OSHA 29 CFR 1910.95, Occupational Noise, General III, LLC, will conduct a noise monitoring evaluation at the commencement of its operations to implement an accurate Hearing Conservation Program.

General III, LLC, will conduct an air monitoring evaluation at the commencement of it operations to determine if its needs to implement OSHA 29 1910.134; Respiratory Protection Program.

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RK & Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1

Response to December 23, 2020 Request for Additional Information for a Class IVB Large Recycling Facility Permit Application located at 11600 S. Burley Avenue, Chicago, Illinois

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The following information includes each item from CDPH's Request for Additional Information followed by Southside Recycling's response.

CDPH Request

1. *Pursuant to section 3.8 of the Rules, provide a copy of the Findings of the Zoning Board of Appeals, CAL 178-19-S & 179-19-Z, and any plans and drawings referenced therein.*

Southside Recycling Response

Included in Attachment A is copy of the "FINDINGS OF THE ZONING BOARD OF APPEALS IN THE MATTER OF THE SPECIAL USE AND VARIATION APPLICATIONS FOR 11600 S. BURLEY AVENUE BY GENERAL, III" along with a copy of the associated presentation to the Zoning Board of Appeals. Please note that the drawings and plant layout diagrams included in the presentation are renderings prepared for the purpose of meeting the standards set forth by the Zoning Board of Appeals. Separate drawings were prepared and submitted to Chicago Department of Buildings for purposes of construction.

CDPH Request

2. *Pursuant to paragraph 3.9.1.4 of the Rules, verify the proposed boundaries of the Facility. CDPH understands the Facility constitutes the Leased Area described in the plat of survey. If the Applicant intends to conduct barge loading of recyclable materials, the Facility boundaries must be extended to the Calumet River, and such activity must be explicitly and clearly incorporated into the Application.*

Southside Recycling Response

Barge loading activity was explicitly and clearly incorporated into the original November 11, 2020 application in *Section 1.1 Description of Operations* ("Recovered ferrous metal will be loaded into barges, trucks and/or rail cars for delivery to steel mills and foundries.") and throughout *Attachment V Air Quality Impact Assessment* of the original application and contained herein. Further, emissions from barge loading activity were accounted for in the air dispersion modeling conducted for and approved by Illinois EPA Bureau of Air. Included in Attachment B is a Site Plan that delineates the location of the barge loading system. It should be noted that the property adjacent to the Calumet River is an approved Homeland Security (DHS) facility under 33 CFR Part 105. While Southside Recycling will be allowed egress onto the property adjacent to the river for the purposes of accessing barge loading operations, the owners of the property will continue to fulfill their obligations under the agreement with DHS.

CDPH Request

3. *To determine the suitability of the proposed 12-inch gravel pavements, describe the operations that will occur over the proposed graveled areas and provide detailed specifications such as the aggregate material type and gradation, installation lift thicknesses, and the compaction and compaction-testing methods.*

   In addition, pursuant to 3.9.6.2, provide a pavement maintenance plan describing how and at what frequency the Applicant will inspect, repair, and maintain all pavements at the Facility to minimize ponding, dust, and mud. This information was not provided in the drawing included in Attachment L of the Application.

Southside Recycling Response

Included in Attachment C is an updated Site Plan indicating the final pavement layout at the Facility along with documentation of the aggregate base course and gradations for the material at the Facility. There will be no recyclable material stored in the gravel area between the scales and the ponds (delineated on the attached Site Plan as the 24,470 square foot area and the adjacent 8,231 square foot area.).

The approximately 105,426 square foot gravel area south/southwest of the scales is primarily an unused portion of the Facility but it will have occasional vehicles and equipment passing over and/or stored on it. The approximately 22,000 square foot gravel area just north of the shredder will be utilized for storage of heavy shredder parts as well as shearing of heavy metal (i.e., rebar, beams, etc.). Concrete is not suitable in this approximately 22,000 square foot area due to the extreme weight and density of the material that will be handled and processed via shearing which would destroy the concrete very quickly.

The gravel area where a portion of the shredded steel will be stockpiled is delineated on the attached Site Plan as the 22,714 square foot area and the adjacent 75,143 square foot area. Due to the abrasive nature of loading out shredded ferrous material, concrete would be destroyed very quickly. Also included in Attachment C is a draft Pavement Maintenance Plan. Pavement surfaces were designed and constructed in accordance with the facility grading plan to allow drainage of storm water toward catch basins and detention ponds to minimize ponding, dust and mud and to ensure no storm water runs off-site.

In accordance with the grading plan, gravel surfaces were laid out with a grader equipped with a GPS to ensure proper level and grading of all surfaces. Gravel surfaces were then thoroughly compacted with a heavy-duty roller similar to those used in roadway construction projects. Due to the level of activity at the Facility, water will not be allowed to remain undisturbed for more than 48 hours.

CDPH Request

4. *Pursuant to paragraphs 3.9.7.2 and 3.9.7.3 of the Rules, provide detailed calculations showing the peak electrical demands at the Facility and demonstrate that adequate services are available to meet the calculated loads. A One-Line Diagram and a Site Power Plan drawing were included as Attachment M of the Application. However, neither sheets provided the required calculations or information. The Facility's electrical loading should be in kilovolt-ampere (kVA) and assessed in relation to the rated transformer capacities at the 122nd Street switchyard substation. Alternatively, an approval letter or permit from the utility provider may be provided.*

Southside Recycling Response

Based on a thorough review of electrical requirements for the Facility, the electric utility provider (ComEd) determined that adequate capacity is available to meet the peak electrical demands for the operation. Included in Attachment D is a copy of an e-mail from a ComEd representative along with load capability reports confirming that the transformers are capable of providing the anticipated load at the Facility.

CDPH Request

5. *Pursuant to paragraph 3.9.8, provide the following information:*

   a. *Backup calculations and a breakdown (fire suppression, dust control cooling, cleaning, irrigation, and employee facilities) of the estimated 50-million-gallon annual water usage;*

   Southside Recycling Response

   Included in Attachment E is an estimated breakdown of approximate annual water usage at the Facility.

   b. *A list and specifications (i.e., pump rating curves) of all water pumps used for fire and dust control and suppression at the site. Sheet FP-0.1 in Attachment N included a fire pump schedule listing two pumps. The first pump is sized at 1,500 gallons per minute (gpm) for the non-ferrous building sprinkler system. The second pump appears much smaller at ten gpm. Provide a similar pump schedule for the shredder building deluge system and other site process water needs; and*

Southside Recycling Response

Included in Attachment F are Cut Sheets that provide the pump schedules requested by CDPH. The first pump system (1,500 GPM) is manufactured by Fairbanks Morse and it utilizes a jockey pump that produces 10 GPM. Pump Package 3, which is located in the shredder building, is manufactured by Bell & Gossett.

c. *Demonstrate that Pump Package 3 depicted in sheet P-1.1, 1st Floor Shredder Plumbing Plans, of Attachment K can provide adequate pressure and water flow for yard hydrants, Dust Bosses, and shredder nozzles. Such demonstration may include, but not be limited to, hydraulic calculations, actual flow, and pressure readings, and vendor cut sheets.*

Southside Recycling Response

At peak demand, the yard hydrants, Dust Bosses and shredder nozzles output 1,185 GPM at 90 psi. A breakdown of these components, which is included in the pump schedule for Pump Package 3 in Attachment F, demonstrates that adequate pressure and water flow will be provided for the yard hydrants, Dust Bosses and shredder nozzles.

CDPH Request

6. *Pursuant to paragraphs 3.9.10.1 and 3.9.10.3 of the Rules, provide the handling capacity and detailed specifications of all structures and fixed equipment including but not limited to, all shredders, fixed material handlers, sorting equipment, conveyors, and air pollution control devices. Provide specifications and process rates for each powered equipment identified in the One-Line Diagram of Attachment M and the process rates and descriptions of all manually operated processing areas and sorting stations.*

Southside Recycling Response

The shredding system, including shredder, material handlers, sorting equipment, conveyors, and air pollution control devices, is capable of processing 500 tons per hour or more. The Facility's Illinois EPA Bureau of Air permit allows for operation of the shredder system Monday through Friday from 7:00 a.m. to 7:00 p.m. and Saturday from 7:00 a.m. to 5:00 p.m. This is approximately 300 allowable shredding hours per month. Thus the shredding system has the capacity to process approximately 150,000 tons per month. This capacity is well above the 100,000 tons per month that the Facility's shredding system is permitted to process by the Illinois EPA. Specifications for equipment for which an Air Pollution Control (APC) Permit was issued by CDPH are included in Attachment G. The associated sorting equipment, conveyors, and air pollution control devices are more than capable of handling their respective portions of the system capacity since each piece of equipment downstream of the shredder has a capacity well in excess of the quantity of material handled. The tables in

Appendix A of the air dispersion modeling report included in Attachment V of the original application list the estimated material throughput rate for each piece of equipment. These figures are based on the approximate percentage of the material the shredder is expected to process (500 tons/hour). For instance, the conveyor that transports the residue after the shredder is expected to handle approximately 26 percent of the material processed by the shredder (500 tons/hour X 0.26 = 130 tons of residue per hour). While there is no specific data available for individual conveyors, based on experience at the Existing Facility this conveyor can handle quantities well in excess of 130 tons per hour.

The nonferrous separation system is capable of processing approximately 70 tons per hour. The Facility's Illinois EPA Bureau of Air permit allows for operation of the nonferrous separation system Monday through Saturday from 5:00 a.m. to 11:00 p.m. This is approximately 465 allowable operating hours per month. Thus, the nonferrous separation system has the capacity to process approximately 32,550 tons per month. Since the nonferrous generation rate is approximately 25% of the shredding system feed rate, the above capacity (32,550 tons per month) is well above the 25,000 tons per month that the Facility's shredding system will produce based on its 100,000 tons per month Illinois EPA permitted shredding system input. As explained above for the shredding system and based on experience from the Existing Facility, the associated sorting equipment, conveyors, and air pollution control devices for the nonferrous separation system are more than capable of handling their respective portions of the system capacity. The estimated amount that each piece of equipment will handle is identified in the tables provided in Appendix B of the air dispersion modeling report included in Attachment V of the original application.

The process rates and descriptions for applicable equipment identified in the One-Line Diagram of Attachment M of the original application and the process rates of all manually operated processing areas and sorting stations are included in the above narrative and calculations for the shredding system and the nonferrous separation system.

CDPH Request

7. *Pursuant to paragraph 3.9.10.2 of the Rules, provide an operations and maintenance (O&M) plan for all structures and fixed equipment identified in item 6 above. Specify if any welding will be conducted at the Facility as part of the O&M and any repairs. In addition, provide an estimate with backup calculations of liquid and solid waste generation associated with these devices.*

Southside Recycling Response

Equipment Operations and Maintenance (O&M) Plans are included in Attachment H. The intent of the O&M Plans is to document certain responsibilities and procedures for the operation and maintenance of facility process and emission control equipment. Welding will be conducted as part of O&M and equipment repairs on an as-needed basis as indicated in the attached O&M Plans. As an example, if a crack was observed during a periodic inspection of the shredder feed chute, welding would be required to repair the crack. Maintenance on the RTO and wet scrubber will be performed in accordance with manufacturer recommendations. For calculations of the estimated amount of shredder fluff to be generated as a result of the metal shredding and separation process, historical data indicates that approximately 20.5% of material processed by the shredder is waste (i.e. shredder fluff). As an example, if 760,000 tons of material will be processed by the shredder per year yields approximately 155,800 tons of shredder fluff per year (0.205 x 760,000 tons).

The only other waste generated by the structures and fixed equipment will be used lubricating oil generated during equipment maintenance activities. Small quantities of equipment lubricating oil, as well as other used oil generated as part of Facility maintenance activities, will be stored in the used oil ASTs equipped with secondary containment as outlined in the facility SPCC Plan. Used oil is ultimately disposed of by a licensed contractor. The quantity of used oil generated and shipped off-site will be recorded and documented in the Liquid Waste report which will be submitted to CDPH on an annual basis.

CDPH Request

8. *Pursuant to paragraphs 3.9.11.2 through 3.9.11.3 of the Rules, provide the following:*

   a. *A drawing showing the size and location of the area dedicated to the screening of inbound loads, including the unloading and inspection of atypical loads and the inspection of random loads. Include detailed calculations of the volume in cubic yards exclusively available for the storage and staging of unauthorized materials, residual waste, and materials requiring special handling as described in Attachment W of the Application. Such calculations may use data from the Applicant's operations at 1909 N. Clifton Avenue ("Existing Facility"). Highlight on a drawing the location where such staging and storage occur.*

   Southside Recycling Response

   Included in Attachment I is a drawing showing the areas that inbound material may be unloaded and the area that items requiring special handling (i.e., compressed gas cylinders, containers that may have contained flammable or combustible materials, materials that could potentially cause a fire, PCB-containing ballasts and capacitors

mercury-containing devices and asbestos-containing materials). The area available for screening, unloading, handling and storage of inbound materials is approximately 111,300 square feet. The area available for the storage and staging of materials that require special handling is approximately 7,120 square feet. This is over 4 times the amount of space utilized at the Existing Facility for materials that require special handling. We estimate that the quantity of materials that will require special handling at the Facility will be less than 1/3 of the amount generated at the Existing Facility due to the reduction in the estimated number of peddlers. Thus, the Facility has an abundance of excess space and capacity available. A calculation of the volume in cubic yards is not applicable since such materials will not be stacked. It should be noted that since scrap metal is very heterogeneous in nature, no two loads of incoming material are the same. As such, no inbound loads would be considered "atypical" or "random" nor would there be a specific, designated area for inspecting, screening, staging or storing atypical or unauthorized materials. Therefore, the facility will screen all loads and inspect for materials that require special handling in accordance with the Feedstock Management Plan included in Attachment W of the original application. The purpose of the Feedstock Management Plan is to detail the policy and procedures to be implemented in order to prevent certain materials from being processed by the shredder, and to ensure that such materials are handled and disposed of properly.

b. *Verify the area used to calculate the available staging space for inbound material. The Application used a value of 80,855 square feet (sf). However, the CDPH's measurement of the one and one-half ellipse-shaped shredder feedstock areas and the triangular peddler drop off area were cumulatively about 67,500 sf. Either recalculate the storage volume or modify the drawings to reflect the larger footprint used in your calculation. In addition, the volumes should be computed using the average-end method, conic formulas, or similar methods that can account for the angle of repose of the stored material.*

Southside Recycling Response

The area as shown in Attachment I that is available for unloading and staging of inbound materials is approximately 420 feet x 265 feet or 11,300 square feet. The angle of repose for scrap metal is estimated to be greater than 45 degrees. However, to be conservative and for ease of review, we have assumed a 45-degree angle of repose on all sides of a 30-foot tall material pile. The shape of such a pile is assumed to most closely resemble a truncated pyramid which is a pyramid whose vertex is cut away by a plane parallel to the base and has 6 faces (base, top and 4 lateral faces). The approximate volume of the pile was calculated using a calculator on aqua-calc.com, a website that includes a comprehensive list of conversions, calculations and reference tools from wide range of categories. Assuming the top of the pile is 360 feet x 205 feet, the estimated volume of the area available for unloading and staging inbound materials is approximately 102,167

cubic yards.

It should be noted that any material storage or staging areas shown on the drawings submitted with the application were not intended to depict the exact location or dimensions of those areas. Rather, the drawings were intended to the show approximate locations of storage and staging piles and to demonstrate that the amount of space available at the Facility for such activities is more than adequate.

c. *Verify the storage areas corresponding to the processed ferrous material areas and the processed shredder residue area per 8(b) above.*

Southside Recycling Response

The two areas shown in Attachment I that are available for processed ferrous material total approximately 55,000 square feet. For ease of review and to be conservative, assuming that each area is approximately 200 feet x 135 feet (27,000 square feet per pile) this yields 54,000 square feet total for both piles. Assuming a 45-degree angle of repose on all sides of a 20-foot tall material pile and using the truncated pyramid calculator on aqua-calc.com yields a volume of 15,432 cubic yards per pile or 30,864 cubic yards total for processed ferrous material.

The area shown in Attachment I that is available for shredder residue awaiting processing at the nonferrous separation plant is approximately 120 feet x 100 feet. Assuming a 45-degree angle of repose on all sides of a 30-foot tall material pile and using the truncated pyramid calculator on aqua-calc.com yields a volume of 7,333 cubic yards.

d. *Provide a drawing highlighting the locations of all storage bins. In addition, provide plan and elevation drawings of the covered post-processed ASR storage enclosure.*

Southside Recycling Response

Included in Attachment J are drawings (elevation and plan view) of the proposed covered post-processed ASR storage enclosure, steel storage bins, along with approximate locations of other extra miscellaneous storage bins constructed of moveable concrete blocks. Storage bins will be used to store post-processed or intermediate-processed recyclable materials. Due to the excessive amount of space available at the Facility, many of the miscellaneous storage bins depicted on some of the renderings submitted with the application are merely placeholders. Nevertheless, the total volume of miscellaneous product storage bins is far in excess of the storage capacity at the Existing Facility, which has proven to be more than adequate. Therefore, the storage capacity for the products to be stored at the Facility will not be an issue.

CDPH Request

9. *Pursuant to 3.9.12.2 of the Rules, provide a copy of the Facility's NPDES permit for industrial stormwater discharge (ILR00) into the Calumet River. A copy of this NPDES permit was previously supplied by RMG to CDPH as part of the permit renewal for the South Shore Recycling RMG facility. The NPDES permit should be updated to reflect operations of the new Facility.*

   In addition, provide a copy of the Notice of Intent (NOI) for construction activity or a copy of the NPDES construction general permit issued by the IEPA Bureau of Water (BOW).

Southside Recycling Response

Included in Attachment K is a copy of the General NPDES Permit for Construction Activity issued to the Facility by the IEPA Bureau of Water. A General Storm Water NPDES Permit for Industrial Activity is not required since storm water from the Facility will discharge to the Metropolitan Water Reclamation District (MWRD) and not to "Waters of the United States". The NPDES Permit previously issued for the campus property by the Illinois EPA is in effect and will remain in effect even after Southside Recycling begins operations, with the exception that the portion of the property leased by Southside Recycling will be specifically excluded from the Permit. The NPDES Permit for the campus property is currently being updated to reflect this change. It should be noted that a retaining wall along the western edge of the campus property prevents any storm water that may not be collected and discharged to the MWRD treatment system from reaching the Calumet River. The Facility will operate in accordance with the SPCC Plan included in Attachment U of the original application. It should also be noted that all water from the Facility will pass through a system of catch basins, detention ponds and/or a triple basin, in order to collect solids and oils, and finally through a voluntarily purchased and installed state-of-the-art water treatment system for removal of other pollutants (i.e., TSS, FOG, etc.) prior to being discharged to the MWRD. The measures described above demonstrate that the water quality of the Calumet River will not be impacted by the Southside Recycling operation.

CDPH Request

10. *Pursuant to paragraph 3.9.12.4 of the Rules, provide the treatment effectiveness of the proposed stormwater treatment unit at removing total suspended solids (TSS) and fats, oil, and greases (FOG). Specifically, provide the treatment efficiency at 1.62 cubic feet per second (cfs), the authorized release rate to the city sewer system. Also, explain the purpose of the caustic additive used by the treatment unit and provide Safety Data Sheets (SDS) for this chemical. In addition, include an O&M plan for the treatment unit and the stormwater detention ponds. Finally, provide detailed drawings and specifications for the triple basin*

located inside the Office and Maintenance Building.

Southside Recycling Response

Based on an analysis of Facility operations, the manufacturer of the proposed storm water treatment system expects the treatment system to remove greater than 90% of TSS and FOG at a discharge rate of 1.62 cfs. The purpose of the caustic additive is pH adjustment and treatment optimization. Included in Attachment L is a copy of a Safety Data Sheet for 50% NaOH along with a copy of the O&M Plan for the treatment unit. Also included in Attachment L is a drawing and specifications for the triple basin associated with the system. Storm water detention ponds and associated inlets will be inspected quarterly for proper drainage and removal of any debris will also be conducted on a quarterly basis. Accumulated sediment from the ponds will be handled and disposed of in accordance with applicable regulations.

CDPH Request

11. *Pursuant to paragraph 3.9.13.2 of the Rules, provide a stacking plan of all trucks and vehicles during the Facility's peak AM and PM traffic hours.*

Southside Recycling Response

Included in Attachment M is a stacking plan for trucks and other vehicles. The stacking plan demonstrates that there is adequate space for trucks within the facility and there should be no staging of trucks on the public way during normal and peak operations.

CDPH Request

12. *Pursuant to paragraphs 3.9.13.4 to 3.9.13.7 of the Rules, provide a traffic study in conformance with the requirements of said paragraphs. A traffic study was previously submitted to CDPH for initial review but was not included in the Application.*

Southside Recycling Response

Included in Attachment N is a copy of the Traffic Study previously submitted to CDPH for initial review which concluded that the surrounding roadway network is designed to accommodate additional traffic potentially generated by Facility operations. This Study, along with the truck stacking plan, further demonstrates the adequacy and capacity of the Facility to avoid staging trucks on the public way during normal and peak operations.

CDPH Request

13. *Pursuant to paragraphs 3.9.14.1 and 3.9.14.2 of the Rules, provide backup calculations on the supplied annual liquid and solid waste generation rates. In addition, give an estimate with backup calculations on the amount of refrigerants anticipated to be recovered each month, and provide the make and model of the EPA-certified device that will be used to recover refrigerants at the Facility. The estimates may be based on the amounts currently collected and recovered at the Existing Facility.*

Southside Recycling Response

The anticipated waste generation rates provided in Section 2.19 of the original application are estimates based on historical rates at the Existing Facility. Included in Attachment O are calculations of the estimated amount of refrigerants anticipated to be recovered each month. Also included in Attachment O are specifications for the EPA-certified device anticipated to be used for recovery of refrigerants at the Facility. It should be noted that the amount of refrigerants anticipated to be recovered will be less than 1/3 of the amount generated at the Existing Facility. This is due to the reduced number of peddlers expected to deliver scrap to the new facility and since peddlers are the primary source of refrigerant-containing materials. It should also be noted that the Facility will have extra recovery units and recovery tanks (i.e., 50-pound cylinders) on hand to ensure that the Facility will have more than enough capacity to handle and process all recyclable materials delivered to the Facility.

CDPH Request

14. *Pursuant to paragraph 3.9.18 of the Rules, provide a stormwater pollution prevention plan (SWPPP). Although the Facility predominantly drains into detention ponds discharging into the city's combined sewer system, CDPH found in the grading plan that the western perimeter of the property is graded towards the river at 4.5%. CDPH assumes this area is where barge loading may occur. Finally, the Facility sits on a property subject to an NPDES permit, as noted in item 9 above.*

Southside Recycling Response

As noted in the Response to CDPH Request 9 above, the Facility will discharge to the Metropolitan Water Reclamation District (MWRD) and not to "Waters of the United States". Storm water will be contained and managed by an elevated rail track and a retaining wall along the western edge of the campus property. Implementation of the SPCC Plan that will further prevent any storm water that may not be collected and discharged to the MWRD treatment system from reaching the Calumet River. Water from the Facility will also be contained and managed by the system of catch basins, detention ponds and a triple basin, in order to collect solids and oils, and also by the voluntarily purchased and installed state-of-

the-art water treatment system for removal of other pollutants (i.e., TSS, FOG, etc.) prior to being discharged to the MWRD.

CDPH Request

15. *Pursuant to paragraph to paragraph 3.9.19.4 of the Rules, provide a noise monitoring plan to continuously record sound pressure levels at the Facility and to collect the data required in 4.6.1 of the Rules.*

Southside Recycling Response

Included in Attachment P is a draft noise monitoring plan along with specifications for the proposed noise meter that will be placed in the same general location as the PM-10 monitor (near the Northeast corner of the campus property). The Noise Impact Assessment included in Attachment T of the original application indicates that the Facility will be in compliance with applicable noise regulations. Sound pressure levels recorded by the noise meter will be periodically reviewed to ensure that any noise from Facility operations remains below allowable levels.

CDPH Request

16. *Pursuant to 3.9.20, indicate on a plan drawing the location of all storage tanks listed under Table G-2 of the SPCC Plan. Provide drawings and specifications of the hydraulic oil storage tank area located inside the Office and Maintenance Building.*

Southside Recycling Response

There will be two 550-gallon hydraulic tanks located in the NW corner of the maintenance building at the Facility. They will sit within a containment box that measures 6.5’ wide by 12.75’ long by 2.25’ tall. Two 275-gallon used oil tanks will also be located in the NW corner of the building. They will sit within a containment box that measures 5’ wide by 7.5’ long by 3’ tall. Included in Attachment Q is a drawing showing the expected locations of the aboveground storage tanks (ASTs) anticipated to be installed at the Facility along with a schematic of the hydraulic oil ASTs. Final AST locations will be determined following a review by Chicago Fire Prevention Bureau.

CDPH Request

17. *Pursuant to paragraph 3.9.21.1 of the Rules, provide the following information relating to the emissions and air dispersion modeling study ("Air Study”):*

    a. *Provide the layout drawings for the ferrous material and non-ferrous material processing*

systems. These layouts were included in the metals modeling report submitted to IEPA. However, these drawings were both redacted in CDPH's copy of said IEPA report.

Southside Recycling Response

The layouts of the processing systems for the ferrous and non-ferrous material processing systems are proprietary and contain information critical to the ongoing sustainability of the business. The information contained in the drawings would reveal information regarding the Facility's proprietary processes that yield processing and recycling rates that are unmatched in the industry. However, any and all information regarding environmental impacts of the ferrous and nonferrous material processing systems are being presented in the following manner: 1) The location of the systems are shown on the site plans included in the application; 2) All the equipment that comprise each of the systems are listed in the APC Permit and are included in Attachment G; 3) Detailed descriptions of equipment and material transfer points are listed in Appendix A and Appendix B of the Air Dispersion Modeling Reporting which is included in Attachment V of the original application; and 4) Air Dispersion Modeling results, submitted to and approved by Illinois EPA Bureau of Air, accounted for all equipment including exact location at the Facility.

b. *Provide calculation of dust emissions due to vehicle travel over paved and unpaved surfaces.*

Southside Recycling Response

Included in Addendum 1 – Attachment R are calculations of PM-10 emissions due to vehicle travel over paved and unpaved surfaces. The information provided identifies the procedures used to calculate emissions and identifies the source of the information used in the calculations.

As described herein, the majority of the roads will be paved. For purposes of the IEPA construction permit application, it was estimated that less than 5% of the vehicle travel areas would be unpaved and the unpaved areas would not be routinely traveled. Due to the anticipated low usage of unpaved areas, unpaved road emissions were not considered in the modeling but were included in the permit application for completeness.

c. *The emission rate for the Fines Processing System of .0086 should be in pounds per minute (lbs./min), not pounds per hour (lbs./hr.). In addition, this value was not computed using the dry standard cubic feet (dscf) value. Show that: i) the correct emission rate was used in the dispersion modeling; ii) the loss of accuracy in not using the dscf value in calculating the emission rate out of the Fines Processing System stack is insignificant.*

Southside Recycling Response

Fines Processing System Baghouse Emission Rate:
Review of the PM10 modeling data confirmed that the lb/min emission rate from Dust Collector DC-01 was actually modeled as a lb/hr value. The lb/min value was converted to a lb/hr value (0.5413 lb/hr) and the model was re-run to evaluate the impact of the revised PM_{10} emission rate. The results of the revised model showed that the 6th highest predicted 24-hour average concentration increased slightly from 29.37 ug/m^3 to 30.02 ug/m^3, which is still significantly below the standard as shown in the table below.

Revised PM_{10} Predicted Impacts

Pollutant	Meteorological Data	Averaging Period	Rank	AERMOD Predicted Concentration (µg/m^3)	Coordinates	
					East (m)	North (m)
PM_{10}	2012-2016	24-HR	6TH	30.02	454091	4614866

Comparison of Modeling Results to NAAQS Standard for PM_{10}

Parameter	Units	24-Hour Average
PM10 NAAQS Standard	µg/m3	150.00
Maximum Predicted PM10 Impact	µg/m3	30.02
Predicted Impact Meets Standard	Yes/No	Yes

It should be noted that the metals modeling performed previously did use the correct particulate matter emission rate from DC-01 (0.5413 lb/hr).

Standard Cubic Feet vs. Dry Standard Cubic Feet:
Applying additional correction for actual standard cubic feet versus the dry standard cubic feet used in the current calculations is not expected to affect the result. There are no combustion sources or water sprays in the fines processing building that increase moisture in the dust collector exhaust and limit the difference between these values. Under these conditions, adjusting the flow rate to dry standard cubic feet is not expected to impact the predicted PM_{10} concentrations.

d. Describe emission sources near the west PM 10 monitor that may preclude its use as an upwind monitor in determining RAL episodes.

Southside Recycling Response

The placement of the west PM-10 monitor is anticipated to be in the Northwest corner of the campus property. The activities closest to this location include vehicle traffic and barge loading. It is the opinion of air emissions experts that this is the most appropriate "upwind" location and the best possible way to minimize the potential of measuring PM-10 emissions from on-site activities. It should be noted, however, that while the predominant wind direction in the Chicago area is generally west to east, it may not always be possible to avoid measuring PM-10 emissions at the "upwind" monitor due to variations in wind direction and speed.

CDPH Request

18. *Pursuant to 3.10.1.3 of the Rules, provide detailed specifications, including maintenance and calibration requirements, of the radiation detectors depicted in sheet TM-01 of Attachment R. Describe procedures that will be followed upon detection of high radiation levels, including, but not limited to, the identification of source isotopes, notification to regulatory agencies, and the handling or storage of radioactive materials, as necessary.*

Southside Recycling Response

Included in Attachment T is correspondence from RadComm which includes specifications, maintenance and calibration requirements for the radiation detectors in sheet TM-01. Also included in Attachment T are procedures for screening potential radioactive material which was developed in consultation with the Illinois Emergency Management Agency (IEMA). Potential radioactive materials that are segregated at the Facility will be stored in a secure room prior to being picked up by IEMA personnel. Radioactive materials picked up from the Facility will be handled and disposed of by IEMA under the Illinois Orphan Source Recovery Program, which is a non-emergency response hazard mitigation program that collects and properly disposes of unwanted or abandoned radioactive material.

CDPH Request

19. *Pursuant to 3.10.2.2 of the Rules, provide detailed calculations estimating the peak daily quantities of material that can be accepted at the Facility, taking into consideration the process flow rates in 3.10.3.1, the staging and storage volumes in 3.9.11.3, truck stacking capacity in 3.9.13.2, the emission limits imposed by IEPA, and other pertinent factors. The estimated material quantities shall be provided on a tons per day basis and include all*

assumptions used in the calculation.

Southside Recycling Response

While the Illinois EPA Permit for the Facility does not include daily production limits, a daily rate has been estimated to demonstrate that the peak daily quantity of material can be accepted and processed at the Facility. Based on the Illinois EPA Permit which allows the Facility to handle and process up to 100,000 tons of material per month and based on historical data indicating that the Existing Facility receives approximately 50% less material on Saturdays, this yields approximately 4,228 tons of inbound material per day (100,000 tons/month X 1 month/4.3 weeks X 1 week/5.5 days). As outlined in the enclosed Truck Stacking Plan, the estimated peak unloading capacity at the Facility is 900 tons per hour. Assuming trucks are capable of unloading at the maximum rate for 14 hours, the peak quantity of metal that could be accepted at the Facility is 12,600 tons per day. As outlined in the response to CDPH Request 8, the Facility has approximately 102,167 cubic yards of space available for staging of inbound material. Assuming an approximate weight of 15 pounds per cubic foot for unprocessed ferrous scrap, the staging area in front of the shredder could accommodate over 20,000 tons of material (15 pounds/cubic foot X 27 cubic feet/cubic yard X 102,167 cubic yards X 1 ton/2,000 pounds = 20,689 tons). This represents enough space to stage inbound material for almost five days if the Facility shredding system did not operate during the five day period. While the Illinois EPA Permit does not limit shredding system production on a daily basis, it does currently include daily operating limits (12 hours per day Monday through Friday, 10 hours on Saturday). Assuming the shredding system operates at 500 tons per hour, the system is capable of processing 6,000 tons of material in one day (12 hours/day X 500 tons/hour), which is significantly more than 4,228 tons.

CDPH Request

20. *Pursuant to 3.10.2.3 of the Rules, provide documentation that the Facility can determine and record the amounts of material in tons entering and exiting the Facility and the quantities of materials processed at the Facility. Such documentation may include sample reports from the Existing Facility and must show the facility can track all inbound and outbound loads, and generate reports summarizing hourly, daily, weekly, and monthly material deliveries and shipments broken down by material type and by mode of transportation (trucks, peddler vehicles, barges, etc.).*

Southside Recycling Response

Included in Attachment U is an example of the information that will be documented and recorded for each load of material entering and exiting the facility through a Tableau tracking system. As demonstrated by the example provided, this is a robust system capable of tracking all inbound and outbound loads and generating detailed reports summarizing material deliveries and shipments broken down by material type and by mode of transportation.

CDPH Request

21. *Pursuant to 3.10.3.1 of the Rules, demonstrate that the peak capacity determined in item 19 above can process the anticipated peak-season maximum daily quantities. The peak-season maximum daily quantities may be determined based on historical data from the Applicant's Existing Facility.*

Southside Recycling Response

As detailed in the response to CDPH Request 19 above, the Facility is capable of processing substantially more than the permitted amount of 100,000 tons per month. Based on historical data from the Existing Facility along with knowledge of the metal recycling market, the expected peak volumes of inbound material will be 20% to 25% less that the monthly permitted amount. Since it has been demonstrated that the Facility can easily handle and process in excess of 100,000 tons per month, the Facility is clearly capable of processing peak material volumes.

CDPH Request

22. *Pursuant to 3.10.2 of the Rules, provide a health and safety plan that includes all job hazards assessment. The health and safety plan and hazards assessment from the Existing Facility may be submitted to satisfy this requirement.*

Southside Recycling Response

Included in Attachment V is the draft health and safety plan and job hazard assessment matrix for the Facility.

CDPH Request

23. *Pursuant to 3.10.3 of the Rules, provide a description and results of any OSHA-required worker air and noise exposure sampling for the Facility. Such information from the Existing Facility may be submitted to satisfy this requirement. The CDPH may request new personal monitoring and analysis as part of the permit conditions. Such monitoring plan must be prepared by an appropriate professional under OSHA regulations.*

Southside Recycling Response

Hearing protection will be provided to workers in certain areas that, based on experience at the Existing Facility, could potentially require hearing protection. In order to comply with OSHA Standard 1910.95, Occupational Noise Exposure, Southside Recycling will contract with a Certified Industrial Hygienist (CIH) to determine the areas within the Facility that produce noise levels at 85 decibels or more using a sound level meter. Employees working in these identified areas will be entered into the Hearing Conservation Program where they will receive training and testing in accordance with the Standard. The CIH will also assess areas at the Facility that may require a respiratory protection program. Based on conditions at the Existing Facility, a respiratory program is not required. However, once the Facility is operational, to comply with OSHA Standard 1910.134, Respiratory Protection, Southside Recycling will contract with the CIH to establish baseline levels, which will then be used to determine whether repeat air monitoring is necessary.

CDPH Request

24. *Pursuant to 3.10.4.2 and 3.10.4.3 of the Rules, provide a list of all flammable or explosive materials used in the day-to-day operation of the Facility and their amounts. This information may be derived from operations at the Existing Facility. In addition, provide specifications for the explosion-proof containers/cabinets and their locations at the Facility.*

Southside Recycling Response

Included in Attachment W is a list of flammable or explosive materials anticipated to be used at the Facility along with an estimated maximum amount of each material anticipated to be on site at any one time.

CDPH Request

25. *Pursuant to 3.10.4.4 of the Rules, provide a description of the devices and measures that will be implemented to prevent explosion and damage to the regenerative thermal oxidation (RTO) unit.*

Southside Recycling Response

An air monitor/bypass damper system will be installed to monitor the shredder exhaust stream for potentially explosive gases and allow such gases to bypass the RTO in order to prevent explosion and damage to the RTO. Included in Attachment X is a thorough narrative that was provided to Illinois EPA detailing the equipment and procedures to be implemented at the Facility to prevent explosion and damage to the RTO. Also included in Attachment X are specification sheets for the Flammability Analyzer (LEL Monitor) that will measure the Lower Explosive/Flammability Level of the shredder exhaust stream.

CDPH Request

26. *Pursuant to 3.10.4.5 of the Rules, provide specifications and locations of all fire extinguishers at the Facility.*

Southside Recycling Response

Included in Attachment Y is a site plan that delineates the approximate location of fire extinguishers anticipated to be in place at the Facility. These locations were selected based on the size and potential hazards at the Facility. Exact locations of fire extinguishers will be finalized after fire prevention professionals are consulted and construction of the Facility is complete.

CDPH Request

27. *Pursuant to 3.10.4.7 of the Rules, provide specifications and the locations of the thermal infrared detection devices used for monitoring stockpile hotspots. For each designated location, show the spatial extent that is covered by the detector. Provide standard operating procedures on their use, including protocols when a potential hot spot is detected.*

Southside Recycling Response

Included in Attachment Z is a specification sheet for the six (6) thermal cameras anticipated to be installed at the Facility along with a site plan that delineates the approximate location of each camera at the Facility and the spatial extent covered by each detector. Also included in Attachment Z are operating procedures for the cameras and procedures for responding to a hot spot.

CDPH Request

28. *Pursuant to 3.10.7 of the Rules, provide a vector control plan for the effective prevention and control of rodents, mosquitos, and other Vectors. The vector control plan serviced by a vector control special at the Existing Facility may be provided to satisfy this requirement.*

Southside Recycling Response

Included in Attachment AA is a letter from Smithereen Pest Management Services (Smithereen) documenting that Smithereen has been contracted to prepare a vector control plan (Plan) for the Facility. According to Smithereen, a final Plan cannot adequately be prepared during the winter months due to the lack of vectors during cold weather. Smithereen recommends waiting until construction of the Facility is complete and until spring weather arrives in April before preparing a final Plan. Nevertheless, the attached letter lists the procedures that Smithereen anticipates performing as part of the Plan in order to control vectors. A final vector control plan will be submitted to CDPH as soon as it is prepared by Smithereen.

CDPH Request

29. *Pursuant to 3.10.8.3 of the Rules, provide an operating plan for each vehicle listed in section 3.8 of the Application and the mobile fuel truck listed in Table G-2 of the SPCC Plan. The operating plan shall include the specific use of the vehicle and its location at the Facility, licenses and certifications required, and a schedule of preventive maintenance checks and services (PMCS).*

Southside Recycling Response

Included in Attachment BB is a draft Vehicle Operating Plan for the Facility that lists potential activities to be performed by each vehicle. It should be noted that each vehicle may be used for a variety of purposes. For instance, the front-end loaders may be used to load processed ferrous scrap, to load shredder fluff or to consolidate scrap material into piles. The amount of time that each front-end loader will spend performing each task will constantly be changing, and one or more of those tasks may not even be performed by a particular vehicle on any given day. An operating plan for each vehicle to be used at the Facility is not appropriate since the proposed vehicles merely serve as support equipment for recycling operations within the Facility. Operation of vehicles within a facility do not require licenses or certifications However, certain vehicles (i.e., forklifts) that may be regulated by OSHA will comply with applicable regulations. Preventive maintenance checks and services will be performed as recommended by the vehicle manufacturer.

CDPH Request

30. *Pursuant to 3.10.8.5 of the Rules, provide the process rate or capacity for each vehicle in item 29 above.*

Southside Recycling Response

As outlined in the Response to CDPH Request 29, the vehicles proposed to be operated at the Facility will merely serve to support recycling operations and, as such, none of the vehicles can be assigned a process rate or capacity. However, the size and number of vehicles at the Facility will ensure that all inbound and outbound materials can be handled efficiently, even during peak operating levels.

CDPH Request

31. *Pursuant to 3.10.9 of the Rules, provide the waste characterization profile of the shredder fluff currently generated at the Existing Facility. Describe any treatment that may be necessary to render the shredder fluff a non-hazardous waste prior to its shipment offsite. Finally, indicate the disposition of the shredder full at the landfill (used as daily cover, disposed of as waste, etc.). All information and documentation of landfill approval must be supported by the waste characterization provided. Any additional sampling and landfill approval for waste generated at the facility must be provided, including any changes in the sample profile, waste manifesting, and disposal criteria.*

Southside Recycling Response

Waste characterization profiles for the shredder fluff generated at the Existing Facility demonstrate that the shredder fluff is nonhazardous. However, such profiles and associated laboratory analysis results cannot be utilized for landfill approval of the shredder fluff at the new facility. As such, shredder fluff to be generated will need to be collected and a new waste characterization profile will need to be obtained from the landfill once the Facility is operational. Regardless, the most recent Waste Profile and associated laboratory analytical results for the shredder fluff from the Existing Facility are included in Attachment CC. No treatment is necessary to render shredder fluff a non-hazardous waste prior to shipment offsite. It should be noted that the Existing Facility voluntarily chose to introduce a stabilization product into the nonferrous material process even though the vast majority of metal shredding facilities in the United States do not introduce any such stabilization materials into their process. Initially, Southside Recycling plans to utilize stabilization material at the new facility and to continue disposing of the shredder fluff at Newton County Landfill.

The expectation is that the landfill, at their discretion, will utilize the fluff as daily cover.

CDPH Request

32. *Pursuant to 3.10.9 of the Rules, provide the Fugitive Particulate Operating Program that was submitted to the IEPA. Said operating program must be supplemented as necessary to provide all the information required under 3.10.10.1 through 3.10.10.6 of the Rules. In addition, provide the following additional information:*

Southside Recycling Response

Included in Attachment DD is a copy of the Fugitive Particulate Operating Program that was submitted to the IEPA.

a. *The rated effectiveness of the proposed street sweeper at removing fine particulates such as PM10;*

Southside Recycling Response

Included in Attachment EE are the specifications for the street sweeper anticipated to be used at the Facility. The specifications for the street sweeper do not include rated effectiveness at removing fine particulates such as PM10. However, the street sweeper is typical of those used for cleaning paved surfaces.

b. *Plans and specifications of the Shaker structure as depicted in the One-Line Diagram, the onsite vehicle movement drawing in Attachment R, and other drawings;*

Southside Recycling Response

The referenced "Shaker" structure is simply a set of two conveyors including a vibratory (shaking) conveyor that load overseas containers. Southside has not yet decided whether this equipment will be installed and operated at the Facility. Potential emissions from these conveyors were included and accounted for in the air dispersion modeling conducted for the Facility. In the event that Southside Recycling decides to install this equipment, CDPH will be provided the required information.

c. *A plan drawing showing the spatial coverage of each Dust Boss equipment.*

Southside Recycling Response

Included in Attachment FF is a plan drawing showing the approximate spatial coverage for each Dust Boss. It should be noted that the coverage of each Dust Boss will vary due to the variability of wind speed and direction on a particular day and time. The proposed location of each Dust Boss was strategically chosen based on the areas within the Facility that are most likely to produce dust and based on the device's ability to mitigate airborne

dust before it reaches property boundaries. However, it should be noted that the number and location of Dust Bosses was not selected with the intent of operating all Dust Bosses simultaneously nor providing coverage for the entire Facility. We know of no other metal recycling facility in the country that employ anywhere near this quantity of Dust Bosses.

d. *A detailed plan and schedule for patrolling and cleaning adjacent areas for litter and ASR Fiber.*

Southside Recycling Response

Included in Attachment GG is a plan and schedule for patrolling and cleaning adjacent off-site areas for materials potentially generated from activities at the Facility. Due to the location of the Facility within the campus property and size of the campus property itself, in combination with the Facility Fugitive Particulate Operating Program, no litter or ASR fiber is expected to travel onto the public way.

CDPH Request

33. *Pursuant to 3.10.11 of the Rules, revise the hours of operation, taking into consideration the restrictions imposed under the IEPA construction air permit ID No. 031600SFX ("IEPA Air Permit"). For example, the IEPA Air Permit limited facility vehicle traffic to 14 hours per day on weekdays and 12 hours per day on weekends. These hours conflict with the 24/7 operation proposed in the Application. Other conflicting hours between the IEPA Air Permit and the Application include the non-ferrous system operation hours and barge loading hours.*

Southside Recycling Response

The IEPA Air Permit was issued as a means of regulating Facility operations by setting limits on certain activities that produce air emissions (i.e., vehicle traffic, non-ferrous system barge loading, etc.). A large percentage of the 24/7 operation proposed in the original application will involve activities (i.e., equipment and vehicle maintenance) that do not produce air emissions and thus, would not be addressed in the IEPA Air Permit. Therefore, the hours of operation in the IEPA Permit and the LRF Permit do not coincide. Regarding instances in which a particular activity is regulated by both the IEPA Permit and the LRF Permit, the Facility will operate in accordance with the more restrictive permit.

CDPH Request

34. *Pursuant to 11-4-2530(I), provide an odor control plan that addresses the potential odors at*

the Facility. Such plan shall include, but may not be limited to, the following:

a. An inventory of odor-emitting activities;

b. The location, time, and duration of each odor-emitting activity;

c. An odor mitigation plan that includes specific administrative and/or engineering controls and best management practices for each odor-emitting activity;

d. Routine odor inspections around the Facility and nearby adjacent Sensitive Areas; and

e. Protocols for investigating odors discovered during routine inspections or as reported in an odor complaint.

Southside Recycling Response

Included in Attachment HH is an odor monitoring plan for the Facility. With regard to odor control, it should be noted that at metal shredding facilities, the shredding operation is the most likely source of odors. The most proven and effective method of controlling odors generated from a metal shredding process is the operation of an RTO for the destruction of Volatile Organic Compounds (VOCs). Since the RTO to be installed on the shredder at the Facility has been proven to have a VOC destruction efficiency of >98%, the plan for controlling odors at the Facility is the operation of the RTO.

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment A

Zoning Board of Appeals Findings and Submittal to ZBA

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ZONING BOARD OF APPEALS
CITY OF CHICAGO

City Hall Room 905
121 North LaSalle Street
Chicago, Illinois 60602
TEL: (312) 744-3888

General III, LLC
APPLICANT

178-19-S & 179-19-Z
CALENDAR NUMBERS

11600 S. Burley Avenue
PREMISES AFFECTED

March 15, 2019
HEARING DATE

ACTION OF BOARD

The application for the special use is approved subject to the conditions specified below. The application for the variation is approved.

THE VOTE

	AFFIRMATIVE	NEGATIVE	ABSENT
Farzin Parang, Chairman	x		
Shaina Doar	x		
Sylvia Garcia	x		
Sam Toia	x		
Amanda Williams			x

FINDINGS OF THE ZONING BOARD OF APPEALS IN THE MATTER OF THE SPECIAL USE AND VARIATION APPLICATIONS FOR 11600 S. BURLEY AVENUE BY GENERAL III, LLC

I. BACKGROUND

General III, LLC (the "Applicant") submitted a special use application and a variation application for 11600 S. Burley Avenue (the "subject property"). The subject property is currently located in PMD-6 and is improved with an existing Class IV-B recycling facility (the "existing facility") operated by the Applicant's parent entity Reserve Management Group ("RMG"). The ZONING BOARD OF APPEALS takes judicial notice of the fact that General Iron Industries, Inc. ("General Iron") recently merged with RMG. This resulted in the creation of the Applicant, which (should the Applicant's applications be granted) would assume General Iron's business activities.[1] The Applicant proposed to construct a metal shredder on a vacant portion of the subject property (the "proposed metal shredder"). This proposed metal shredder would be a relocation of General Iron's metal shredder at 1909 N. Clifton Avenue (the "current metal shredder"). To permit the proposed metal shredder, the Applicant sought: (1) a special use to expand the existing facility to operate a Class IV-B recycling facility[2]; and (2) a variation to reduce the interior landscape area from 260,489 square feet to 3,484 square feet and to reduce the number of interior trees from 2,084 to 10 to accommodate the vehicular use area of the proposed expansion of the existing facility. In accordance with Section 17-

[1] Because of this, General Iron and the Applicant were used interchangeably at the hearing.
[2] In accordance with Section 17-13-0910 of the Chicago Zoning Ordinance.

APPROVED AS TO SUBSTANC

CHAIRMA

APR 22 2019

CITY OF CHICAGO
ZONING BOARD OF APPEALS

13-0903 of the Chicago Zoning Ordinance, the Zoning Administrator of the City's Department of Planning and Development (the "Zoning Administrator") recommended approval of the special use provided that: (1) the special use was issued solely to the Applicant; (2) was developed consistent with the layout and design represented on the site plan dated March 15, 2019 and prepared by Knight E/A, Inc.; (3) all landscaping was installed consistent with the landscape plans, including the plans for the landscape mitigation area along South Avenue O between 114th and 116th Streets, dated March 15, 2019 and prepared by Upland Design, Ltd.; (4) all landscaping was maintained in accordance with Section 17-11-0500 of the Chicago Zoning Ordinance for a period of five (5) years from the date of installation; (5) the Applicant installed air monitors of the type, number and locations as determined and approved by the Chicago Department of Public Health ("DPH"); (6) the Applicant performed noise modeling and monitoring as established and approved by DPH; (7) the Applicant installed the freestanding business identification sign and associated landscaping consistent with the plan dated March 15, 2019 and prepared by Knight E/A, Inc.; and (8) the Applicant installed signage along 116th Street (private) and Avenue O (public) directing trucks to travel south on Avenue O when leaving the facility, consistent with the plan dated March 15, 2019 and prepared by Knight E/A, Inc.

II. PUBLIC HEARING

A. The Hearing

The ZONING BOARD OF APPEALS held a public hearing on the Applicant's special use and variation applications at its regular meeting held on March 15, 2019, after due notice thereof as provided under Section 17-13-0107-B of the Chicago Zoning Ordinance and by publication in the *Chicago Sun-Times*. In accordance with the ZONING BOARD OF APPEALS' Rules of Procedure, the Applicant had submitted its proposed Findings of Fact. RMG's chief operations officer of its existing facility and representative for the Applicant Mr. Hal Tobin, General Iron's vice president of operations Mr. Adam Labkon and the Applicant's attorney Mr. Scott Borstein were present. Also present on behalf of the Applicant were its MAI certified real etate appraiser Mr. Hugh Edfors, its lead architect Ms. Roxanne Knapp, its traffic consultant Mr. Timothy Doron, its landscape architect Ms. Liz DaFoe, its civil and environmental engineer Mr. John Pinion, its civil engineer Mr. Lukasz Sledz, and its economic consultant Dr. Jarrod Welch. Testifying in support of the applications were the following RMG and General Iron employees: Mr. Thomas J. Saozak, Ms. Susana Garcia, Ms. Itzel Martinez, Mr. Darryl Cooper, Mr. Jose Perez and Mr. Brent Mulder. Assistant Zoning Administrator Mr. Steven Valenziano and Coordinating Planner Mr. Nelson Cheung testified on behalf of the City's Department of Planning and Development (the "Department"). Ms. Meleah Geertsma, Ms. Stacy Meyers, Ms. Juliana Pino, Ms. Olga Bautista, Ms. Peggy Salazar, Ms. Victoria Persky, Ms. Carolin Wooten, Ms. Angelika Vassilatos, Ms. Julie Redemacher-Wedd, Mr. Patrick Baranouskas, Mr. Pat Williams and Ms. Olivia Gotsch (collectively, the "Objectors") testified in opposition to the applications. With the exception of certain statements and testimony that will be explained below, the statements and testimony given during the public hearing were given in accordance with the ZONING BOARD OF APPEALS' Rules of Procedure.

The Applicant presented the testimony of its lead architect Ms. Roxanne Knapp. Ms. Knapp testified that the Applicant's proposed metal shredder met all standards necessary for both a special use in a planned manufacturing district and a variation.

The Applicant presented the testimony of General Iron's vice president of operations Mr. Adam Labkon. Mr. Labkon testified that (should the special use and variation be granted) that he would oversee management of the Applicant's proposed metal shredder. He testified as to his history and experience in the metal shredding industry and at General Iron in particular. He testified that General Iron currently processes 740,000 tons of recycling material and is the City's largest metal recycler. He testified that General Iron's current metal shredder was going to close in 2020 and without the Applicant's proposed metal shredder, the City's recycling chain would be terribly disrupted, which would result in significant negative economic and environmental consequences. He then testified as to these consequences. He testified that, therefore, in his opinion, the Applicant's special use would be in the interest of the public convenience and would not have significant adverse impact on the general welfare of the neighborhood.

The Applicant presented the testimony of civil and environmental engineer Mr. John Pinion. Mr. Pinion testified as to how the proposed metal shredder would meet all local, state and federal regulations with respect to pollution and emissions.

The Applicant presented the testimony of RMG's chief operations officer of the existing facility and representative for the Applicant Mr. Hal Tolin. Mr. Tolin testified as to his history and experience in the recycling industry. He then testified as to how, in his opinion, the Applicant's proposed shredder met all standards for a special use in a planned manufacturing district and a variation.

The Applicant presented the expert testimony of its MAI certified real estate appraiser Mr. Hugh Edfors. The ZONING BOARD OF APPEALS recognized Mr. Edfors as an expert in real estate appraisal. Mr. Edfors testified that he had inspected the subject property and prepared a land use report with respect to the proposed metal shredder dated March 2, 2019. He testified that based on the preparation of the land use report, he was very familiar with the subject property, the surrounding manufacturing area and surrounding neighborhoods, the proposed operations of the proposed metal shredder, the values of properties in the area and the proximity of the proposed special use to neighboring residents. He then testified as to how, in his opinion, the proposed special use in a planned manufacturing area and the variation would not have a significant adverse impact on the area, would not negatively impact property values in the area and will, instead, have a positive impact on the area.

The Applicant presented the expert testimony of its traffic consultant Mr. Timothy Doron. The ZONING BOARD OF APPEALS recognized Mr. Doron as an expert in traffic analysis. Mr. Doron testified that he had prepared a traffic impact study with respect to the proposed metal shredder dated February, 2019. He testified as to the

conclusions of his report. He then testified as to his opinion that though the proposed metal shredder would be heavily dependent on truck traffic, such truck traffic would not have a significant adverse impact, would promote pedestrian safety and comfort, would not create any conflicts with other manufacturing activities in the area, would have minimal impact on surrounding businesses and would not have a significant negative impact on any of the surrounding residential areas.

The Applicant presented the expert testimony of Dr. Jarrod Welch. The ZONING BOARD OF APPEALS recognized Dr. Welch as an expert in economic theory. Dr. Welch testified that he had reviewed and analyzed the economic impact of the proposed metal shredder in the South Deering community. He testified that, in his opinion, the proposed metal shredder would generate economic benefit for the area and would have a positive spillover effect on other businesses and other properties in PMD-6.

The Applicant presented the testimony of its civil engineer Mr. Lukasz Sledz. Mr. Sledz testified that he was the lead engineer in connection with designing the proposed metal shredder's storm water management system. He testified that such storm water management system complied with all rules and regulations of the City.

The Applicant presented the testimony of its landscape architect Ms. Liz Dafoe. Ms. Dafoe testified as to how, in her opinion, the Applicant met certain standards for a variation.

The ZONING BOARD OF APPEALS summarized the Applicant's applications to the Objectors. It then asked the Department to discuss the Applicant's argument with respect to its request for a variation.

The Department presented the testimony of Assistant Zoning Administrator Mr. Steven Valenziano. Mr. Valenziano testified as to the history and intent of the Chicago Landscape Ordinance.[3] In particular, he testified the intent was aesthetic in nature, in that the objective of the ordinance was to provide an attractive city with tree-lined streets, cleaner neighborhoods and enhanced property values. He testified that the Landscape Ordinance was written for small-scale parking lots, such as those provided by grocery stores or businesses. He testified that, however, the Landscape Ordinance discussed "vehicular use areas," which includes such things as loading docks, trailer storage yards and gas stations. He testified that such uses often require variations because the traffic circulation of such uses makes compliance with the Landscape Ordinance not feasible. He testified that because the proposed special use will be expanding an existing use on the subject property, the Chicago Zoning Ordinance requires that not only the proposed metal shredder comply with the Landscape Ordinance but also the existing facility.

In response to questions from the ZONING BOARD OF APPEALS, Mr. Valenziano testified that there are currently no trees on the subject property today. He testified that if the Applicant were required to comply with the Landscape Ordinance, it would need to install approximately 2100 trees on the subject property. He testified that if those trees

[3] Chapter 17-11 of the Chicago Zoning Ordinance.

were put on the subject property, there would be no traffic circulation areas and there would be no parking areas.

The ZONING BOARD OF APPEALS then put forth its questions to the Applicant's witnesses. Said questions elicited further testimony from said witnesses.

Mr. Thomas J. Saozak, Ms. Susana Garcia, Ms. Itzel Martinez, Mr. Darryl Cooper, Mr. Jose Perez and Mr. Brent Mulder – all current employees of either General Iron or RMG – testified in support of the applications.

Ms. Meleah Geertsma, home address unknown, testified in opposition to the applications. Ms. Geertsma testified that she was a senior attorney at the Natural Resource Defense Council ("NRDC") and that she was representing the NRDC at the hearing. However, the ZONING BOARD OF APPEALS' Rules of Procedure require that an attorney's client be present, and Ms. Geertsma called no representatives of the NRDC as witnesses. Based on her conduct at the ZONING BOARD OF APPEALS, it is apparent that she considered herself to be her own witness.[4] Consequently and to resolve any confusion[5], the ZONING BOARD OF APPEALS determined her comments at the hearing to be her personal testimony rather than the statements of an attorney advocating on behalf of a client.

Ms. Stacy Meyers, home address unknown, testified in opposition to the applications. Ms. Meyers testified that she was senior counsel at Openlands. However, the ZONING BOARD OF APPEALS' Rules of Procedure require that an attorney's client be present, and Ms. Meyer called no representatives of Openlands as witnesses. Like Ms. Geertsma, the ZONING BOARD OF APPEALS determined her comments at the hearing to be her personal testimony rather than the statements of an attorney advocating on behalf of a client.

In response to Ms. Meyers' testimony, the ZONING BOARD OF APPEALS stated that the written notice of a special use was only provided to property owners within 250 feet of the subject property.[6] It stated that it had not seen any evidence that the Applicant had not provided such required notice.

Ms. Geertsma testified that she and Ms. Meyers understood the formal notice requirements but that she thought everyone should look at reforming such notice requirements.

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[4] Such as, but not limited to, her focus on her master's degree in public and environmental health, her co-authorship of impact maps on the cumulative vulnerability of Chicago and her various blog articles.
[5] "A witness is required to testify on the basis of personal knowledge, while an advocate is expected to explain and comment on evidence given by others. It may not be clear whether a statement by an advocate-witness should be taken as proof or as an analysis of the proof." Ill. Rules of Prof'l. Conduct (201) R. 3.7 Advocate-Witness Rule cmt. 2 (eff. Jan. 1, 2010).
[6] Section 17-13-0107-A(2)(a) of the Chicago Zoning Ordinance.

The ZONING BOARD OF APPEALS stated that such reformation was beyond its powers and that it had to follow the procedures set forth in the Chicago Zoning Ordinance.

Ms. Geertsma testified that she understood.

Ms. Meyers then testified that she did not understand why the Applicant was removing 2000 trees.

Ms. Dafoe testified that the Applicant was not removing 2000 trees. She testified that strict compliance with the Landscape Ordinance would require that the Applicant install 2000 trees on the subject property. She testified that the Applicant did not have the capacity to install 2000 trees and run both the existing facility and the proposed metal shredder on the subject property. She testified that the Applicant had agreed to add 200 trees to Avenue O.

Ms. Meyers then testified that she did not understand why the Applicant was only adding trees to such a small area.

Mr. Borstein clarified to Ms. Meyers that the landscaping requirement under the Chicago Zoning Ordinance was 5.9 acres for the subject property and the Applicant would be providing 6.2 acres of landscaping along Avenue O. He stated that the Applicant was adding landscaping that would not otherwise be required. He stated that the Applicant's landscaping plan was done at the direction and recommendation of the Department.

The ZONING BOARD OF APPEALS then asked the Department to speak to this issue.

The Department presented the testimony of Coordinating Planner Mr. Nelson Chueng. Mr. Chueng testified that given the nature of operations of the subject property, there is no place to provide landscaping on the subject property itself. He testified that as a result, the Applicant will be providing landscaping along Avenue O. He testified as to the Department's actions and recommendations with respect to this landscaping along Avenue O.

Ms. Meyers then asked a series of questions with respect to storm water management. In response to her questions, Mr. Sledz provided further testimony.

Ms. Juliana Pino, home address unknown, testified in opposition to the applications. While a good portion of her testimony was not relevant to the ZONING BOARD OF APPEALS' inquiry, she testified that the current metal shredder had had a fire in 2015 and that she did not have any indication that additional safety measures had been taken with the proposed metal shredder.

In response to Ms. Pino's testimony, Mr. Labkon testified briefly to the 2015 fire and to the safety measures that were incorporated at the current metal shredder after the 2015 fire. He testified that such safety measures would be incorporated at the proposed metal shredder.

Ms. Pino then asked about job training and recruitment. In response to her questions, Mr. Labkon provided further testimony. This led to a long discussion wherein the ZONING BOARD OF APPEALS ultimately noted that local hiring by the Applicant was not a requirement under the Zoning Ordinance for either a special use in a planned manufacturing district or a variation.

Ms. Olga Bautista, of 11100 South Avenue L, testified in opposition to the applications. While most of her testimony was not relevant to the ZONING BOARD OF APPEALS' inquiry, she did testify that she was concerned about air quality, water quality and traffic. In response to her concerns, Mr. Labkon and Mr. Doron provided further testimony.

Ms. Peggy Salazar, of 9719 S. Houston, testified in opposition to the applications. In response to her questions with respect to fire, Mr. Labkon provided further testimony.

Ms. Victoria Persky, of 518 Barry Avenue, testified in opposition to the applications.

Ms. Caroline Wooten, of 70 E. Lake Street, testified in opposition to the applications.

Ms. Angelika Vassilatos, of 5841 S. Ellis Avenue, testified in opposition to the applications.

Ms. Julia Redemacher-Wedd, of 5615 S. Woodlawn Avenue, testified in opposition to the applications.

Mr. Patrick Baranouskas, of Rogers Park, testified in opposition of the applications. In response to his questions, Mr. Labkon testified that the current metal shredder would be closing.

Mr. Pat Williams, of 1682 W. Thorndale Avenue, testified in opposition to the applications.

Ms. Olivia Gostch, of 5550 S. Blackstone Avenue, testified in opposition to the applications.

B. Criteria for a Special Use in a Planned Manufacturing District

Pursuant to Section 17-13-0905-A of the Chicago Zoning Ordinance, no special use application may be approved unless the ZONING BOARD OF APPEALS finds that the proposed use in its proposed location meets all of the following criteria: (1) it complies with all applicable standards of the Chicago Zoning Ordinance; (2) it is in the interest of

the public convenience and will not have a significant adverse impact on the general welfare of the neighborhood or community; (3) it is compatible with the character of the surrounding area in terms of site planning and building scale and project design; (4) it is compatible with the character of the surrounding area in terms of operating characteristics, such as hours of operation, outdoor lighting, noise and traffic generation; and (5) it is designed to promote pedestrian safety and comfort.

Pursuant to Section 17-13-0905-C of the Chicago Zoning Ordinance, in acting on any application within a planned manufacturing district, the ZONING BOARD OF APPEALS must apply the general criteria of Section 17-13-0905-A of the Chicago Zoning Ordinance and make specific findings on the probable effects of the proposed use on: (1) existing manufacturing activities, including the potential for land use conflicts and nuisance complaints; and (2) efforts to market other property within the planned manufacturing district for industrial use.

C. Criteria for a Variation

Pursuant to Section 17-13-1107-A of the Chicago Zoning Ordinance, no variation application may be approved unless the ZONING BOARD OF APPEALS finds, based upon the evidence presented to it in each specific case, that: (1) strict compliance with the standards of the Chicago Zoning Ordinance would create practical difficulties or particular hardships; and (2) the requested variation is consistent with the stated purpose and intent of the Chicago Zoning Ordinance.

Pursuant to Section 17-13-1107-B of the Chicago Zoning Ordinance, in order to determine that practical difficulties or particular hardships exist, the ZONING BOARD OF APPEALS must find evidence of each of the following: (1) the property in question cannot yield a reasonable return if permitted to be used only in accordance with the standards of the Chicago Zoning Ordinance; (2) the practical difficulties or particular hardships are due to unique circumstances and are not generally applicable to other similarly situated property; and (3) the variation, if granted, will not alter the essential character of the neighborhood.

Pursuant to Section 17-13-1107-C of the Chicago Zoning Ordinance, in making its determination of whether practical difficulties or particular hardships exist, the ZONING BOARD OF APPEALS must take into consideration the extent to which evidence has been submitted substantiating the following facts: (1) the particular physical surroundings, shape or topographical condition of the specific property involved would result in a particular hardship upon the property owner as distinguished from a mere inconvenience, if the strict letter of the regulations were carried out; (2) the conditions upon which the petition for a variation is based would not be applicable, generally, to other property within the same zoning classification; (3) the purpose of the variation is not based exclusively upon a desire to make more money out of the property; (4) the alleged practical difficulty or particular hardship has not been created by any person presently having an interest in the property; (5) the granting of the variation will not be detrimental to the public welfare or injurious to other property or improvements in the

neighborhood in which the property is located; and (6) the proposed variation will not impair an adequate supply of light and air to adjacent property, or substantially increase the congestion in the public streets, or increase the danger of fire, or endanger the public safety, or substantially diminish or impair property values within the neighborhood.

III. FINDINGS OF FACT

After careful consideration of the evidence, testimony and the entire record, including the Applicant's proposed Findings of Fact, the ZONING BOARD OF APPEALS hereby makes the following findings with reference to the Applicant's application for a special use pursuant to Section 17-13-0905-A of the Chicago Zoning Ordinance:

1. *The proposed special use complies with all applicable standards of the Chicago Zoning Ordinance.*

   As Ms. Knapp very credibly testified, with the exception of the special use and variation, the Applicant's proposed metal shredder complies with all standards of the Chicago Zoning Ordinance, including but not limited to setbacks, floor area ratio and fencing. Since the ZONING BOARD OF APPEALS has decided to grant both the special use and variation, the proposed special use complies with all applicable standards of the Chicago Zoning Ordinance.

2. *The proposed special use is in the interest of the public convenience and will not have a significant adverse impact on the general welfare of the neighborhood or community.*

   The proposed special use is in the interest of the public convenience because without the proposed metal shredder, there would be a terrible disruption to the recycling chain in the City, with significant negative economic and environmental consequences. The ZONING BOARD OF APPEALS finds Mr. Labkon to be a very credible witness on this point. Further, the proposed special use will not have a significant adverse impact on the general welfare of the neighborhood or community. The subject property is located in PMD-6 and is surrounded by other manufacturing uses, including RMG's existing facility. As very credibly testified to by Mr. Labkon, Mr. Tolin, Mr. Doron, Mr. Pinion and Mr. Sledz, the Applicant's operations will be very well run. The proposed metal shredder will therefore neither disrupt these nearby manufacturing uses nor impact the residential uses further away. Indeed, Mr. Edfors very credibly testified that the proposed metal shredder will not have any negative impact on property values and will, instead, likely have a positive economic impact on the community.

3. *The proposed special use is compatible with the character of the surrounding area in terms of site planning and building scale and project design.*

   The subject property is located in PMD-6. As Ms. Knapp very credibly testified, PMD-6 is characterized by large industrial buildings and significant outdoor operations, including areas for material stockpiles and the accommodation of all

trucking, including staging. The design of the proposed metal shredder includes several buildings and room for significant outdoor operations, including areas for material stockpiles and the accommodation of all trucking, including staging. Therefore, the proposed special use is compatible with the character of the surrounding area in terms of site planning and building scale and project design.

4. *The proposed special use is compatible with the character of the surrounding area in terms of operating characteristics, such as hours of operation, outdoor lighting, noise and traffic generation.*

   The combined testimony of Ms. Knapp, Mr. Labkon, Mr. Tolin, Mr. Doron, Mr. Pinion and Mr. Sledz leaves no doubt that the proposed special use is compatible with the character of the surrounding area in terms of operating characteristics, such as hours of operation, outdoor lighting, noise and traffic generation. The ZONING BOARD OF APPEALS finds Ms. Knapp, Mr. Labkon, Mr. Tolin, Mr. Doron, Mr. Pinion and Mr. Sledz to be very credible witnesses. DPH allows for operating hours between 7:00 AM to 9:00 PM. The Applicant may request a waiver from these operating hours (i.e., to operate longer), but the proposed metal shredder itself would only operate within these hours. These hours are similar to those of the existing facility. The lighting has been designed so that it is directed on-site and does not spill onto any other neighboring properties. The proposed metal shredder will be entirely enclosed which will significantly reduce the noise generated by the shredding operation; moreover, the subject property itself is over 2000 feet from the nearest residence. While there will be more trucks due to the proposed special use, these trucks can be readily accommodated with minimal impact on the surrounding businesses and property owners due to the subject property's access to a favorable street network, the interstate highway system and excellent waterway shipping opportunities.

5. *The proposed special use is designed to promote pedestrian safety and comfort.*

   The subject property is located in a planned manufacturing district, is not accessible by any public right of way and is located over 1500 feet from any residential zoning district. Ms. Knapp has designed the proposed special use to limit the number of walk paths within the facility and all pedestrian walkways will be marked with painted stripes and signage to promote pedestrian safety and comfort. Further, the Applicant will provide a private bus service to shuttle its employees. Again, the ZONING BOARD OF APPEALS finds Ms. Knapp and Mr. Doron to be very credible witnesses.

After careful consideration of the evidence, testimony and the entire record, including the Applicant's proposed Findings of Fact, the ZONING BOARD OF APPEALS hereby makes the following findings with reference to the Applicant's application for a special use pursuant to Section 17-13-0905-C of the Chicago Zoning Ordinance:

1. *The proposed special use will have no negative effect on existing manufacturing activities, including the potential for land use conflicts and nuisance complaints.*

   The proposed metal shredder has been designed to handle all truck movements on-site. The traffic generated by the proposed metal shredder will not negatively impact the other truck-dependent industrial and manufacturing uses in the area. The proposed metal shredder will operate with similar hours of operation to the existing facility. Further, the proposed metal shredder will be completely enclosed, reducing noise and the risk of fire and will be incredibly well-run. In short, the proposed special use shall have no negative effect on existing manufacturing activities, including the potential for land use conflicts and nuisance complaints. Again, the ZONING BOARD OF APPEALS finds Ms. Knapp, Mr. Labkon, Mr. Tolin, Mr. Doron, Mr. Pinion and Mr. Sledz to be very credible witnesses.

2. *The proposed special use will have no negative effect on efforts to market other property within the planned manufacturing district for industrial use.*

   The proposed metal shredder is an industrial use. It is an expansion of the existing facility which is also an industrial use. Therefore, the proposed special use will have no negative effect on efforts to market other property within the planned manufacturing district for industrial use.

After careful consideration of the evidence, testimony and the entire record, including the Applicant's proposed Findings of Fact, the ZONING BOARD OF APPEALS hereby makes the following findings with reference to the Applicant's application for a variation pursuant to Section 17-13-1107-A of the Chicago Zoning Ordinance:

1. *Strict compliance with the regulations and standards of the Chicago Zoning Ordinance would create practical difficulties or particular hardships for the subject property.*

   If the Applicant were to strictly comply with the regulations and standards of the Chicago Zoning Ordinance in this instance, it would be required to not only provide landscaping areas but also install a little more than 2000 trees within the vehicle use area of the subject property. Based on the nature of the Applicant's operations at the subject property, namely that there will be truck, equipment and material movement crossing the entirety of the vehicle use area, such a requirement would preclude the Applicant's ability to run its business. As Ms. Knapp very credibly testified, there is simply no room to install the landscaping without significantly negatively impacting the economics of the Applicant's operations on the subject property – as well as negatively impacting the safety of the Applicant's truck drivers. As Mr. Valenziano very credibly testified, if the required number of trees were installed on the subject property, there would be no

vehicle use areas and vehicles could neither circulate nor park. This creates a practical difficulty or particular hardship for the subject property.

2. *The requested variation is consistent with the stated purpose and intent of the Chicago Zoning Ordinance.*

   Pursuant to Section 17-1-0501 of the Chicago Zoning Ordinance, the requested variation promotes the public health, safety and general welfare because it will ensure truck drivers' safety. Pursuant to Section 17-1-0505 of the Chicago Zoning Ordinance, the requested variation retains and expands the City's industrial base because it will allow for the relocation of the proposed metal shredder. Pursuant to Section 17-1-0508 of the Chicago Zoning Ordinance, the requested variation maintains orderly and compatible land use and development patterns because it will allow land zoned for manufacturing and industrial use to be used by an industrial use.

After careful consideration of the evidence, testimony and the entire record, including the Applicant's proposed Findings of Fact, the ZONING BOARD OF APPEALS hereby makes the following findings with reference to the Applicant's application for a variation pursuant to Section 17-13-1107-B of the Chicago Zoning Ordinance:

1. *The property in question cannot yield a reasonable return if permitted to be used only in accordance with the standards of the Chicago Zoning Ordinance.*

   Mr. Valenziano very credibly testified that if the Applicant were to abide by the Chicago Zoning Ordinance, there would be no circulation areas or parking areas on the subject property. As Ms. Knapp very credibly testified, the Applicant's operations are heavily dependent on vehicle use areas as there is truck, equipment and material movement crossing the entirety of the vehicle use area. In consequence, without the requested variation, the Applicant would be precluded from operating its recycling business on the subject property. Thus, the portion of the subject property the Applicant is leasing would remain vacant and unable to yield a reasonable rate of return. Moreover, the entirety of the subject property would also be unable to yield a reasonable rate of return because without circulation areas or parking areas, RMG's existing facility would not be able to operate either since it is also, as very credibly testified to by Mr. Tolin, has significant outdoor operations that rely on transporting materials by truck.

2. *The practical difficulties or particular hardships are due to unique circumstances and are not generally applicable to other similarly situated property.*

   As Ms. Knapp very credibly testified, the fact that the Applicant's operations are heavily dependent on truck movements and equipment and materials moving all over the site is a unique circumstance and not generally applicable to other property zoned for manufacturing or industrial use as other property zoned for

manufacturing or industrial use typically has indoor operations and large parking areas for employees.

3. *The variation, if granted, will not alter the essential character of the neighborhood.*

   There are currently no trees on the subject property. The subject property is surrounded on all sides by industrial uses, does not abut a public right of way and any landscaping on site would not be visible from any public right of way or residential zoning district (as the nearest residential zoning district is over 1500 feet away). Therefore, the variation, if granted, will not alter the essential character of the neighborhood.

After careful consideration of the evidence, testimony and the entire record, including the Applicant's proposed Findings of Fact, the ZONING BOARD OF APPEALS hereby makes the following findings with reference to the Applicant's application for a variation pursuant to Section 17-13-1107-C of the Chicago Zoning Ordinance:

1. *The particular physical surroundings, shape or topographical condition of the specific property involved would result in a particular hardship upon the property owner as distinguished from a mere inconvenience, if the strict letter of the regulations were carried out.*

   The particular topographical conditions of the subject property – that is, the fact that the Applicant's operations are heavily dependent on truck movements and equipment and materials moving all over the site – results in particular hardship upon not only the Applicant but also upon the property owner[7] because without the requested variation, the Applicant would not be able to operate its business on the subject property.

2. *The conditions upon which the petition for the variation is based would not be applicable, generally, to other property within the same zoning classification.*

   The fact the Applicant's operations are heavily dependent on truck movements and equipment and materials moving all over the site is not a condition generally applicable to other property within a PMD zoning classification. As Ms. Knapp very credibly testified, other manufacturing or industrial uses do not have similar operations. Instead, manufacturing or industrial use typically has indoor operations and large parking areas for employees.

3. *The purpose of the variation is not based exclusively upon a desire to make more money out of the property.*

---

[7] As both the Applicant and South Chicago Property Management, Ltd. are wholly-owned subsidiaries of RMG.

Without the requested variation, the Applicant could not perform its business operations on the subject property. Thus, the purpose of the variation is not based exclusively upon a desire to make more money out of the subject property but is instead necessary for the Applicant to operate. Further, as the Applicant will be landscaping 6.2 acres alongside Avenue O, it will be expending money with respect to the variation.

4. *The alleged practical difficulty or particular hardship has not been created by any person presently having an interest in the property.*

   As very credibly testified to by Ms. Knapp and Mr. Valenziano, it is the Chicago Zoning Ordinance itself that creates the practical difficulty or particular hardship in this instance. It has not been created by the Applicant, South Chicago Property Management, Ltd. or RMG.

5. *The granting of the variation will not be detrimental to the public welfare or injurious to other property or improvements in the neighborhood in which the property is located.*

   The variation is to allow the Applicant to obtain a waiver from the Chicago Landscape Ordinance for its vehicle use area. Currently, there are no trees on the subject property. The subject property is surrounded on all sides by industrial uses, does not abut a public right of way and any landscaping on site would not be visible from any public right of way or residential zoning district (as the nearest residential zoning district is over 1500 feet away). Nevertheless, the Applicant will be providing 6.2 acres of landscaping along Avenue O, which is a public right of way. Such landscaping will be vast improvement to Avenue O as the Applicant will be following the recommendations of the Department as very credibly testified to by Mr. Chueng and Ms. Dafoe. Therefore, the granting of the variation will not be detrimental to the public welfare or injurious to other property or improvements in the neighborhood in which the subject property is located.

6. *The variation will not impair an adequate supply of light and air to adjacent property, or substantially increase the congestion in the public streets, or increase the danger of fire, or endanger the public safety, or substantially diminish or impair property values within the neighborhood.*

   The variation is to allow the Applicant to obtain a waiver from the Chicago Landscape Ordinance for its vehicle use area. There are currently no trees on the subject property and with the waiver, there will be the addition of ten trees on the subject property. Thus, the variation will not impair an adequate supply of light and air to adjacent property, increase the congestion in the public streets or increase the danger of fire. It will also not endanger the public safety or substantially diminish or impair property values within PMD-6.

IV. CONCLUSION

For all of these reasons, the ZONING BOARD OF APPEALS finds that the Applicant has proved its case by evidence, testimony and the entire record, including the Applicant's proposed Findings of Fact, covering: (1) the specific criteria for a special use in a planned manufacturing district pursuant to Sections 17-13-0905-A and C of the Chicago Zoning Ordinance; and (2) the specific criteria for a variation pursuant to Sections 17-13-1107-A, B and C of the Chicago Zoning Ordinance.

The ZONING BOARD OF APPEALS hereby approves the Applicant's application for a special use in a planned manufacturing district, and pursuant to the authority granted to the ZONING BOARD OF APPEALS by Section 17-13-906 of the Chicago Zoning Ordinance, the Zoning Administrator is authorized to permit said special use subject to the following conditions:

1. The special use shall be issued solely to the Applicant;

2. Development shall be consistent with the layout and design represented on the site plan dated March 15, 2019, and prepared by Knight E/A, Inc.;

3. All landscaping shall be installed consistent with the landscape plans, including the plans for the landscape mitigation area along South Avenue O between 114th and 116th Streets, dated March 15, 2019, and prepared by Upland Design, Ltd.;

4. All landscaping shall be maintained in accordance with Section 17-11-0500 of the Chicago Zoning Ordinance for a period of five (5) years from the date of installation;

5. The Applicant shall install air monitors of the type, number and locations as determined and approved by DPH;

6. The Applicant shall perform noise modeling and monitoring as established and approved by DPH;

7. The Applicant shall install the freestanding business identification sign and associated landscaping consistent with the plan dated March 15, 2019, and prepared by Knight E/A, Inc; and

8. The Applicant shall install signage along 116th Street (private) and Avenue O (public) directing trucks to travel south on Avenue O when leaving the facility, consistent with the plan dated March 15, 2019, and prepared by Knight E/A, Inc.

The ZONING BOARD OF APPEALS hereby approves the Applicant's application for a variation, and the Zoning Administrator is authorized to permit said variation.

This is a final decision subject to review under the Illinois Administrative Review Law, 735 ILCS 5/3-101 *et seq.*

Special Use (within PMD)

EXHIBIT C

[ATTACH ALL OTHER DOCUMENTS SUCH AS SITE PLANS, LETTERS OF SUPPORT, ETC.]

Exibit A
Lay Witnesses

Hal Tolin

South Chicago Property Management Company, Ltd. and General III

HalTolin@reserve-group.com

Adam Labkon

General Iron

adam@general-iron.com

Address: 11600 South Burley Avenue
ZBA Docket: 178-19-S and 179-19-Z
Hearing Date: March 15, 2019

AFFIDAVIT

The undersigned, Hal Tolin, being first duly sworn on oath states as follows:

I, Hal Tolin, intend to be a witness at the Chicago Zoning Board of Appeals hearing on Friday, March 15, 2019, and to provide testimony consistent with the Proposed Findings of Fact in the matter of special use and variation applications, Calendar Numbers: 178-19-S and 179-19-Z, for address: 11600 South Burley Avenue, Chicago, Illinois.

FURTHER AFFIANT SAYETH NAUGHT.

3-4-19
Signature, Date

Hal Tolin
Printed name

South Chicago Property Management, Ltd and General III, LLC
Employer, Title

11600 South Burley Avenue, Chicago, Illinois
Employer Address

SUBSCRIBED AND SWORN
To before me this 4th day of March 2019.

Denise E. Follmar
Notary Public

DENISE E. FOLLMAR
Notary Public, State of Indiana
Lake County
Commission # 697056
My Commission Expires
February 22, 2025

AFFIDAVIT

The undersigned, Adam Labkon, being first duly sworn on oath states as follows:

I, Adam Labkon, intend to be a witness at the Chicago Zoning Board of Appeals hearing on Friday, March 15, 2019, and to provide testimony consistent with the Proposed Findings of Fact in the matter of special use and variation applications, Calendar Numbers: 178-19-S and 179-19-Z, for address: 11600 South Burley Avenue, Chicago, Illinois.

FURTHER AFFIANT SAYETH NAUGHT.

3/4/19
Signature, Date

Adam Labkon
Printed name

General Iron Industries, Inc.
Employer, Title

1909 North Clifton Avenue, Chicago, Illinois
Employer Address

SUBSCRIBED AND SWORN
To before me this 4th day of March, 2019.

Notary Public

Official Seal
Liset Menendez
Notary Public State of Illinois
My Commission Expires 11/21/2020

ADAM LABKON

Vice President of Operations

Bachelor of Science

Economics and Psychology,

Northwestern University

Professional Experience

1992 – Present: *Vice President of Operations, General Iron*

- Deployed the first shredder in the country of its size to be enclosed to mitigate sound, dust, and ensure safety
- Employed extensive dust mitigation system with a series of dust bosses, water sprayers upon entrance to facility, street sweeper, water truck, shredder enclosure, high efficient filter roll media
- Developed proprietary technology to segregate metals before landfilling resulting in 1,000 + tons a year diverted from landfills
- Only Recycling facility in Chicago to accept items that have no resale value and result in a cost to handle for purpose of getting these items off the streets, including obsolete TVs, pressurized cylinders, PCB containing ballasts, and mercury switches

Special Use (within PMD)

EXHIBIT B

[ATTACH ALL EXPERT REPORTS]

Exhibit B
Expert Witnesses

Roxanne Knapp
Director of Architecture, Knight E/A, Inc.
221 North LaSalle Street, Suite 300,
Chicago, Illinois
rknapp@knightea.com

Ermin Skrebo
Architect, Knight E/A, Inc.
221 North LaSalle Street, Suite 300,
Chicago, Illinois
eskrebo@knightea.com

Lukasz Sledz
Civil Engineer, Knight E/A, Inc.
221 North LaSalle Street, Suite 300,
Chicago, Illinois
lsledz@knightea.com

Hugh Edfors
Appraiser, The Edfors Group
1150 N. Lake Shore Drive, Suite 18K
Chicago, Illinois
theedforsgroup@yahoo.com

Liz DaFoe
Landscape Architect, Upland Design Ltd.
1250 West 18th Street
Chicago, Illinois
ldafoe@uplanddesign.com

John Pinion
Principal Engineer, RK & Associates,
Inc. 2 South 631 Route 59, Suite B,
Warrenville, Illinois
jpinion@rka-inc.com

Timothy Doron
Senior Transportation Consultant,
Sam Schwartz Engineering
223 West Jackson Boulevard, Suite 1101
Chicago, Illinois
tdoron@samschwartz.com

Dr. Jarrod Welch
Associate Principal,
Charles River Associates
One South Wacker Drive, 34th Floor
Chicago, Illinois
jarrod.welch@gmail.com

AFFIDAVIT

The undersigned, Roxanne Knapp, being first duly sworn on oath states as follows:

I, Roxanne Knapp, intend to be a witness at the Chicago Zoning Board of Appeals hearing on Friday, March 15, 2019, and to provide testimony consistent with the Proposed Findings of Fact in the matter of special use and variation applications, Calendar Numbers: 178-19-S and 179-19-Z, for address: 11600 South Burley Avenue, Chicago, Illinois.

FURTHER AFFIANT SAYETH NAUGHT.

Roxanne M Knapp 3.4.2019
Signature, Date

Roxanne Knapp
Printed name

Knight E/A, Inc., Director of Architecture
Employer, Title

221 North LaSalle Street, Suite 300, Chicago, Illinois
Employer Address

SUBSCRIBED AND SWORN
To before me this 4th day of March, 2019.

Samantha Alsbury
Notary Public

OFFICIAL SEAL
SAMANTHA ALSBURY
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:09/19/21

KNIGHT
Engineers & Architects

ROXANNE M. KNAPP, RA, NCARB, LEED GA
Director of Architecture

EDUCATION
BA/1990/Architecture and Design/
University of Illinois at Chicago

REGISTRATION/CERTIFICATIONS
1994/Registered Architect/Illinois

National Council of Architectural Registration Boards (NCARB)

LEED Green Associate

INDUSTRY EXPERIENCE
8 Years with Knight
28 Years of Experience

EXECUTIVE SUMMARY
As Director of Architecture, Ms. Knapp brings a wide range of experience in project management, project design, programming, contract documents and construction administration, with extensive client interface in all phases of design to the Knight team. She has completed architectural work for educational, commercial, and federal projects and has proven abilities in management, staffing, team leadership, production, creative problem solving and effective budget/cost control.

PROJECT EXPERIENCE

Illinois Department of Transportation
US 41 at Deerpath Road Pump Station 38 **2017-Present**
Lead Architect – Responsible for architectural services for the relocation and design of Pump Station 38 replacement in Lake Forest, Illinois. The new pump station and related drainage improvements will address significant historical flooding of the U.S. Route 41 underpass with Deerpath Road. The project will include extensive storm sewer and storm water detention improvements that will protect against flooding of the underpass.

Forest Preserve District of DuPage County
Blackwell Fleet Management Building Design **2006-Present**
Supervisor – Responsible for overseeing all architecture services related to design of the new 27,600 SF Blackwell Fleet Management Building.

DuPage County Facility Management
Facilities Management Task Order **2010-Present**
Project Manager – Responsible for architectural tasks assigned under the direction of the County's Director of Facilities Management. Tasks have included schematic design for the relocation of the Office of Emergency Management, ADA upgrades to County courthouses, architectural assessments, construction administration for multi-phase remodeling of the County Convalescent Center and design of a "green" outdoor employee break area.

DuPage County Facility Management
Window Replacement **2013-2015**
Project Manager – Knight was responsible for the design of the removal and replacement the existing teak windows on the JOF with new aluminum clad wood windows using standard Low E glazing with a security film tint throughout the facility. The tint is required to eliminate visibility from the exterior into the facility at any time of day or night. An alternate was also be included to address the need for bullet resistant glazing and frames on select windows on the east elevation.

Springfield Airport Authority
Hangar 3 Renovations **2013-2015**
Supervisor – Responsible for overseeing all architecture services related to the renovation of Hangar 3 for the Springfield Airport Authority.

DuPage County
Animal Control Facility Renovations **2015-2016**
Project Manager – Knight provided architectural/engineering design and site development services to the County of DuPage for the renovation of the Animal Control Facility located in Wheaton, Illinois. Architectural services included the demolition of existing systems and components as well as removal of the existing chimney. Architectural renovations include extension of selected masonry walls to create separate kennel compartments, new suspended acoustical tile ceilings, replacement of exterior doors, addition of roof insulation and preservation of existing skylights.

Illinois Capital Development Board
Renovate Data Center **2010-2014**
Project Manager – Responsible for providing programming, concept design and preparation of construction documents for the renovation of the Illinois State Police Headquarters Data Center. The project included isolated abatement, upgrades of electrical and HVAC systems, a new uninterruptable power system (UPS).

Illinois Capital Development Board
Sewage Treatment Plants and Shower Building Replacement **2015-Present**
Supervisor – Knight will remodel and expand the existing Potawatomi campground shower building, including renovating/expanding the mechanical room and provide

architectural, structural, mechanical, electrical, plumbing, instrumentation and site work. The shower building will see an increase in the amount of fixtures, which includes doubling the amount of showers. The completed work on the Potawatomi shower building will greatly improve energy efficiency. Work includes all required permits for construction.

Illinois Capital Development Board

Florence Hotel Annex Roof Stabilization **2014**

Project Manager – Knight provided architectural and engineering services for the emergency stabilization of the Florence Hotel Annex roof at the Pullman Historical Site. These repairs were needed to stabilize the building and protect it from further deterioration.

Illinois Capital Development Board

General Jones Armory (Department of Military Affairs) **2012-2014**

Architect of Record – Responsible for architectural services for the replacing of 24,000 SF of built up roofing system including installing flashing, gutters and roof drains. The scope of work also provided for replacing exterior doors and windows, tuck pointing and interior repairs.

DuPage County Facility Management

Office of Emergency Management Relocation and LEED Design **2011**

Supervisor – Oversaw the preparation of construction and permit documents as well as preparation of LEED commercial interiors design submittal. The project involved design for the Office of Emergency Management (OEM) relocation to the south wing of the Juvenile Detention Center in DuPage County, Illinois. The floor plan was developed with review and approval from both OEM and Facility Management staff. It incorporates required building and fire code elements in addition to OEM programmatic requirements. The renovations were designed to meet LEED silver certification once construction is completed.

Orland Fire Protection District

OFPD Training Facility Improvements **2016-Present**

Architect – The training facility build-out will potentially consist of three (3) phases of work depending on funding availability. Knight will be required to complete design development, permitting, construction documents, pre-bid activities, bid assistance, bid review and recommendations, material reviews, shop drawing reviews, progress meetings, on-site inspection, and record drawings. This work will also include contract specifications, detail cost estimating, and all necessary permitting.

Cook County Office of Capital Planning & Policy

Perimeter Security Enhancements **2010-Present**

Senior Architect – Responsible for overseeing all architecture services related to perimeter and parking lot security enhancements at nine Cook County facility buildings and sidewalk restoration at three court houses (Rolling Meadows, Bridgeview, and Markham) to ensure ADA accessibility.

Cook County Forest Preserve District

Building Group 4R1-D **2013**

Project Manager – Knight provided professional architecture and engineering services on six different project sites for the Cook County Forest Preserve District, Building Group 4R1-D. Ms. Knapp acted as the prime point of contact between the County and the design/ engineering disciplines required to prepare construction drawings and specifications to update the multiple facilities for both Life Safety and ADA accommodations. Ms. Knapp was responsible for expediting Cook County Permits and Fire District Design Approvals. Throughout the Construction Process, Ms. Knapp acted as the primary contract administrator between the County and the General Contractor.

Cook County Forest Preserve District

Highland Woods Roof Replacement **2012**

Project Manager – Project consisted of a total re-roof due and existing conditions were initially reviewed before preparing project documents for permitting / bidding. Documents included demolition plans and new construction plans and specifications. Knight preformed Construction Administration tasks including construction site observation, attend construction meetings, review contractor pay applications and shop drawing review. General project close out tasks were also performed.

Jesse Brown VA

Materials Management Remodel and Expansion **2010-Present**

Senior Project Architect – Responsible for design and architectural services for the remodel and expansion of the Jesse Brown VA's Materials Management Facility. Scope of work includes providing professional architecture and engineering design services for the construction of a 4,600 SF new building with basis of design for 8 more floors and remodeling approximately 4,500 SF of existing space.

AFFIDAVIT

The undersigned, Ermin Skrebo, being first duly sworn on oath states as follows:

I, Ermin Skrebo, intend to be a witness at the Chicago Zoning Board of Appeals hearing on Friday, March 15, 2019, and to provide testimony consistent with the Proposed Findings of Fact in the matter of special use and variation applications, Calendar Numbers: 178-19-S and 179-19-Z, for address: 11600 South Burley Avenue, Chicago, Illinois.

FURTHER AFFIANT SAYETH NAUGHT.

03.04.'19.
Signature, Date

Ermin Skrebo
Printed name

Knight E/A, Inc., Architect
Employer, Title

221 North LaSalle Street, Suite 300, Chicago, Illinois
Employer Address

SUBSCRIBED AND SWORN
To before me this 4th day of March, 2019.

Notary Public

OFFICIAL SEAL
SAMANTHA ALSBURY
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:09/19/21

KNIGHT
Engineers & Architects

ERMIN SKREBO
Architect

EDUCATION
BA/2008/Architecture/Illinois Institute of Technology
National Architectural Accrediting Board (NAAB)

INDUSTRY EXPERIENCE
1 Year with Knight
13 Years of Experience

EXECUTIVE SUMMARY
Mr. Skrebo joined Knight's architectural department and brings 12 years of experience. His experience includes site planning, design development, construction documents, computer modeling and rendering.

PROJECT EXPERIENCE

Illinois Tollway
General Engineering Contract (GEC) **2018-Present**
Architect – Knight's Architecture division is responsible for the annual inspections of building on the Tollway system and preparation of the Annual Report. The Annual Report provides an overview of general condition of the System and its value. Our Design engineers review and provide comments on plan format and adequacy, conformance with the project requirements, all master plans, tollway standards, and tollway policies. Formal reviews occur at following levels of completion; 30 percent, 60 percent, 95 percent, and final.

James McHugh Construction
General Iron Industries New Scrap Metal Recycling Facility **2019-Present**
Architect – Responsible for architectural services for the new scrap metal recycling operations facility. The new plant will include two 40,000 SF pre-manufactured buildings and an 8,500 SF office building as well as a 24,000 SF equipment containment structure with an option to increase one of the 40,000 SF buildings to 80,000 SF. Knight is providing code and zoning review; land surveys and geotechnical investigations; site utilities design/coordination; site planning/engineering; building design services; permit assistance; and construction phase services.

Chicago Housing Authority/Cabrera Capital
LeClaire Court Development **2018-Present**
Architect – As a consultant to Cabrera Capital for Chicago Housing Authority, Knight provided professional engineering services for the overall development process, including but not limited to predevelopment work, design and site planning, infrastructure and utilities planning, site preparation, environmental engineering and remediation, assisting with preparing funding applications, and obtaining necessary governmental approvals such as zoning and building permits, and to present a feasible development vision that best meets the development objectives by redeveloping underutilized land.

PREVIOUS EXPERIENCE

Earles Architects & Associates
Architectural Associate **2015-2018**
As an Architectural Associate, Mr. Skrebo was responsible for creating construction documents and managing the interior renovations of commercial spaces ranging in budgets up to $1M under tight deadlines. This includes tasks such as performing code research, performing surveys for the existing shell, coordinating with multiple disciplines, landlords, and clients throughout project duration, and performing the punch list.

Chipman Design Architecture
Project Associate **2013-2015**
As a Project Associate, Mr. Skrebo created construction documents in AutoCAD under tight deadlines for renovations for commercial spaces which included clients such as Noodles & Company, Sketchers, Dunham's Sporting Goods, and Ulta. This included tasks such as performing code research, performing surveys for the existing shell, coordinating with multiple disciplines, landlords, and clients throughout project duration, and performing the punch list.

Self-employed
Independent Contractor **2011-2013**
During this time period, Mr. Skrebo collaborated with an architect to create construction documents for renovations on multi-unit residential spaces. Coordination with multiple disciplines, such as Mechanical, Electrical and Plumbing took place throughout the design and construction phases.

AFFIDAVIT

The undersigned, Lukasz Sledz, being first duly sworn on oath states as follows:

I, Lukasz Sledz, intend to be a witness at the Chicago Zoning Board of Appeals hearing on Friday, March 15, 2019, and to provide testimony consistent with the Proposed Findings of Fact in the matter of special use and variation applications, Calendar Numbers: 178-19-S and 179-19-Z, for address: 11600 South Burley Avenue, Chicago, Illinois.

FURTHER AFFIANT SAYETH NAUGHT.

Lukasz Sledz, 3-4-19
Signature, Date

Lukasz Sledz
Printed name

Knight E/A, Inc., Civil Engineer
Employer, Title

221 North LaSalle Street, Suite 300, Chicago, Illinois
Employer Address

SUBSCRIBED AND SWORN
To before me this 4th day of March, 2019.

Notary Public

OFFICIAL SEAL
SAMANTHA ALSBURY
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:09/19/21

KNIGHT
Engineers & Architects

LUKASZ SLEDZ, PE
Civil Engineer

EDUCATION
BS/2012/Civil Engineering/University of Illinois at Chicago

REGISTRATION
2016/Professional Engineer/Illinois

AFFILIATIONS
American Society of Civil Engineers

INDUSTRY EXPERIENCE
6 Years with Knight
6 Years of Experience

EXECUTIVE SUMMARY
Mr. Sledz joined Knight after receiving a Bachelor of Science in Civil Engineering from the University of Illinois at Chicago. He has been involved in all project phases including concept, preliminary and final design.

PROJECT EXPERIENCE

Illinois Department of Transportation
IL 7 (159th Street), I-355 to Will Cook Road, Phase II **2012-2015**
Civil Engineer – Assisting with the Phase II engineering for the widening and reconstruction of IL 7 from east of Gougar Road to east of Will Cook Road; a distance of 5.2 miles. The proposed cross section will consist of two 12' lanes in each direction separated by a raised 28' wide barrier median. Curb and gutter will be provided at the outside pavement edges to accommodate a closed drainage system. The project will also include new traffic signals and turning lanes at the following major cross roads: Cedar Road, Parker Road, Bell Road, South Bell Road, and Will Cook Road. Sidewalk and a shared use path will also be constructed as part of these improvements.

Illinois Department of Transportation
IL 59, Ferry Road to South of Aurora Avenue (Phase II) **2012-2015**
Civil Engineer – Responsible for assisting with plan preparation throughout Knight's Phase II engineering services on IL 59. The project includes preparation of contract plans, specifications and estimates including structure plans and roadway plans. The scope of work consists of widening and reconstruction of IL 59 to provide 3-12 foot lanes in each direction separated by a 30 foot and variable width barrier median. Combination concrete curb and gutter will be provided at the outside edges of pavement and a closed drainage system. There are 9 existing traffic signals along IL 59 that will be replaced and or modernized and interconnected. Knight is also responsible for preparing contract documents for a new pump station along IL 59.

Illinois Department of Transportation
I-64 Structures over Wabash River (Phase I & II) **2014-2015**
Civil Engineer – Responsible for Phase I preparation of TS&L plans, Structure Report and Phase II Structural Plans for the replacement of the 27-span dual structure carrying Interstate 64 over Wabash River.

Chicago Department of Transportation
Blue Island Avenue/Cermak Road Sustainable Streetscape Design **2012-2015**
Project Manager – Assisted with the preparation of a streetscape design for the City of Chicago that includes a sustainable stormwater management concept. This pilot demonstrated inventive technologies and design techniques that can be used in the public right of way. The Pilsen Sustainable Streetscape project used integrated design to achieve multiple environmental performance goals in the most cost-efficient and beautiful way possible.

Chicago Department of Transportation
Surface Transportation PMO **2014-2017**
Civil Engineer – Knight serves as a consultant to the City of Chicago Department of Transportation as Project Manager for the Streetscape Program. Responsible for multiple projects in various stages of design and construction. Additional responsibilities include communication and coordination between City leaders and agencies, consultants, community groups and other key stakeholders.

Chicago Department of Transportation
Wells/Wentworth Connector **2012-2018**
Civil Engineer – Responsible for design of geometry for temporary shoofly tracks (detour tracks) to maintain rail service during construction of two railroad bridges for the design of a new roadway to connect Wells Street from Roosevelt Road to Wentworth Avenue at 17th Street. Also responsible for developing complete plans for shoofly tracks for the Freeport Sub (5 alternatives developed of which one was chosen for the current design, shoofly tracks for the Saint Charles Air line (3 alternatives developed of which one was chosen for the current design) and shoofly tracks for the Saint Charles Air Line to Rock Island WYE connector (5 alternatives developed of which one was chosen for the current

design). Track designs included may constraints and design considerations due to close proximity of existing railroad crossings and accommodating existing and future conditions of all 3 railroad lines that are being realigned during and after CDOT roadway work.

Chicago Department of Transportation

Irving Park People Spot **2014-2015**

Civil Engineer – Responsible for client communication and plan preparation for a proposed people spot to be located at McVicker Avenue and Park Road. Project elements included ADA ramps, street printing, curb bump outs and community banners.

Illinois Tollway

Elgin O'Hare Western Access I-11-4014 **2012-Present**

Civil Engineer – Responsible for providing subconsultant services to CH2M Hill for Design Corridor Management (DCM) and Contract PS & E preparation. Project consists of constructing a new, all-electronic toll road around the western border of O'Hare International Airport linking the Jane Addams Memorial Tollway (I-90) and the Tri-State Tollway (I-294), as well as extending the Elgin O'Hare Expressway east along Thorndale Avenue to O'Hare. Major elements of this multi-billion dollar endeavor include lane additions, numerous interchange improvements, multiple new interchanges, new toll roads, toll road conversions and extensions, new ramps, and a new four-lane connector.

Illinois Tollway

IL19 Interchange Elgin-O'Hare **2014-Present**

Civil Engineer – Knight received Phase I design from CH2MHill which required major revisions due to major realignment of the roadway. All Phase I drainage including detention, Bensenville Ditch Culvert extension, sewers, ditches, and BMPs and had to be revised and approved before Phase I design could begin. Phase II engineering (yet to start) will include storm sewer design, ditch design, detention design, BMP design, compensatory storage design, and the extension of the Bensenville Ditch Culvert as well as adhering to FAA drainage and detention requirements due to the proximity to O'Hare airport.

Cook County Department of Transportation & Highways

Touhy Avenue **2014-Present**

Civil Engineer – Knight was selected for the design of Touhy Avenue (IL-72) from Elmhurst Road to Mount Prospect Road. This is a major piece of the Elgin O'Hare Western Access program and the largest single roadway design project ever undertaken by the Cook County Department of Transportation and Highways. Project work includes widening and reconstruction of Touhy Avenue and Elmhurst Road, grade separations over future I-490 and the Union Pacific Railroad, approach embankments and retaining walls, realignment of Mount Prospect Road at Touhy Avenue, new and upgraded traffic signals, storm sewer installation, detention pond construction, utility relocation, right-of-way acquisition, construction of a multi-use path serving regional multi-modal needs, landscaping and erosion control.

DuPage County Division of Transportation

Gary Avenue Reconstruction **2011-2014**

Civil Engineer – Responsible for civil engineering services for the widening of Gary Avenue, from Illinois Route 64 (North Avenue) to Army Trail Road. Improvements include roadway widening to accommodate two through lanes in each direction, separated by a flush median/left turn lane, intersection improvements at various locations, resurfacing, traffic signal modernization, retaining walls, drainage systems, and possible extension of the box culvert along Lies Road. Coordination of stormwater management/ detention and riparian environment permitting through the Department of Development and Environmental Concerns are major components to this project.

CN Railway

USS Storage Yard Expansion **2015**

Civil Engineer – Responsible for the civil engineering, design and assistance through the construction of the USS Storage Yard Expansion project. The engineering services work included track layout of 3 new alignments and connections from H yard to I Yard. The work also included utility and mechanical work in order to procure the appropriate air compressor. An important task was the gathering data available on the condition of existing tracks and turnouts. This data served as a basis for the development of material ordering.

PREVIOUS EXPERIENCE

Illinois Department of Transportation **05/2011- 08/2011**

Engineering Technician

AFFIDAVIT

The undersigned, Hugh Edfors, being first duly sworn on oath states as follows:

I, Hugh Edfors, intend to be a witness at the Chicago Zoning Board of Appeals hearing on Friday, March 15, 2019, and to provide testimony consistent with the Proposed Findings of Fact in the matter of special use and variation applications, Calendar Numbers: 178-19-S and 179-19-Z, for address: 11600 South Burley Avenue, Chicago, Illinois.

FURTHER AFFIANT SAYETH NAUGHT.

Hugh J. Edfors 3/4/19
Signature, Date

Hugh Edfors
Printed name

The Edfors Group, Appraiser
Employer, Title

1150 N. Lake Shore Dr, 18K, Chicago
Employer Address

SUBSCRIBED AND SWORN
To before me this 4th day of March, 2019.

Kaitlin Gauthier
Notary Public

KAITLIN GAUTHIER
Official Seal
Notary Public – State of Illinois
My Commission Expires Oct 17, 2021

AFFIDAVIT

The undersigned, Liz Dafoe, being first duly sworn on oath states as follows:

I, Liz Dafoe, intend to be a witness at the Chicago Zoning Board of Appeals hearing on Friday, March 15, 2019, and to provide testimony consistent with the Proposed Findings of Fact in the matter of special use and variation applications, Calendar Numbers: 178-19-S and 179-19-Z, for address: 11600 South Burley Avenue, Chicago, Illinois.

FURTHER AFFIANT SAYETH NAUGHT.

Signature, Date

Liz Dafoe
Printed name

Upland Design Inc., Project Manager
Employer, Title

1250 West 18th Street, Chicago, Illinois
Employer Address

"OFFICIAL SEAL"
Mark Johnson
Notary Public, State of Illinois
My Commission Expires May 19, 2020

SUBSCRIBED AND SWORN
To before me this 4th day of March, 2019.

Notary Public

Liz Dafoe

Landscape Architect

Registered Landscape Architect
Illinois #157-001572
Certified Playground Safety Inspecto , since 2014
Education: Bachelor of Landscape Architecture
Michigan State University, 2006
Professional Activities:
American Society of Landscape Architects, Member
MSU Landscape Architecture Alumni Advisory Board

Experience: For the past twelve years, Liz has lived in Chicago and her work has centered on creating great outdoor spaces in the surrounding areas. Her experience includes landscape design, public plazas, park design, playgrounds and sport field design. She has lead numerous public engagement pieces to park master planning. She has completed projects from concepts through construction drawings for a variety of sites and communities, and she has coordinated with permitting agencies and governments to provide a smooth design through completion.

Project List: Below are a number of projects Liz worked on the past five years.

Irons Oaks Environmental Learning Center Master Plan: Olympia Fields

Fox River Native Riverbank Restoration: Carpentersville, Illinois

Lawler Park Playground and Splash Pad Renovation: Chicago Park District

Riverview Courtyard: St. Charles, Illinois

Baker Woods and Ellis Equestrian Center Site Improvements: Kendall County Forest Preserve District

Wentworth Ball Field Renovation: Chicago Park District

Park 526 Development: Chicago Park District

Kaper Park Master Plan and Phase I Renovation: Cary Park District

Kishwaukee Health Center Park Site: DeKalb, Illinois

Health Science Center Landscape at Black Hawk College: Moline, Illinois

Morrill and Leland Elementary School - Sustainable School Sites and Playgrounds: Chicago, Illinois

Carpenter Park Master Plan and Development: Village of Carpentersville

Proesel Park: Village of Lincolnwood

Orland Park Nature Center Development: Village of Orland Park

Transportation Maintenance Facility: Galesburg, IL

Orland Park Nature Center Park: Orland Park, Illinois

Fox River River Edge Restoration: Carpentersville, Illinois

Montrose Artificial Turf Renovation and ADA Improvements: Chicago Park District

Park 566 Master Plan: Former USI Site: Chicago Park District

Lions Park Master Plan and Phase I Renovation: Cary Park District

Brentwood Park Master Plan and Renovation: Butterfield Park Distric

Village of Plainfield Image and Concepts: illage of Plainfiel

Village Hall Landscape Improvements: Village of Plainfiel

Park 556 Dog Park: Chicago Park District

Downtown Streetscape Standards: Naperville, Illinois

Stars and Stipes Park Renovations: Chicago Park District

Glen Briar Master Plan: Butterfield Park Distric

West Park Master Plan and Renovation: Joliet Park District

References:

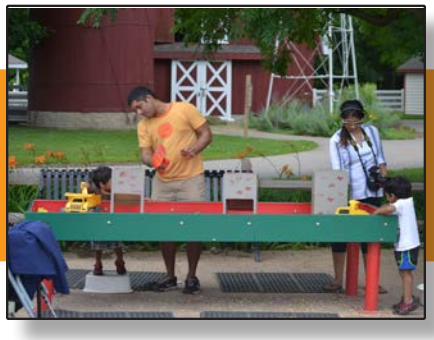
Bob Cole
Director of Public Works
Village of Carpentersville
1075 Tamarac Drive, Carpentersville, IL 60110
Phone: 224-293-1600
bcole@cville.org

Ryan Cory
Asst. Superintendent of Parks
Oak Lawn Park District
9400 South Kenton Avenue, Oak Lawn, IL 60453
Phone: 708-857-2201
rgory@olparks.com

Jim McGreevy
Project Manager
Chicago Park District
541 North Fairbanks, Chicago, IL 60611
Phone: 312-742-4648
jim.mcgreevy@chicagoparkdistrict.com

Susan Wallace
Public Works Administrative Superintendent
City of Wheaton
303 W Wesley Street, Wheaton, IL 60187
Phone: 630-260-2115
swallace@wheaton.il.us

Julie Smith
Planning and Construction
Chicago Park District
541 North Fairbanks Court, Chicago, Illinois 60611
Phone: Tel: 312.742.6033
julie.smith@chicagoparkdistrict.com



AFFIDAVIT

The undersigned, John Pinion, being first duly sworn on oath states as follows:

I, John Pinion, intend to be a witness at the Chicago Zoning Board of Appeals hearing on Friday, March 15, 2019, and to provide testimony consistent with the Proposed Findings of Fact in the matter of special use and variation applications, Calendar Numbers: 178-19-S and 179-19-Z, for address: 11600 South Burley Avenue, Chicago, Illinois.

FURTHER AFFIANT SAYETH NAUGHT.

3-4-19

Signature, Date

John Pinion

Printed name

RK & Associates, Inc., Principal Engineer

Employer, Title

2 South 631 Route 59, Suite B, Warrenville, Illinois

Employer Address

SUBSCRIBED AND SWORN
To before me this 4th day of March, 2019.

Notary Public

KATHLEEN F. PINION
OFFICIAL SEAL
Notary Public, State of Illinois
My Commission Expires
November 14, 2019

JOHN G. PINION

Principal Engineer

EDUCATION:

B.S. Civil/Environmental Engineering, University of Wisconsin, Madison, Wisconsin, 1983

EMPLOYMENT HISTORY:

- Cross Tessitore & Associates, Inc. – Orlando, FL, (May 1984 to Aug. 1991)
  Staff/Project Engineer responsible for design and implementation of air emission testing programs, air permitting, multi media environmental compliance, and soil remediation projects using thermal treatment for volatile organic emissions.
- Harding Lawson Associates, Inc. – Orlando, FL and Oak Park, IL (Aug. 1991 to Nov. 1995)
  Project/Senior Engineer responsible for industrial air permitting, air emission testing, soil remediation and multi-media environmental compliance projects.
- RK & Associates, Inc. – Warrenville, IL (Dec 1995 to Present)
  Associate/Principal Engineer as described herein.

AREAS OF SPECIALTY:

Air Emissions Testing, Control, Permitting, and Compliance;
Multi Media Environmental Compliance

MEMBERSHIPS:

Air and Waste Management Association
Chemical Industry Council of Illinois

EXPERIENCE:

Mr. John Pinion's has been providing air quantity management, permitting and compliance services for industrial facilities in Illinois for over thirty years. Experience includes: evaluating, testing, and permitting of air emissions from industrial processes, combustion sources, and site remediation activities • design and implementation of comprehensive air emission testing programs for criteria pollutants, metals, and air toxics • air dispersion modeling for evaluation of off-site air quality impacts from area and point sources of air toxics, criteria pollutants, and odors • controlling air emissions from thermal treatment of hazardous and industrial wastes, contaminated soils and sludges • performing soil thermal treatability studies to determine applicability of thermal treatment processes to specific waste streams and characterization of full scale operating requirements to meet site remedial action goals.

The following individual projects are representative of Mr. Pinion's experience:

Air Quality Management

General Iron Industries, Inc. – Chicago, Illinois – Project manager responsible for design and implementation of shredder emission testing program to identify emissions of total hydrocarbons, particulate, and metals from a large metal shredder located in an urban area. This project included air dispersion modeling of metals emissions for comparison to Wisconsin Department of Natural Resources air toxics standards for metals. Test results were submitted to USEPA and were used to obtain an IEPA construction permit for a Regenerative Thermal Oxidizer and Scrubber to provide additional control of shredder VOM emissions.

Air Permitting and Lead Monitoring from Scrap Recycling Facility – Rockford, Illinois – Project manager for lead emissions compliance evaluation at a lead recycling facility. Responsibilities included design and implementation of particulate and metals emission testing for nine process units and three control devices, obtaining required IEPA construction and operating air permits and the design and implementation of a three-year ambient air lead monitoring program to evaluate ambient air lead impacts from the facility. The lead monitoring program was performed at the direction of USEPA Region V and included air dispersion modeling to demonstrate compliance with National Ambient Air Quality Standard (NAAQS) for lead.

Adkins Energy – Lena, Illinois; Project manager responsible for multiple pollution control projects including evaluation and selection pollution of a regenerative thermal oxidizer (RTO) to control VOM, CO, and odor emissions from a distiller's dry grain and solubles rotary dryer, optimization of a packed tower wet scrubber to recover ethanol from fermentation off gas, design and permitting of an RTO to control VOM, CO, and odors from expansion of the fermentation process, and most recently, permitting of a third RTO for control of VOM, CO and odor emissions from a new Ring Dryer. Mr. Pinion has been responsible for over 40 construction and operation permits and multiple compliance evaluations over the last 10 years including coordination of agency communications, emission testing, permitting, and process monitoring.

Chemical Manufacturing Facility – Joliet, Illinois – Project manager for preparation of an application for renewal of a Title V operation permit for a large chemical production facility. It had been 15 years since IEPA issued a Title V operating permit for the facility. The Title V permit application required a comprehensive regulatory applicability analysis to incorporate over 60 construction permits that had been obtained since the last issuance of a Title V operating permit. As a result of this project, Mr. Pinion was also responsible for obtaining additional IEPA air construction permits for modification of existing chemical manufacturing processes at this facility.

Orion Industries and Related Entities – Chicago, Illinois – Mr. Pinion was responsible for conducting a comprehensive air emission inventory for 34 coating lines using over 200 specialty coatings to produce finished products for consumer goods, automotive parts, and medical devices. This project included correspondence with IEPA and City of Chicago Department of Environment to obtain required construction and operating permits and demonstration of compliance with applicable City and State air permitting requirements.

Carus Chemical Corporation, LaSalle, Illinois – Project manager responsible for obtaining over 15 air construction and operating permits for the production of inorganic chemicals over the last eight years. Projects have included process expansions, air emission testing and emission factor development, NESHAPs compliance, and routine air emission reporting.

Applied Energy, LLC – Multiple Facilities – California – Project manager responsible calculation and reporting of Greenhouse Gas (GHG) emissions from four gas turbine cogeneration projects (with auxiliary boilers and emergency equipment) in San Diego and Oxnard California from 2010 through 2018. Responsible for reporting GHG emissions and maintaining facility monitoring plans under both the California Air Resources Board (ARB) and United States Environmental Protection Agency (USEPA) GHG Mandatory Reporting programs.

City of St. Paul, Minnesota - Gopher State Ethanol; Project manager responsible for conducting a plant wide odor assessment to identify and characterize potential odor emission sources. Reviewed process operations to identify opportunities for VOM emission and odor reduction. Conducted an air dispersion modeling analysis to determine potential offsite odor impacts and to identify source specific odor emission limits that would ensure compliance with an adopted community odor threshold. Identified excess VOM and odor emissions that led to modification of existing scrubbers, installation of new scrubbers and thermal oxidizers to reduce emissions to acceptable levels.

Flexible Foam Products Inc. – Archbald, Pennsylvania; Project manager responsible for development of air emission estimates in support of air permitting activities for a proposed polyurethane foam manufacturing facility. Activities included preparation of an air dispersion modeling analysis to predict maximum offsite ground level impacts associated with the permitted maximum emissions rates of volatile organic compounds and hazardous air pollutants. Mr. Pinion has provided air permitting services for 19 Flexible Foam Products plants located in 13 states.

Milwaukee Metropolitan Sewerage District – Milwaukee Wisconsin; Project manager responsible for preparation of Risk Management Plans (for compliance with Section 112(r) of the Clean Air Act Amendments of 1990) for propane storage facilities at Jones Island sewage treatment plant and methane generation, storage, and combustion at South Shore sewage treatment plant. Work included conducting a process hazard analysis, development of worst case release scenarios, and off site impact analysis utilizing USEPA's Cameo and Aloha dispersion models.

Provided technical support for conducting an air dispersion modeling analysis to predict off-site odor impacts from multiple sources of odorous air emissions including screening, grit removal, primary clarification, aeration, secondary clarification, chlorination, and sludge dewatering and handling. Existing odor control devices were evaluated and tested to determine overall odor reduction efficiency for use in the modeling analysis.

Silicon Carbide Manufacturing Facility, Illinois: Project Manager for modification of a Prevention of Significant Deterioration (PSD) construction and Title V operating permit applications and for conducting emissions testing of a unique manufacturing process for production of silicon carbide. Process and emissions testing were performed to develop system mass and energy balances and VOM and sulfur compound emission factors to modify facility permits to reflect actual emissions reductions achieved by a $15-million hydrogen sulfide removal system. Permitting required revision of Best Available Control Technology (BACT) analyses from previous projects to demonstrate that existing control systems met applicable BACT standards.

Multiple Industrial Air Permits – State of Florida; Prepared numerous industrial air permit applications for new and modified industrial facilities over eight years. Work performed typically included development of emissions factors, preparation of emissions inventories, evaluation of maximum emissions, air dispersion modeling to predict maximum off-site ground level impacts of selected pollutants as required by Florida environmental regulations, and development and implementation of air emissions testing programs to demonstrate compliance with permitted emission rates.

Remediation Projects

General Dynamics/Teledyne Inc., Muskegon Michigan; Prepared design and specifications for remediation of PCB contaminated wood block flooring and asbestos abatement for an operating 400,000 square foot manufacturing facility. Remediation activities included removal and disposal of PCB contaminated wood block flooring, cleaning of existing concrete surfaces to remove PCB containing oily residues, and installation of new thin-slab high-strength concrete floor. The work required development and coordination of a phased plan to temporarily shut down sections of the manufacturing facility, disconnect and relocate equipment, remediate contaminated media and remove asbestos, install new concrete floor, and re-install all manufacturing equipment. All work was completed within a demanding time table to minimize disruption for facility operations.

Bridgeport Rental and Oil Site PCB Superfund Cleanup, Bridgeport, New Jersey - design of thermal treatment system for site cleanup including, identification of regulatory site requirements, cost analysis, preparation of technical and performance based specifications and comprehensive technical incinerator monitoring.

LaSalle Electric Utilities PCB Abatement Project, Phases I and II, LaSalle, Illinois - design of thermal treatment system for site cleanup including, identification of regulatory site requirements, cost analysis, preparation of technical and performance-based specifications and comprehensive technical incinerator monitoring. Based on emissions test data, an air dispersion modeling analysis was conducted to predict off site impacts from incinerator emissions.

Douglassville Disposal Site Superfund Cleanup, Berks County, Pennsylvania - design of thermal treatment system for site cleanup including thermal treatability study, identifications of regulatory site requirements, cost analysis, and preparation of technical and performance-based specifications.

U.S. Army Johnston Atoll Chemical Agent Disposal System – traveled to Johnston Atoll representing USEPA's TSCA office to conduct a field sampling audit of a PCB trial burn to evaluate ability of waste disposal and air pollution control systems to destroy PCBs contained in the waste stream.

Thermal Treatability Studies

Nebraska Ordnance Plant Site, Mead Nebraska - design and performance of a thermal treatability study for two waste streams contaminated with explosives.

Forest Waste Superfund Site, Ottisville, Michigan - design and performance of thermal treatability study on three waste streams including drummed waste from and excavated landfill.

Douglassville Disposal Site Superfund Cleanup, Berks County, Pennsylvania - design and performance of low temperature thermal desorption and high temperature incineration treatability study for site consisting of 50,000 cubic yards of oil filter sludge containing PCB's, petroleum hydrocarbons, and lead.

Environmental Management System Implementation

Confidential Client – Multiple Locations; Project manager for implementation of an Environmental Management System for five specialty metals manufacturing facilities located in four states. The project consisted of implementation of an Environmental Management System developed by corporate staff. Implementation tasks included: identifying and documenting all waste streams and emission points in a database; estimating quantities of waste streams and individual waste stream constituents using appropriate emission factors, test results, raw material information, and/or process calculations; conducting regulatory audits for all facility operations; and, development of written procedures specifying compliance and reporting requirements for each emission unit. Training requirements were also identified where appropriate.

AFFIDAVIT

The undersigned, Timothy Doron, being first duly sworn on oath states as follows:

I, Timothy Doron, intend to be a witness at the Chicago Zoning Board of Appeals hearing on Friday, March 15, 2019, and to provide testimony consistent with the Proposed Findings of Fact in the matter of special use and variation applications, Calendar Numbers: 178-19-S and 179-19-Z, for address: 11600 South Burley Avenue, Chicago, Illinois.

FURTHER AFFIANT SAYETH NAUGHT.

Timothy J. Doron 3-4-19
Signature, Date

Timothy Doron
Printed name

Sam Schwartz, Senior Transportation Consultant
Employer, Title

223 West Jackson Boulevard, Suite 1101 Chicago, Illinois
Employer Address

SUBSCRIBED AND SWORN
To before me this 4th day of March, 2019.

Kristin D. Carroll
Notary Public

OFFICIAL SEAL
KRISTIN D. CARROLL
NOTARY PUBLIC - STATE OF ILLINOIS
My Commission Expires February 16, 2021

AFFIDAVIT

The undersigned, Jarrod R. Welch, being first duly sworn on oath states as follows:

I, Jarrod R. Welch, intend to be a witness at the Chicago Zoning Board of Appeals hearing on Friday, March 15, 2019, and to provide testimony consistent with the Proposed Findings of Fact in the matter of special use and variation applications, Calendar Numbers: 178-19-S and 179-19-Z, for address: 11600 South Burley Avenue, Chicago, Illinois.

FURTHER AFFIANT SAYETH NAUGHT.

3/4/19
Signature, Date

Jarrod R. Welch
Printed name

Associate Principal
Title

One South Wacker Dr, 34th Floor
Chicago, IL 60657
Business Address

SUBSCRIBED AND SWORN
To before me this 4th day of March, 2019.

Judith Haase
Notary Public Judith Haase

"OFFICIAL SEAL"
JUDITH HAASE
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 4/10/2021

CRA Charles River Associates

Jarrod R. Welch

Associate Principal

PhD, Economics
University of California,
San Diego

MA, Economics
University of California,
San Diego

BA, Economics
University of California,
Santa Barbara

Dr. Jarrod Welch is an associate principal in the Competition Practice of CRA. He is an applied econometrician and specializes in the empirical analysis of economic issues related to antitrust regulation and litigation, class action litigation, economic impact evaluation, and damages. He has worked on litigation matters and mergers in a variety of industries including retail, transportation, manufacturing, and telecommunications.

Prior to his role at CRA, Dr. Welch was a post-doctoral research fellow and applied econometrician at the National Bureau of Economic Research. He has written for academic publications such as the *Review of Economics and Statistics* and *Proceedings of the National Academy of Sciences of the United States of America.*

Fields of specialization

Applied econometrics

Professional experience

2013–Present	*Associate Principal*, Charles River Associates, Chicago
2011–2013	*Post-Doctoral Fellow and Applied Econometrician,* National Bureau of Economic Research

Selected consulting reports

- "Analysis of Video Programming Foreclosure Issues Involving Dr. John Malone and Advance/Newhouse Partnership." With Steven C. Salop, Robert Stillman, and Serge Moresi. Submitted to the Federal Communications Commission on behalf of Charter, November, 2015.
- "Analysis of Video Programming Foreclosure Issues Involving TWC SportsNet and SportsNet LA." With Steven C. Salop, Robert Stillman, and Serge Moresi. Submitted to the Federal Communications Commission on behalf of Charter, December, 2015.

Academic publications

- "The Ecological Footprint of Poverty Alleviation: Evidence from Mexico's Oportunidades Program." With Jennifer Alix-Garcia, Kate Sims, and Craig McIntosh. 2013, *Review of Economics and Statistics.* Vol. 95, No. 2. pp 417-435.
- "Rice yields in tropical/subtropical Asia exhibit large but opposing sensitivities to minimum and maximum temperatures." *Proceedings of the National Academy of Sciences of the United States of America.* 107(33): 14562-14567.

Selected consulting projects

Mergers

- Charter – Time Warner Cable – Bright House Networks (on behalf of the parties, 2015)
- Endicia – Stamps.com merger (on behalf of the parties, 2015)
- AT&T – DirecTV merger (on behalf of the parties, 2014-15)
- Dollar Tree – Family Dollar merger (on behalf of the parties, 2014)
- American Airlines – U.S. Airways merger (on behalf of the DOJ, 2013)

Antitrust litigation

- *In re OPTICAL DISC DRIVES ANTITRUST LITIGATION,* In the United States District Court for the Northern District of California, Case No. 3:10-md-2143 RS.
- *In re FIRST IMPRESSION INC, et al. v. NATIONAL MILK PRODUCERS FEDERATION, et al.,* In the United States District Court for the Southern District of Illinois, Case No. 3:13-cv-00454-NJR-SCW.
- *In re KLEEN PRODUCTS LLC, et. al. individually and on behalf of those similarly situated v. International Paper et al*. In the United States District Court for the Northern District of Illinois, Eastern Division, Case No. 1:10-cv-05711.
- *In re Processed Egg Products Antitrust Litigation*. In the United States District Court for the Eastern District of Pennsylvania, MDL No. 08-MD-02002.

LAND USE REPORT

11600 SOUTH BURLEY AVENUE
CHICAGO, ILLINOIS

CALLS 178-19-S, 178-19-Z

March 2, 2019

Mr. Scott R. Borstein
Attorney at Law
Neal & Leroy, LLC
20 South Clark Street, Suite 2050
Chicago, Illinois 60603

Re: 11600 South Burley Avenue
Chicago, Illinois

Dear Mr. Borstein,

As requested, this zoning analysis is prepared to assist legal counsel and legal counsel's client, General III LLC, regarding an application for special use to permit a proposed new Class IV-B recycling facility, expanding and existing development, and also a variation to reduce the interior landscape area from 260,489 square feet to 3,484 square feet and to reduce the number of interior trees from 2,084 to 10 to accommodate the vehicular use area for the proposed expansion of an existing Class IV- B recycling facility. The property is within Planned Manufacturing District No. 6 Lake Calumet zoning district. This report is intended for use by legal counsel, legal counsel's client and the City of Chicago Zoning Board of Appeals.

Sincerely,

Hugh T. Edfors, MAI, JD
Certified General Real Estate
Appraiser-Illinois
License #: 553-001308, Exp. 9/30/19

CERTIFICATION

I certify that, to the best of my knowledge and belief:

- The statement of facts in this report are true and correct

- The reported analyses, opinion and conclusion are limited only by the reported assumptions and limiting conditions, are my personal, impartial and unbiased professional analyses, opinions, conclusions, and recommendations

- I have no present interest in the property that is the subject of the report, and I have no personal interest with the parties involved

- I have no bias with respect to any property that is the subject of this report or to the parties involved with the assignment

- My engagement in this assignment was not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value or my opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this consulting assignment

- My analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice

- I have made a personal inspection of the property and neighborhood that is the subject of this report

- No one provided significant real property appraisal or appraisal consulting assistance to the person signing this certification

IN WITNESS WHEREFORE, THE UNDERSIGNED has caused these statements to be signed and attested to on March 2, 2019.

Hugh T. Edfors, MAI, JD
Certified General Real Estate Appraiser-Illinois
License # 553.001308 Exp. 9/30/19
"As of the date of this report, Hugh T. Edfors Has completed the requirements
of the continuing Education program of the Appraisal Institute"

Community Analysis

The property is in the far east central part of the 8.89-square mile South Deering Community Area, about 18.5+ miles southeast of Chicago's Loop, in Chicago's far south side. This community area is surrounded by the community areas of Calumet Heights on the north, Hegewisch on the east and south, and Pullman and Riverdale on the west.

In 2016, South Deering's population was 14,635 down 3.1% from 2010 but down 13.9% from 2000. It had 5,012 households with an average size of 2.9 persons. The median age was 35.6 years. The media income was $34,078, and about 25% of residents had income below the poverty level. South Deering had 5,012 occupied housing units, of which 58.2%were by owners. Most housing was built from 1940-1969 and single family detached. During the last six months, the average sale prices of detached and attached housing units were only $86,837 and $37,660, respectively. During the last 12 months, the prices averaged $83,624and $46,407, respectively.

Educational attainment levels of community area residents are very low, at 34.5% for high school or equivalent, 6.6% bachelor's degrees and 4.9% for graduate or professional. Crime rates are relatively high in the community area.

The 6,322-person labor force had a high 25.4% unemployment rate in 2016. Most residents, at 62.2 %, are employed in manufacturing. Overall, the South Deering Community area continues having a depressed economy ever since its largest area employer, Wisconsin Steel works closed in 1980.

Overall land uses are primarily industrial. Lake Calumet comprises a large part of the community's area. In 2016, 65.1% of the community area was transportation or other, 9.3% industrial, 9.2% vacant, 7.9% open space and 6.0% single-family residential. Small-scale commercial land uses have a lower percentage.

Neighborhood Analysis

The South Deering Community Area has four neighborhoods, Jeffery Manor, Vet's Park, Trumbull Park and South Deering, in the industrial part of the community area around the Lake Calumet and the Calumet River, in its planned manufacturing district in which the subject property is a part.

The subject property, and neighborhood properties along the Calumet River are designated by the City as Subarea A and a blighted industrial area in the latest amended Redevelopment Project and Plan of the 11,684– acre Lake Calumet Industrial TIF, which the city plans for industrial development. The TIF was designated to restore business activity on expansive parcels of vacant and underutilized land in the South Deering, Hegewisch and East Side communities. The TIF was designated in 2000 and expires in 2024.

Among other objectives, it was designated to promote the construction of new industrial and commercial uses that provide full-time employment opportunities for area residents. The proposed new expansion fulfills this objective, among others by the TIF.

The immediate subject neighborhood is bounded generally by 110th and 122nd streets on the north and south respectively, Avenue O on the east and the Calumet River on the west. The area is partly built-up with some large industrial buildings of the prior steel mill operations of Republic Steel and LTV Steel Manufacturing, some light industrial uses and extensive vacant land area.

ZONING

The property is zoned and is part of the large Planned Manufacturing District No. 6 Lake Calment (PMD6).

The purpose of this district intended to foster the city's industrial base; maintain the city's diversified economy for the general welfare of its citizens; strengthen existing manufacturing areas that are suitable in size, location and character and which the City Council deems may benefit from designation as P.M.D.; and help plan and direct programs and initiatives to promote the growth and development of the city's industrial employment base.

Permitted uses include many public and civic, commercial, industrial, including Cass I and II recycling facilities; Classes III, IVA, IVB and V are special uses.

Adjacent and nearby properties are zoned PMD6. Land areas east of Avenue O in the Hegewisch Community Area are typically zoned RS-1 and RS-3 Residential Single-Unit (Detached House) in built-up subdivisions, and some M1-1 Limited Manufacturing/ Business Park and POS-1 Parks and Open Space.

The proposed new development of the subject property will conform with the PMD 6 zoning.

Site Description

The irregular-shaped, generally flat, 22.884 acre site is in part of the 123.2 + parcel owned by South Chicago Property Management Company, Ltd. The site to be leased is opposite to the northwest end of vacated 116th Street, and extends west about 1,600 to 1,675 feet west to the Calumet River, along which it has about 490 feet of frontage. The east end of the site has about 598 feet opposite vacated Burley Avenue and freight railroad tracks. It has full availability of utilities. It has most recently been used for stockpiling of scrap and recycled material.

Accessibility

The site has average to good accessibility. Operating freight railroad tracks are adjacent to the east. The navigable Calumet River borders the site on its west. Vacated 116th Street provides access to the site and its adjacent parcel. This asphalt-paved illuminated street is in below average condition and has two traffic lanes. This private street extends east about 0.3 miles to moderately heavily-traveled Avenue O, with traffic control by a four-way signalized intersection. A CTA bus stop is by this intersection. Burley Avenue is just east of the site. This vacated dirt road is gated at 116th Street and appears seldom used. A monitored gate is also at the entrance to the site's adjourning property from private 116th Street. Also, Avenue O leads about 1.8 miles south to 130th street, which runs about 2.7 miles further west to a full interchange with I-94. Additionally, Avenue O leads about 1.7 miles north to 106th Street, which runs about 1.1 miles west to Torrence Avenue, which leads about 1.9 miles further to the full interchange of I-94 with Stony Island Avenue.

Adjacent and Nearby Properties

The 123+ acre parcel of which the subject 22.884 acre site is a part, has several large primarily steel-paneled industrial buildings remaining from the prior steel manufacturing at the property. An old, large multitenant industrial building that was part of the complex is partly used by the property owner for recycling, having obtained a Class IV-B permit about seven years ago. Other remaining riverfront industrial buildings of the prior manufacturing complex are further south. Vacant riverfront acreage is north of the subject 22.884 acres. Further north is a large riverfront outside storage yard for automobiles.

Across the freight railroad tracks and vacated Burly Avenue is a surface parking lot for employees of the property owner at its buildings. Further northeast, east and southeast extending to Avenue O is primarily vacant, partly-wooded acreage, some small warehouses of the property owner and, at the southwest corner of Avenue O and 116th Street, a manufacturing building operated for the last 70 + years by the Dri-Rite Company, a producer of absorbents for oil and grease, and related products.

Further east of Avenue O are several commercial buildings and small industrial buildings. Much further northeast, east and southeast in the Hegewisch Community Area are single-family residential buildings, which general exhibit average to good quality and maintenance, a high school, and elementary school, commercial, institutional and recreational properties, as well as Lake Michigan further east.

The adjacent multitenant building south of the proposed new recycling expansion, as indicated, is used for recycling including Class IV-B recycling by the property owner, as well as other metal- related industries and including sorting, disassembly, shearing, breaking, torching and large- scale processing. Other activities include outdoor storage, general manufacturing, container storage, vehicle and equipment repair and office. Numerous other metal- and recycling –related industrial companies are at other nearby locations along the Calumet River and its area. These include operations of American Zinc Recycling, across the river at 2701 East 114th Street, Dockside Processing at 12100 South Stony Island Avenue, Sim's Metal Management at 9331 South Ewing Avenue; ELG Metals, Inc, at 10321 South Calumet Access Road, Optimum Scrap Yard at 11500 South State Street; and others.

Proposed Development

The 22.884 acre site to be leased is proposed for a new Class IV-B recycling facility to have several buildings, including a nonferrous building, a maintenance/service buildings and a shredder buildings with a state-of-the art shredder. The operator will convert obsolete metal products into raw materials for use by steel mills and foundries, eliminating the need for dumping unprocessed metals into landfills. There will also be sorting and processing areas, paved vehicular use areas, stormwater management systems including a detention pond, a weighing scale system, and necessary fencing, among other site improvements. All new buildings equipment enclosures and storage piles will be set back at least 90 feet from the river. Existing barge and ship equipment currently used will be enhanced to transport processed materials from the propped new Class IV-B operation to barges, rail cars and tracks.

Special Use

The proposed special use complies with the following criteria of the Zoning Ordinance

1. Complies with all applicable standards of the Zoning Ordinance:

   The proposed Special Use will comply with all applicable standards of the Zoning Ordinance presuming the Special Use is granted by the Zoning Board of Appeals.

2. Is in the interest of the public convenience and will not have a significant adverse impact on the general welfare of the neighborhood or community:

   The proposed Special Use is in the interest of public convenience and will not have an adverse impact on the general welfare of the neighborhood or community. It will not have any adverse impact on neighborhood or community property area market values. Rather, it will replace an underutilized site in PD6, with a new recycling facility, with a state-of-the art shredder. Its expansion of the owner's operations in its adjacent building, will foster employment from nearby neighborhood and community areas, having desirable needed economic benefits. It will also result in environmental benefits from recycling.

3. Is compatible with the character of the surrounding area in terms of site planning and building scale and project design:

   The proposed new Class IV-B Recycling Facility will be established and located, and work in conjunction with an already licensed and operating Class IV-B Recycling Facility at the subject property. The subject property is located within Planned Manufacturing Development No. 6. The proposed Special Use will be very compatible with the character of the surrounding area in terms of site planning, and building scale and project design.

4. Is compatible with the character of the surrounding area in terms of operating characteristics, such as hours of operation, outdoor lighting, noise and traffic generation:

   The proposed new Class IV-B Recycling Facility will be established and located, and work as an expansion to an already licensed and operating Class IV-B Recycling Facility at the subject property. Similar industrial uses are established at the adjacent and nearby buildings on the 123.2-acre property and at nearby properties within the PD6. The proposed Special Use will be compatible with the character of the surrounding area in terms of operating characteristics such as hours of operation, outdoor lighting noise, and traffic generation.

5. Is designed to promote pedestrian safety and comfort:

   The proposed Special Use will be wholly contained within the subject zoning lot. Existing driveways
6. and drive aisles that serve the Class IV-B Recycling Facility operation will also be used during the regular operation of the new proposed Class IV(B) Recycling Facility, as well as new site improvements at the proposed Class IV-B expansion. Where the subject property is located in a Planned Manufacturing Development, there should be no impact on pedestrian safety and/or comfort. The subject property and its surrounding larger parcel, do not abut any public streets or residential areas, which is not nearby.

Variation

Strict compliance with the regulations and standards of the Chicago Zoning Ordinance (Ordinance) and the Landscape Ordinance would create practical difficulties and particular hardships. The proposed new recycling facilities requires open interior space for its operation, including processing, material storage, vehicular use and riverfront loading and transportation activities, which would be impeded by interior landscaping.

The requested variation is consistent with the stated purpose and intent of the ordinances. The requested variation conforms with neighborhood land uses and character, and are not detrimental.

The property cannot yield a reasonable return if permitted to be used only in accordance with the standards of the ordinances. The proposed new facility requires operations on open interior parts of its site, as indicated.

Practical difficulties and particular hardships are due to unique circumstances not generally applicable to other similarly situated properties. The property is unique due to its physical and locational characteristics, as part of an expansion of an existing recycling facility.

The granted variation will not alter the essential character of the neighborhood. The neighborhood in fact will benefit from mitigation of the landscape deficit by the provision of landscaping on 6.25+ acres along Avenue O, with good exposure.

The particular physical surroundings, shape or topography of the property would result in a particular hardship if the strict letter of the regulations were carried out. The particular hardship would limit processing activities of the proposed recycling facility as to its operations, including riverfront loading.

The conditions upon which the petition for a variation is based are generally not applicable to other property with the same zoning classification. The physical characteristics of the proposed building are unique due to its new age and design. The site abuts no public street, has a riverfront location and is serviced by active freight rail.

The purpose of the variation is not based exclusively on a desire to make more money out of the property. It is necessary for financed feasibility of the recycling operations.

The alleged practical difficulty or particular hardship has not been created by any person presently having an interest in the property. It is necessary for expansion of an adjacent existing Class IV-B recycling facility that has been operating for over 15 years.

The granting of the variation will not be detrimental to the public welfare or injurious to other property or improvements in the neighborhood in which the property is located. The requested

variation in fact benefits the neighborhood due to the proposed creating of 6.25+ acres of landscaping along Avenue O, and will increase employment opportunities for the neighborhood and community area.

The variation will not impair an adequate supply of light and air to adjacent property, or substantially increase the congestion in the public street, or increase the danger of fire, or endanger the public safety, or substantially diminish or impair property values within the neighborhood.

Conclusion

In my opinion, the requested special use and variation comply with the specific criteria of the Ordinance, including the landscape Ordinance.

PHOTOS

SOUTHWESTERLY VIEW OF SITE

NORTHWESTERLY VIEW OF SITE

GUARDHOUSE AT PROPERTY ENTRANCE

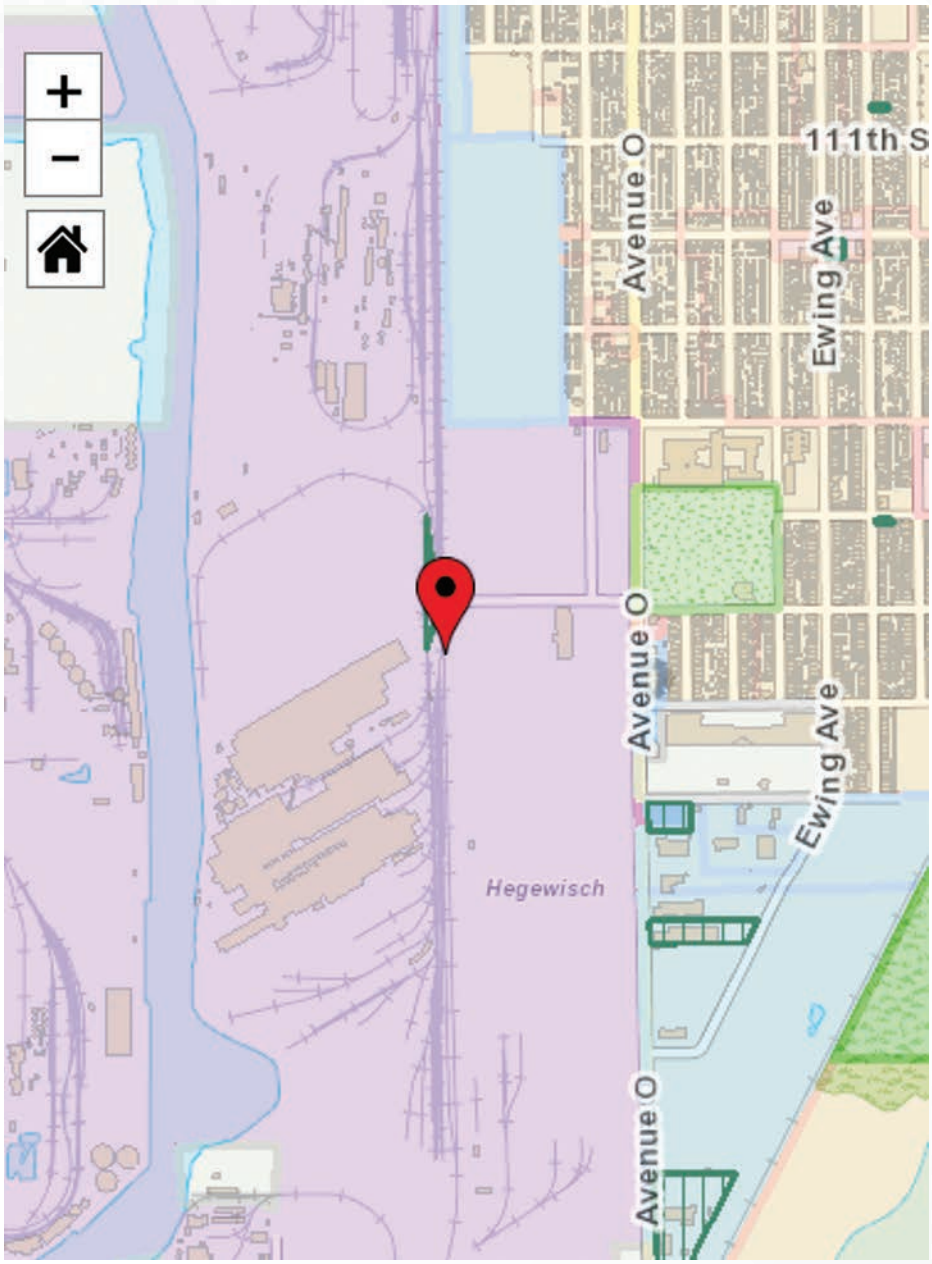
SOUTHWESTERLY VIEW OF ADJACENT RAILROAD TRACKS

ENTRANCE GATE TO PROPERTY

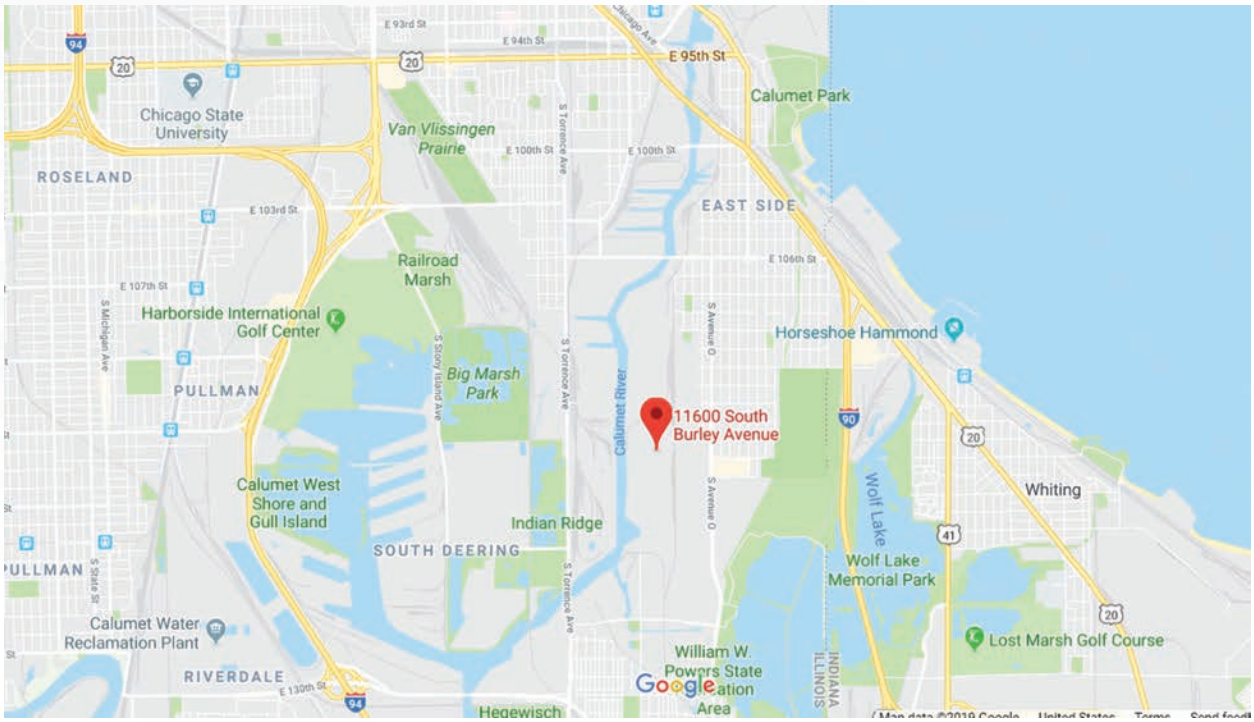
NORTHEASTERLY VIEW OF ADJACENT RAILROAD TRACKS

NORTHWESTERLY VIEW OF PROPERTY FROM VACATED 116TH STREET

Zoning Map

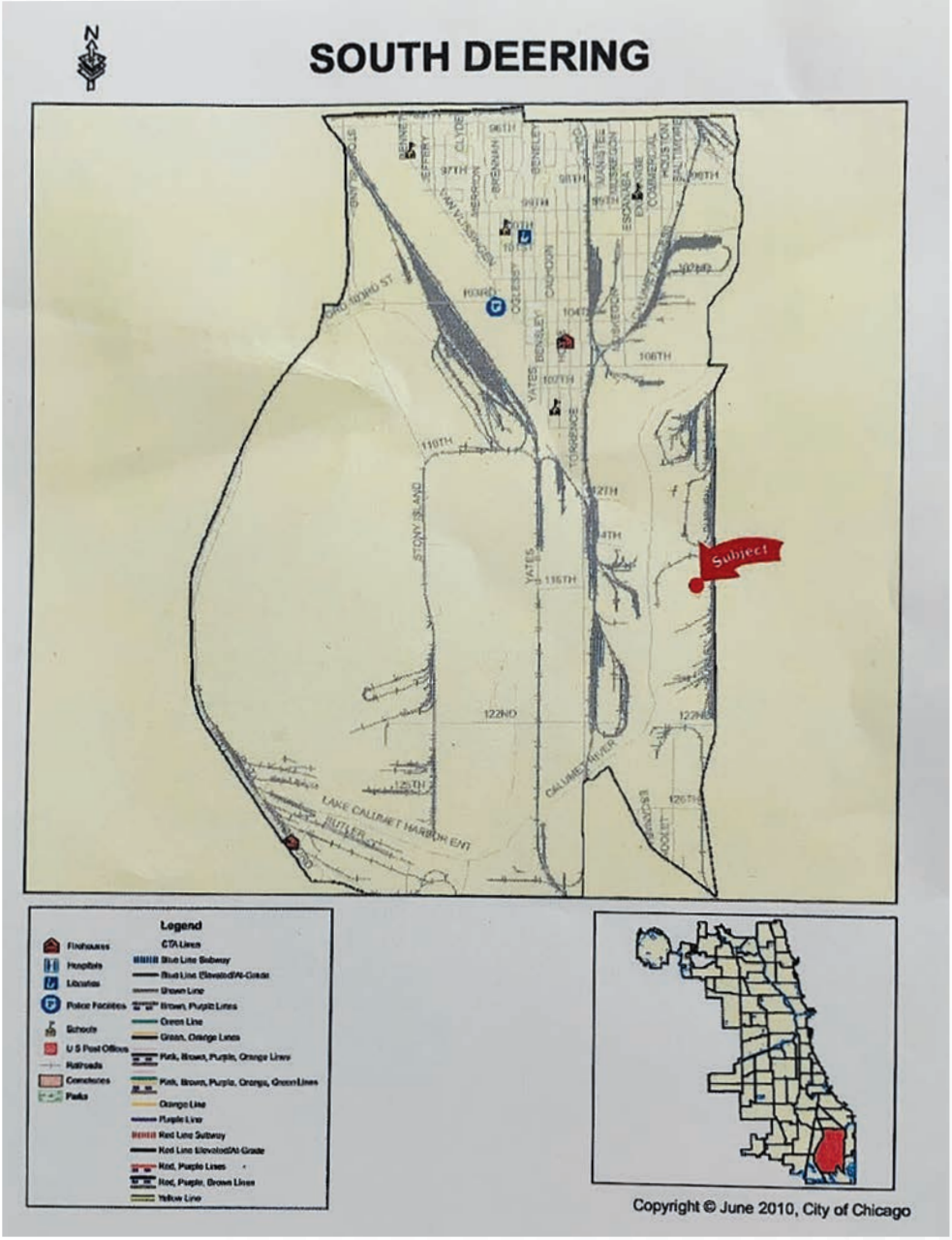

111th S
Avenue O
Ewing Ave
Avenue O
Ewing Ave
Hegewisch
Avenue O

Location Map



Aerial Photo

Community Area Map



Site Plan

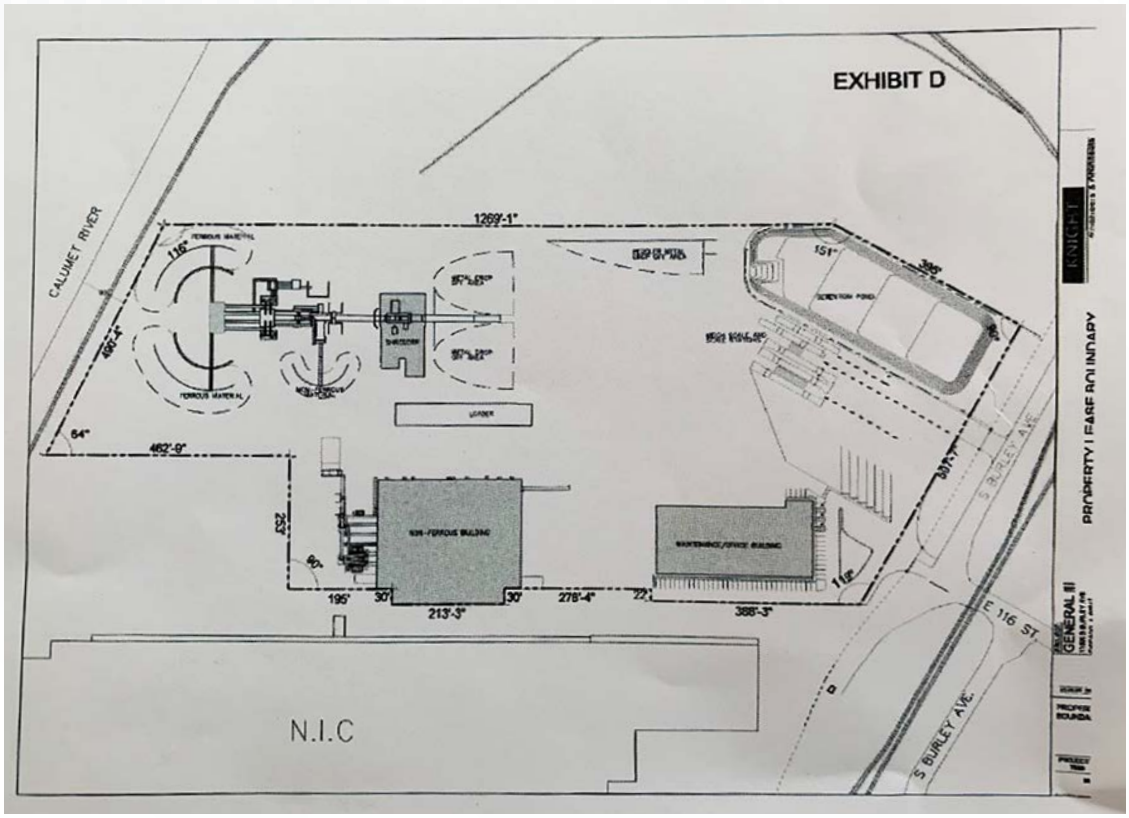
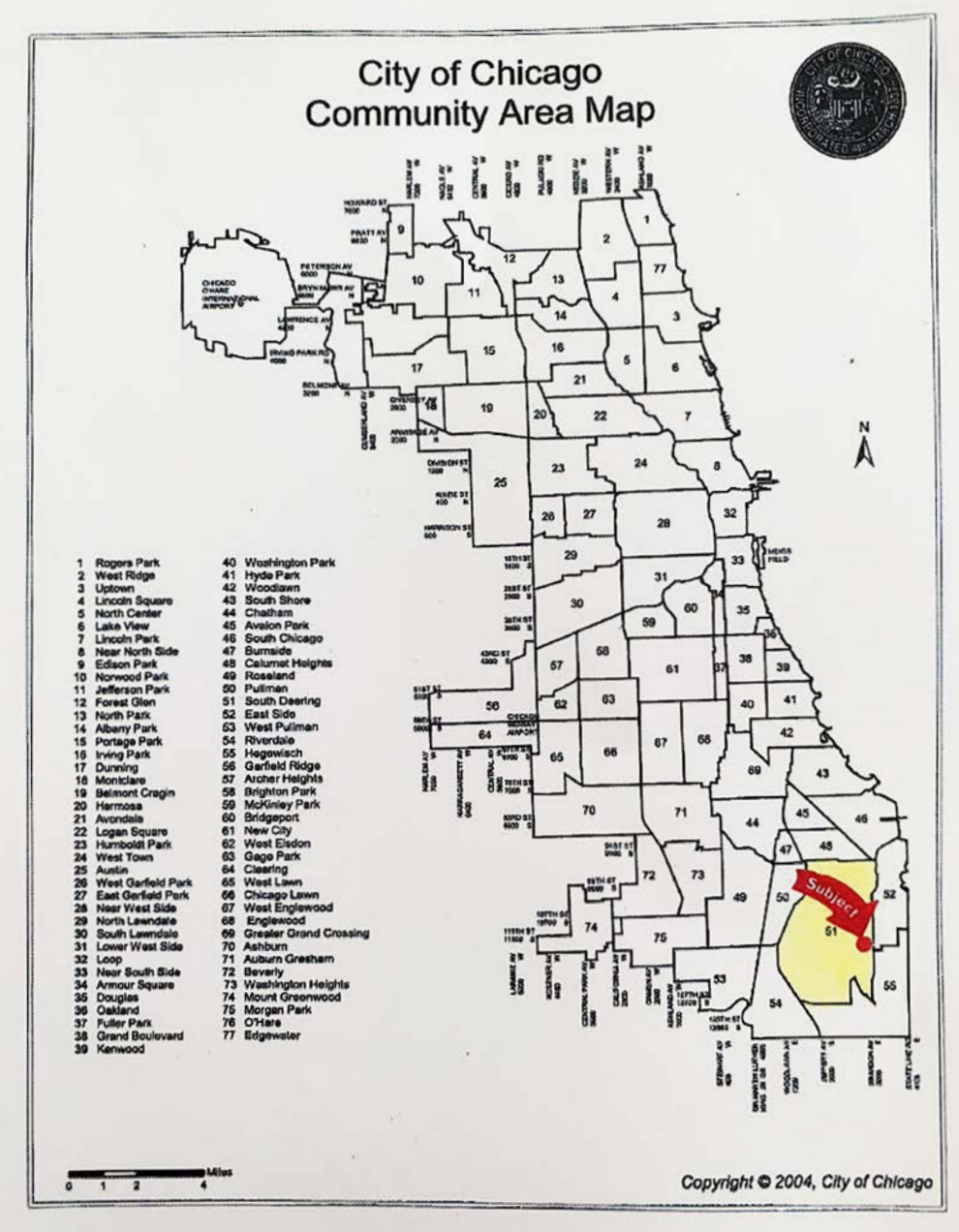


EXHIBIT D
CALUMET RIVER
1269'-1"
462'-9"
64°
252'
195'
30'
213'-3"
30'
278'-4"
22'
388'-3"
N.I.C
S BURLEY AVE
E 116 ST
S BURLEY AVE
KNIGHT
PROPERTY / EASEMENT BOUNDARY

Community Area Location Map



QUALIFICATIONS OF HUGH TERRANCE EDFORS-MAI, JD

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Chicago, Illinois 60611
312 590-2211 | theedforsgroup@yahoo.com

PROFESSIONAL PRACTICE

The Edfors Group-Principal
Real estate counseling firm- Chicago and Miami Beach

Real estate counseling, investments, valuation and litigation support throughout United States, with particular emphasis in Chicago and Southeast Florida areas

Advisor to Cook County Board of Review/Tax Appeals, Chicago, with responsibilities including counsel to Commissioners and review of cases on appeal for final reduction in assessed valuations of major properties throughout the Chicago metropolitan area

Co-founder in 1982 of Sheffield Equities, Ltd., a Chicago real estate syndication firm, with responsibilities including property acquisitions and placement of equity capital

1980-1982
Roan & Grossman-Real Estate Attorney
A medium-size Chicago law firm

Responsibilities included all aspects of general real estate law.

1975-1982
Real Estate Research Corporation-Principal Counselor and Appraiser
Chicago

Responsibilities with one of the nation's largest and oldest real estate counseling firms included valuation analysis, investment portfolio review, marketing studies and related real estate advisory services to institutional and foreign investors, developers, corporations and governments

Through 1978 functioned as special financial and real estate consultant to the Real Estate Department of the First National Bank of Chicago in the identification, valuation and acquisition of real estate assets, including mortgages, located throughout the United States in connection with REIT asset swap programs and loan work-outs

1972-1975
Independent real estate appraiser and consultant

Counseling affiliations with several Chicago and Wisconsin appraisal, brokerage, investment and development firms.

1970-1972
Home Federal Savings and Loan Association
A large Chicago Loops financial institution

EDUCATION

J.D. degree, De Paul University, Chicago.
Concentration in Real Estate and Taxation

M.B.A. degree, University of Chicago, Graduate School of Business, Chicago.
Concentration in Finance and Marketing

M.S. degree in Business, University of Wisconsin, Madison, Wisconsin.
Specialization in Real Estate Investment Analysis and Appraisal. Studied under Dr. James Graaskamp.

Completed half of requirements for M.S degree in Urban and Regional Planning from University of Wisconsin School of Urban and Regional Planning.

B.A. degree in Geology, Northwestern University, Evanston, Illinois.
Completed advanced program with courses in M.S and Ph.D. curriculum.

Numerous additional real estate, real estate-related and law courses and seminars by the Appraisal Institute, American Institute of Real Estate Appraisers, Society of Real Estate Appraisers, American Savings and Loan Institute, Illinois Institute for Continuing Legal Education, Chicago Bar Association and the International Real Estate Federation, including representation as one of Chicago directors to annual conference in Taipei, Taiwan.

PROFESSIONAL AFFILIATIONS

Member of the Appraisal Institute

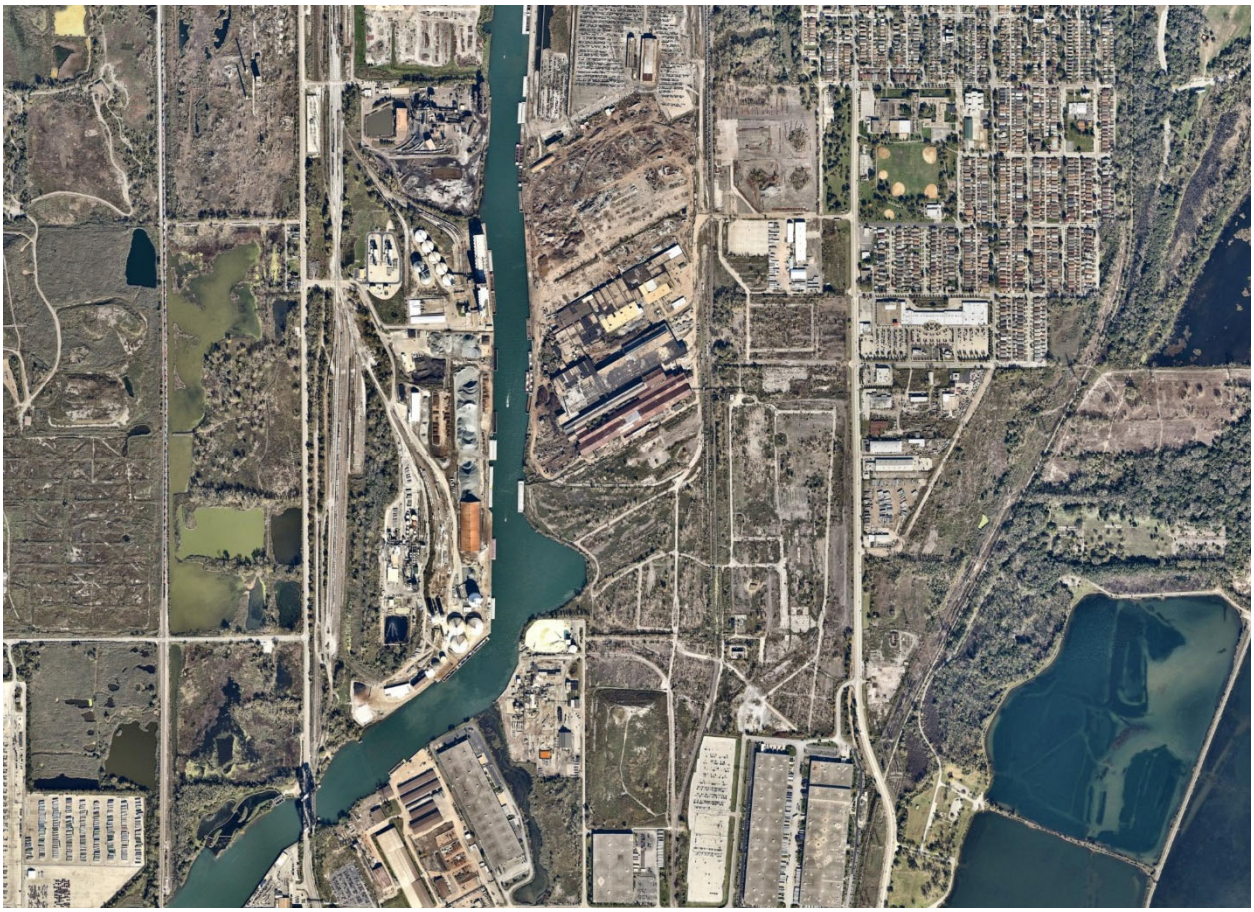
Prior member of the Chicago Bar Association and its Real Estate Taxation Committee.

Prior real estate broker in the State of Illinois and prior member of the Chicago Association of REALTORS

Illinois Certified General Real Estate Appraiser.

TRAFFIC IMPACT STUDY

Metal Recycling Facility
11600 South Burley Avenue
Chicago, Illinois



February 2019

Prepared for:
General III, LLC

Sam Schwartz
Transportation Consultants

TABLE OF CONTENTS

1.0 INTRODUCTION

Sam Schwartz Consulting (*Sam Schwartz*) was retained by General III, LLC ("G3") to conduct a traffic impact study ("TIS") to assess transportation impacts for the proposed expansion of an existing metal recycling center located at 11600 S. Burley Avenue ("Property") in the City of Chicago. The proposed operation will be part of the Reserve Management Group ("RMG"), which has 11 locations throughout the United States. RMG is a private company that supports the steel industry through recycling as an alternative to landfills. RMG deals with processing of different types of ferrous, non-ferrous, and electronic scrap. Their current Chicago location, which has operated since 1996, also has warehousing and water (barge) terminal services.

The Property is comprised of approximately 123 acres located along the Calumet River situated (north-south) between approximately 114th Street (extended) and 119th Street (extended), and (east – west) between the Calumet River and approximately 200 feet to the west of vacated Burley Avenue. Approximately 300 persons work at the Property. Most workers arrive between 5AM and 7AM and depart between 3PM and 5PM. As proposed, a metal recycling operation, further described below, will be located on 22.884 acres of the existing property ("Site") and will employ an additional 100-130 workers, on four primary shifts. Access to the Site will be from a controlled gated entrance located along a north-south industrial service drive adjacent to the Site. This service drive is located approximately 200 feet west of vacated Burley Avenue.

Plans are for G3 to build a new recycling operation at the Site next to the current RMG operations. The new metal recycling facility will convert obsolete metal products into raw materials for use by steel mills and foundries and smelters that, in turn, produce new metal for industrial needs. This recycling process mitigates the need to "dump" the unprocessed metals into a landfill. Specifically, the G3 operation will be improved with new buildings and equipment, sorting and processing areas, paved driveways, stormwater management systems, new cranes, and connections to shipping and barging on the Calumet River, and a new state-of-the-art shredder.

The location of the businesses will allow for recycling services that are facilitated by a network of waterways, rail and roadways for delivery and shipment of goods. The location of the Site is shown on ***Figure 1***. The Site will be serviced by large trucks or barges bringing in materials from construction sites, automobile recyclables, and other recycling facilities, and leaving with loads delivering to end users. Additionally, the business will take in metal scrap from individual small truck operators, who travel throughout the City and suburbs.

The following report presents and documents *Sam Schwartz's* methodology, data collection, and analyses and identifies any potential impacts from the G3 development. The report is completed in conformance with the Chicago Department of Transportation ("CDOT") standards. The analysis includes an annual traffic growth rate, provided by The Chicago Metropolitan Area for Planning ("CMAP"), of 1.5% to determine background growth for 2024 future conditions, which is anticipated buildout plus five years. Referenced items are included in the Appendix.

N

Not to Scale

Sam Schwartz Engineering D.P.C.

Figure 1

Site Location Map

2.0 EXISTING CONDITIONS

Sam Schwartz conducted field visits to collect relevant information pertaining to the site, the surrounding street network, traffic volumes, traffic controls, lane geometry, and infrastructure at the study intersections. Based on these characteristics, existing intersection capacity was evaluated to establish baseline operational conditions for the study area. This section of the report provides a description of these existing characteristics.

2.1 Area Land Uses & Connectivity

Located on 116th Street approximately 200 feet west of Burley Avenue, the subject parcel will be part of an existing 175-acre metal shredding and recycling center operated by Reserve Management Group. Adjacent land uses are generally industrial in nature, with some residential uses and a neighborhood shopping center east of Avenue O, approximately one-quarter mile from the site. The George Washington School is located north of the site at 114th Street.

The Calumet River runs along the western edge of the site, providing direct access to waterway shipping routes. Interstate 90 can be accessed via 106th Street approximately two miles northeast of the site, and Interstate 94 can be accessed via 130th Street approximately four and one-half miles southwest of the site, or at 103rd Street north of the site. It should be noted that the 106th Street bridge, which could provide access to the 103rd Street interchange, was out of service at the time of this study.

2.2 Existing Street Characteristics

Field data collection was performed along the primary study roadways of 130th Street, Brainard Avenue, Torrence Avenue, 126th Street, Avenue O, and 116th Street. Descriptions of these roadways are provided below.

130th Street is an east-west, four-lane roadway that is designated as a Strategic Regional Arterial (SRA) by the Illinois Department of Transportation (IDOT). The SRA system is designed to promote vehicle throughput with the use of such strategies as access management and limited signalization. At its signalized intersection with Torrence Avenue and Brainard Avenue, the eastbound approach of 130th Street provides two exclusive left-turn lanes, two through lanes, and one dedicated right-turn lane. A 35 MPH speed limit is posted on 130th Street, and it is under the jurisdiction of the Chicago Department of Transportation (CDOT).

Torrence Avenue is a north-south, four-lane roadway that is designated as an SRA by the Illinois Department of Transportation (IDOT). At its signalized intersection with 130th Street and Brainard Avenue, the northbound approach of Torrence Avenue provides one exclusive left-turn lane, two through lanes, and one dedicated right-turn lane. The southbound approach at this intersection provides two exclusive left-turn lanes, two through lanes, and one dedicated right-turn lane. At its signalized intersection with 126th Street, the northbound approach of Torrence Avenue provides one exclusive left-turn lane, two through lanes, and one dedicated right-turn lane. The southbound approach at this intersection provides one exclusive left-turn lane, a through lane, and a shared through/right-turn lane. A 40 MPH speed limit is posted within the study area. Torrence Avenue is under the jurisdiction of CDOT north of its intersection with 130th Street and IDOT south of 130th Street.

Brainard Avenue is an east-west, four-lane minor arterial that is approximately three miles south of the subject site. At its signalized intersection with Torrence Avenue and 130th Street, the eastbound approach of Brainard Avenue provides an exclusive left-turn lane, two through lanes, and one dedicated right-turn lane. A 35 MPH speed limit is posted on Brainard Avenue, and it is under the jurisdiction of CDOT.

126th Street is an east-west, two-lane major collector roadway that is approximately one and one-quarter miles south of the subject site. At its signalized intersection with Torrence Avenue, the westbound approach of 126th Street provides two exclusive left-turn lanes and one shared through/right-turn lane. The eastbound approach at this intersection, which is an access drive for the Ford assembly factory, provides an exclusive left-turn lane and one shared through/right-turn lane. At its signalized intersection with Avenue O, the eastbound approach of 126th Street provides one exclusive left-turn lane, and a shared through/right-turn lane. The westbound approach at this intersection, which is an access drive for the Wolf Lake Recreation Area, provides an exclusive left-turn lane and a shared through/right-turn lane. A 30 MPH speed limit is posted on 126th Street, and it is under the jurisdiction of CDOT.

Avenue O is a north-south, four-lane minor arterial that is approximately one quarter-mile east of the subject site. At its signalized intersection with 126th Street, the northbound and southbound approaches of Avenue O each provide an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. At its signalized intersection with 116th Street, the northbound approach of Avenue O provides an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. The southbound approach at this intersection provides a shared through/right-turn lane, and a shared through/left-turn lane. A 30 MPH speed limit is posted on Avenue O, and it is under the jurisdiction of CDOT.

The Chicago Transit Authority (CTA) provides transit service along Avenue O via bus route 30. At the study intersections, stops are provided at the southeast and southwest corners of Avenue O and 126th Street, and at the northwest and northeast corners of Avenue O and 116th Street. There is a bus shelter on the northeast side of 116th Street and Avenue O. Service operates approximately every 17- 20 minutes northbound and southbound during peak employee arrival and departure hours.

116th Street is an east-west, two-lane local road that ends at the eastern edge of the subject site. At its signalized intersection with Avenue O, the eastbound and westbound approaches of 116th Street are offset. Each of these approaches provide a single shared through/right-/left-turn lane. 116th Street is a private road west of Avenue O and is under the jurisdiction of CDOT east of Avenue O. No speed limit is posted on 116th Street.

2.3 Existing Traffic Volumes

Intersection turning movement counts were conducted in December 2018 and January 2019 in order to identify existing traffic volumes within the study area. The intersections that were counted for this study are listed below:

- Torrence Avenue at 130th Street and Brainard Avenue
- Torrence Avenue at 126th Street
- Avenue O at 126th Street

- Avenue O at 116th Street
- 116th Street at the Industrial Site Access Drive

Counts were performed during the weekday morning and weekday evening peak periods (6:00-9:00AM and 3:00-6:00PM, respectively) in order to coincide with peak activity on the area street network. Based on the resulting count data, the observed street peak hours took place from 7:15-8:15AM during the weekday morning and from 5:00-6:00PM during the weekday evening. Peak hour traffic volumes are illustrated on ***Figure 2***. Summaries of the raw count data are contained in the Appendix.

The standards for CDOT traffic studies generally call for an analysis of the peak hour of the area street network, which is shown in this report. However, it should be noted that this time period is different than the peak hour of the site traffic, as the majority of employees arrive for shifts that begin before and after the street peak hours. Consequently some vehicle volumes may be lower during this time period. Likewise large, and small truck deliveries mostly occur outside of the peak hour of the street. This is discussed further in Section 3.2 Trip Generation.

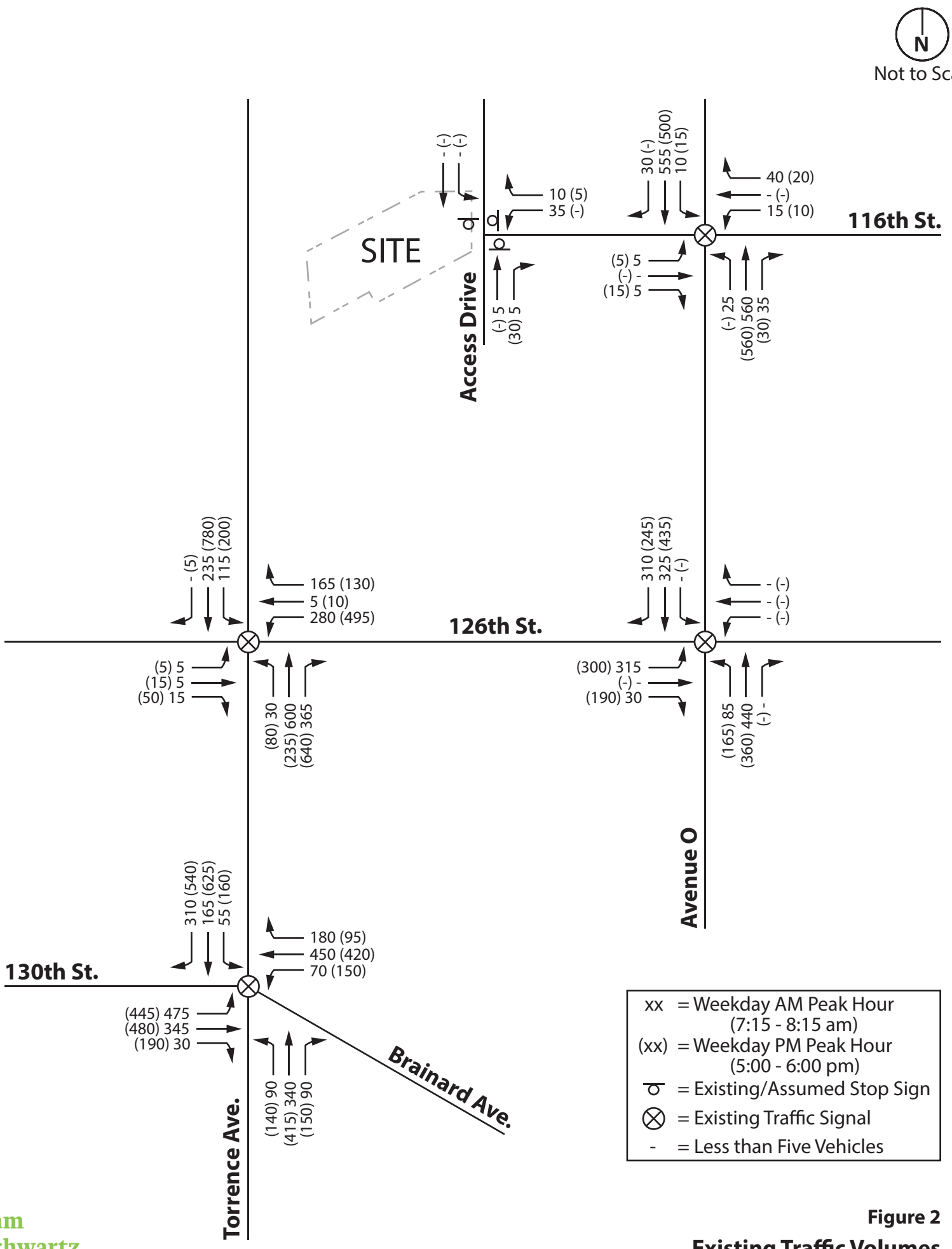


Figure 2

Existing Traffic Volumes

Sam Schwartz Engineering D.P.C.

2.4 Existing Intersection Operations

The operational effectiveness of transportation facilities is measured in terms of Level of Service (LOS). LOS ranges from LOS A to LOS F, with LOS A being the best level of operation for an intersection and LOS F being the worst. LOS A represents free-flow conditions where motorists experience a high level of comfort and convenience. LOS E represents saturated or at-capacity conditions, and LOS F represents oversaturated conditions.

LOS at a signalized intersection is defined in terms of average control delay (measured in seconds per vehicle), which is portion of total delay experienced by a motorist that is attributable to the traffic signal. LOS A describes operations with minimal delays (up to 10 seconds per vehicle), while LOS F describes operations with delays in excess of 80 seconds per vehicle. At intersections with long cycle lengths, the quantity of red time that is allocated to an approach or movement may near or exceed that 80-second threshold, increasing the likelihood of poor LOS. The LOS criteria for signalized intersections, as defined in the Highway Capacity Manual, Sixth Edition (HCM), are provided in ***Table 1***.

Table 1. LOS Criteria for Signalized Intersections

Level of Service (LOS)	Average Delay	Volume-to-Capacity (v/c) Ratio
A	≤ 10.0 seconds	< 1.0
B	> 10.0 and ≤ 20.0 seconds	< 1.0
C	> 20.0 and ≤ 35.0 seconds	< 1.0
D	> 35.0 and ≤ 55.0 seconds	< 1.0
E	> 55.0 and ≤ 80.0 seconds	< 1.0
F	> 80.0 seconds	≥ 1.0

Transportation Research Board. Highway Capacity Manual, Sixth Edition.

For unsignalized intersections, total delay is defined as the total elapsed time from the moment a vehicle stops at the back of the queue until the vehicle departs from the stop bar on the stop-sign controlled approach. This includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The LOS thresholds for unsignalized intersections, which differ from those for signalized intersections, are summarized in ***Table 2***.

Table 2. LOS Criteria for Unsignalized Intersections

Level of Service (LOS)	Average Delay	Volume-to-Capacity (v/c) Ratio
A	≤ 10.0 seconds	< 1.0
B	> 10.0 and ≤ 15.0 seconds	< 1.0
C	> 15.0 and ≤ 25.0 seconds	< 1.0
D	> 25.0 and ≤ 35.0 seconds	< 1.0
E	> 35.0 and ≤ 50.0 seconds	< 1.0
F	> 50.0 seconds	≥ 1.0

Transportation Research Board. Highway Capacity Manual, Sixth Edition.

Capacity analysis was performed to analyze the study intersections for the weekday peak hours using Synchro 10 capacity analysis software. Synchro's Lanes, Volumes, & Timings report was used to evaluate capacity at the signalized intersections under existing conditions. Synchro's HCM 2010 All-Way Stop Control report was used to evaluate capacity at the unsignalized intersection. These capacity results are summarized in ***Table 3***.

Table 3. Existing (Year 2018) Levels of Service

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Torrence Avenue/130th Street/Brainard Avenue[1]				
Eastbound	32.1	C	35.5	D
Westbound	30.4	C	23.6	C
Northbound	29.7	C	31.8	C
Southbound	20.2	C	33.9	C
Overall Intersection	*28.7*	*C*	*32.2*	*C*
Torrence Avenue/126th Street[1]				
Eastbound	16.8	B	17.0	B
Westbound	24.4	C	27.8	C
Northbound	17.4	B	13.0	B
Southbound	15.4	B	25.5	C
Overall Intersection	*18.8*	*B*	*21.3*	*C*
Avenue O/126th Street[1]				
Eastbound	107.7	F	36.8	D
Westbound	21.7	C	21.7	C
Northbound	7.5	A	7.3	A
Southbound	8.4	A	12.5	B
Overall Intersection	*30.8*	*C*	*18.0*	*B*
Avenue O/116th Street[1]				
Eastbound	40.6	D	30.1	C
Westbound	18.9	B	24.1	C
Northbound	15.7	B	14.4	B
Southbound	24.4	C	21.5	C
Overall Intersection	*20.1*	*C*	*18.1*	*B*
116th Street/Industrial Site Access[2]				
Westbound	8.6	A	8.5	A
Northbound	8.6	A	8.7	A
Southbound	8.9	A	8.1	A
Overall Intersection	*8.6*	*A*	*8.6*	*A*

[1]Signalized Intersection
[2]Unsignalized Intersection

As shown above, the majority of approaches at the study intersections currently operate acceptably, at LOS D or better, during the weekday morning and evening peak periods. The eastbound approach at Avenue O and 126th Street currently operates at LOS F during the weekday morning peak hour due to the limited green time provided for this approach compared to the north- and southbound approaches. Additional green time could be provided for the eastbound approach at this intersection with little impact to the operation of other approaches.

3.0 FUTURE CONDITIONS

In order to evaluate future intersection operations, traffic volume projections were forecasted for a build plus five-year design horizon in accordance with CDOT requirements. With the expectation that the proposed development would be completed in Year 2019, a Year 2024 design year was utilized. Future traffic forecasting was based on two main factors: background traffic growth and trips generated by the subject development. Based on the resulting projections, capacity analyses were prepared to evaluate operational conditions after completion of the proposed development. The findings and resulting recommendations are discussed in this section of the report.

3.1 Site Development Plan

As proposed, the subject development would consist of a 22.884 acre metal shredding and recycling center to be constructed on the development site which is part of an existing approximate123-acre RMG property at 11600 South Burley Avenue. The Site will take in recyclable metals from demolition projects, automobile and independent recyclers, other recycling facilities, from a variety of sources, including small businesses, and residences. In addition to employees entering and leaving on several shifts, the Site will be serviced by large trucks, as well as small pick-up type vehicles. Vehicular access to the Site would be provided via an access drive to be constructed as a west leg at the existing intersection of the private roadway known as 116th Street with a private north-south industrial access drive. A conceptual site plan illustrating these access locations and the internal roadway network can be found in the Appendix.

3.2 Trip Generation

In order to obtain data for trip generation for the new G3 proposed Site expansion, *Sam Schwartz* conducted 15-hour weekday traffic counts (5:00 AM - 8:00 PM) at an existing recycling facility to use as a model. Counts were taken at the General Iron Industries facility located at 1909 N. Clifton Ave. in Chicago. General Iron Industries will close by year 2020 and the G3 operation will assume much of its business. These counts were performed on Monday, December 10, 2018, in order to match the busiest day of the week at the site. Summaries of the raw count data are contained in the Appendix. The raw counts were then adjusted according to the following four factors to determine new trip generation at the G3 subject site:

1) The trip counts at 1909 N. Clifton Ave. were multiplied by a factor of 1.33 to account for seasonal variability. *Sam Schwartz* reviewed monthly data provided by General Iron and determined that the busiest month of operations (August) typically sees 33% more trips than December.
2) Passenger vehicle and single-unit truck trips were then reduced by 80% based on the results of a survey of existing customers at the 1909 N. Clifton Avenue site that indicate only 20% of existing customers would travel to the proposed new facility at 11600 S. Burley Ave.
3) The existing passenger vehicle and single-unit truck trip counts currently occurring at the RMG Property were multiplied by a factor of .60 to account for an expected 60% increase in business at the proposed expanded site. These were added to the adjusted trip counts from steps 1 and 2 above.

4) The current large truck trip counts at 1909 N. Clifton Ave. were increased by one truck per hour to account for new remote collections sites and the resulting transfer/delivery of material by truck to the new site.

The site-generated trip projections are summarized in ***Table 4***.

Table 4. Site-Generated Trips

Vehicle Class	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Passenger Vehicles	15	5	20	0	20	20
Single-Unit Trucks	5	5	10	0	0	0
Articulated Trucks	15	25	40	5	5	10
TOTAL NEW TRIPS	**35**	**35**	**70**	**5**	**25**	**30**

The standards for CDOT traffic studies generally call for an analysis of the peak hour of the area street network, which is shown in this report. However, it should be noted that this time period is different than the peak hour of the site traffic, as the majority of employees arrive for shifts that begin before or after the street peak hours, and truck deliveries likewise take place outside of the street peak periods. Consequently, site-generated vehicle volumes may be lower during this time period. The existing hourly volume distribution of trips, taken from the current RMG and current General Iron sites (used as a model), are shown on ***Figures 3a and 3b***.

Figure 3a. Current Hourly Vehicle Volume Distribution – General Iron Site

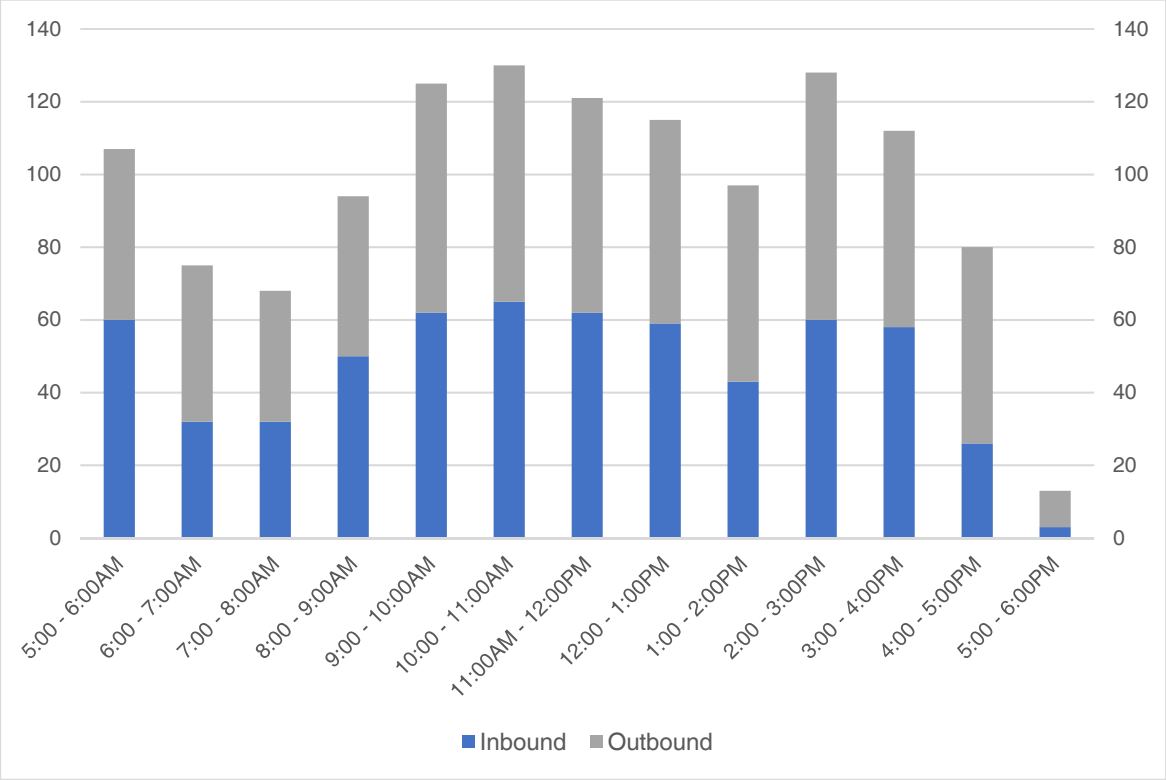
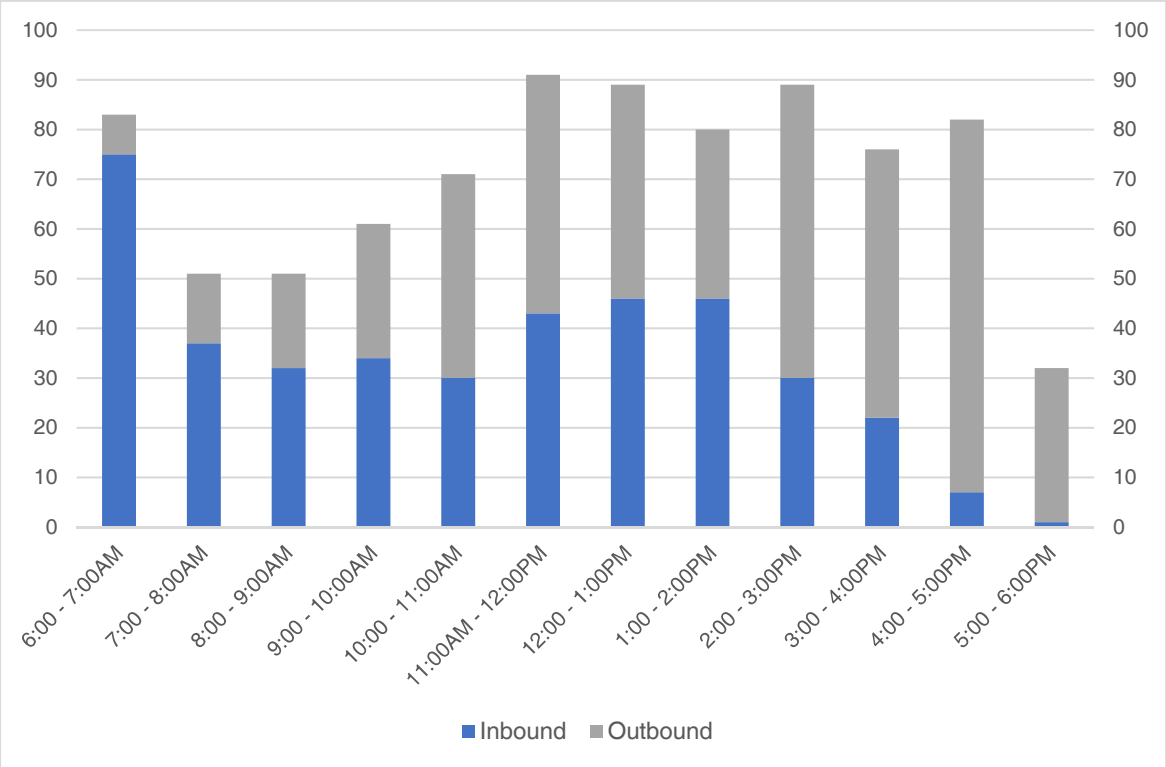


Figure 3b. Existing Hourly Vehicle Volume Distribution – RMG Site



3.3 Directional Distribution

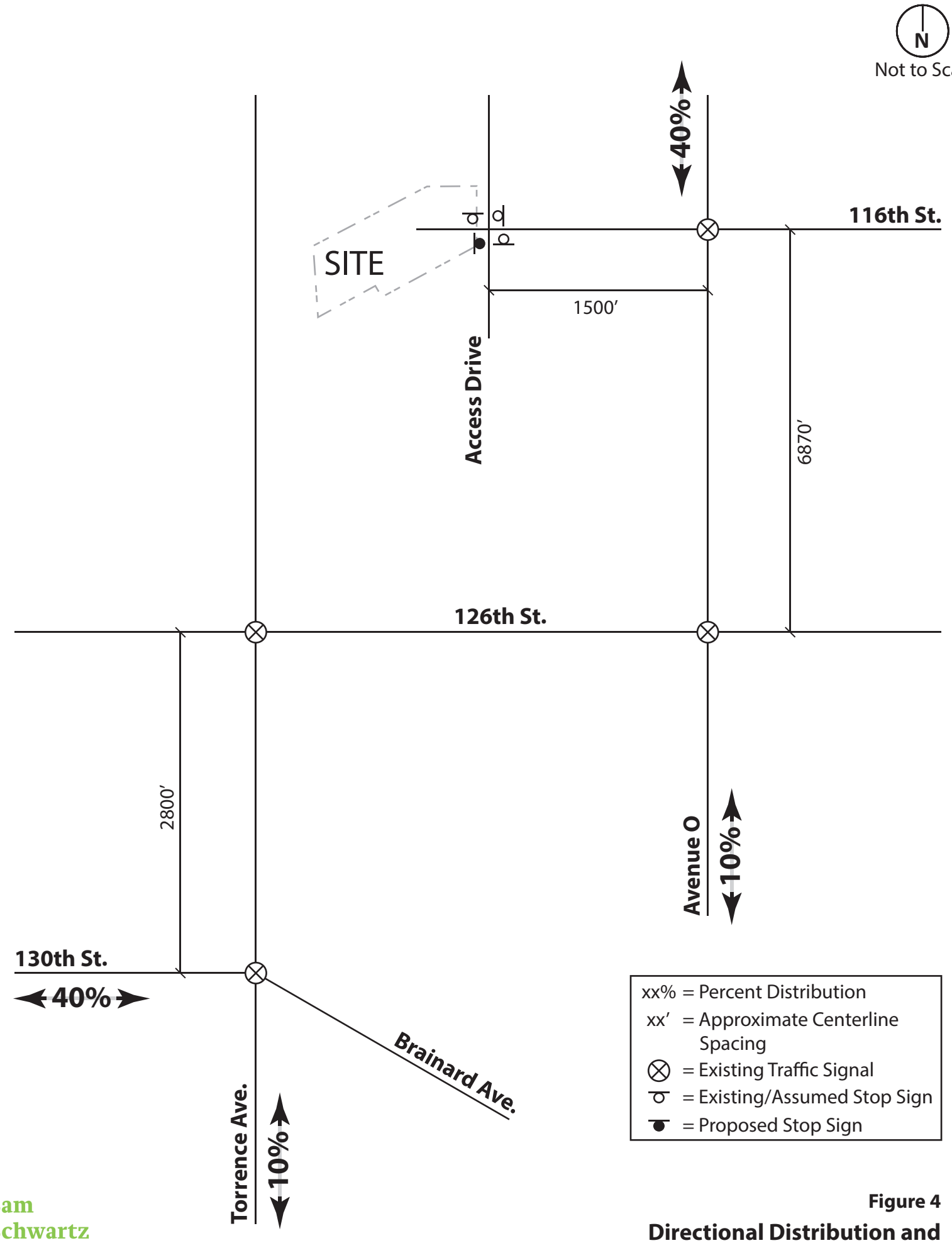
The directional distribution of site-generated traffic is a function of several variables, including existing travel patterns, characteristics of the area street network and traffic control, and peak hour congestion within the study area. The resulting percentages are a best estimate using engineering judgment, familiarity with the area, and logical travel paths to likely origins and destinations for site users. The anticipated directional distributions for passenger vehicle and truck trips to and from the site are shown in ***Figure 4*** and ***Figure 5***, respectively. Approximate centerline spacing for the existing site access driveways is also illustrated on these figures.

3.4 Site Trip Assignment

Trips generated by the proposed development were assigned to the street network based on the total trip generation estimates (Table 4) and the estimated trip distribution (Figures 4 and 5). The resulting trip assignments for passenger vehicles and trucks are illustrated in ***Figure 6*** and ***Figure 7***.

3.5 Future Traffic Projections

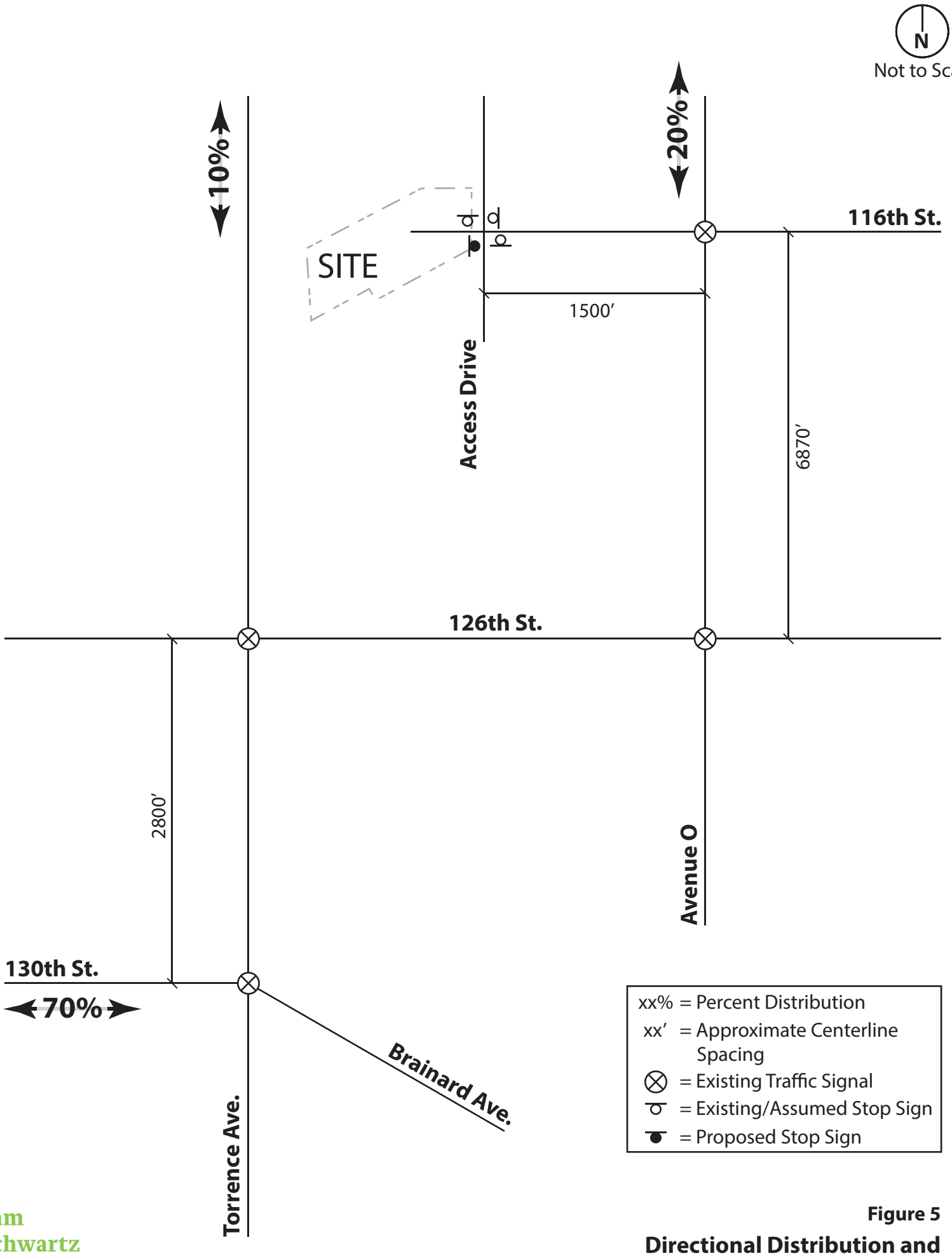
In order to estimate future background traffic for the Year 2024 design horizon, Year 2050 Average Daily Traffic (ADT) projections were obtained from the Chicago Metropolitan Agency for Planning (CMAP) for the roadways within the study area. Based on the projections provided, a compounded annual growth rate of 1.50% was derived for each street within the study area. This percentage was applied to existing traffic volumes as an estimate of Year 2024 background traffic. Background growth and site trips were added to the existing traffic volumes (shown in Figure 2) in order to obtain Year 2024 future traffic projections, illustrated in ***Figure 8***.



Sam Schwartz Engineering D.P.C.

Figure 4

Directional Distribution and Intersection Spacing - Cars



Sam Schwartz Engineering D.P.C.

Figure 5

Directional Distribution and Intersection Spacing - Trucks

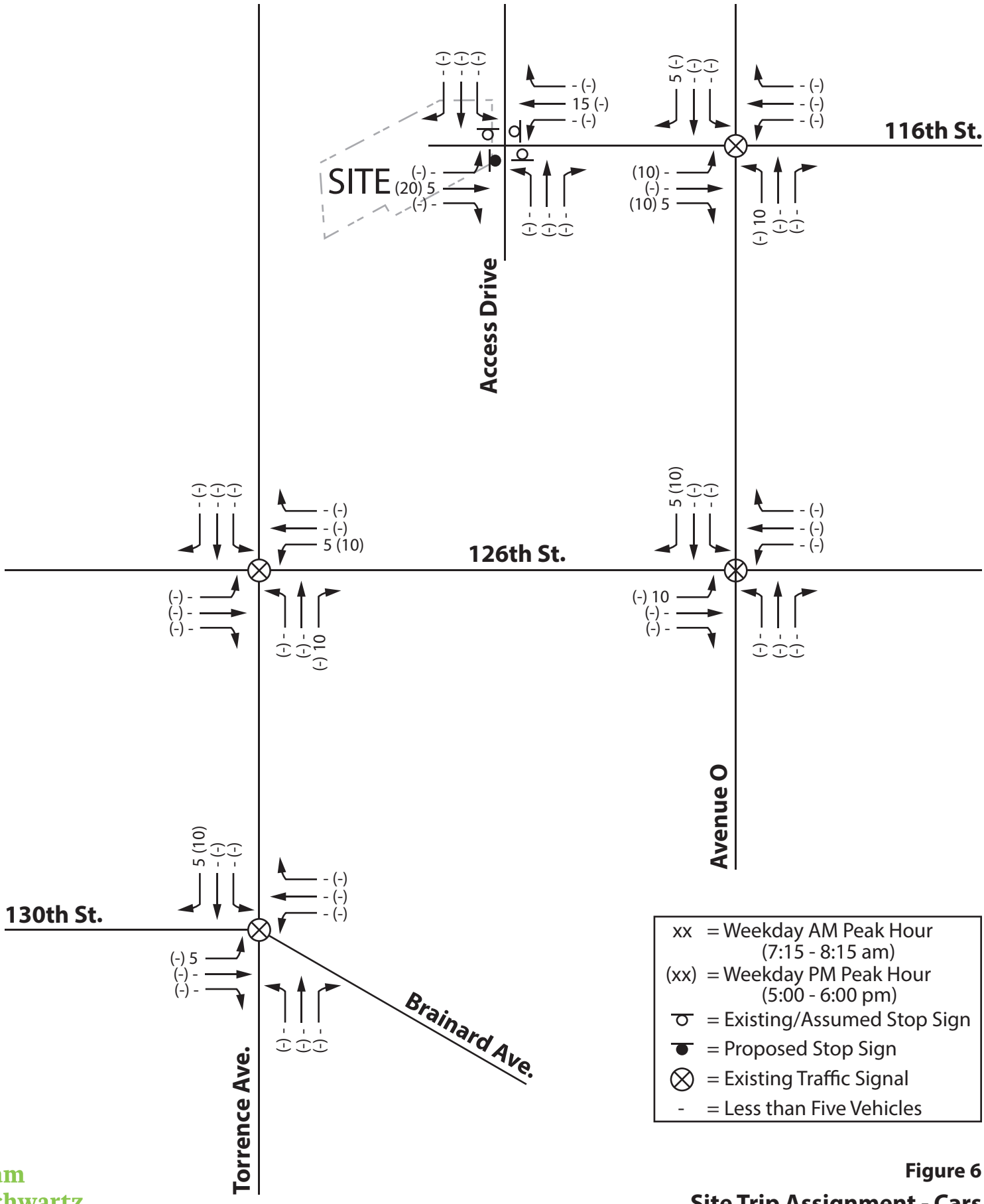


Figure 6

Site Trip Assignment - Cars

Sam Schwartz Engineering D.P.C.

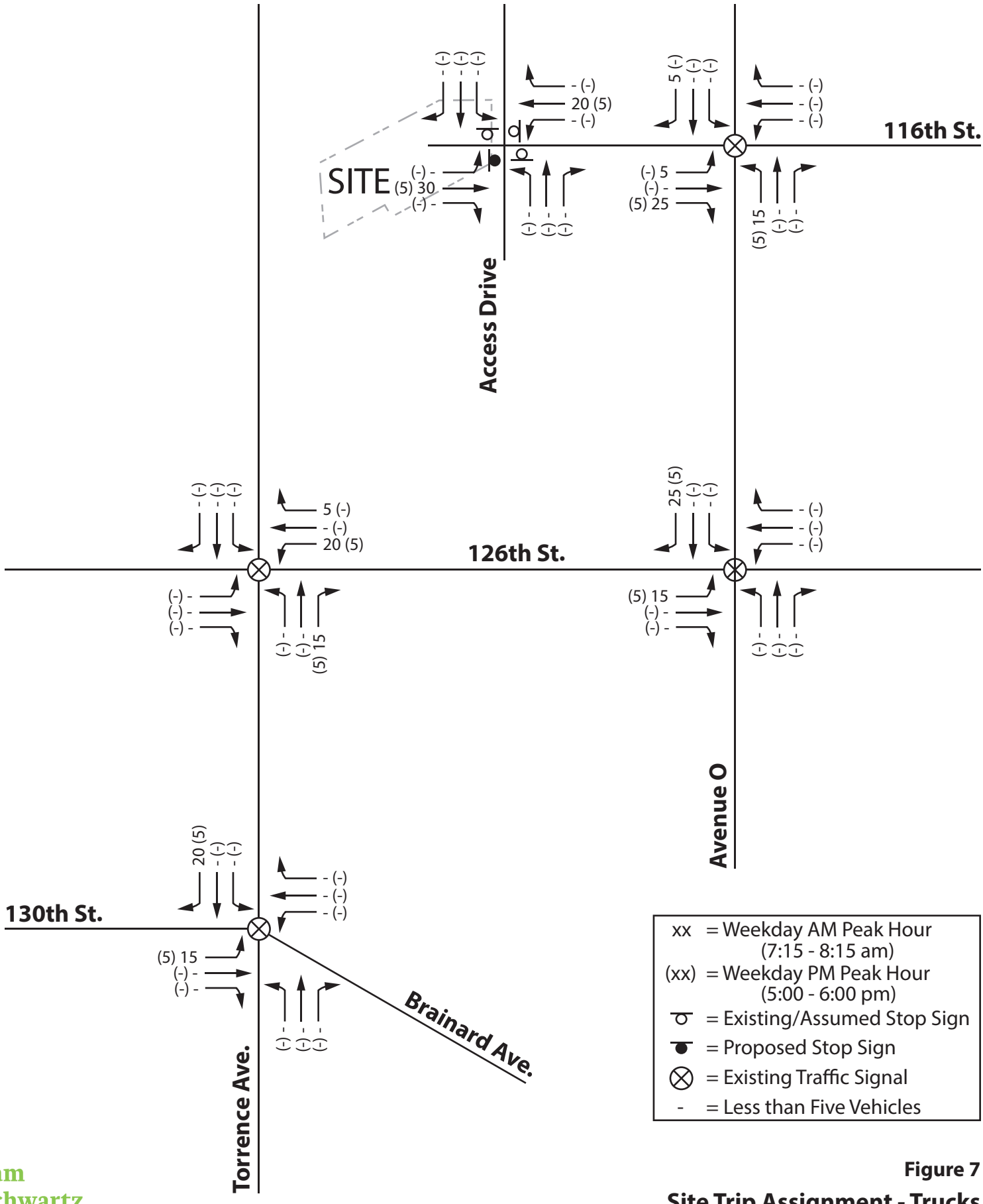


Figure 7

Site Trip Assignment - Trucks

Sam Schwartz Engineering D.P.C.

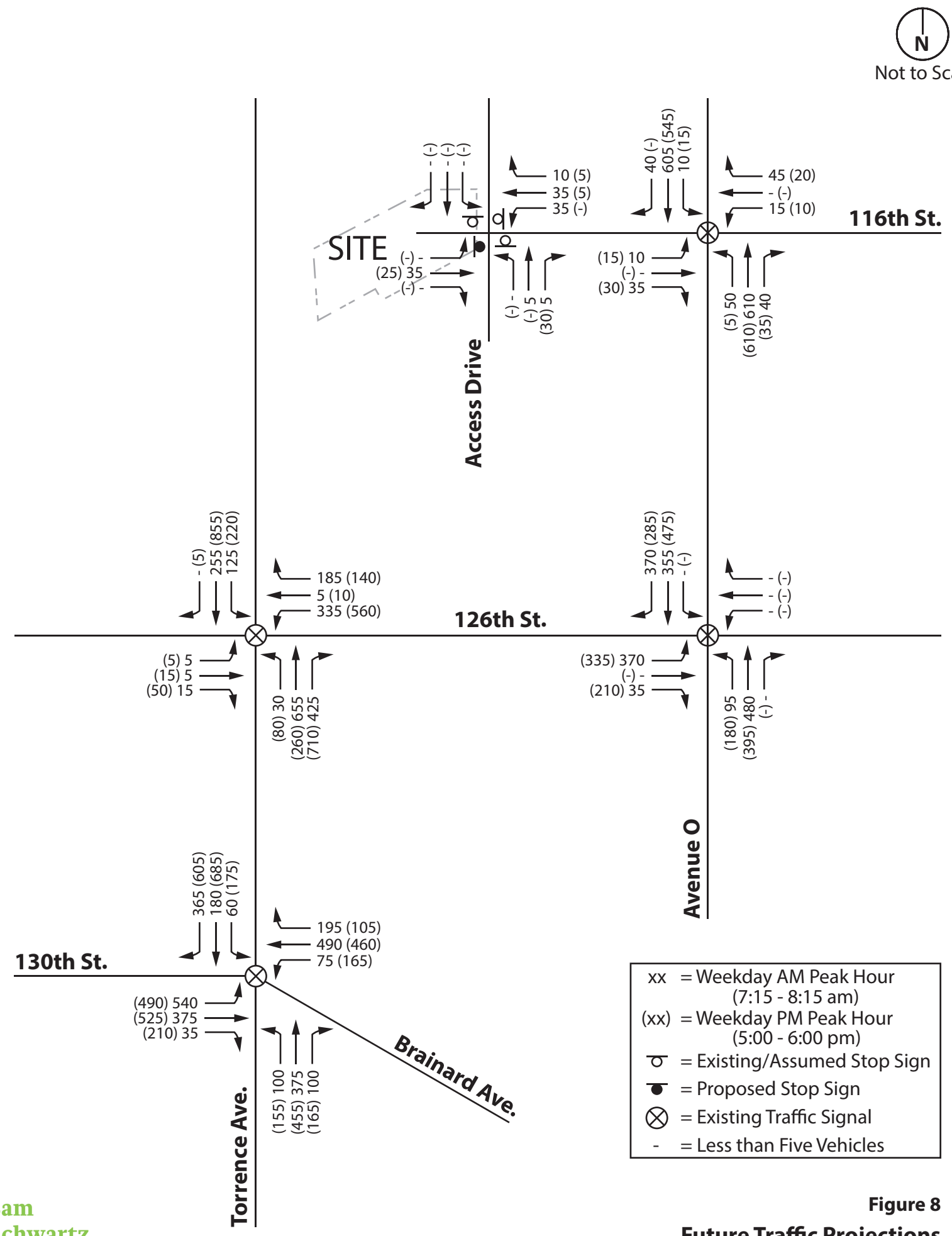


Figure 8

Future Traffic Projections

Sam Schwartz Engineering D.P.C.

3.6 Future Intersection Operations

Capacity analyses were conducted using Synchro 10 software to assess future traffic operation during the weekday morning and weekday evening peak hours. As part of this capacity analysis, additional green time was allocated to the eastbound movements at the intersection of Avenue O and 126th Street during the weekday morning peak period. This recommendation is detailed further in Section 4 of this report.

Summaries of the capacity analysis results under future (Year 2024) conditions are presented in ***Table 5***.

Table 5. Future (Year 2024) Conditions Levels of Service

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Torrence Avenue/130th Street/Brainard Avenue[1]				
Eastbound	32.7	C	41.5	D
Westbound	33.5	C	24.0	C
Northbound	30.2	C	34.0	C
Southbound	21.3	C	37.8	D
Overall Intersection	*30.0*	*C*	*35.8*	*D*
Torrence Avenue/126th Street[1]				
Eastbound	16.8	B	17.0	B
Westbound	24.4	C	28.9	C
Northbound	18.0	B	13.4	B
Southbound	16.7	B	27.1	C
Overall Intersection	*19.4*	*B*	*22.3*	*C*
Avenue O/126th Street[1]				
Eastbound	64.0	E	44.3	D
Westbound	16.0	B	21.7	C
Northbound	12.6	B	7.9	A
Southbound	16.7	B	13.4	B
Overall Intersection	*26.5*	*C*	*20.7*	*C*
Avenue O/116th Street[1]				
Eastbound	32.2	C	30.6	C
Westbound	18.9	B	23.9	C
Northbound	16.4	B	14.8	B
Southbound	25.6	C	22.0	C
Overall Intersection	*21.1*	*C*	*18.7*	*B*

[1]Signalized Intersection
[2]Unsignalized Intersection

Table 5. Future (Year 2024) Conditions Levels of Service (cont.)

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
116th Street/Industrial Site Access[2]				
Eastbound	7.3	A	7.2	A
Westbound	8.9	A	8.7	A
Northbound	7.1	A	6.7	A
Southbound	8.9	A	7.9	A
Overall Intersection	*8.3*	*A*	*7.2*	*A*

[1]Signalized Intersection
[2]Unsignalized Intersection

As shown above, the majority of movements at the study intersections continue to operate adequately at LOS D or better after site completion. With implementation of the recommended allocation of additional green time to the eastbound movements at Avenue O and 126th Street, the eastbound approach improves from a LOS F to a LOS E during the weekday morning peak hour. There is minimal impact to the north- and southbound movements, which each operate at LOS B during this period.

4.0 RECOMMENDATIONS AND CONCLUSIONS

Based on the analyses detailed in this report, the following recommendations were identified in order to accommodate future site-generated traffic resulting from the proposed development:

- All-way stop control should be posted at the intersection of vacated 116th Street, which is a private road, with the existing north-south access road and the new site access drive.
- An additional nine seconds of green time should be allocated to the eastbound movements at Avenue O and 126th Street during the weekday morning peak period to mitigate the high delay currently experienced by vehicles at this approach. This change improves the eastbound approach operation in the weekday morning peak hour from LOS F to LOS E. The overall intersection continues to operate at LOS C.
- Shuttle service should be expanded and coordinated with the CTA Route 30 schedule to meet most of the employee arrivals and departures. The shuttle service should be extended from the employee lot (current operation) to the bus shelters on Avenue O. This may require further study by the owner to ensure compatibility.
- A new bus shelter should be constructed at the existing southbound CTA bus stop at the intersection of Avenue O and 116th Street.

In conclusion, the surrounding roadway network is currently designed to accommodate commercial traffic, including large trucks. The G3 development Site is favorably situated to conduct recycling services with access to a favorable street network and excellent waterway shipment opportunities. With the above recommendations in place, it is anticipated that Site-generated trips and background traffic growth will be readily accommodated at the study intersections with minimal impacts. The recommended pedestrian improvements will serve employees in a more efficient manner and provide better access to public transit. The Site, as designed, should work well within the context of the surrounding transportation system and providing excellent access to major arterials and the Interstate system.

APPENDIX

Site Plan

2050 Traffic Projections from CMAP

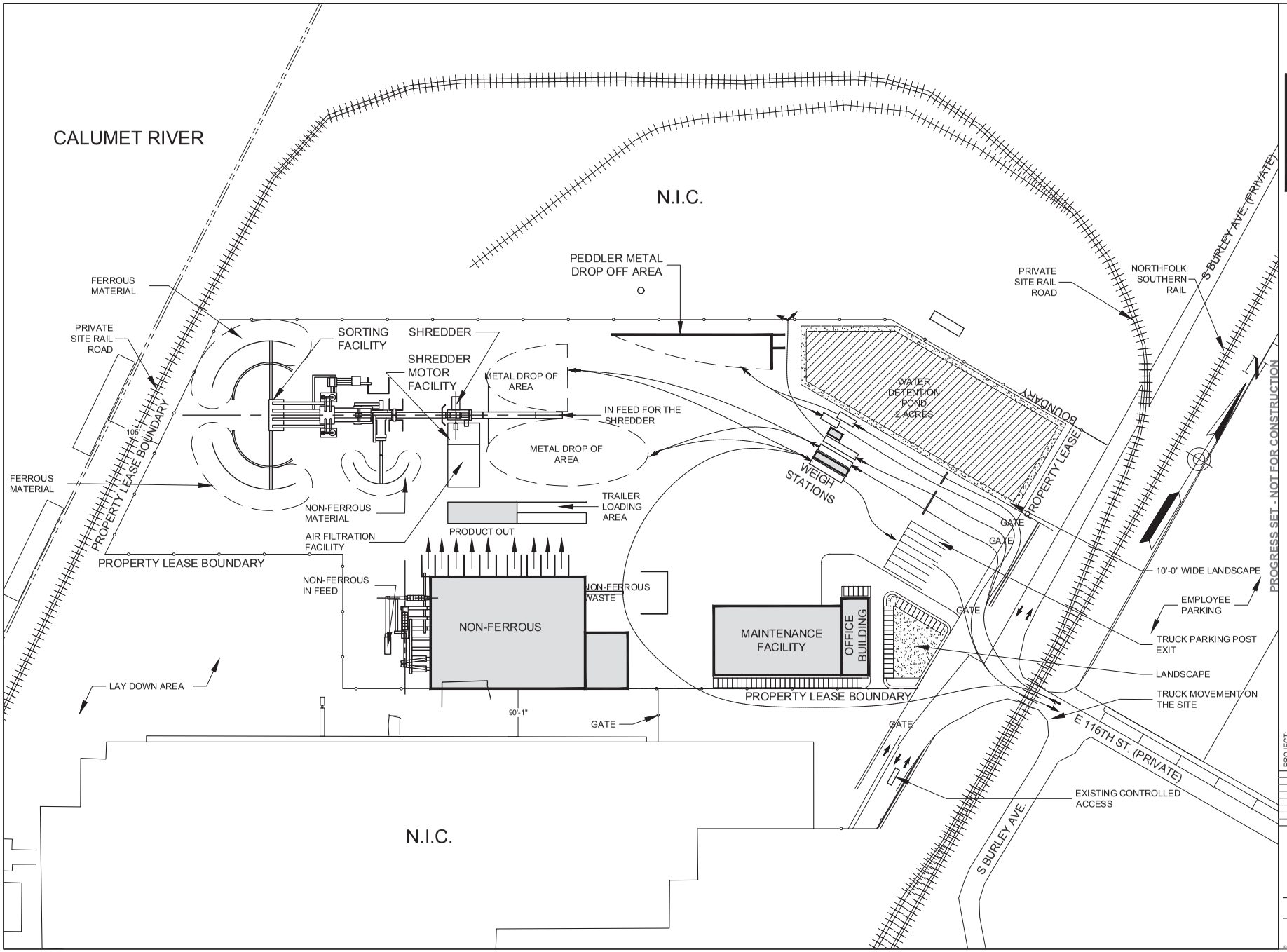
Trip Generation Data

Capacity Analysis Results

Raw Traffic Data

AutoTURN Exhibits

Site Plan



PROGRESS SET - NOT FOR CONSTRUCTION

SITE LOGISTICS

GENERAL IRON INC.
11600 BURLEY AVE. CHICAGO IL 606..
CHICAGO, IL 60617

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

PROJECT:
GENERAL IRON INC.
11600 S BURLEY AVE
CHICAGO, IL 60617

CLIENT:
CLIENT NAME
CLIENT STREET ADDRESS
CLIENT STATE & ZIP CODE
CLIENT CONTACT #

XX-XX-XX ISSUE FOR REVIEW

SITE LOGISTICS

PROJECT #: 7563
DATE:

SHEET #:
A

2050 Traffic Projections from CMAP

From: Kathleen Murphy
To: "Jose Rodriguez"
Subject: Traffic Projections Request
Date: Wednesday, January 02, 2019 1:47:00 PM
Attachments: Site Location Aerial.jpg

Hello Jose –

Sam Schwartz has been contracted to perform a traffic study for a proposed industrial facility in Chicago, IL. I've attached an aerial showing the location of the site, which is on 116th Street west of Avenue O. In order to comply with CDOT requirements, we are formally requesting Year 2050 Average Daily Traffic (ADT) projections for the study roadways in order to derive annual growth rates for the study area. A list of the study roadways and latest ADT volumes is provided below:

- 130th Street/Brainard Ave, west of Torrence Ave: 16,600 (Year 2014, IDOT)
- Brainard Ave/Saginaw Ave, east of Torrence Ave: 6,200 (Year 2014, IDOT)
- Torrence Ave: 10,900 (Year 2014, IDOT)
- 126th Street: 5,550 (Year 2014, IDOT)
- Avenue O @ 126th Street: 12,800 (Year 2014, IDOT)
- Avenue O @ 116th Street: 14,400 (Year 2014, IDOT)

Thank you for your help and let us know if you need any additional information.

Thanks,
Kathleen

Kathleen Murphy, P.E.
Transportation Engineer

Sam Schwartz
Transportation Consultants

kmurphy@samschwartz.com
office: 773.305.0800 x431

223 W. Jackson Blvd., Suite 1101
Chicago, IL 60606
samschwartz.com
TransCentral newsletter

Special Use (within PMD)

EXHIBIT A

[ATTACH ALL LAY WITNESS AFFIDAVITS]

TRAFFIC FORECAST RECORD

Record Number: ck-01-19

Type of Report: Projection

Year Sought: 2050

Analyst: JAR

Organization requesting forecast: Sam Schwartz Engineering

Contact: Kathleen Murphy, P.E.

Phone number: (773) 305-0800 x431

Sponsor: IDOT

Date request was received: January 2, 2019

Date that response was mailed or faxed: January 2, 2019

Facility Location: Avenue O / Torrence Avenue from 116th St to 130th Street

Municipality: City of Chicago

Chicago Metropolitan Agency for Planning

233 South Wacker Drive
Suite 800
Chicago, Illinois 60606

312 454 0400
www.cmap.illinois.gov

January 2, 2019

Kathleen Murphy, P.E.
Transportation Engineer
Sam Schwartz Engineering
223 West Jackson Boulevard
Suite 1101
Chicago, IL 60606

Subject: ***Avenue O / Torrence Avenue from 116th St to 130th Street***
IDOT

Dear Ms. Murphy:

In response to a request made on your behalf and dated January 2, 2019, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT	Year 2050 ADT
130th St/Brainard Ave W of Torrence	16,600	28,400
Brainard Ave/Saginaw Ave E of Torrence	6,200	10,600
Torrence Ave	10,900	18,600
126th Street	5,550	9,500
Avenue O, @ 126th St	12,800	21,900
Avenue O, @ 116th St	14,400	24,600

Traffic projections are developed using existing ADT data provided in the request letter and the results from the October 2018 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

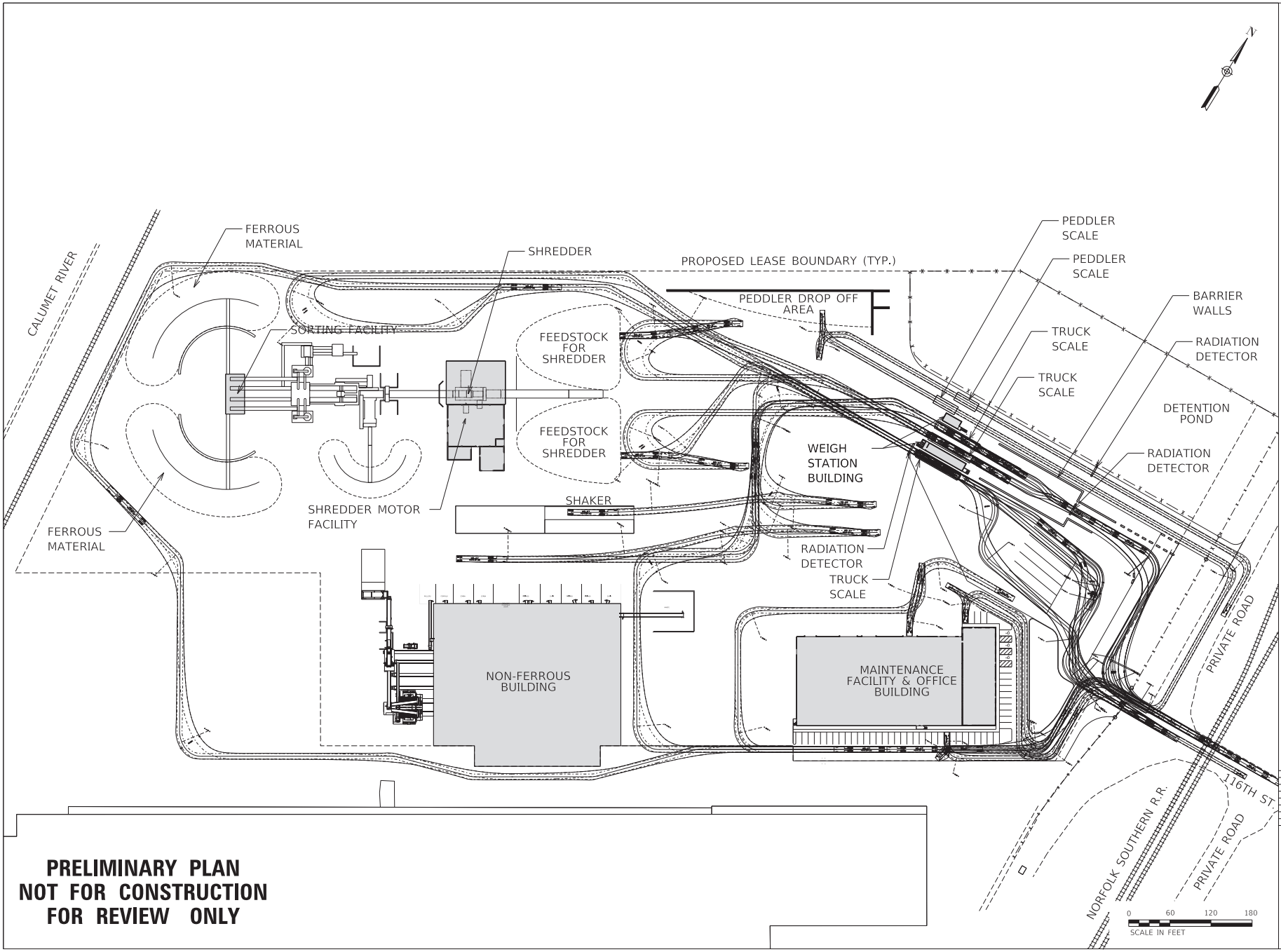
If you have any questions, please call me at (312) 386-8806.

Sincerely,

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

cc: Quigley (IDOT)
S:\AdminGroups\ResearchAnalysis\2019_ForecastsTraffic\Chicago\ck-01-19\ck-01-19.docx

AutoTURN Exhibits



PRELIMINARY PLAN
NOT FOR CONSTRUCTION
FOR REVIEW ONLY

KNIGHT Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

ON-SITE VEHICLE MOVEMENTS

PROJECT:
GENERAL III
11600 S BURLEY AVE
CHICAGO, IL 60617

XX-XX-XX	ISSUE FOR REVIEW

GENERAL III
PROPOSED SITE PLAN
ON-SITE VEHICLE MOVEMENTS

PROJECT #:	DATE:
7563	01-21-2018

TM-01.1

Exhibit C
Documents Other than Expert Reports

Drawings

Text

- Critical Need
- Preserving and Creating Jobs
- Material Screening
- Emission Reduction
- Pedestrian Safety

Graphics

- Metal Recycling
- Committed to Sustainability

NEED FOR A NEW FACILITY

General Iron, a 100-year-old, family-owned business, will close in 2020. Every year, the facility processes 740,000 tons of recyclable metal; this is approximately the same volume of all of the garbage collected in the City of Chicago.

At this time, no other business in the Chicago area has the capacity to handle this quantity of shredable recyclables. Unless another facility is ready to satisfy market demand for recycling as soon as the General Iron facility closes, the economic and environmental consequences to the city will be dire.

Recycling offers the obvious benefit of keeping discarded metals out of landfills. The metal recycling service provided by General Iron provides numerous other benefits as well.

Chicago has long nurtured a recyclable metal supply chain, and thousands of individual peddlers form a crucial component of this sequence. If collectors are unable to sell discarded metal at the best price and a convenient location, they will be forced to transport material further away (incurring additional transportation costs) in search of higher values. They'll have less incentive to search for discarded metals, and collections from local alleys will slow down or stop. Collectors who rely upon General Iron for their livelihood will scramble to find new sources of income, upsetting families and increasing overall unemployment. Discarded appliances and bulk metal items could remain in alleys, causing obstructions and creating havens for pests in residential areas.

If individual collectors do not pick up discarded metals, city workers will be required to gather this waste. Garbage pickup costs will skyrocket. If discarded metals are transported to landfills, the city will be required to pay increased tipping fees for disposal.

Even if Chicago workers were to collect discarded metal, certain items, such as pressurized containers, are not safe or appropriate for city sanitation workers to pick up. These items require specialized handling and disposal. General Iron provides a valuable community service by accepting -- then paying for proper disposal of -- items like pressurized containers and televisions, even though these discards have no resale value. Without a facility run by operators who are willing to perform this service, the city would be required to remove these sensitive materials from residential areas.

Disrupting the flow of the metal recycling process will also increase the cost of demolition projects. Transportation costs (and adverse effects of truck traffic) will

increase as developers and contractors haul construction materials longer distances to centers outside of Chicago. Weak competition will reduce the value of used metals, forcing demolition companies to charge higher rates for projects.

If General Iron were to close without a new facility ready to process metals in a safe and environmentally responsible way, less scrupulous operators will surface or expand their operations to fill the void in the marketplace. Such operators may not use energy efficient, effective, or legally compliant methods. They may violate zoning and health standards set by the city, may not conform to aesthetic standards, install air monitors, or utilize expensive air filtering and cleaning processes.

In contrast to these potential negative consequences, General III proposes to open a state-of-the art metal recycling facility in the heart of an industrial district well buffered from residential properties. The proposed new shredder and processing operation will utilize the latest technology to create a clean, efficient, environmentally sensitive plant that will preserve metal markets in Chicago, keep metal out of city alleys and landfills, maintain city garbage collection costs, support families that rely on the metal industry, and ensure that metals are reprocessed and reused instead of abandoned or sent to landfills.

General III, LLC – Emission Reduction Measures Protecting Air Quality

The proposed new recycling facility will adopt state of the art engineering to meet all standards in the industry for ensuring air quality and attractive aesthetics.

General III's metal shredder will feature a custom-designed and constructed air pollution control system consisting of the following:

Enclosure – An astatically pleasing partial enclosure will be constructed around the shredder for noise control, increased safety and dust mitigation.

Capture Hood – The shredder will be equipped with a high efficiency emissions capture hood. A large induced draft fan will draw air from the enclosure into the hood at the top of the shredder to sweep shredder emissions into the capture hood. A network of ducts will route the captured emissions to the shredder air emissions control system.

Cyclone Separator – Once collected, the shredder exhaust will be directed through a high-efficiency cyclone that will remove a large portion of particulate matter. Cyclone separators work by directing air flow through the cyclone in a spiral pattern which causes particulate matter to separate from the airstream through centrifugal force.

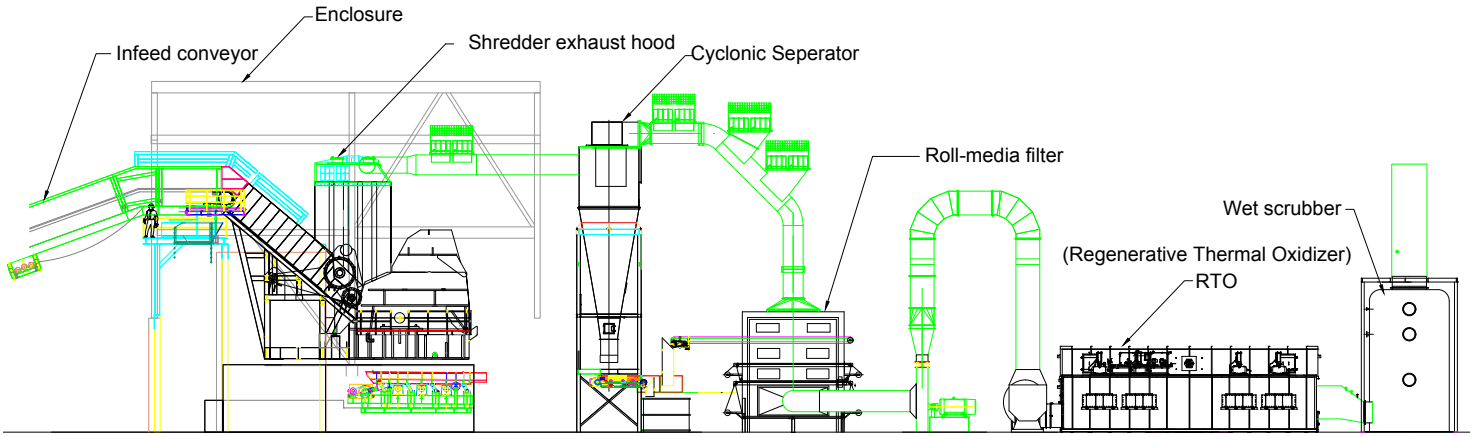
Roll-Media Filter System – After the cyclone, the shredder exhaust will be directed through a thicklayer of filterfiltering material that creates a physical barrier toand retains particulate matter, while allowing filtered air to pass through the system. As its name implies, clean filter material is continuously fed to the system from a large roll. A take up roll pulls used filter media out of the system while simultaneously pulling clean material into the system to ensure efficient operation and high particulate removal efficiencies.

Regenerative Thermal Oxidizer (RTO) – After the roll-media filter system, the filtered air will be directed to an RTO that will thermally oxidize >98% of volatile organic matter compounds (VOM) to carbon dioxide and water vapor.

Wet Scrubber – After the RTO, the airstream will be directed to a wet scrubberde-signed to neutralize exhaust gases from the RTO and will also reduce residual particu-late matter. Exhaust gases from the wet scrubber will be discharged to the atmosphere through a dedicated stack.

In addition to the shredder air emission control system, a comprehensive network of large fixed and portable dust suppression misting cannons will be employed throughout the facility to reduce fugitive dust generated from material handling and stockpiling activities.

Air emissions from the metal shredder will be controlled using an extensive array of collection and control devices.



- Emissions from the shredder will be collected by an exhaust hood and will then be directed to a cyclone which will remove relatively coarse particulate matter through centrifugal force.
- Following the cyclone, the shredder exhaust will be directed to a high-efficiency filter which will remove the majority of remaining particulate matter by forcing the air through a fine mesh filter.
- Filtered air from the cyclone and roll-media filter will then be directed to a regenerative thermal oxidizer (RTO) which will destroy greater than 98% of volatile organic compounds (VOCs) through combustion of the VOCs.
- Finally, exhaust from the RTO will be directed to a wet scrubber which will neutralize any gases and filter any particulate matter that may be generated by the RTO.

MATERIAL SCREENING

General III will screen all incoming material before accepting recyclable material into the facility. Trained inspectors will check incoming loads for signs of potentially hazardous materials and will reject objects that are unsuitable for clean recycling.

Every load of recyclable material will pass through a radiation detector that can identify potential sources of radiation. If suspect materials are detected, the load will be segregated and thoroughly inspected using handheld radiation detection devices. Any potential radioactive material identified during the course of the inspection will be contained and subsequently removed by the Illinois Department of Nuclear Safety under the state's Orphan Source Recovery Program. This state initiative is a non-emergency response hazard mitigation program that collects and properly disposes of unwanted or abandoned radioactive material. State involvement prevents improper management of these materials that could result in unnecessary exposure to individuals or result in the spread of radioactive contamination to the environment.

General III inspectors will be trained to identify and segregate various types of batteries that may be received, as well as containers that may contain hazardous materials, including paints and solvents. Inspectors are also trained to identify and segregate materials that may contain asbestos, mercury, or Polychlorinated biphenyls (PCBs). In cases where inspectors identify potential hazards, facility personnel will contact an appropriate authorized contractor to remove and properly dispose of, or recycle, these materials.

As a community service, General III will accept compressed gas cylinders, which can present hazards if left in streets and alleys. Facility personnel will segregate pressurized cylinders and will pay an authorized cylinder contractor, as necessary, to handle and remove them in accordance with federal, state, and local regulations.

PRESERVE AND CREATE JOBS

General III anticipates that the proposed new recycling facility will demand a substantial number of on- and off-site construction industry jobs, including skilled trades and craft labor performed by unionized workers. General contractor estimates are that the project will fill approximately 940 construction-related jobs. This figure consists of approximately 370 on-site labor, site management, and administration jobs, as well as an additional 570 off-site jobs related to producing and supplying goods and materials that will be needed and project design.

Once completed, the company anticipates that it will retain many of its current employees while losing others to attrition. The loss of an as yet undetermined number of employees will necessitate hiring new permanent workers, also labor union members, who will be full-time employees of the company. The company provides job-training, as needed, to current and new employees, and there is no impediment to hiring qualified workers with limited English language skills.

As a result, building and keeping the new facility in the City of Chicago will both preserve jobs and create new jobs to complete the workforce of more than 100 full-time, head-of-household employees who earn an average annual salary of approximately $80,000 plus benefits. The current workforce is predominantly minority – approximately 69 percent Hispanic and 14 percent African-American – and General III anticipates a similar demographic workforce. These employees and their families will continue spending and investing in the local economy, especially benefitting Chicago's southeast side.

General III's related company (RMG) currently employs nearly 350 workers at the site of the proposed new facility. The companies provide healthcare benefits for all permanent employees, including paying approximately 84 percent of the premium, and a 4 percent matching 401k plan.

RMG has a 31-year history on the city's southeast side and is engaged with numerous local organizations to provide employment and job training opportunities. General III will continue that commitment by working with local organizations, including community groups and educational institutions such as Olive-Harvey College, to offer job placement and training.

The company has a comprehensive safety and compliance program, headed by a full-time safety director, to ensure that operations fully comply with and exceed all OSHA regulations. The company provides employees with all necessary personal safety and protective equipment. In addition, the proposed new facility will be adequately and properly protected by trained security personnel.

PEDESTRIAN SAFETY

Engineers and industrial architects have designed the site to limit the number and size of walk paths that will run through the site. Pedestrian walkways will be marked by painted stripes and signage.

Truck drivers will receive instructions about policies to promote safety and orderly operations. Equipment operators will be trained on procedures for safe passage to and from buildings and the equipment and for safe operation of equipment in the unlikely event pedestrians are too near active stockpiles. Onsite inspectors will help to enforce rules for safety; they will have authority to direct traffic and serve as traffic control personnel.

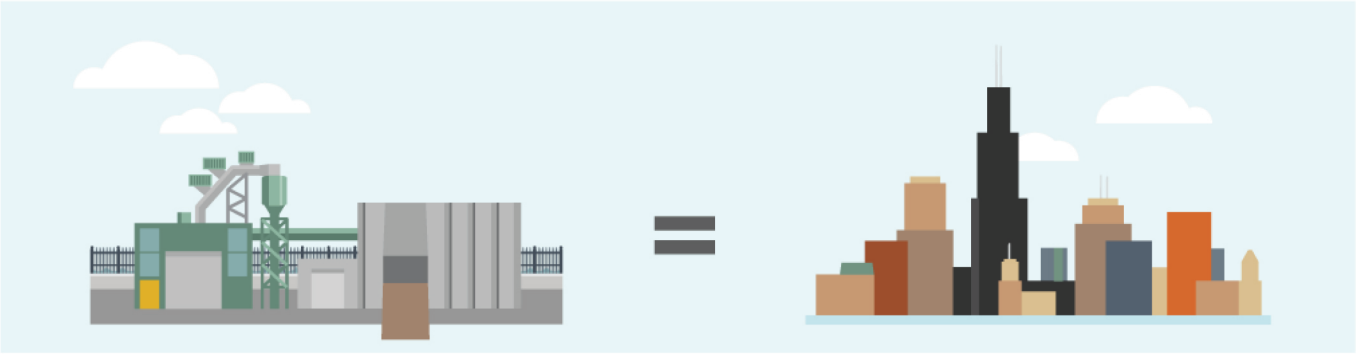
Employees who travel to and from the property using public transit will be transported to the site via a business — operated shuttle. Chicago Transit Authority Route 30 operates approximately every 17- 20 minutes northbound and southbound during peak employee arrival (5:12am to 7:47am) and departure hours (2:45pm to 5:45pm). At this time, the property owner, South Chicago Property Management Company, Ltd. runs a shuttle from the employee parking lot to buildings within the 123+ acre zoning lot; that shuttle route will be expanded to include pick-ups and drop-offs at the public transit stop on Avenue O.

METAL RECYCLING

Metal recycling transforms discarded, used metal products into a raw material that steel mills and foundries use to efficiently produce new metal for industrial and manufacturing needs. This life cycle of creating new metal from scrap metal benefits the environment by preventing landfills from becoming graves for autos, appliances, demolition material and other discarded metal, and just as importantly, by requiring less energy than would be needed to create new metal without recycling.

Recycling Process

More than **80 million tons** of steel are recycled each year in North America.



General Iron recycles **740,000** tons of metal annually

Approximately the same amount as all garbage collected in Chicago annually

General Iron will close operations by 2020; a new recycler must fill the market need, or the city will be overwhelmed with discarded metals.

1
Purchasing

Recycling companies purchase discarded and end of life recyclable material from a variety of sources. General III will buy materials only from suppliers who are registered to do business with the company. General III owners value the strong relationships we have developed with our suppliers and treat them as business partners.

End of life vehicles

Demolition sites

Individual metal recyclers

Local recycling facilities

End of life appliances

Sortation facilities

2
Collecting

Certain types of materials handled by city sanitation workers require special handling and disposal, so General III will provide a community service by collecting these items even though they have no re-sale value. We will pay EPA-permitted contractors to pick-up and process these materials to ensure they are handled and/or disposed of responsibly.

Televisions and monitors

Compressed gas cylinders

Mercury containing devices

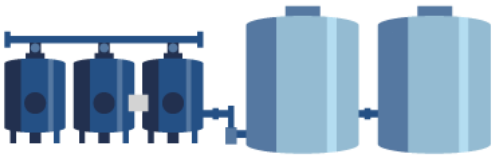
Ballasts and capacitors

3
Screening

General III will have strict guidelines governing items we recycle, so we will employ **inspectors** who examine all material before it is accepted for processing.

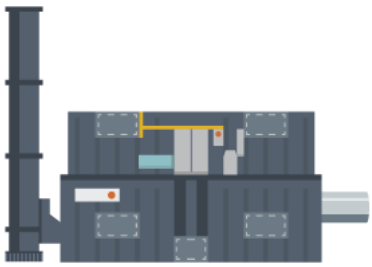
4
Cleaning

General III will invest millions of dollars in filtration systems to capture and clean the air and water in order to minimize the impact on our environment.



Water filtration

Air filtration



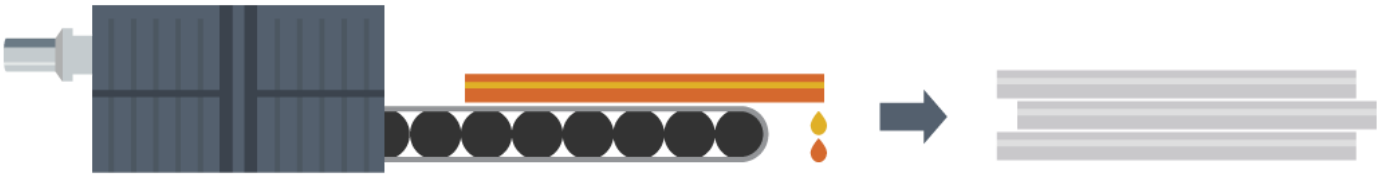
Regenerative thermal oxidizer (coming soon)

5
Processing

General III's unique processing systems will allow for most of the material to be transformed into consumable ferrous and non-ferrous products for steel mills, foundries and other end users.

6
Creating

Steel mills and foundries use their own processing techniques to transform our recycled material into new steel and metal products for various industries. Using recycled metal in the production of new steel requires **70 percent less energy** and reduces greenhouse gases by **more than 50 percent** versus producing new steel using raw materials. The energy saved is enough to power **18 million households** for a year.



7

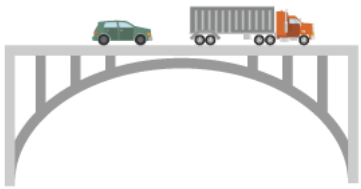
Building / Constructing

Steel mills and foundries sell their material to an array of industries and manufacturers who create a wide variety of infrastructure and consumer products that people use every day. Using scrap metal instead of mining for natural resources protects our environment and drives costs lower for all consumers.

Auto and aircraft industry

Building construction

Gas and oil



Roadways and bridges

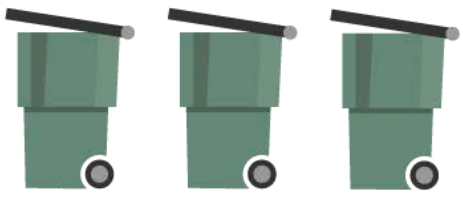
Electrical and Electronics

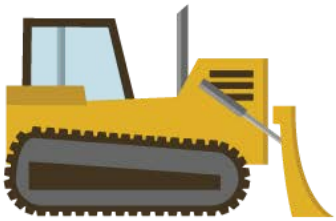
Consumable products

8

Conserving / Protecting

General III will play a critical role in the life cycle of creating new products from end of life products. The alternative is filling landfills with recyclable materials or allowing recyclable scrap metal to congest city streets and alleys.



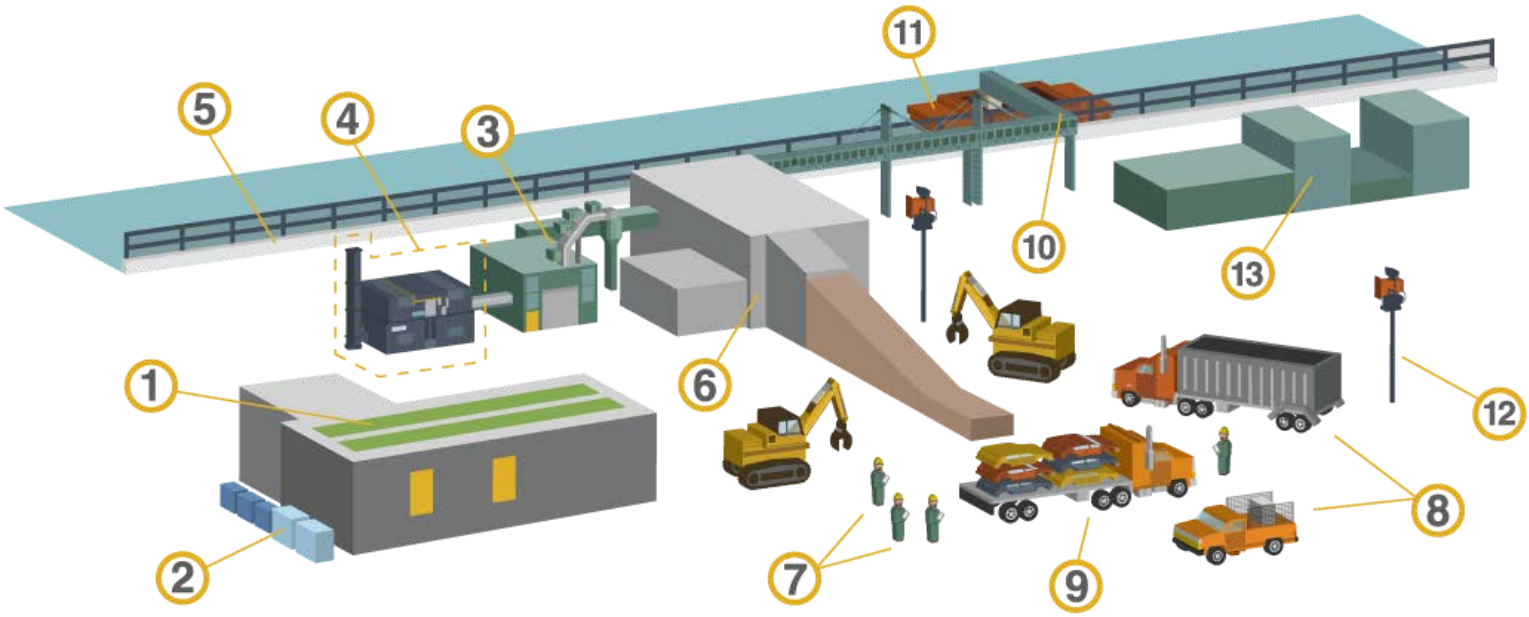


Committed to Sustainability

When metal products such as automobiles, appliances, and construction materials are discarded or become obsolete, responsible recycling supports the earth's sustainability by conserving energy and natural resources while also protecting the environment. We understand the responsibility that accompanies recycling the vast amount of raw material that we will handle, and we will be committed to protecting the health and safety of our workers, suppliers, customers, and neighbors, as well as the environment. From our planned green roof to our air and water filtration systems to our daily operations, sustainability will be at the core of who we are and what we do.

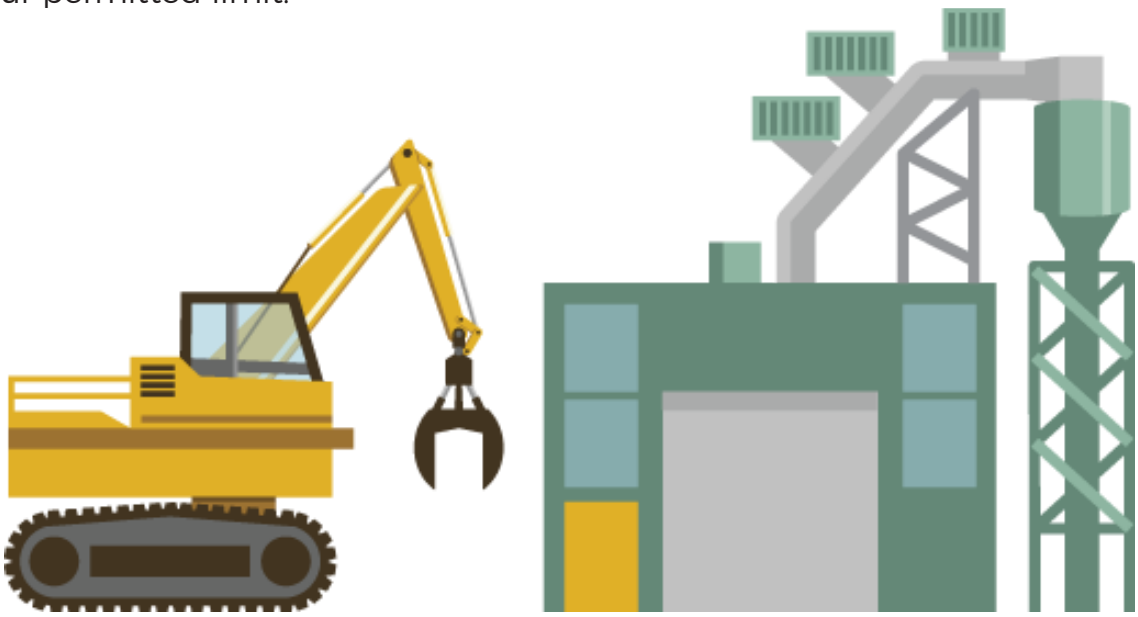
Sustainability

We will be committed to our employees, our neighbors and our world.



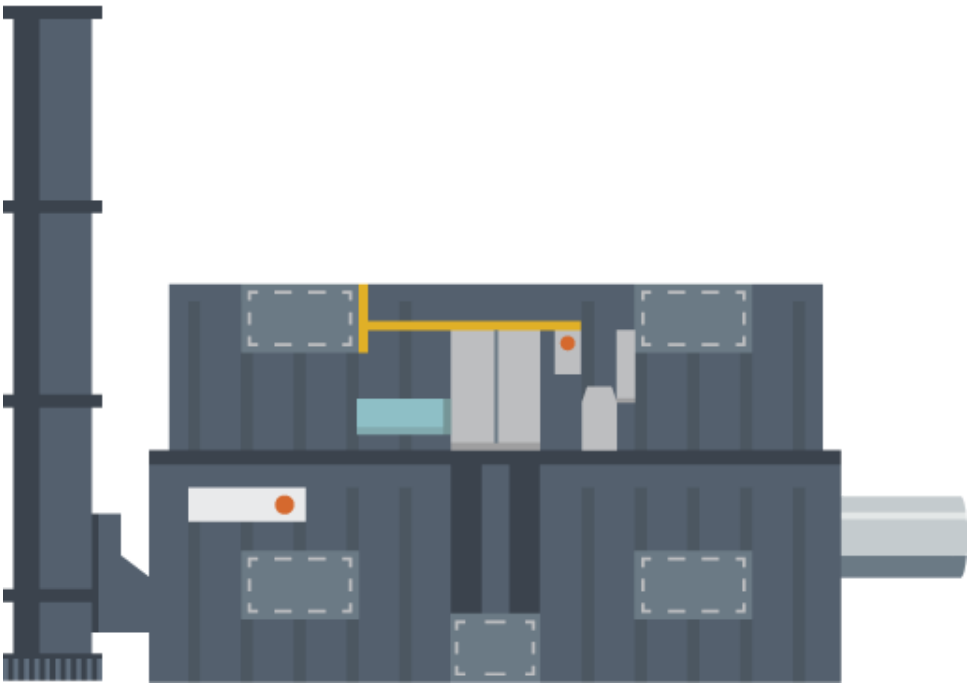
3 Air Filter

We will use a high-efficiency air filtration system to control metal and particulate matter emissions. Our shredder's PM emissions rate will be **less than three percent** of our permitted limit.



4 RTO

We are investing over **$2 million** to install a regenerative thermal oxidizer (RTO) to reduce VOC emissions, making us the first and only metal shredding facility in Chicago to use this technology.

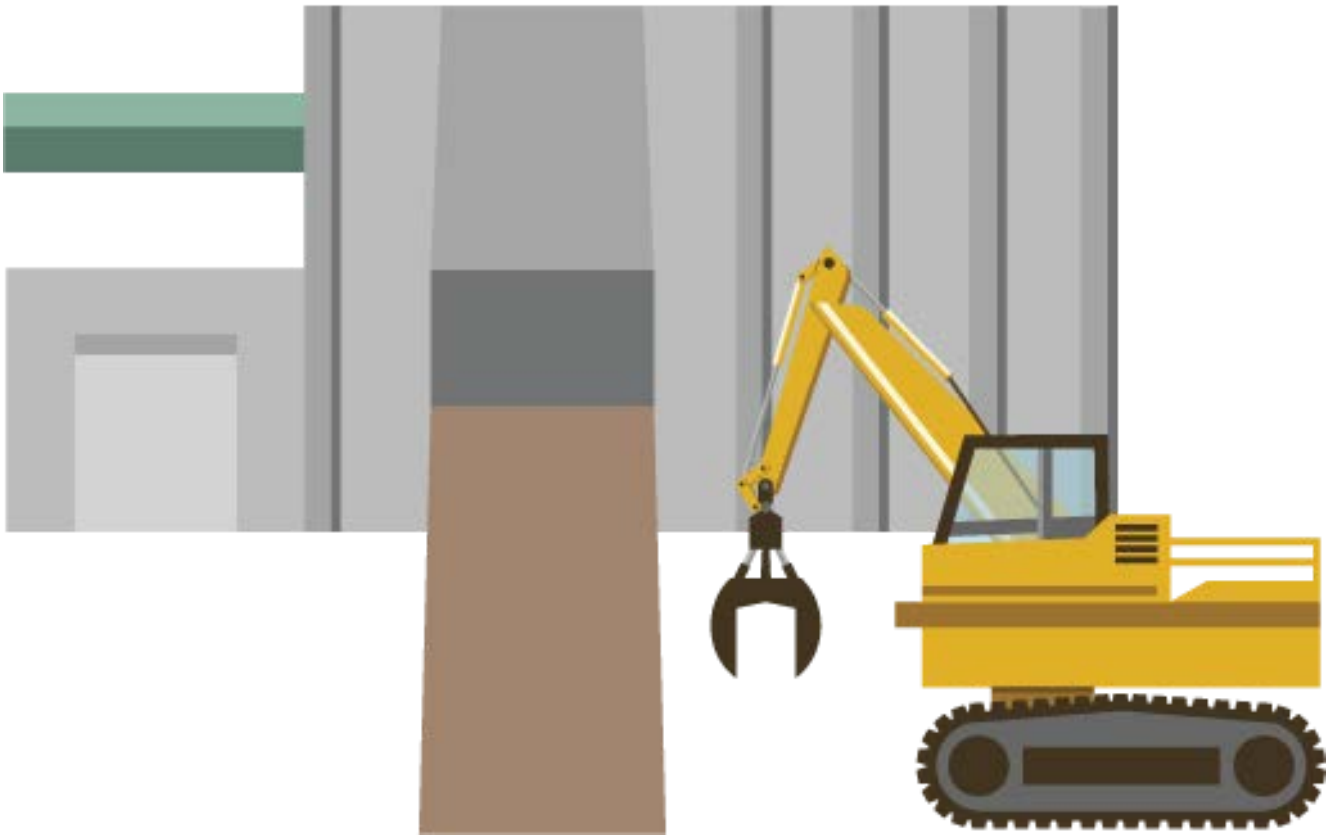


5 Riverbank Barrier

Our property will include a **26-inch high** cement barrier with fencing that runs along the river. It will not allow stormwater to enter the river.

6 Enclosed Shredder

We were the first metal shredding facility in the country to install an enclosure around a mega shredder. This enclosure promotes safety and mitigates noise and dust.



7 Inspectors

We will have a workforce of **nine inspectors** who examine all loads for unauthorized materials before they are received and shredded.

8 Suppliers

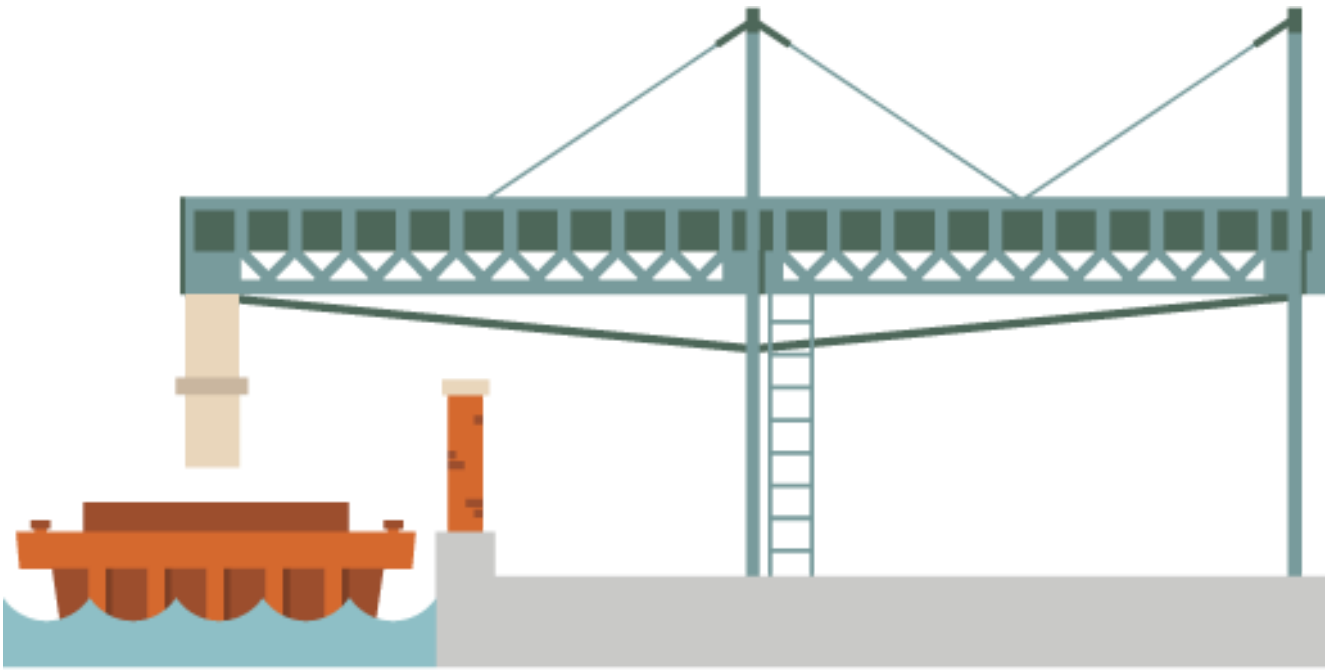
All suppliers will be registered with us and have a signed supplier agreement on file.

9 Auto Suppliers

All suppliers who will sell us end of life vehicles must be licensed with the Secretary of State and registered with industry vehicle title and information systems. We will also require that all fluids and freon are drained and batteries are removed prior to delivery.

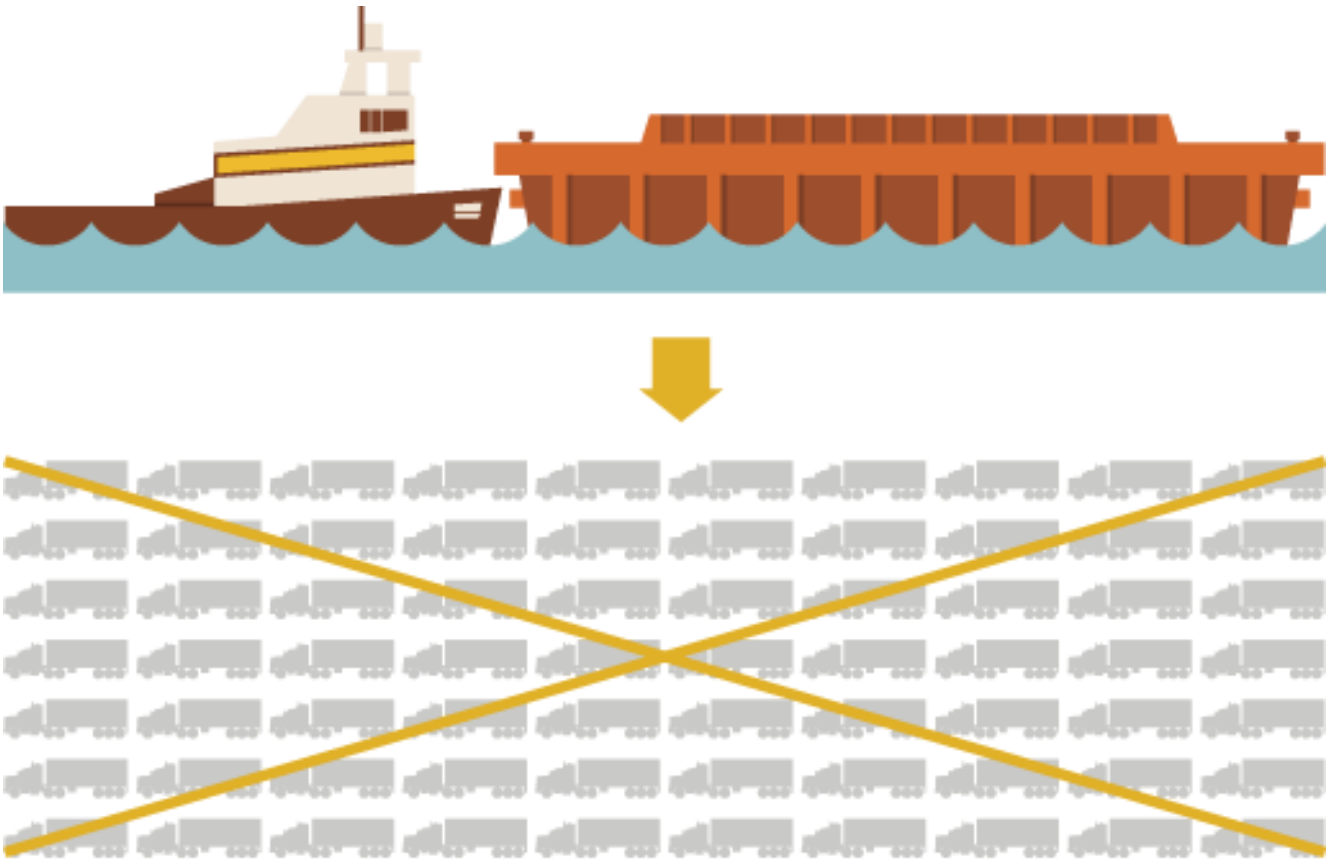
10 Automated Loading

Our automatic barge loading system will greatly reduce CO2 emissions by eliminating the need for trucks and other heavy mobile equipment. We estimate an annual savings of **70,000 gallons** of diesel fuel and associated emissions.



11 Barges

We will transport a high volume of our finished goods by barge, which will keep more than **1,600 trucks** off our roadways every month. This will reduce CO2 emissions and neighborhood traffic congestion.



One barge equals 70 truck loads

12 Water Misters

Eight water misters, a street sweeper, and a water truck will be used at our facility to mitigate dust.

13 Separation Plant

Our innovative metal separation technology will make us a national industry leader and allow for the highest recoveries and greatest reduction of waste to landfills.

Project Description

11600 South Burley Avenue

General Ill, LLC ("G3") proposes to develop a new Class IVB recycling operation on industrial land owned by South Chicago Property Management Company, Ltd. ("Landlord") and located in Planned Manufacturing District 6 (PMD6).

A special use permit is required to construct and operate a new Class IV-B recycling facility in PMD6 per Chicago Zoning Ordinance ("CZO") §17-6-0403-F, Row HH, 5.

A variation from landscaping requirements is necessary because the Property, which is not visible from any pubic street, cannot accommodate onsite trees and green space as required by CZO §17-11-0203-A. In mitigation for the landscaping variation, G3 and Landlord propose to improve green space on an off-site parcel where new plantings and improvements to the grounds will be visible to the public.

Property and Existing Conditions

Landlord has assembled 123+ acres generally bounded by the east bank of the Calumet River between 114th Street (if extended), 119th Street (if extended) and the rail line west of vacated Burley Avenue. The eastern edge of the Property is situated approximately 1,450 feet west of Avenue O and is obscured from public view by industrial fences, buildings, and active rail lines. Industrial uses and zoning district designations surround the Property on all sides.

Because 116th Street and Burley Avenue have been vacated, the Property does not about any public street.

All buildings and equipment onsite are used in connection with metal material sorting, hand disassembly, shearing, breaking, torching, and large-scale processing. Other activities conducted at the Property include outdoor storage as principal use; manufacturing (general); office; vehicle repair and storage; warehousing; and container storage.

Marine terminal services operate on the bank of the Calumet River along the entire shoreline of the Property. The waterside boundary is actively used for river-dependent activities, such as loading and unloading ships, boats, and barges. Development of the G3 Site will intensify and increase active use of the waterway.

In 2012, South Shore Recycling applied for and secured a special use permit for a Class IV-B recycling facility to operate within existing buildings at the Property. See Zoning Board of Appeals Resolution 83-12-S. South Shore Recycling is actively engaged in Class IV-B recycling pursuant to said approval.

Proposed Development

Landlord will lease 22.884 acres of the Property to G3 for development and operation of a new Class IV-B recycling operation. As proposed, the recycling operation will feature a series of new buildings, sorting and processing areas, paved vehicular use areas, stormwater management systems, connections to existing shipping and barging on the Calumet River, and an enclosed state-of-the-art-shredder.

The new operation will convert obsolete metal products into raw materials for use by steel mills and foundries, thereby preventing dumping of unprocessed metals into landfills.

All new buildings, equipment enclosures, and storage piles will be set back at least 90 feet from the top of the bank of the waterway. Existing barge and ship loading and unloading equipment and systems already operating at the Property will be enhanced to transport processed materials from the proposed new Class IV-B operation to barges, rail cars, and trucks.

Special Use

G3 proposes to develop and operate a new Class IV-B recycling facility at the Property. A special use permit is required to construct and operate a new Class IV-B recycling facility by Chicago Zoning Ordinance ("CZO") §17-6-0403-F, Row HH, 5.

Chicago Municipal Code Sections 11-4-2540 and 11-4-2510 define Class IV-B recycling as follows:

"Class IV facilities are divided into Class IVA facilities and Class IVB facilities. Class IVA facilities are recycling facilities for the collection of Type A and Type C recyclable materials only. Class IVA facilities may engage in processing, such as cleaning, bundling, compacting or packing of recyclable materials, and may also dismantle, either manually or with the use of small power tools used vehicles and used vehicle parts for resale. Class IVB facilities are recycling facilities for the collection of Type A and Type C recyclable materials only. Class IVB facilities may perform any activity permitted in a Class IVA facility and may also engage in the shredding, crushing or other large-scale processing of vehicles."

"Type A recyclable material(s)" means any aluminum or ferrous or non-ferrous scrap metal; bi-metal or tin cans; glass products; paper products; rubber; textiles; plastic products, such as polyethelene terephthalate, high density polyethylene, low density polyethylene, polystyrene or polypropolene; and any other material designated as Type A recyclable material by the commissioner in duly promulgated rules and regulations.

"Type C recyclable material(s)" means used motor vehicles or motor vehicle parts, and any other material designated as Type C recyclable material by the commissioner in duly promulgated rules and regulations.

Variation from Landscaping Requirements

Because operations at the Property started before August 1, 2004 (the effective date of the CZO), Landlord was not required to make the Property meet landscape requirements. Development of the new buildings will trigger a requirement for the entire Property to conform.

Given the amount of vehicular use area on site (59.8 acres), the Property should have 5.98 acres of landscaping for interior landscaping of vehicular use as required by CZO §17-11-0203-A. Only .08 acres of landscaping can be provided on the Property, so Landlord and G3 are requesting a variation.

Landlord will mitigate its deficit of required landscaping by providing 6.25 acres of off-site green space adjacent to Avenue O. New plantings, tree maintenance, and improvements to the appearance of these grounds will be visible from George Washington High School, commercial properties facing Avenue O, and Rowan Park.

Landlord and G3 Ownership and Affiliates

All companies operating at the Property are owned by RMG Investment Group affiliates: South Shore Recycling; Reserve FTL, LLC, doing business as Reserve Marine Terminals; Napuck Salvage of Waupaca, LLC; and RSR Partners, LLC, doing business as Regency Technologies. These companies, along with South Chicago and G3, share a common agent and common manager. Like the other businesses operating at the Property, South Chicago and G3 are wholly owned by RMG Investment Group companies.

At eleven locations throughout the United States, RMG Investment Group businesses are actively accepting, sorting, processing, and transporting metals, thereby providing a critical recycling function that diverts waste from landfills and supports the American steel industry.

River Wall Edge

PROPERTY LINE

ACRES 48.778

546'-9"

PROPERTY LINE

PROPERTY LINE

90' MIN

PROPOSED LEASE BOUNDARY

189'

1251'-9"

520'-3"

116°

150°

395'-5"

60'-4"

Calumet River

490'-4"

PROPOSED LEASE
22.884 ACRES

90°

64°

597'-7"

519'-1"

90' MIN

445'-9"

93'-9"

PROPERTY LINE

252'-11"

ACRES 8.07

30'

30'

21'-9"

119°

60'-8"

194'-11"

213'-3"

276'-4"

388'-2"

78'-6"

PROPERTY LINE

PROPERTY LINE

River Wall Edge

E 116th St.

S Burley Ave.

KNIGHT
Engineers & Architects

Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knighttea.com

LEASE AREA BOUNDARIES
TENANT: GENERAL III
OWNER: SOUTH CHICAGO PROPERTY MANAGEMENT COMPANY, LTD

PROJECT:
GENERAL III
11600 S BURLEY AVE
CHICAGO, IL 60617

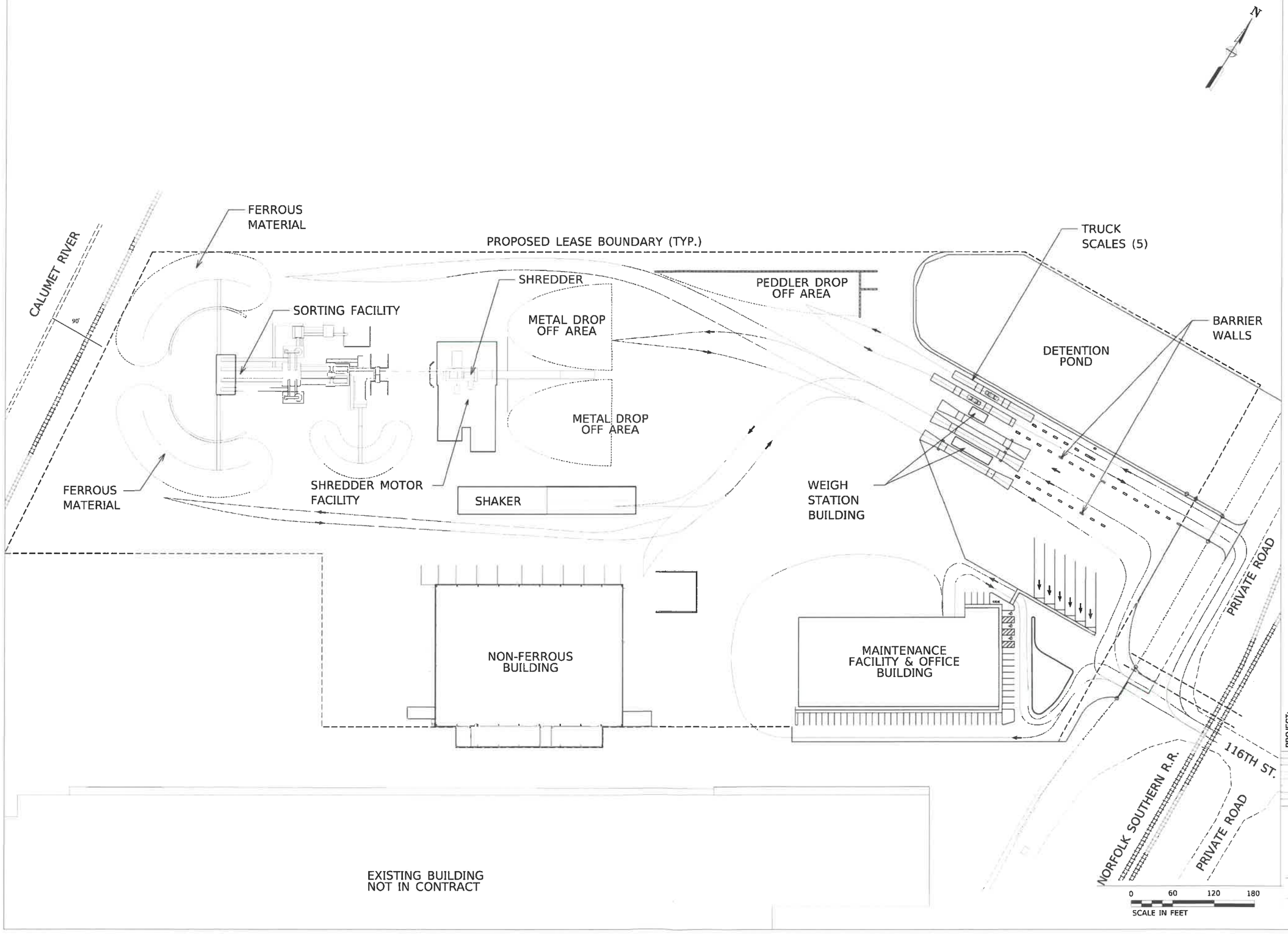
XX-XX-XX ISSUE FOR REVIEW

SITE/LEASE BOUNDARIES

PROJECT #: 7563

DATE:

SHEET #: A



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LEASE AREA
ON-SITE TRUCK ROUTES

PROJECT:
GENERAL III
11600 S BURLEY AVE
CHICAGO, IL 60617

XX-XX-XX ISSUE FOR REVIEW

GENERAL III
PROPOSED SITE PLAN
ON-SITE TRUCK ROUTES

PROJECT #:	DATE:
7563	02-20-2019

B

Size of the buildings and detention area to be in substantial conformance with this plan; changes, if any, will not result in an increase in the vehicular use area.

LEGEND

- CONCRETE SURFACE
- ASPHALT SURFACE
- WATER DETENTION / TREATMENT

N

FERROUS MATERIAL

PROPOSED LEASE BOUNDARY (TYP.)

DETENTION / TREATMENT FACILITY 2 ACRES

CALUMET RIVER

90'

SHREDDER

SORTING FACILITY

METAL DROP OFF AREA

100'

120'

WEIGH STATIONS

METAL DROP OFF AREA

FERROUS MATERIAL

SHREDDER MOTOR FACILITY

SHAKER

60'

NON-FERROUS BUILDING

MAINTENANCE FACILITY & OFFICE BUILDING

PRIVATE ROAD

EXISTING BUILDING NOT IN CONTRACT

NORFOLK SOUTHERN R.R.

116TH ST.

PRIVATE ROAD

0 60 120 180

SCALE IN FEET

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knightea.com

LEASE AREA
SITE SURFACE AREA

PROJECT:
GENERAL III
11600 S BURLEY AVE
CHICAGO, IL 60617

XX-XX-XX ISSUE FOR REVIEW

GENERAL III
PROPOSED SITE PLAN
SITE SURFACE AREA

PROJECT #: 7563

DATE: 02-20-2019

C

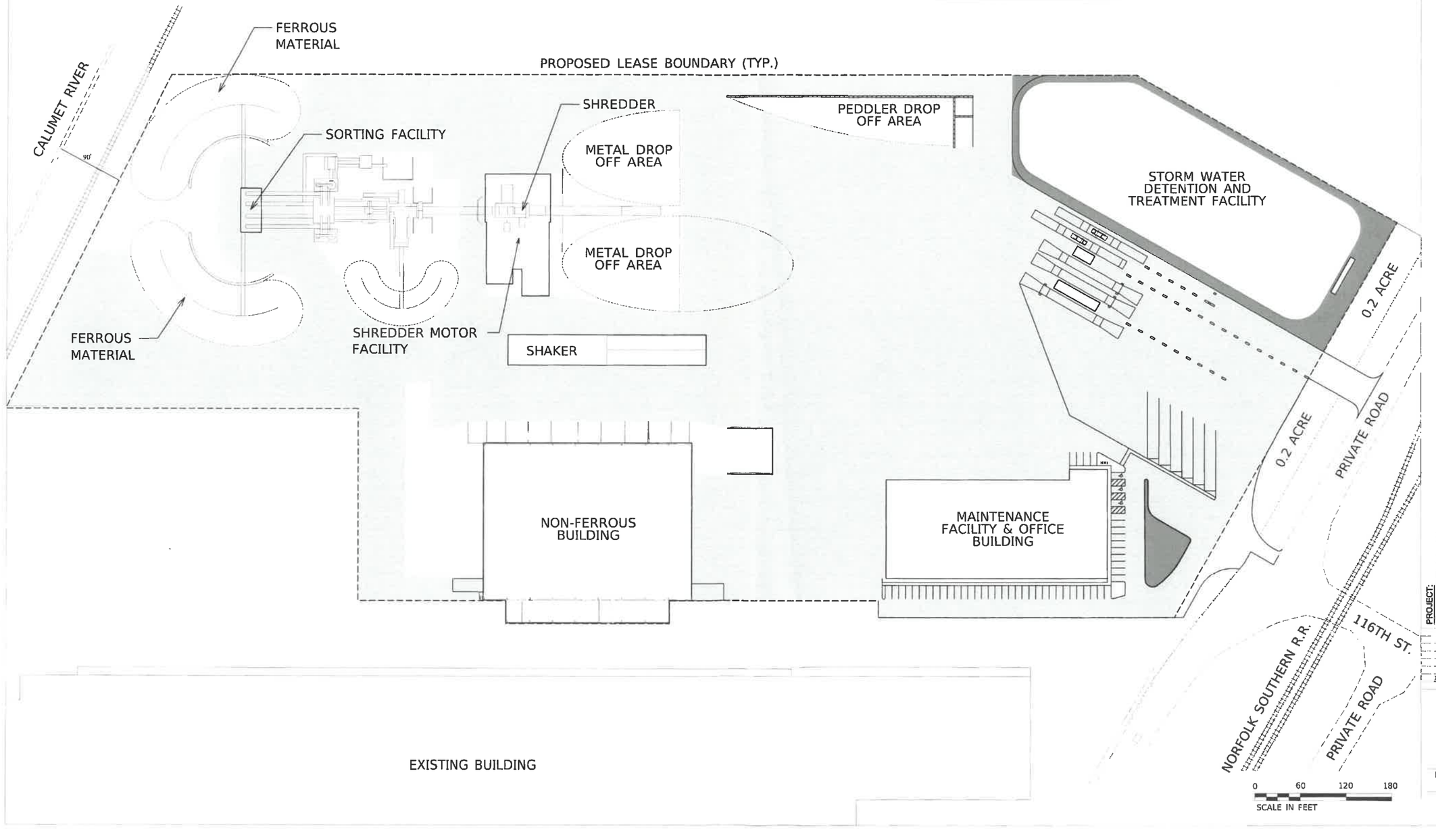
Size of the buildings and detention area to be in substantial conformance with this plan; changes, if any, will not result in an increase in the vehicular use area.

LEGEND

VEHICULAR USE AREA
13.6 ACRES

PROPOSED LANDSCAPE
AREA 0.53 ACRES

REQUIRED LANDSCAPED
AREA 1.36 ACRES



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LEASE AREA

SITE USE AREA PLAN

PROJECT:
GENERAL III
11600 S BURLEY AVE
CHICAGO, IL 60617

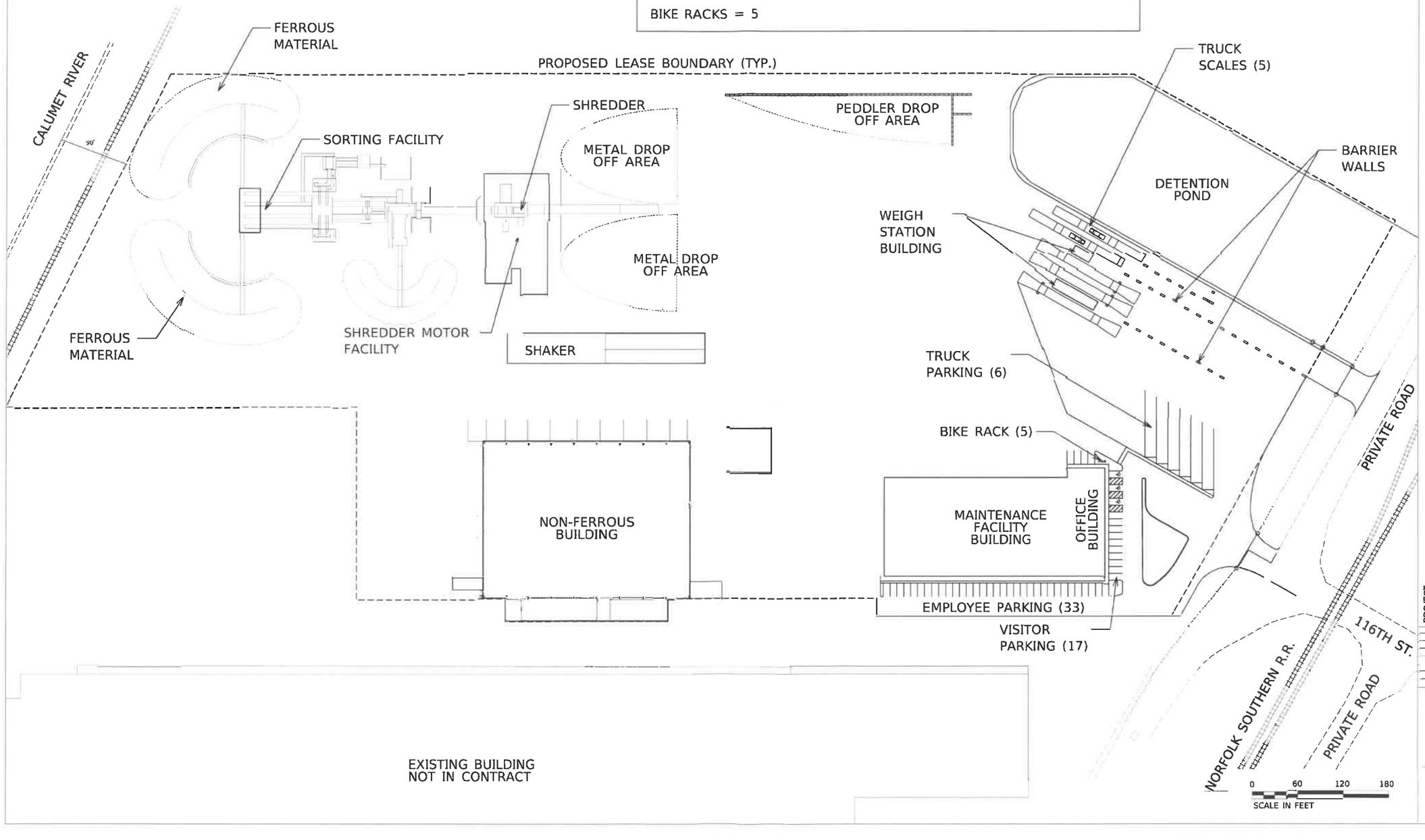
XX-XX-XX ISSUE FOR REVIEW

GENERAL III
PROPOSED SITE PLAN
SITE USE AREA PLAN

PROJECT #:	DATE:
7563	02-20-2019

D

SITE PARKING
EMPLOYEE SPACES = 33 • ALLOWS FOR 132 EMPLOYEES (1 SPACE PER 4 EMPLOYEES) • ACTUAL 120 TOTAL EMPLOYEES -SHIFT 1 = 40 EMPLOYEES -SHIFT 2 = 40 EMPLOYEES -SHIFT 3 = 40 EMPLOYEES TRUCK SPACES = 6 • ALLOWS FOR DRIVERS TO ACCESS ADMIN. FUNCTIONS. VISITOR SPACES = 17 BIKE RACKS = 5



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LEASE AREA
PARKING AVAILABILITY

PROJECT:
GENERAL III
11600 S BURLEY AV E
CHICAGO, IL 60617

XX-XX-XX ISSUE FOR REVIEW

GENERAL III
PROPOSED
PARKING AVAILABILITY

PROJECT #:	DATE:
7563	02-20-2019

E

Size of the buildings and detention area to be in substantial conformance with this plan; changes, if any, will not result in an increase in the vehicular use area.

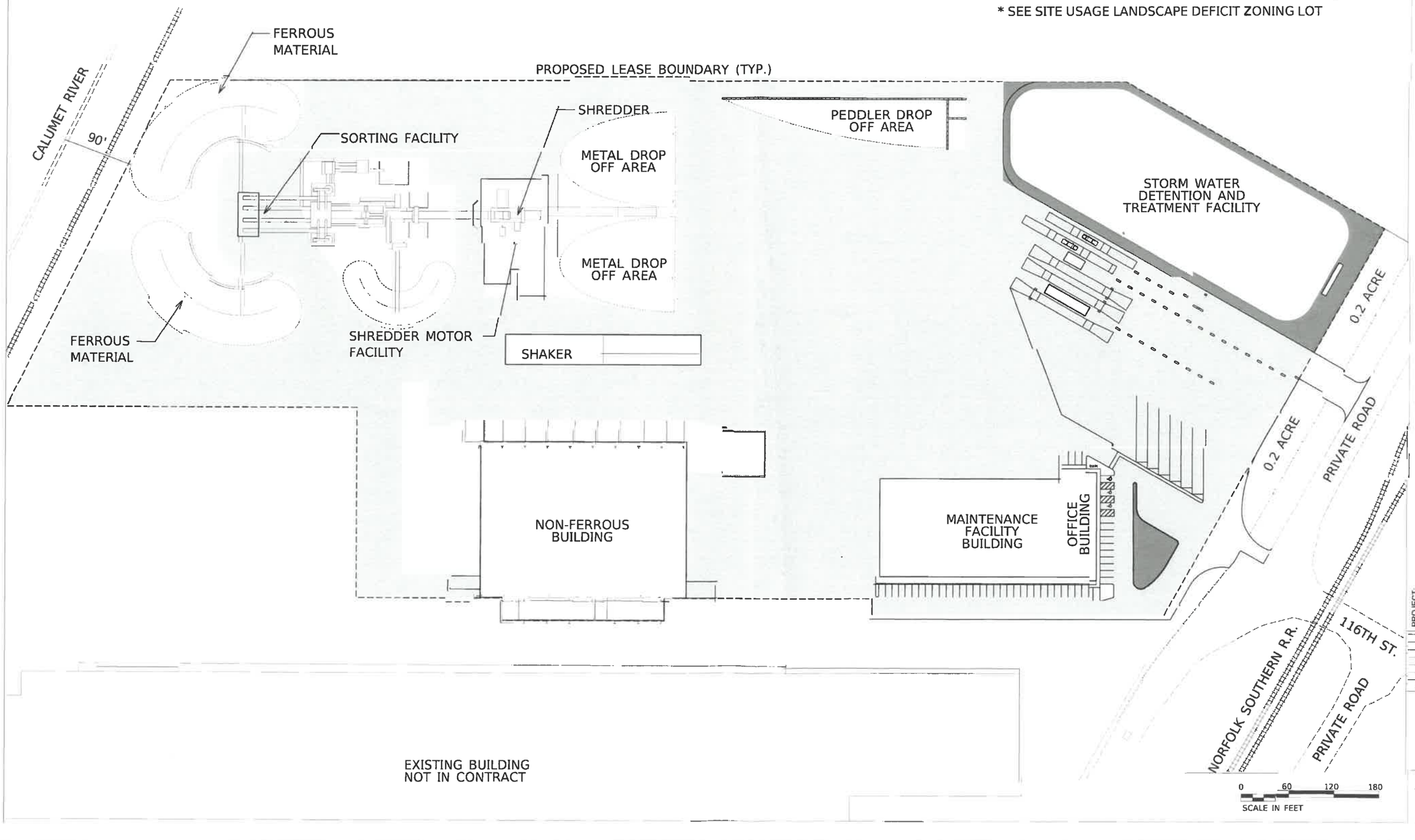
LEGEND

VEHICULAR USE AREA
13.6 ACRES

LANDSCAPE AREA
0.53 ACRES

LANDSCAPE AREA	
OFFICE ENTRANCE	0.09 ACRES
POND PERIMETER	0.44 ACRES
TOTAL AVAILABLE WITHIN LEASE AREA	0.53 ACRES
DEFICIT ON LEASE AREA	0.83 ACRES

* SEE SITE USAGE LANDSCAPE DEFICIT ZONING LOT



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Phone: (312) 577-3300
knighteа.com

LEASE AREA
LANDSCAPE AREA

PROJECT:
GENERAL III
11600 S BURLEY AV E
CHICAGO, IL 60617

XX-XX-XX ISSUE FOR REVIEW

GENERAL III
PROPOSED SITE PLAN
LANDSCAPE AREA

PROJECT #: 7563
DATE: 02-20-2019

F

ZONING LOT = 123+ ACRES

OFF-SITE MITIGATION = 6.25 ACRES

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Engineers & Architects

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Phone: (312) 577-3300
knightea.com

OFF-SITE MITIGATION FOR LANDSCAPE DEFICIT

PROJECT:
GENERAL III
11600 S BURLEY AVE
CHICAGO, IL 60617

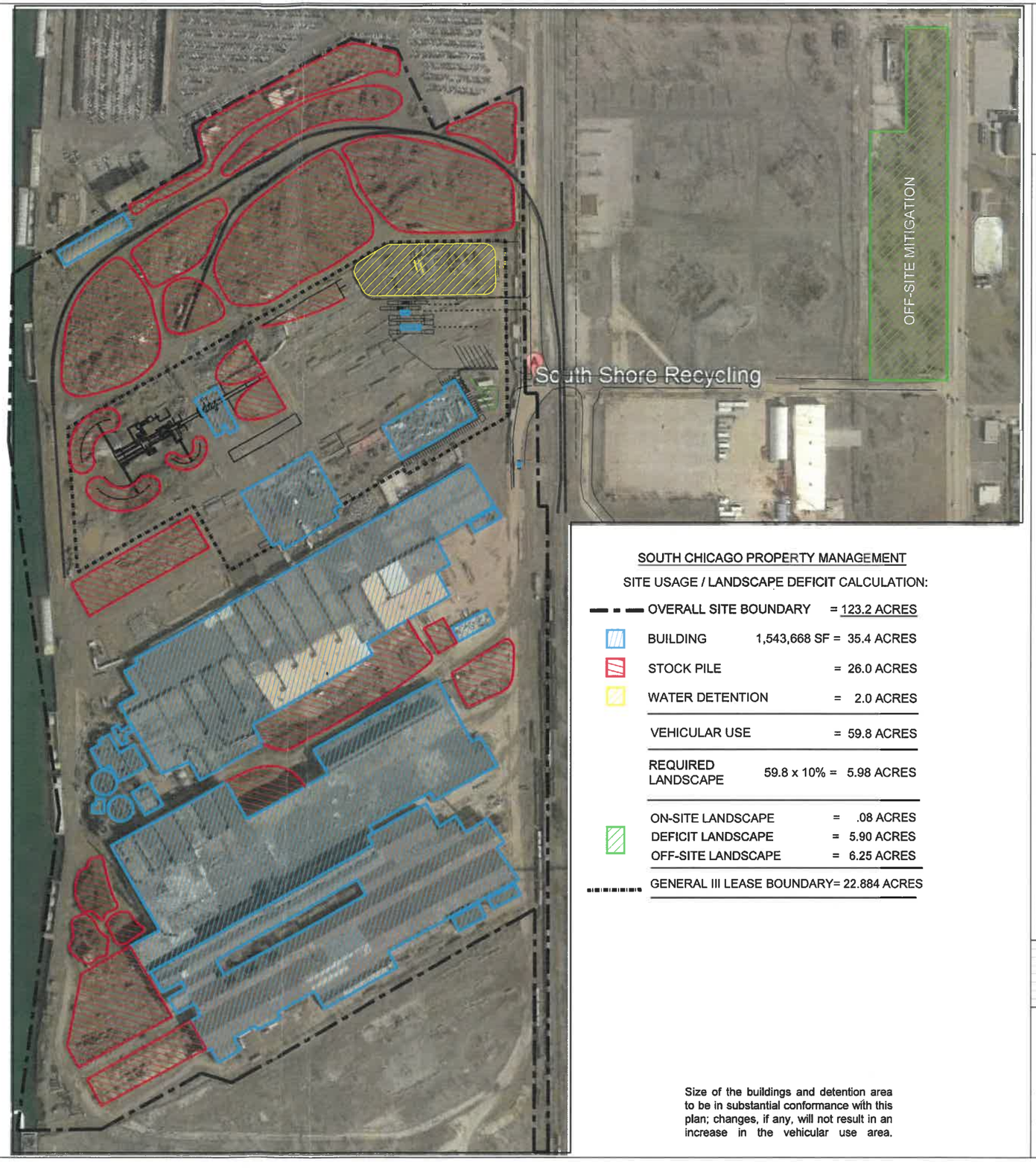
XX-XX-XX ISSUE FOR REVIEW

PROPOSED OFF-SITE MITIGATION FOR LANDSCAPE DEFICIT

PROJECT #: 7563
DATE:

SHEET #: F-2

HISTORIC VIEWS OF NORTH END OF THE SITE
NOTED FOR STOCK PILE LOCATION HISTORY



SOUTH CHICAGO PROPERTY MANAGEMENT

SITE USAGE / LANDSCAPE DEFICIT CALCULATION:

OVERALL SITE BOUNDARY		= 123.2 ACRES
BUILDING	1,543,668 SF	= 35.4 ACRES
STOCK PILE		= 26.0 ACRES
WATER DETENTION		= 2.0 ACRES
VEHICULAR USE		= 59.8 ACRES
REQUIRED LANDSCAPE	59.8 x 10%	= 5.98 ACRES
ON-SITE LANDSCAPE		= .08 ACRES
DEFICIT LANDSCAPE		= 5.90 ACRES
OFF-SITE LANDSCAPE		= 6.25 ACRES
GENERAL III LEASE BOUNDARY		= 22.884 ACRES

Size of the buildings and detention area to be in substantial conformance with this plan; changes, if any, will not result in an increase in the vehicular use area.

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ZONING LOT
LANDSCAPE DEFICIT AND
OFF-SITE MITIGATION

11600 S. BURLEY AVE.
CHICAGO, IL 60617

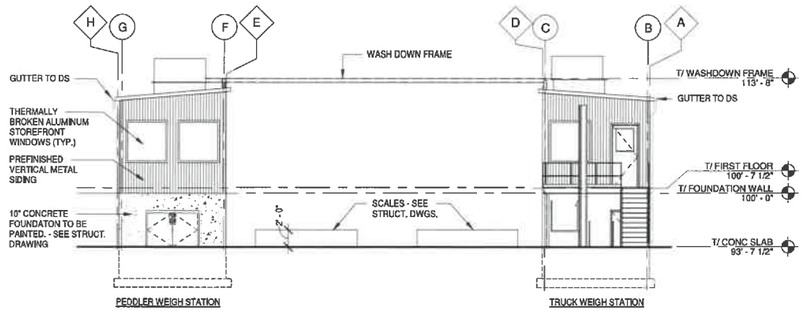
PROJECT:
SOUTH CHICAGO PROPERTY
MANAGEMENT COMPANY, LTD.
CZO SEC. 17-11-0203 Interior Landscape

XX-XX-XX ISSUE FOR REVIEW

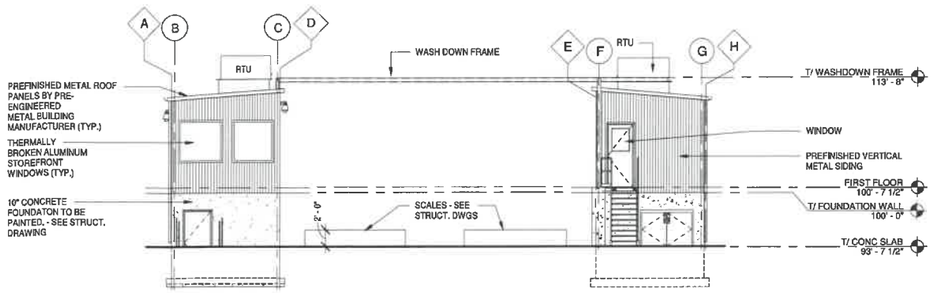
SITE USAGE /
LANDSCAPE DEFICIT

PROJECT #: 7563
DATE:

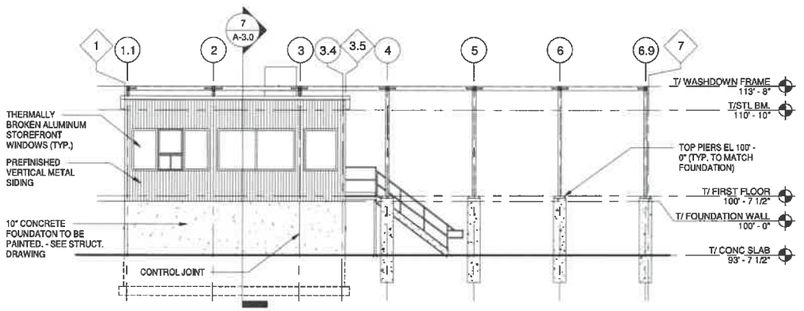
SHEET #:
K



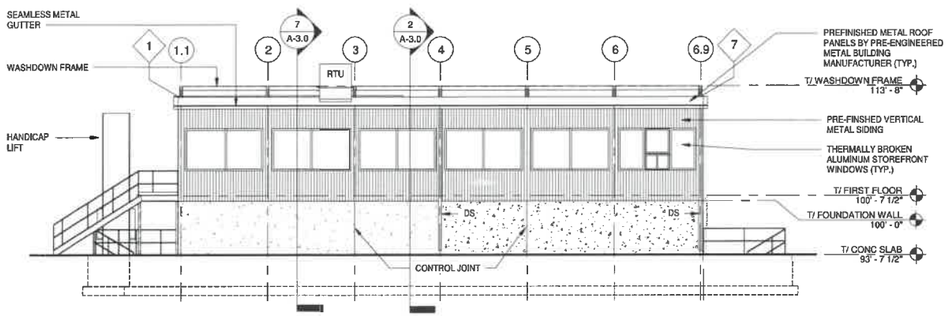
6 **PEDDLER AND TRUCK WEIGH STATION - WEST ELEVATION**
1/8" = 1'-0"



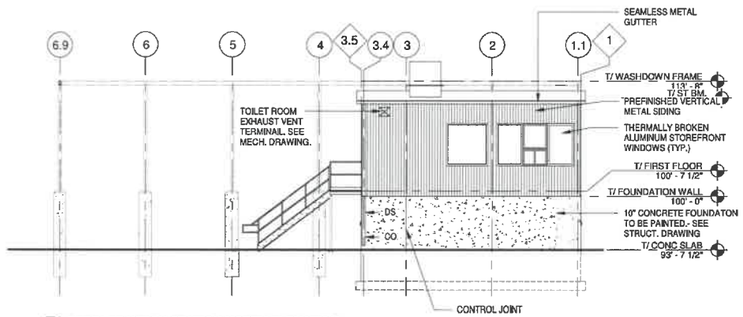
3 **PEDDLER AND TRUCK WEIGH STATION - EAST ELEVATION**
1/8" = 1'-0"



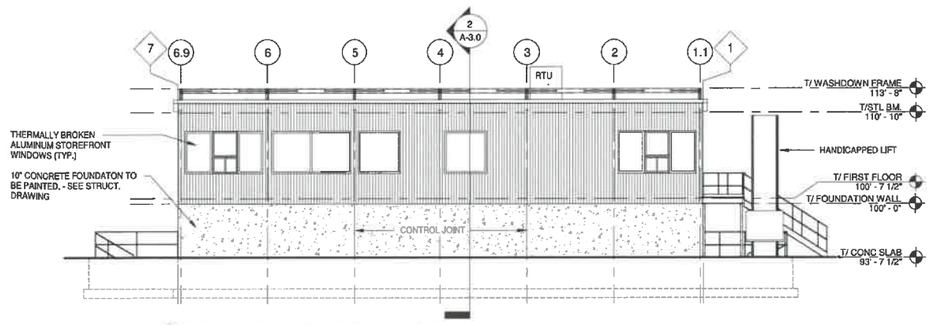
5 **PEDDLER WEIGH STATION SOUTH ELEVATION**
1/8" = 1'-0"



2 **TRUCK WEIGH STATION SOUTH ELEVATION**
1/8" = 1'-0"



4 **PEDDLER WEIGH STATION NORTH ELEVATION**
1/8" = 1'-0"



1 **TRUCK WEIGH STATION NORTH ELEVATION**
1/8" = 1'-0"

8' 4' 0 4' 8' 16'

SCALE: 1/8" = 1' 0"

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 N. LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

PROGRESS SET - NOT FOR CONSTRUCTION

PROJECT:
GENERAL III, LLC
11600 S. BURLEY AVE
CHICAGO, IL. 60617

CLIENT:

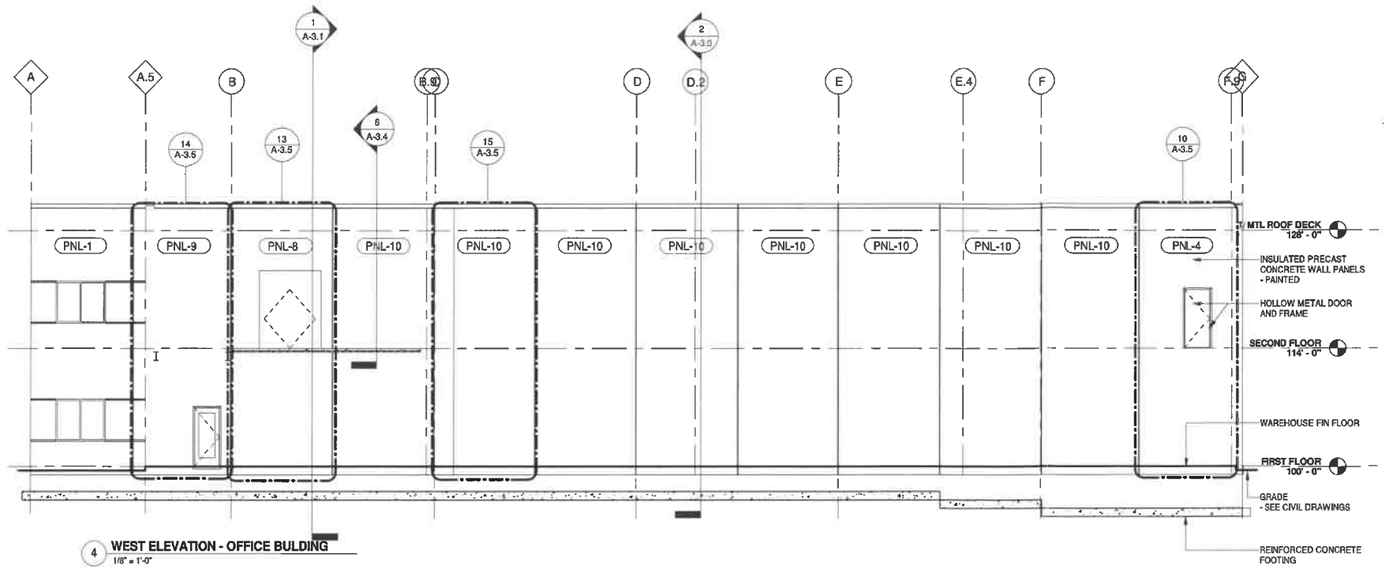
CLIENT ADDRESS
CLIENT CONTACT #:

#	DATE	ISSUED FOR

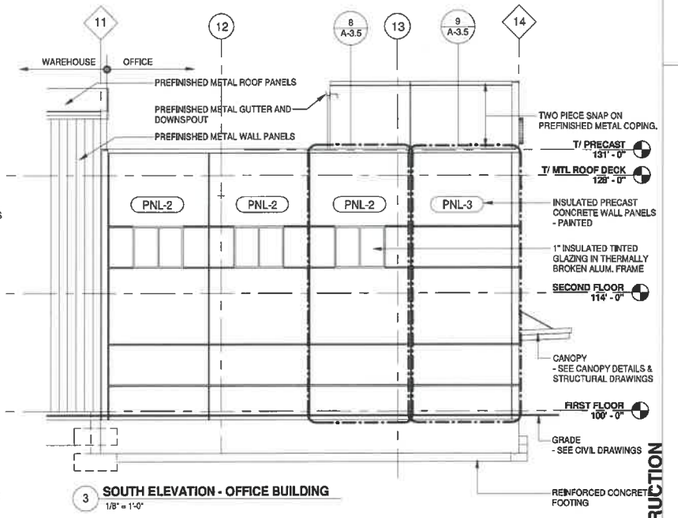
EXTERIOR ELEVATIONS

PROJECT #:	DATE:
Project Number	

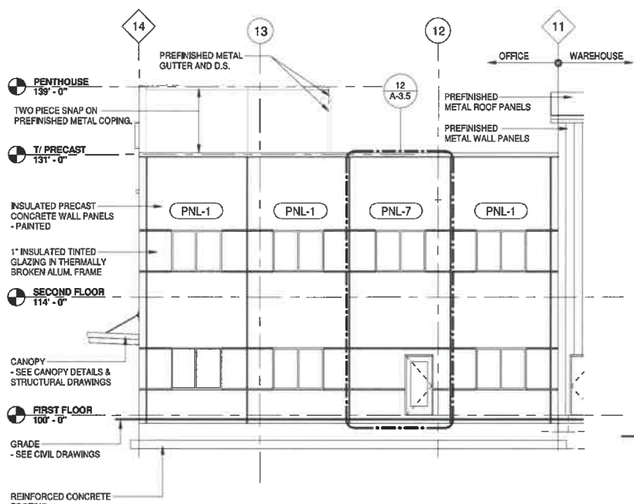
A-2.0



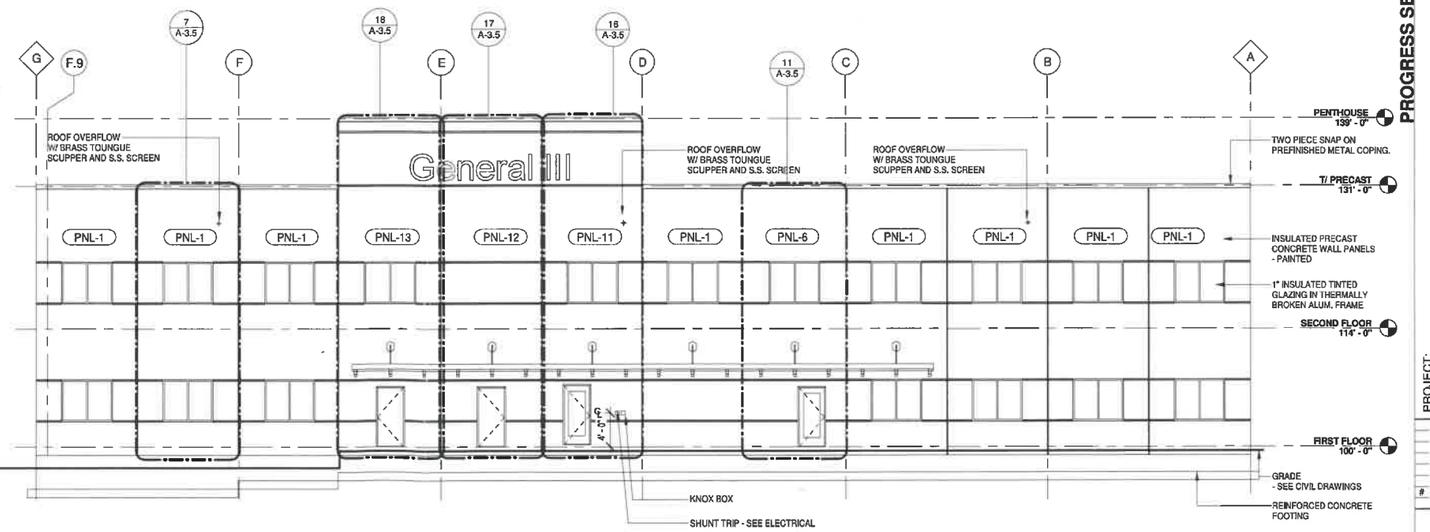
4 **WEST ELEVATION - OFFICE BULDING**
1/8" = 1'-0"



3 **SOUTH ELEVATION - OFFICE BUILDING**
1/8" = 1'-0"



2 **NORTH ELEVATION - OFFICE BUILDING**
1/8" = 1'-0"



1 **EAST ELEVATION - OFFICE BUILDING**
1/8" = 1'-0"

8' 4' 0 4' 8' 16'
SCALE: 1/8" = 1' 0"

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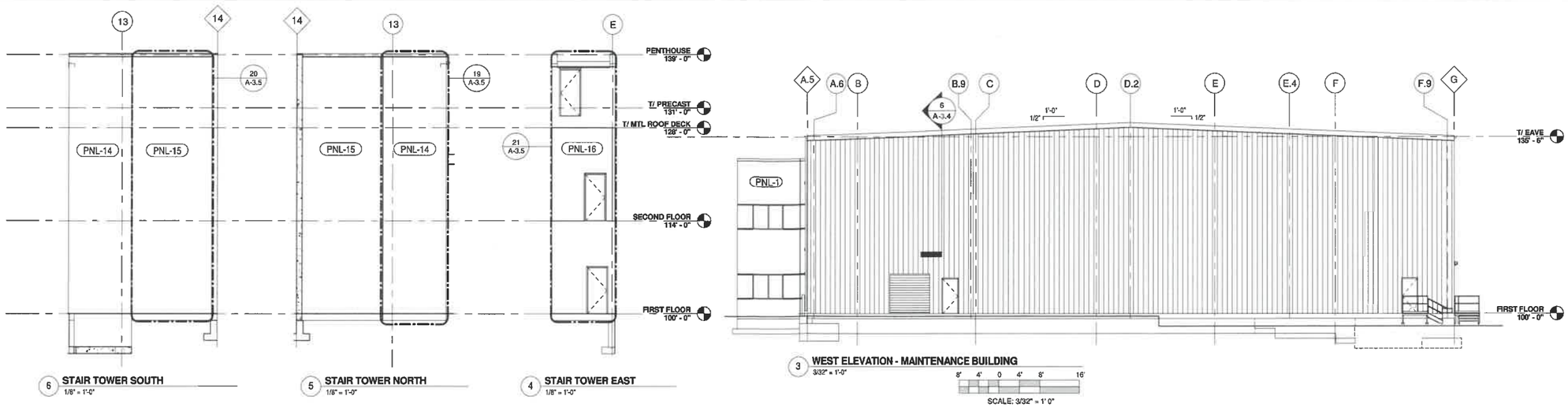
11600 S. BURLEY AVE
CHICAGO, IL, 60617

#	DATE	ISSUED FOR

OFFICE BUILDING EXTERIOR ELEVATION

PROJECT #:	DATE:
7563	

A-2.0



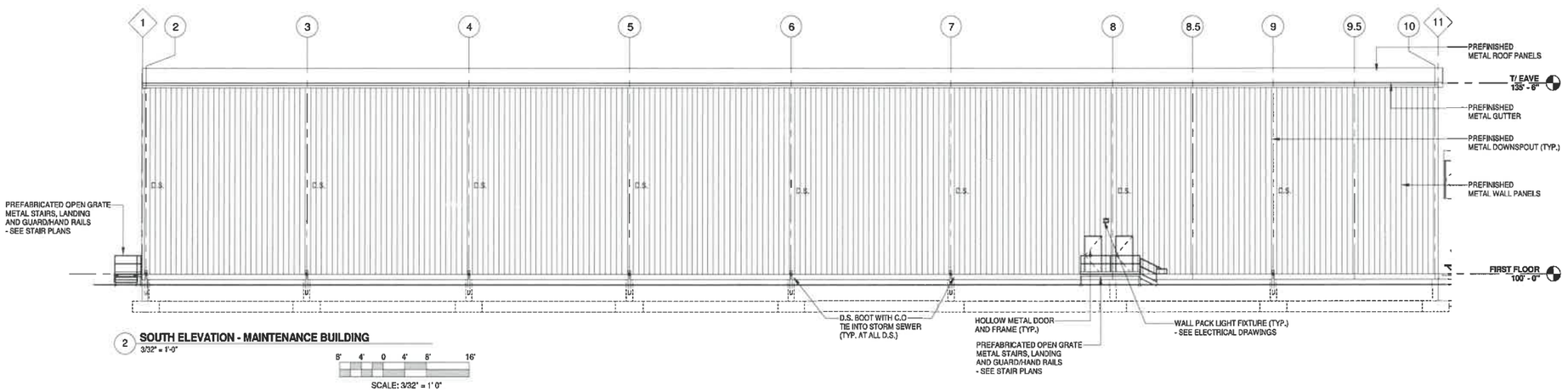
6 **STAIR TOWER SOUTH**
1/8" = 1'-0"

5 **STAIR TOWER NORTH**
1/8" = 1'-0"

4 **STAIR TOWER EAST**
1/8" = 1'-0"

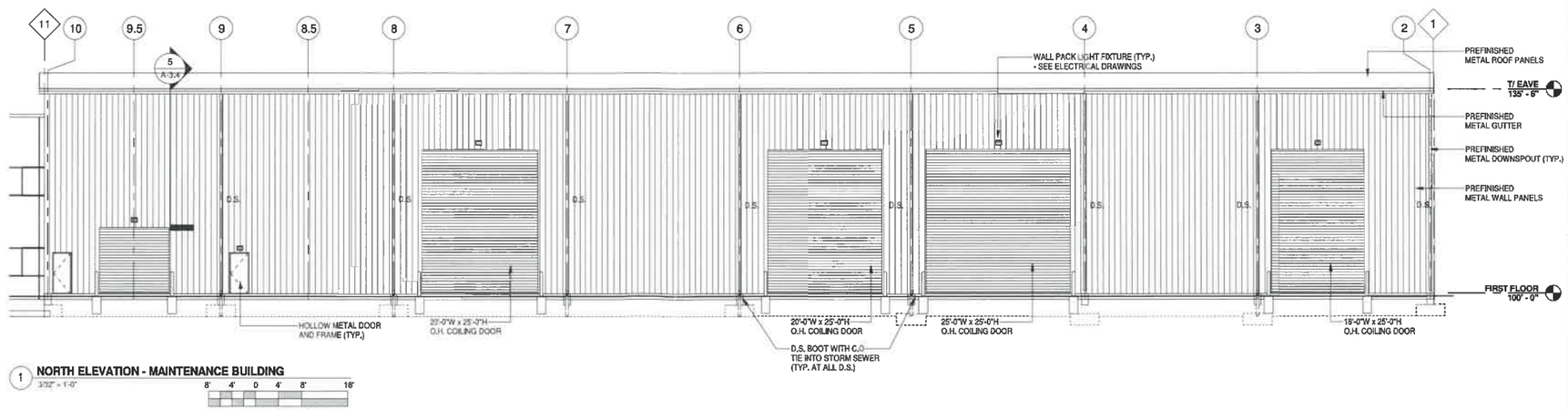
3 **WEST ELEVATION - MAINTENANCE BUILDING**
3/32" = 1'-0"

8' 4' 0 4' 8' 16'
SCALE: 3/32" = 1' 0"



2 **SOUTH ELEVATION - MAINTENANCE BUILDING**
3/32" = 1'-0"

8' 4' 0 4' 8' 16'
SCALE: 3/32" = 1' 0"



1 **NORTH ELEVATION - MAINTENANCE BUILDING**
3/32" = 1'-0"

8' 4' 0 4' 8' 16'
SCALE: 3/32" = 1' 0"

PROGRESS SET - NOT FOR CONSTRUCTION

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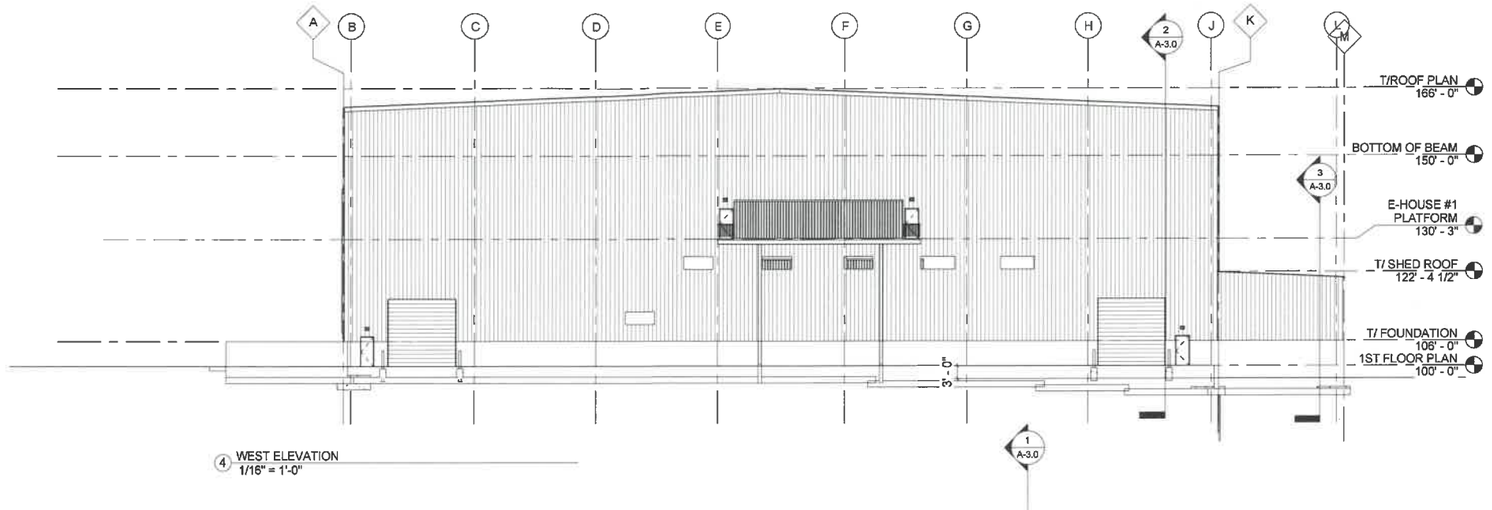
#	DATE	ISSUED FOR

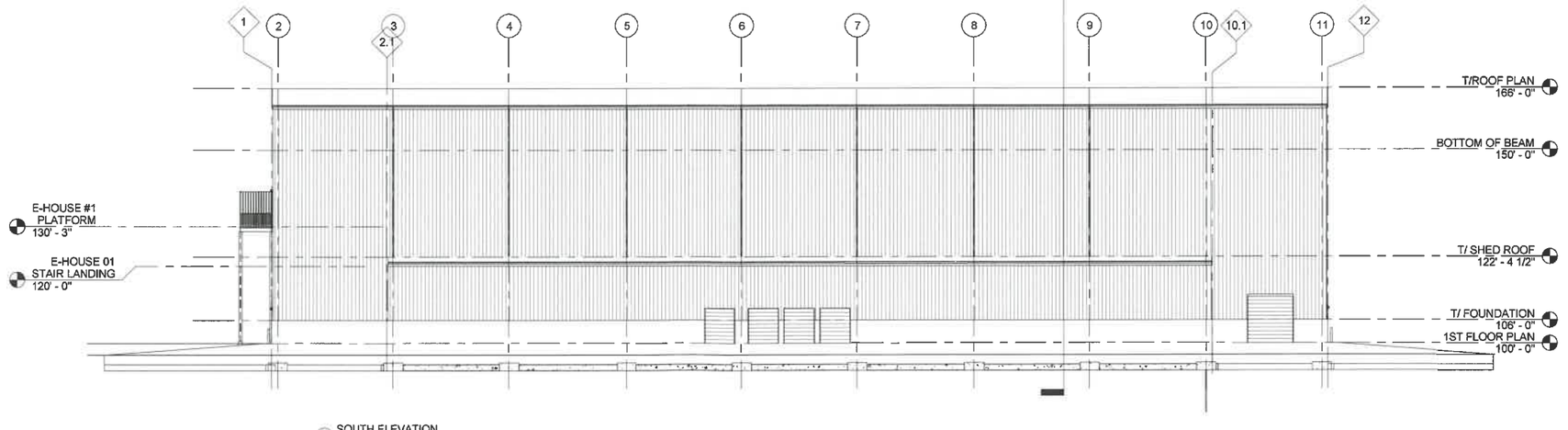
MAINTENANCE BUILDING EXTERIOR ELEVATION

PROJECT #:	DATE:
7583	

A-2.1



4 WEST ELEVATION
1/16" = 1'-0"



3 SOUTH ELEVATION
1/16" = 1'-0"

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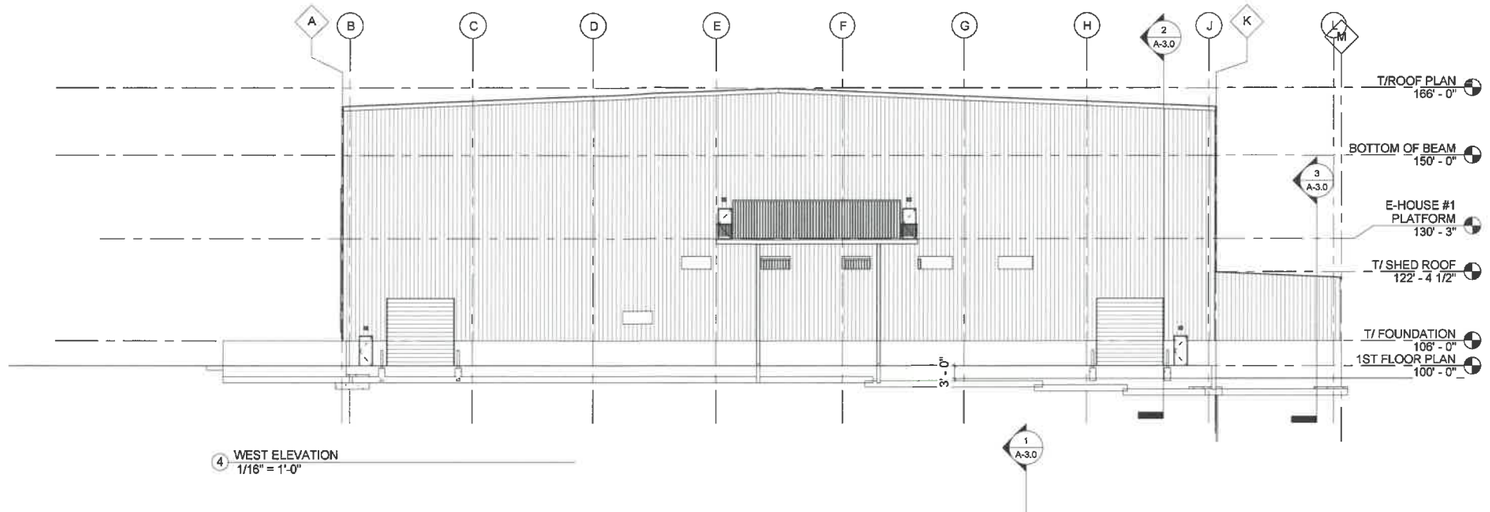
CHICAGO, IL, 60617

#	DATE	ISSUED FOR

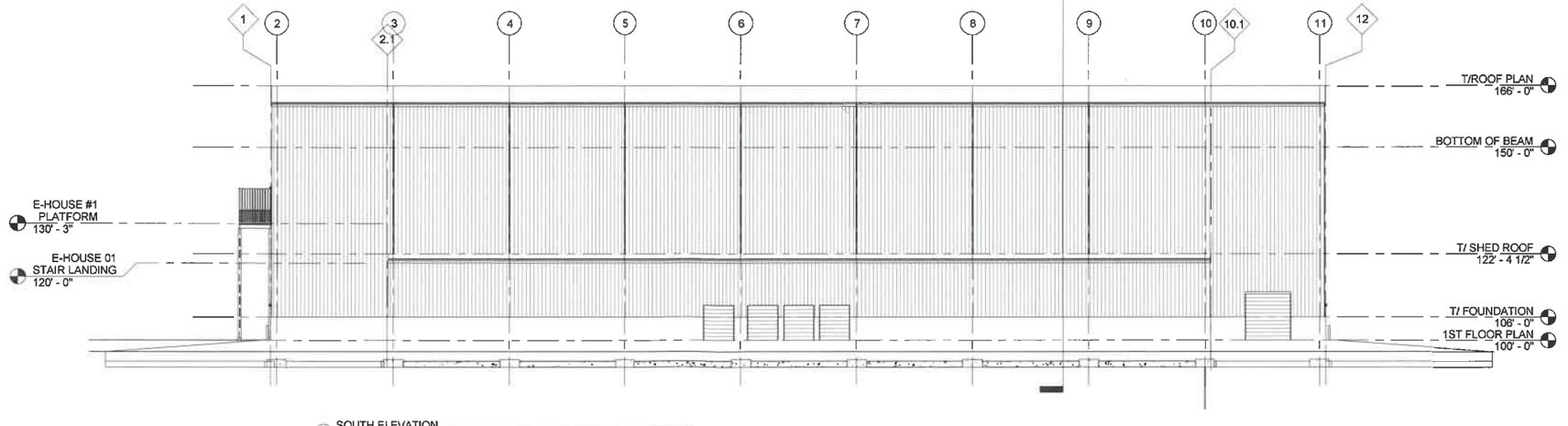
EXTERIOR ELEVATION

PROJECT #:	DATE:
7563	

A-2.0



4 WEST ELEVATION
1/16" = 1'-0"



3 SOUTH ELEVATION
1/16" = 1'-0"

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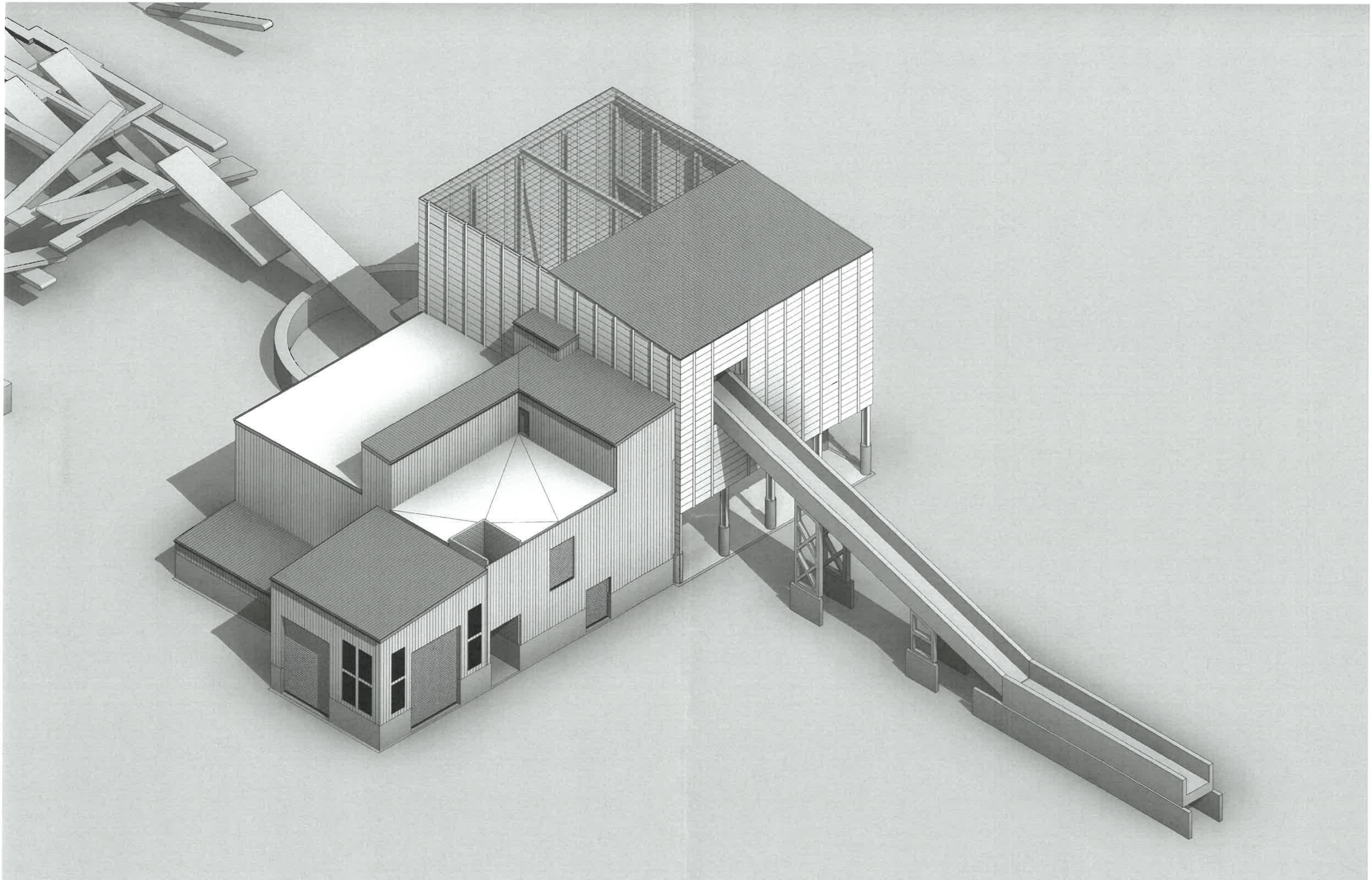
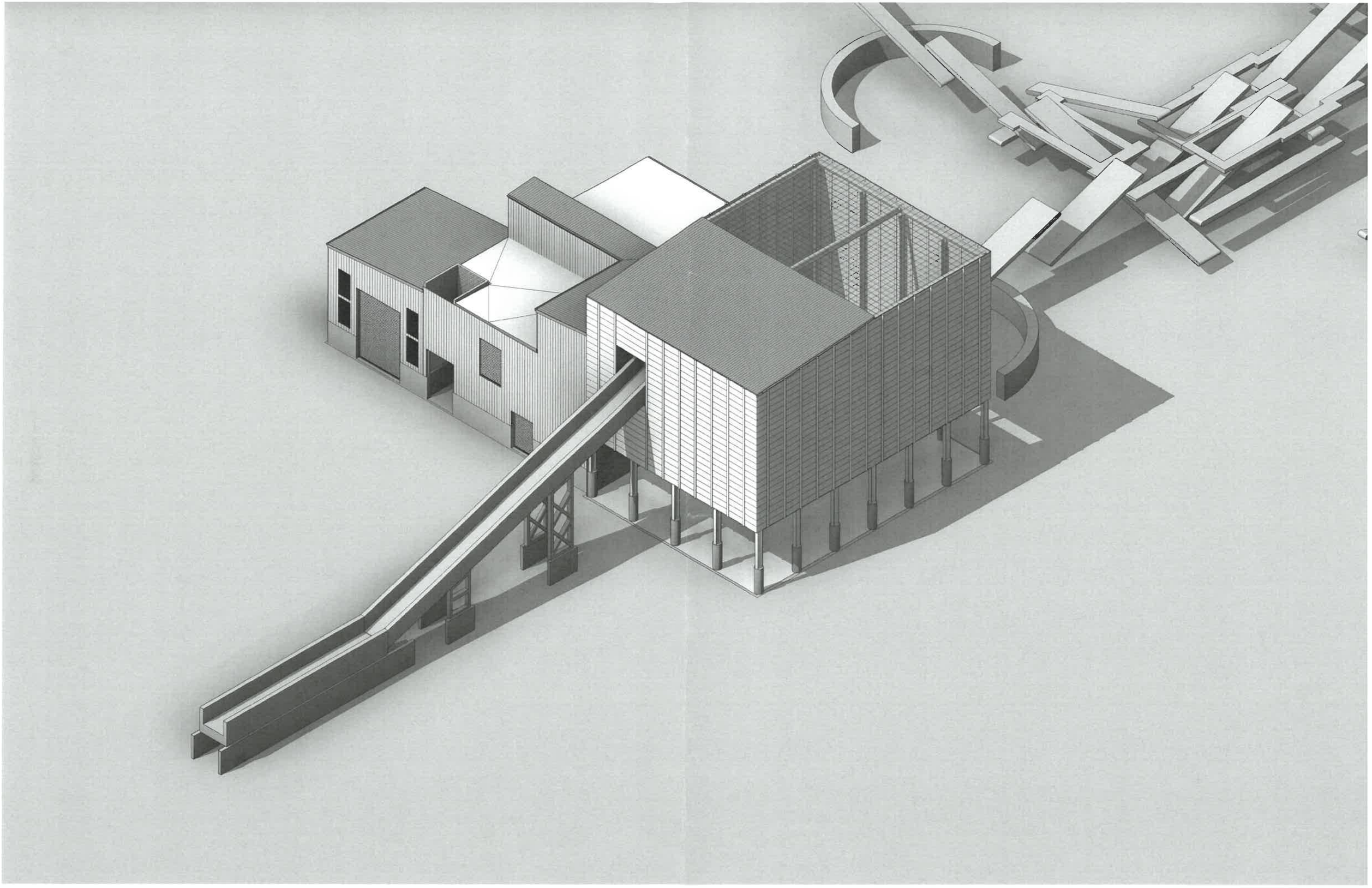
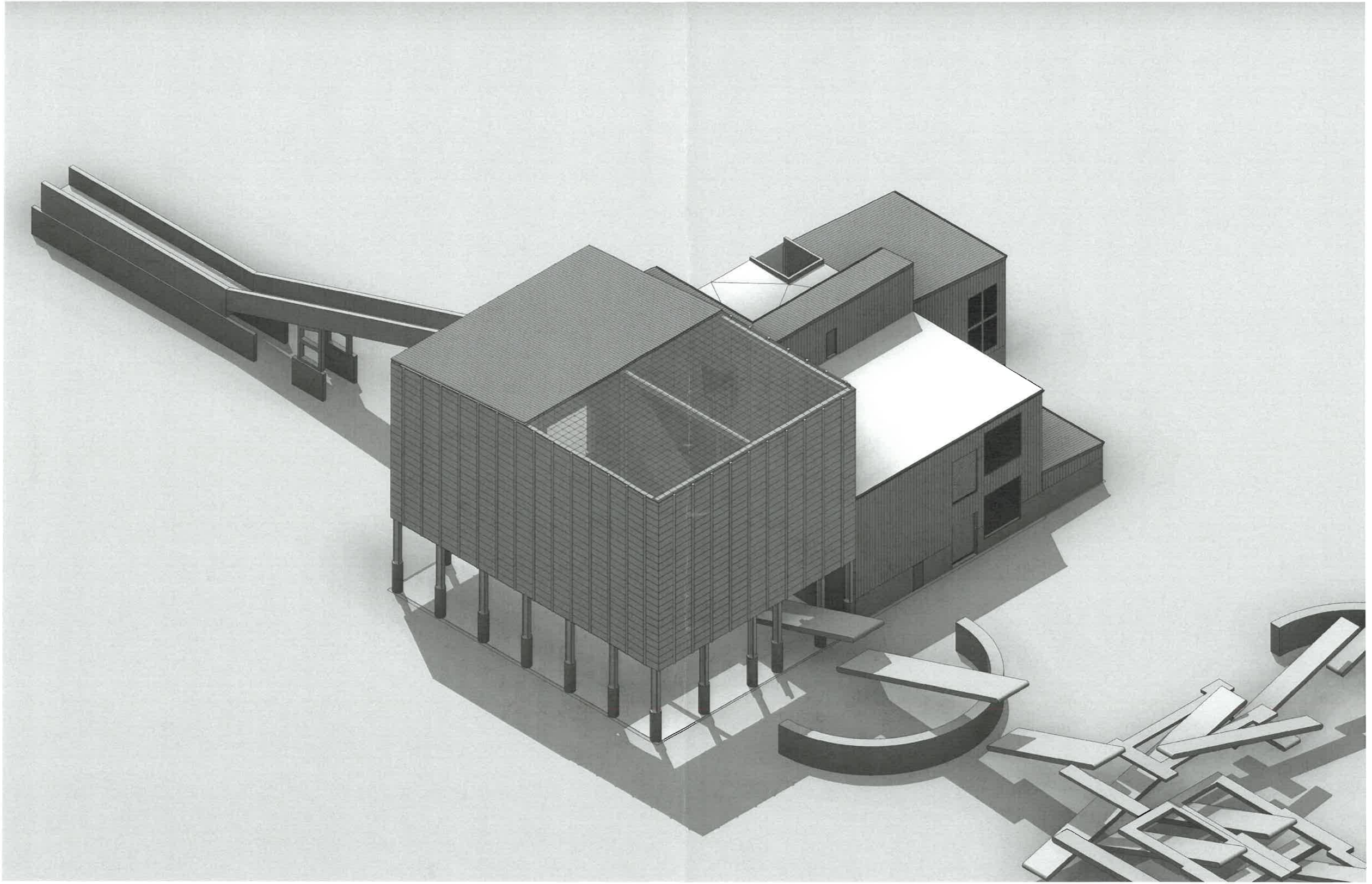
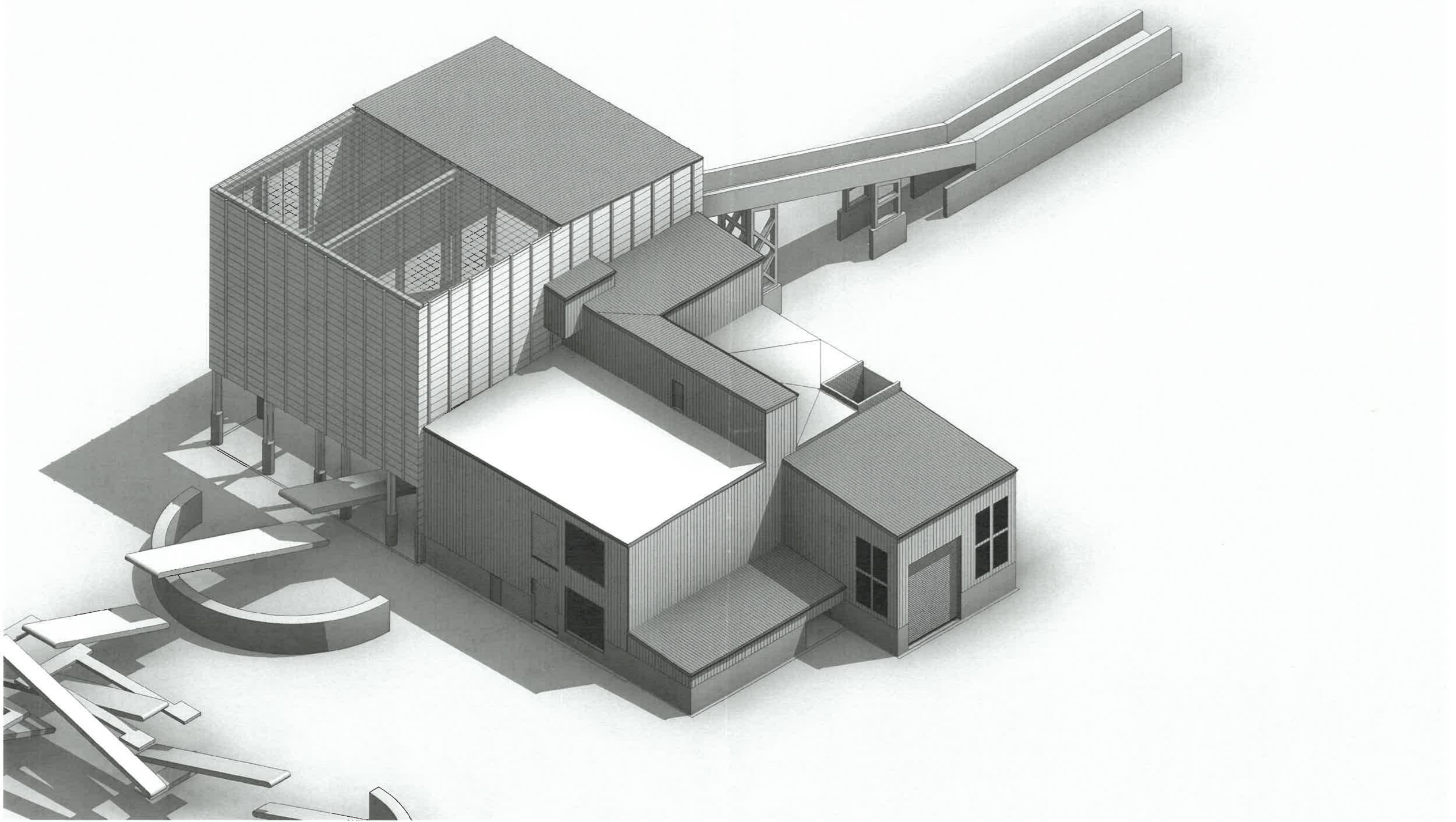
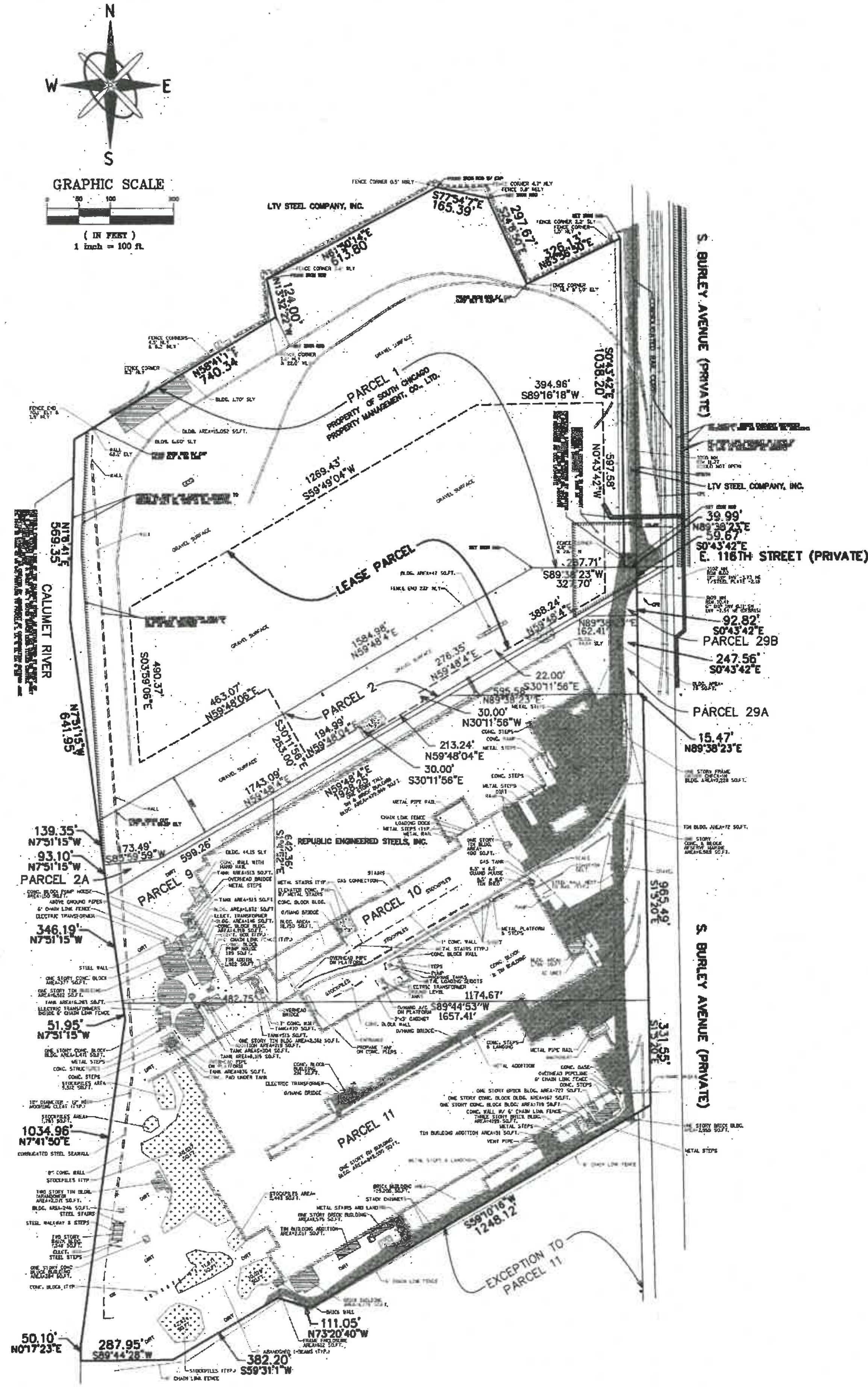








BOUNDARY SURVEY



PARCEL 1:
THAT PART OF THE WEST 1/2 OF THE NORTHEAST 1/4 AND THE EAST 1/2 OF THE NORTHWEST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, AS ESTABLISHED BY SURVEY OF THE UNITED STATES ENGINEER'S OFFICE WAR DEPARTMENT (AS SHOWN ON SHEET NO. 6 DATED MARCH 1939 AND SHEET NO. 7 DATED MARCH 1938) TITLED "CONTROL SURVEY CALUMET RIVER", BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 19; THENCE SOUTH 89 DEGREES 38 MINUTES 23 SECONDS WEST ALONG THE NORTH LINE OF SAID SECTION 19 (BASIS OF BEARINGS) 1506.49 FEET; THENCE SOUTH 00 DEGREES 43 MINUTES 42 SECONDS EAST 244.82 FEET ALONG A LINE 40 FEET WESTERLY FROM, MEASURED AT RIGHT ANGLES, AND PARALLEL WITH THE WEST RIGHT-OF-WAY LINE OF CONRAIL (FORMERLY THE SOUTH CHICAGO AND SOUTHERN RAILROAD) TO THE POINT OF BEGINNING; THENCE CONTINUING SOUTH 00 DEGREES 43 MINUTES 42 SECONDS EAST 1038.20 FEET ALONG SAID LINE 40 FEET WESTERLY FROM, MEASURED AT RIGHT ANGLES, AND PARALLEL WITH THE PREVIOUSLY MENTIONED WEST RIGHT-OF-WAY LINE OF CONRAIL; THENCE SOUTH 89 DEGREES 38 MINUTES 23 SECONDS WEST 287.71 FEET ALONG THE NORTHERLY LINE OF REPUBLIC ENGINEERED STEELS, INC.; THENCE SOUTH 59 DEGREES 48 MINUTES 04 SECONDS WEST 1584.98 FEET ALONG THE NORTHWESTERLY LINE OF REPUBLIC ENGINEERED STEELS, INC.; THENCE NORTH 07 DEGREES 51 MINUTES 15 SECONDS WEST 641.95 FEET ALONG THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER; THENCE NORTH 01 DEGREE 06 MINUTES 41 SECONDS EAST 569.35 FEET ALONG SAID EASTERLY CHANNEL LINE; THENCE NORTH 58 DEGREES 41 MINUTES 01 SECOND EAST 740.33 FEET; THENCE NORTH 13 DEGREES 32 MINUTES 22 SECONDS WEST 124.01 FEET; THENCE NORTH 61 DEGREES 50 MINUTES 14 SECONDS EAST 613.60 FEET; THENCE SOUTH 77 DEGREES 54 SECONDS 07 MINUTES EAST 165.39 FEET; THENCE SOUTH 24 DEGREES 06 MINUTES 50 SECONDS EAST 297.67 FEET; THENCE NORTH 63 DEGREES 56 MINUTES 50 SECONDS EAST 326.13 FEET TO THE POINT OF BEGINNING, CONTAINING 48.778 ACRES, MORE OR LESS, ALL IN COOK COUNTY, ILLINOIS.

CONTAINING AN APPROXIMATE AREA OF 2,124,774 SQ.FT. OR 48.78 ACRES, MORE OR LESS.

PARCEL 2:
THAT PART OF THE WEST 1/2 OF THE SOUTHEAST 1/4 AND THE EAST 1/2 OF THE SOUTHWEST 1/4 OF SECTION 18, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, AS ESTABLISHED BY SURVEY OF THE UNITED STATES ENGINEER'S OFFICE, WAR DEPARTMENT (AS SHOWN ON SHEET NUMBER 6 DATED MARCH 1939 AND SHEET NUMBER 7 DATED MARCH 1938) TITLED CONTROL SURVEY CALUMET RIVER AND THAT PART OF THE WEST 1/2 OF THE NORTHEAST 1/4 AND OF THE EAST 1/2 OF THE NORTHWEST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE AFORESAID EASTERLY CHANNEL LIEN OF SAID CALUMET RIVER BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE CENTER LINE OF EAST 111TH STREET (NOW VACATED) AND THE WEST LINE OF SOUTH BURLEY AVENUE; THENCE SOUTH 00 DEGREES 23 MINUTES 08 SECONDS WEST ON THE WEST LINE OF SOUTH BURLEY AVENUE, 1952.08 FEET TO A POINT 33 FEET NORTH OF THE SOUTH LINE OF SECTION 18; THENCE SOUTH 00 DEGREES 23 MINUTES 40 SECONDS WEST, 1309.13 FEET TO A MONUMENT; THENCE SOUTH 60 DEGREES 56 MINUTES 28 SECONDS WEST, A DISTANCE OF 133.70 FEET TO A POINT, SAID POINT BEING ON THE WEST RIGHT OF WAY LINE OF THE 116.40 FOOT WIDE RIGHT OF WAY OF THE SOUTH CHICAGO AND SOUTHERN RAILROAD; THENCE NORTH 00 DEGREES 23 MINUTES 40 SECONDS EAST ON THE WEST LINE OF SAID RAILROAD, 17.23 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 60 DEGREES 56 MINUTES 28 SECONDS WEST, 1743.09 FEET; THENCE SOUTH 86 DEGREES 03 MINUTES 18 SECONDS WEST, 173.49 FEET TO A POINT ON THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, ESTABLISHED AS AFORESAID; THENCE NORTH 6 DEGREES 43 MINUTES 53 SECONDS WEST, 130.56 FEET; THENCE NORTH 60 DEGREES 56 MINUTES 26 SECONDS EAST, 1584.98 FEET TO A POINT ON A LINE 1283.00 FEET SOUTH OF AND PARALLEL TO THE NORTH LINE OF THE NORTHEAST 1/4 OF SECTION 19; THENCE SOUTH 89 DEGREES 14 MINUTES 18 SECONDS EAST ON THE LAST DESCRIBED LINE 327.70 FEET TO A POINT ON THE WEST RIGHT OF WAY LINE OF SAID RAILROAD; THENCE SOUTH 00 DEGREES 23 MINUTES 40 SECONDS WEST ON THE WEST LINE OF SAID RAILROAD 43.44 FEET TO THE POINT OF BEGINNING IN COOK COUNTY, ILLINOIS.
CONTAINING 351,850 SQUARE FEET = 8.078 ACRES

CONTAINING AN APPROXIMATE AREA OF 351,841 SQ.FT. OR 8.08 ACRES, MORE OR LESS.

PARCEL 2A:
THAT PART OF THE WEST 1/2 OF THE SOUTH EAST 1/4 AND THE EAST 1/2 OF THE SOUTHWEST 1/4 OF SECTION 18, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER AS ESTABLISHED BY SURVEY OF THE UNITED STATES ENGINEER'S OFFICE, WAR DEPARTMENT (AS SHOWN ON SHEET NUMBER 6 DATED MARCH, 1939 AND SHEET NUMBER 7 DATED MARCH, 1938), TITLED CONTROL SURVEY CALUMET RIVER, AND THAT PART OF THE WEST 1/2 OF THE NORTHEAST 1/4 AND OF THE EAST 1/2 OF THE NORTHWEST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE AFORESAID EASTERLY CHANNEL LINE OF SAID CALUMET RIVER; BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE CENTER LINE OF EAST 111TH STREET (NOW VACATED) AND THE WEST LINE OF SOUTH BURLEY AVENUE; THENCE SOUTH 0 DEGREES 23 MINUTES 08 SECONDS WEST ON THE WEST LINE OF SOUTH BURLEY AVENUE, 1952.08 FEET TO A POINT 33 FEET NORTH OF THE SOUTH LINE OF SECTION 18; THENCE SOUTH 0 DEGREES 23 MINUTES 40 SECONDS WEST, 1309.13 FEET TO A MONUMENT; THENCE SOUTH 60 DEGREES 56 MINUTES 28 SECONDS WEST, A DISTANCE OF 133.70 FEET TO THE POINT OF BEGINNING, SAID POINT BEING ON THE WEST RIGHT OF WAY LINE OF THE 116.40 WIDE RIGHT OF WAY OF THE SOUTH CHICAGO AND SOUTHERN RAILROAD; THENCE CONTINUING SOUTH 60 DEGREES 56 MINUTES 28 SECONDS WEST, 1928.26 FEET TO A POINT ON THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER, ESTABLISHED AS AFORESAID; THENCE NORTH 6 DEGREES 43 MINUTES 53 SECONDS WEST ALONG SAID EASTERLY CHANNEL LINE OF SAID CALUMET RIVER, 22.90 FEET TO A POINT; THENCE NORTH 86 DEGREES 03 MINUTES 18 SECONDS EAST, 173.49 FEET TO A POINT ON A LINE 15 FEET NORTHWEST OF AND PARALLEL TO THE PREVIOUSLY DESCRIBED LINE DESCRIBED AS SOUTH 60 DEGREES 56 MINUTES 28 SECONDS WEST; THENCE NORTH 60 DEGREES 56 MINUTES 26 SECONDS EAST ON SAID PARALLEL LINE 1743.09 FEET TO A POINT ON THE WEST RIGHT OF WAY LINE OF SAID RAILROAD; THENCE SOUTH 0 DEGREES 23 MINUTES 40 SECONDS WEST ON THE WEST LINE OF SAID RAILROAD, 17.23 FEET TO THE POINT OF BEGINNING, IN COOK COUNTY, ILLINOIS

CONTAINING AN APPROXIMATE AREA OF 35,508 SQ.FT. OR 0.817 ACRES, MORE OR LESS.

PARCEL 9:
THAT PART OF THE EAST 1/2 OF THE NORTHWEST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE EASTERLY CHANNEL LINE OF THE NEW CHANNEL OF THE CALUMET RIVER AS ESTABLISHED BY THE UNITED STATES GOVERNMENT AND NORTH OF THE SOUTH LINE OF THE NORTHWEST 1/4 OF SAID SECTION 19 AND WEST OF THE CENTER LINE OF A STRIP OF LAND DESIGNATED ON THE PLAT OF FRISBIES ADDITION TO CARONDOLET AVENUE (NOW VACATED) BEING THE EAST LINE OF THE NORTHWEST 1/4 OF SAID SECTION 19 (EXCEPT THAT PART NORTHERLY OF A LINE DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE CENTER LINE OF EAST 111TH STREET (NOW VACATED) AND THE WEST LINE OF SOUTH BURLEY AVENUE; THENCE SOUTH 00 DEGREES 21 MINUTE 13 SECONDS WEST ON THE WEST LINE OF SOUTH BURLEY AVENUE 1952.08 FEET TO A POINT 33 FEET NORTH OF THE SOUTH LINE OF SECTION 18, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN; THENCE SOUTH 00 DEGREES 21 MINUTES 44 SECONDS WEST 1309.13 FEET TO A MONUMENT BEING THE POINT OF BEGINNING OF SAID LINE: THENCE SOUTH 60 DEGREES 53 MINUTES 30 SECONDS WEST TO A POINT ON THE EASTERLY CHANNEL LINE OF SAID CALUMET RIVER, IN COOK COUNTY, ILLINOIS

CONTAINING AN APPROXIMATE AREA OF 250,972 SQ.FT. OR 5.762 ACRES, MORE OR LESS.

PARCEL 10:
ALL OF BLOCKS 3 TO 10, BOTH INCLUSIVE, INCLUDING ALL OF THE STREETS AND ALLEYS ADJOINING AND ACCRUING TO SAID BLOCKS, IN INDIAN RIDGE, BEING A SUBDIVISION OF 40 ACRES IN THE SOUTHWEST CORNER OF THE NORTHEAST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED SEPTEMBER 23, 1899 AS DOCUMENT 28598 (EXCEPTING FROM SAID PREMISES THAT PART LYING NORTHERLY OF A LINE DESCRIBED AS FOLLOWS:
COMMENCING AT THE INTERSECTION OF THE CENTER LIEN OF EAST 111TH STREET, NOW VACATED, AND THE WEST LINE OF SOUTH BURLEY AVENUE; THENCE SOUTH 00 DEGREES 21 MINUTES 13 SECONDS WEST ON THE WEST LINE OF SOUTH BURLEY AVENUE, 1952.08 FEET TO A POINT 33 FEET NORTH OF THE SOUTH LINE OF SECTION 18, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, THENCE SOUTH 00 DEGREES 21 MINUTES 44 SECONDS WEST 1309.13 FEET TO A MONUMENT BEING THE POINT OF BEGINNING OF SAID LINE; THENCE SOUTH 60 DEGREES 53 MINUTES 30 SECONDS WEST TO A POINT ON THE WEST LINE OF THE NORTHEAST 1/4 OF SECTION 19 AFORESAID; ALSO EXCEPT THAT PART CONVEYED TO THE SOUTH CHICAGO AND SOUTHERN RAILROAD COMPANY BY DEED RECORDED JUNE 28, 1946 AS DOCUMENT NUMBER 13540700 AND DESCRIBED AS FOLLOWS:
THAT PART OF THE WEST 1/2 OF THE NORTHEAST 1/4 AND THAT PART OF THE WEST 1/2 OF THE SOUTH EAST 1/4 OF SECTION 18, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, BOUNDED AND DESCRIBED AS FOLLOWS: TO WIT:
BEGINNING AT THE INTERSECTION OF THE EAST LINE OF THE WEST 28.60 FEET OF SOUTH BURLEY BEGINNING AT THE INTERSECTION OF THE EAST LINE OF THE WEST 28.60 FEET OF SOUTH BURLEY AVENUE (NOW VACATED) NORTH OF 116TH STREET WITH A LINE 1683.0 FEET SOUTH OF AND PARALLEL TO THE NORTH LINE OF SECTION 19 AFORESAID; THENCE SOUTH 00 DEGREES 00 MINUTES 33 SECONDS WEST ALONG THE EAST LINE OF THE WEST 28.60 FEET OF SAID SOUTH BURLEY AVENUE (NOW VACATED) 985.74 FEET TO A POINT ON THE EAST-WEST CENTER LINE OF SECTION 19 AFORESAID; THENCE NORTH 89 DEGREES 09 MINUTES 57 SECONDS WEST ALONG SAID EAST-WEST CENTER LINE OF SECTION 19, 0.93 FEET TO THE INTERSECTION OF THE WEST LINE OF SOUTH BURLEY AVENUE (SOUTH OF 166TH STREET) WITH SAID CENTER LINE OF SECTION 19; THENCE SOUTH 00 DEGREES 23 MINUTES 09 SECONDS EAST 371.98 FEET ALONG THE WEST LINE OF SOUTH BURLEY AVENUE (SOUTH OF EAST 116TH STREET) TO A POINT, SAID POINT BEING ALSO ON THE EASTERLY RIGHT OF WAY LINE OF THE SOUTH CHICAGO AND SOUTHERN RAILROAD COMPANY, WHICH RIGHT OF WAY LINE FROM THE LAST DESCRIBED POINT SOUTH IS COINCIDENTAL WITH SAID WEST LINE OF SOUTH BURLEY AVENUE; THENCE NORTHWESTERLY ALONG A CURVED LINE OF RADIUS OF 1960.08 FEET, CONVEX TO THE NORTH EAST AN ARC DISTANCE OF 378.02 FEET TO A POINT ON THE EAST-WEST CENTER LINE OF SECTION 19 AFORESAID (SAID CURVED LINE BEING THE EASTERLY LINE OF THE TRACT OF LAND CONVEYED TO THE SOUTH CHICAGO AND SOUTHERN RAILROAD COMPANY BY DOCUMENT RECORDED IN THE RECORDER'S OFFICE OF COOK COUNTY, ILLINOIS, ON OCTOBER 4, 1919 AS DOCUMENT NUMBER 6630378); THENCE CONTINUING NORTHWESTERLY ALONG A CURVED LINE OF RADIUS OF 1960.08 FEET CONVEX TO THE NORTHEAST AN ARC DISTANCE OF 235.74 FEET TO A POINT OF TANGENT; THENCE NORTH 18 DEGREES 14 MINUTES 21 SECONDS WEST TANGENTIAL TO THE LAST DESCRIBED CURVED LINE 12.54 FEET TO A POINT; WHICH POINT IS 100.93 FEET WEST MEASURED AT RIGHT ANGLES FROM THE EAST LINE OF THE WEST 28.60 FEET OF SOUTH BURLEY AVENUE (NORTH OF 166TH STREET); THENCE NORTH 00 DEGREES 00 MINUTES 33 SECONDS EAST 726.52 FEET TO A POINT ON A LINE 1683.0 FEET SOUTH OF AND PARALLEL TO THE NORTH LINE OF SECTION 19 AFORESAID; THENCE NORTH 89 DEGREES 16 MINUTES 08 SECONDS WEST ALONG SAID LINE 1683.0 FEET SOUTH OF AND PARALLEL TO THE NORTH LINE OF SECTION 19 AFORESAID, 15.47 FEET TO A POINT; THENCE NORTH 00 DEGREES 21 MINUTES 44 SECONDS WEST 340.27 FEET TO A POINT; THENCE NORTH 280 DEGREES 53 MINUTES 30 SECONDS EAST 133.760 FEET TO A MONUMENT; THENCE SOUTH 00 DEGREES 21 MINUTES 44 SECONDS WEST 409.80 FEET TO THE POINT OF BEGINNING) IN COOK COUNTY, ILLINOIS.

CONTAINING AN APPROXIMATE AREA OF 1,042,236 SQ.FT. OR 23.926 ACRES, MORE OR LESS.

PARCEL 11
THAT PART OF THE NORTH 1204.34 FEET OF THE NORTH 1/2 OF THE SOUTHEAST 1/4 AND THE NORTH 1/2 OF THE SOUTHWEST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER AS ESTABLISHED BY SURVEY OF THE UNITED STATES ENGINEER'S OFFICE WAR DEPARTMENT (AS SHOWN ON SHEET NUMBER 6 DATED MARCH 1939 AND SHEETS NUMBER 7 AND 8 DATED MARCH 1938), TITLED CONTROL SURVEY CALUMET RIVER, LYING WESTERLY OF THE WESTERLY RIGHT-OF-WAY LINE OF THAT PART OF THE SOUTH CHICAGO AND SOUTHERN RAILROAD RIGHT-OF-WAY LYING IN THE SOUTHEAST 1/4 OF FRACTIONAL SECTION 19 SAID WESTERLY RIGHT-OF-WAY LINE DESCRIBED AS FOLLOWS: COMMENCING AT A POINT ON THE SOUTH LINE OF THE SOUTHEAST FRACTIONAL 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN SAID POINT BEING 1182.86 FEET EAST OF THE SOUTHWEST CORNER OF THE SOUTHEAST 1/4 OF SAID SECTION 19; THENCE NORTH 00 DEGREES 21 MINUTES 45 SECONDS WEST ON A LINE 100.00 FEET WEST OF AND PARALLEL WITH THE WESTERLY LINE OF THE 66.00 FOOT STREET DEDICATED BY PLAT FILED FOR RECORD IN THE RECORDER'S OFFICE JULY 2, 1897 AS DOCUMENT NUMBER 2559611, A DISTANCE OF 33.00 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING NORTH 00 DEGREES 21 MINUTES 45 SECONDS WEST ALONG THE WESTERLY RIGHT-OF-WAY LINE OF SAID RAILROAD A DISTANCE OF 2612.22 FEET TO THE NORTH LINE OF THE SOUTHEAST FRACTIONAL 1/4 OF SAID SECTION 19, SAID POINT BEING ON A LINE 100.93 FEET WEST OF THE EAST LINE OF THE WEST 28.60 FEET OF SOUTH BURLEY AVENUE (NOW VACATED), LYING IN THE NORTHEAST 1/4 OF SAID SECTION 19; (EXCEPTING THAT PART LYING SOUTHERLY OF THE FOLLOWING DESCRIBED LINE: COMMENCING AT THE POINT OF INTERSECTION OF THE WESTERLY RIGHT-OF-WAY LINE OF SAID RAILROAD WITH THE NORTH LINE OF THE SOUTHEAST 1/4 OF SECTION 19, THENCE SOUTH 00 DEGREES 21 MINUTES 45 SECONDS EAST TO THE WESTERLY RIGHT-OF-WAY LINE OF SAID RAILROAD, ABOVE DESCRIBED, A DISTANCE OF 331.55 FEET TO A POINT OF BEGINNING; THENCE SOUTH 60 DEGREES 17 MINUTES 38 SECONDS WEST, A DISTANCE OF 1248.12 FEET TO A POINT; THENCE NORTH 72 DEGREES 13 MINUTES 18 SECONDS WEST A DISTANCE OF 111.05 FEET TO A POINT; THENCE SOUTH 60 DEGREES 38 MINUTES 23 SECONDS WEST A DISTANCE OF 382.20 FEET TO A POINT, SAID POINT BEING ON A LINE 78.00 FEET NORTH OF AND PARALLEL TO THE SOUTH LINE OF THE NORTH 1204.34 FEET OF THE NORTH 1/2 OF THE SOUTHWEST 1/4 OF SAID SECTION 19; THENCE NORTH 89 DEGREES 08 MINUTES 10 SECONDS WEST ON THE LAST DESCRIBED LINE A DISTANCE OF 287.95 FEET TO THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER (DESCRIBED ABOVE). (EXCEPTING FROM THE ABOVE DESCRIBED PARCEL THE EAST 39.0 FEET THEREOF), IN COOK COUNTY, ILLINOIS.

CONTAINING AN APPROXIMATE AREA OF 1,381,101 SQ.FT. OR 31.706 ACRES, MORE OR LESS.

PARCEL 29A
THAT PART OF LOT 7 IN THE DIVISION OF THE NORTH 102 ACRES OF THE NORTHEAST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN LYING WEST OF THE WEST RIGHT OF WAY LINE OF THE SOUTH CHICAGO AND SOUTHERN RAILROAD AS PER DEED DATED JUNE 2, 1945 AS PER DOCUMENT NUMBER 3460700 IN COOK COUNTY, ILLINOIS, AND (EXCEPT THAT PART OF SAID LOT LYING NORTHERLY AND WESTERLY OF THE FOLLOWING DESCRIBED LINE BEGINNING AT THE INTERSECTION OF THE EAST LINE OF THE WEST 1/2 OF THE NORTHEAST 1/4 OF SAID SECTION 19 WITH THE NORTH LINE OF SAID SECTION 19; THENCE SOUTH 00 DEGREES 07 MINUTES 24 SECONDS WEST ALONG SAID EAST LINE 1254.27 FEET TO A POINT; THENCE SOUTH 60 DEGREES 53 MINUTES 30 SECONDS WEST 44.07 FEET TO A MONUMENT WHICH IS 1278.13 FEET SOUTH OF THE NORTH LINE OF SECTION 19 AFORESAID AND WHICH IS THE POINT OF BEGINNING OF THE LINE HEREINBEFORE REFERRED TO; THENCE CONTINUING SOUTH 60 DEGREES 53 MINUTES 30 SECONDS WEST 1462.86 FEET TO A POINT ON THE NORTH - SOUTH CENTER LINE OF SAID SECTION 19 WHICH POINT IS THE SOUTHWESTERLY END OF THE LINE HEREINBEFORE REFERRED TO) IN COOK COUNTY, ILLINOIS.

CONTAINING AN APPROXIMATE AREA OF 93,823 SQ.FT. OR 2.154 ACRES, MORE OR LESS.

PARCEL 29B
LOT 8 IN THE DIVISION OF THE NORTH 102 ACRES OF THE NORTHEAST 1/4 OF SECTION 19, TOWNSHIP 37 NORTH, RANGE 15 EAST OF THE THIRD PRINCIPAL MERIDIAN (EXCEPT FROM SAID LOT 8 THAT PART LYING EAST OF THE WEST LINE OF RAILROAD RIGHT OF WAY OF THE SOUTH CHICAGO AND SOUTHERN RAILROAD COMPANY CONVEYED BY DEED RECORDED JUNE 28, 1946 AS 13540700) AND (EXCEPT THAT PART LYING NORTHERLY AND WESTERLY OF THE FOLLOWING DESCRIBED LINE: COMMENCING AT THE INTERSECTION OF THE CENTER LINE OF THE EAST 111TH STREET (NOW VACATED) AND THE WEST LINE OF SOUTH BURLEY AVENUE; THENCE SOUTH 00 DEGREES 21 MINUTES 13 SECONDS WEST ON THE WEST LINE OF SOUTH BURLEY AVENUE 1952.08 FEET TO A POINT 33 FEET NORTH OF THE SOUTH LINE OF SECTION 18; THENCE SOUTH 00 DEGREES 21 MINUTES 44 SECONDS WEST, 1309.13 FEET TO A MONUMENT AND THE POINT OF BEGINNING OF LINE TO BE DESCRIBED: THENCE SOUTH 60 DEGREES 53 MINUTES 30 SECONDS WEST, 2081.96 FEET TO A POINT ON THE EASTERLY CHANNEL LINE OF THE CALUMET RIVER AND THE SOUTHWESTERLY TERMINUS OF LINE DESCRIBED), IN COOK COUNTY, ILLINOIS

CONTAINING AN APPROXIMATE AREA OF 7537 SQ.FT. OR 0.173 ACRES, MORE OR LESS.

SITE LOCATION DETAIL
N.T.S.

GENERAL NOTES:
1. ALL DIMENSIONS ARE GIVEN IN FEET AND DECIMAL PARTS THEREOF.
2. COMPARE DEED DESCRIPTION AND SITE CONDITIONS WITH THE DATA SHOWN HEREON AND REPORT ANY DISCREPANCIES AT ONCE.
3. NO DIMENSIONS SHALL BE DERIVED FROM SCALED MEASUREMENT.
4. ONLY THOSE BUILDING SETBACK LINES AND EASEMENTS WHICH ARE SHOWN ON THE RECORDED PLAT OF SUBDIVISION ARE SHOWN HEREON, UNLESS INDICATED OTHERWISE. REFER TO DEED, TITLE INSURANCE POLICY AND LOCAL ORDINANCES FOR OTHER RESTRICTIONS WHICH MAY OR MAY NOT EXIST.
5. LEGAL DESCRIPTION AS PER MOST RECENT DEED OF RECORD, UNLESS OTHERWISE INDICATED HEREON.

SURVEYOR'S NOTES:
1. BEARINGS BASED ON ILLINOIS STATE PLANE EAST ZONE, NAD83 (2011). GPS DERIVED.
2. VERTICAL DATUM IS NAVD'88, GPS DERIVED.
3. DISTANCES ALONG CURVES ARE ARC DISTANCES UNLESS OTHERWISE NOTED.
4. THIS SURVEY WAS PERFORMED ON THE GROUND AND COMPLETED JANUARY 28, 2019.
5. ONLY THE IMPROVEMENTS THAT WERE VISIBLE FROM ABOVE GROUND AT TIME OF SURVEY AND THROUGH A NORMAL SEARCH AND WALK THROUGH OF THE SITE ARE SHOWN ON THE FACE OF THIS PLAT.
6. VISIBLE SURFACE INDICATIONS OF UTILITIES ON THE SURVEYED PARCEL AND HAVE BEEN SHOWN. UNDERGROUND AND OFFSITE OBSERVATIONS HAVE NOT BEEN MADE TO DETERMINE THE EXTENT OF UTILITIES SERVING OR EXISTING ON THE PROPERTY. OVERHEAD WIRES, IF ANY, ARE EXISTING AND THEIR POLES HAVE BEEN SHOWN, HOWEVER THEIR FUNCTION AND DIMENSIONS HAVE NOT BEEN NOTED.
7. OTHER THAN VISIBLE OBSERVATIONS NOTED HEREON, THIS SURVEY MAKES NO STATEMENT REGARDING THE ACTUAL PRESENCE OR ABSENCE OF ANY SERVICE OR UTILITY LINE. CONTROLLED UNDERGROUND EXPLORATORY EFFORT TOGETHER WITH DIGGER LOCATIONS IS RECOMMENDED TO DETERMINE THE FULL EXTENT OF UNDERGROUND SERVICE AND UTILITY LINES. CONTACT DIGGER AT: 312-744-7000.
8. PROPERTY NOT MONUMENTED AT CLIENT'S REQUEST.

STATE OF ILLINOIS }
COUNTY OF COOK } SS

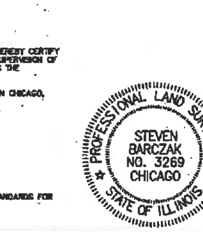
WE, KNIGHT E/A, INC., ILLINOIS PROFESSIONAL DESIGN FIRM NO. 184-002141, HEREBY CERTIFY THAT THE PROPERTY HEREON DESCRIBED WAS SURVEYED UNDER THE DIRECT SUPERVISION OF AN ILLINOIS PROFESSIONAL LAND SURVEYOR, AND THAT THIS PLAT REPRESENTS THE CONDITIONS FOUND AT THE TIME OF SAID SURVEY.

GIVEN UNDER MY HAND AND SEAL THIS 21 DAY OF February 2019 IN CHICAGO, ILLINOIS.

KNIGHT E/A, INC.

STEVEN BARCZAK, [illegible]
LICENSE EXPIRES: 11/30/2020

THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY.



Drawn By: JV Designed By: SB Scale: 1"=200'

BOUNDARY SURVEY

REVISIONS

1

11600 S. BURLEY AVENUE

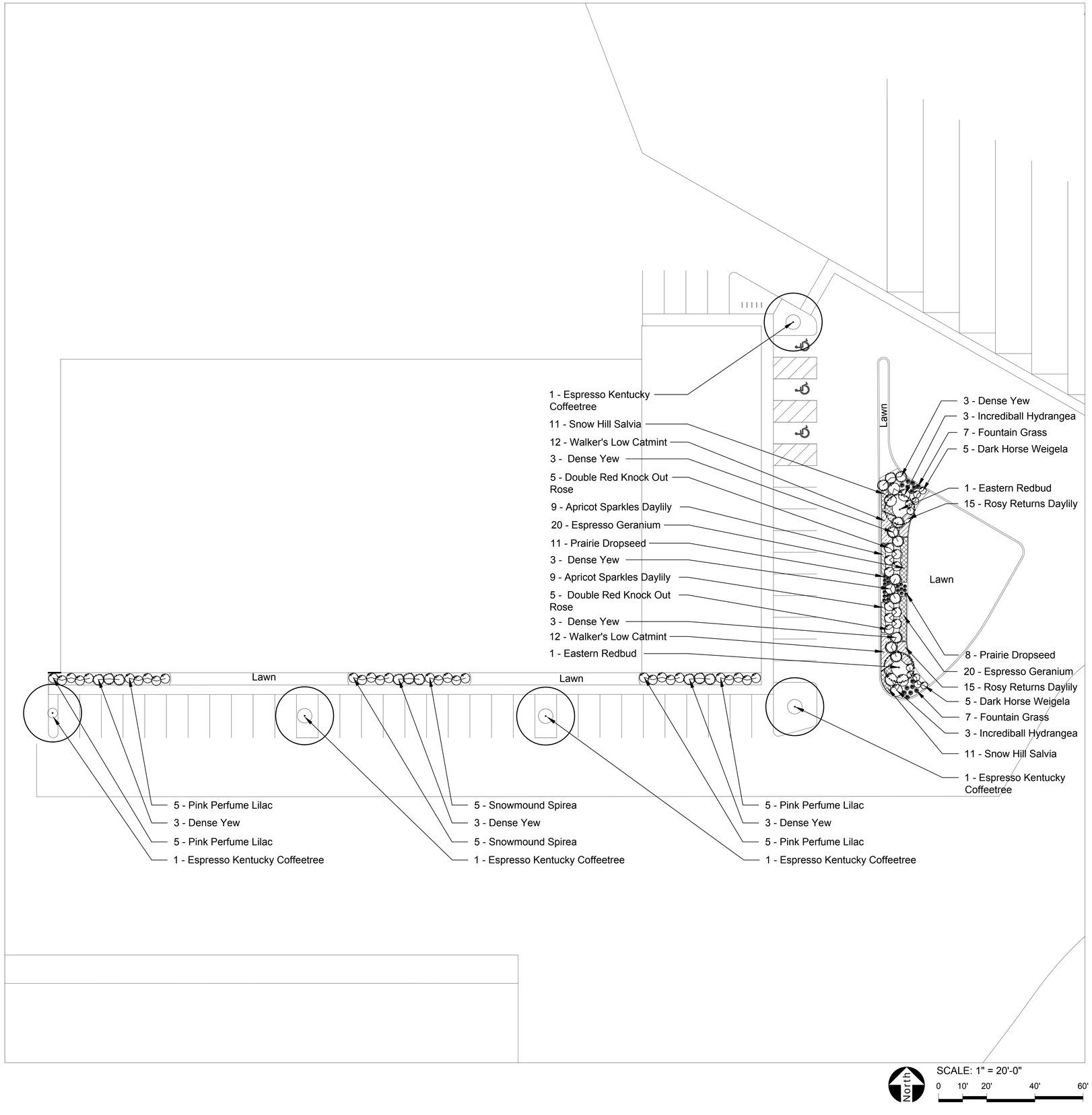
PREPARED FOR:

GENERAL III, LLC
11600 S. BURLEY AVENUE
CHICAGO, IL 60617

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 N. LaSalle Street, Suite 300
Chicago, Illinois 60601-1211
Phone (312) 577-3300
Fax (312) 577-3526
knightea.com

SHEET NO. 1 OF 1

DATE: 02/20/19
JOB NO. 7563.01



GENERAL NOTES: LANDSCAPE

1. Notes indicated on grading plans shall pertain to landscape plans. Final grade of planting beds shall be as per grading plan.
2. The landscape contractor shall be responsible for making themselves familiar with all underground utilities and structures.
3. All existing plant material and trees shall be saved and protected unless otherwise noted. Contractor to protect new and existing trees and landscaping from damage and shall restore all areas disturbed as a result of construction.
4. Plant material shall be supplied from Northern Illinois nursery stock, shall be dug the planting season it is installed, and shall conform to the American Association of Nurseryman's standards.
5. Plant material shall be size and type specified. Substitution of plant material shall be on a case by case basis and approved in writing by the Owner's Representative. In no case shall plant material be smaller than indicated in the plans.
6. Do not willfully proceed with plantings as designed when it is obvious that obstructions and/or grade differences exist that may not have been known during the design process. Such conditions shall be immediately brought to the attention of the Owner's Representative.
7. All plant material shall be inspected and approved by the Owner's Representative prior to the installation of any and all plant material.
8. Plant locations shall be flagged in field with Owner's Rep. Final location of all plant material shall be subject to approval of the Owner's Representative prior to digging any holes. The landscape contractor is responsible for providing Owner's Representative with 48 hour minimum advance notice prior to planting.
9. Plants shall be watered on the day they are planted and maintained with watering until final acceptance of the project.
10. Apply a pre-emergent as per manufacturer's specification prior to installing mulch.
11. Beds and tree rings (6' diameter) shall have 3" of hardwood shredded mulch applied and a 4" deep spade edge at lawn. Trees that are not located in beds, shall have a tree ring.
12. Landscape plant material shall be guaranteed for 12 months from final acceptance. Any plant 1/3 dead or more shall be replaced under the guarantee.
13. Contractor to prepare landscape beds by roto-tilling 2" of Mushroom Compost into new beds. Do not add compost nor roto-till within drip line of existing trees.
14. Lawn Seeding shall be under favorable weather conditions, and shall follow dates in specification.
15. Turf mixes shall be installed and lawn established at all disturbed areas.
16. Do not overseed into mulch beds and paving.
17. Contractor shall restore all areas disturbed as a result of construction.

LEGEND

- Shade Tree
- Ornamental Tree
- Shrub
- Ornamental Grass
- Perennial and Groundcover (hatch symbol varies)

PLANT LIST

QTY	SIZE	BOTANICAL NAME	COMMON NAME	NOTES
Decidious Trees - Balled and Burlap				
5	2.5" cal.	*Gymnocladus dioicus 'Espresso'*	Espresso Kentucky Coffeetree	B&B
5	Total			
Ornamental Trees - Balled and Burlap				
2	6' ht.	*Cercis canadensis*	Eastern Redbud	B&B
2	Total			
Evergreen Shrubs - Balled and Burlap or Pot (minimum 5 gallon)				
21	36" ht.	*Taxus media 'Denseformis'*	Dense Yew	Pot
21	Total			
Shrubs - Balled and Burlap or Pot (minimum 5 gallon)				
6	36" ht.	*Hydrangea arborescens 'Abetwo'*	Incrediball Hydrangea	Pot
10	24" ht.	*Rosa 'Radtko'*	Double Red Knock Out Rose	Pot
20	36" ht.	*Syringia 'Pink Perfume'*	Pink Perfume Lilac	Pot
10	36" ht.	*Spirea nipponica*	Snowmound Spirea	Pot
10	24" ht.	*Weigela x 'Dark Horse*	Dark Horse Weigela	Pot
56	Total			
Perennials, Grasses, and Graoundcovers				
40	#1 cont.	*Geranium maculatum 'Espresso'*	Espresso Geranium	Pot
18	#1 cont.	*Hemerocallis 'Apricot Sparkles'*	Apricot Sparkles Daylily	Pot
30	#1 cont.	*Hemerocallis ' Rosy Returns'*	Rosy Returns Daylily	Pot
24	#1 cont.	*Nepeta racemosa 'Walker's Low'*	Walker's Low Catmint	Pot
14	#1 cont.	*Pennisetum alopecuroides*	Fountain Grass	Pot
22	#1 cont.	*Salvia nemorosa 'Snow Hill'*	Snow Hill Salvia	Pot
19	#1 cont.	*Sporobolus heterolepis*	Prairie Dropseed	Pot
167	Total			

REQUIREMENT CHART

Parking Lot and Vehicular Use Area Internal Parking

Location	Ordinance	Requirement	Provided
Building Parking	Parking Lots between 4,500 an 30,000 SF= 7.5% Internal Landscaping	24,031.15 SF*7.5%= 1,802 SF Landscape	1,965.3 SF of Landscape
	Vehicular Use Areas above 4,500 SF, Trees Planted in Internal Islands	5 Islands= 5 Trees	5 Trees
	7' Planting Strip	7' Planting Bed	7' Planting Bed

General III
11600 South Burley Ave.
Chicago, IL 60617

PROJECT
General III
11600 South Burley Ave.
Chicago, IL 60617

uplandDesign ltd
Park Planning and Landscape Architecture
24042 Lockport St, Plainfield, Illinois 60544
815-254-0091 www.uplanddesign.com

SHEET TITLE
Landscape Plan

SHEET NUMBER L1.0

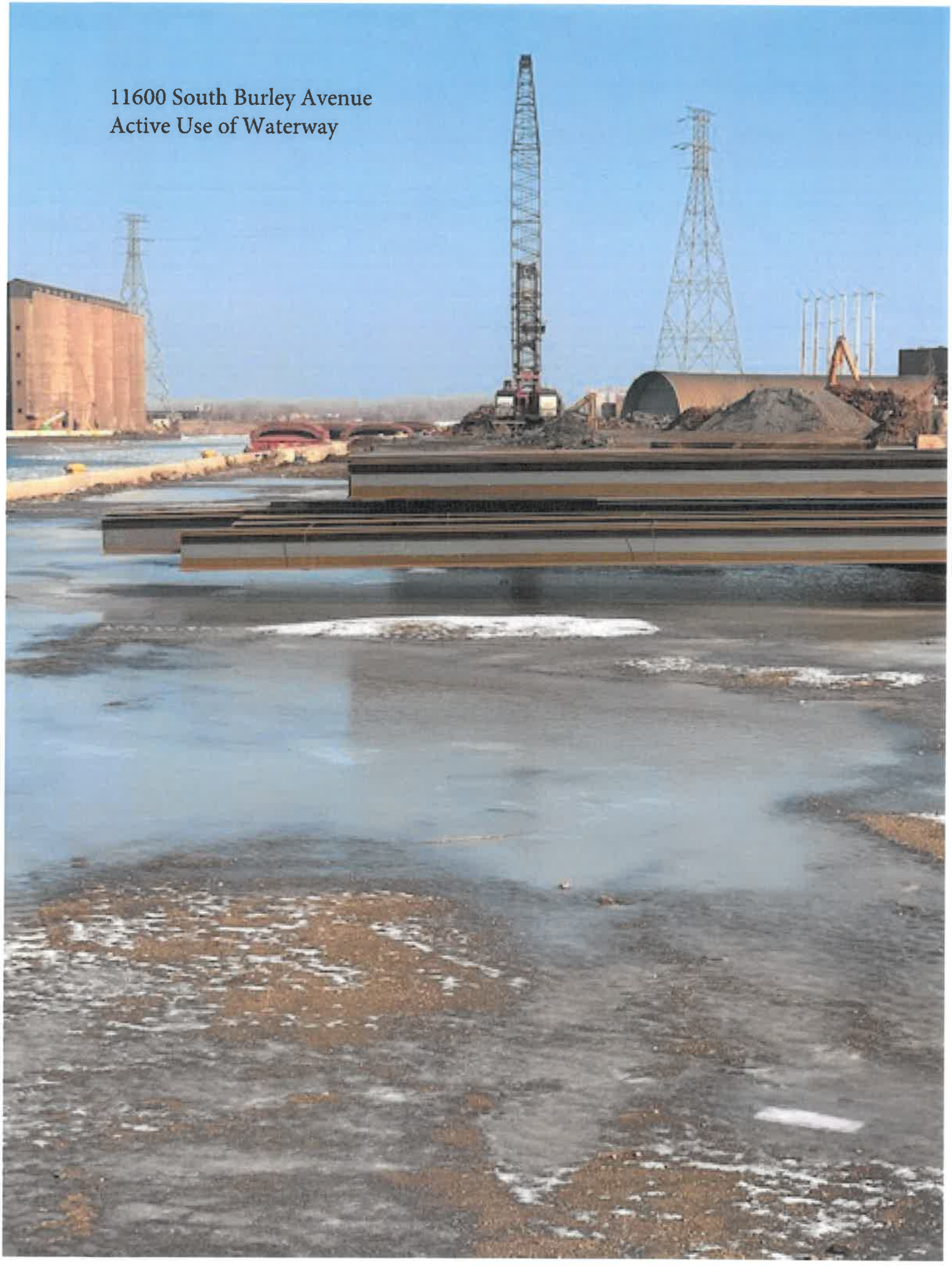
DRAW / REVISION

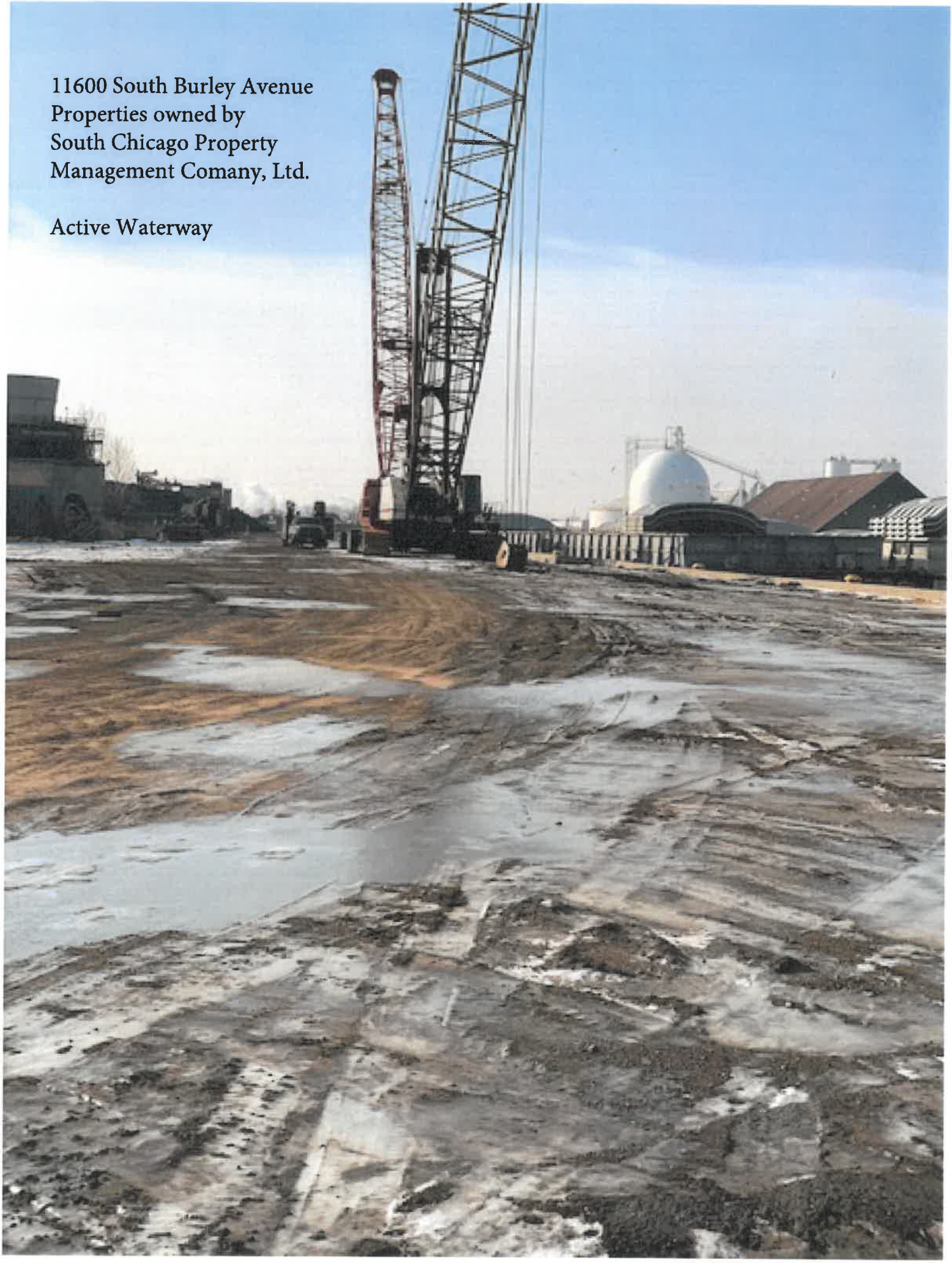
LD/DW	Landscape Plan	22FEB2019

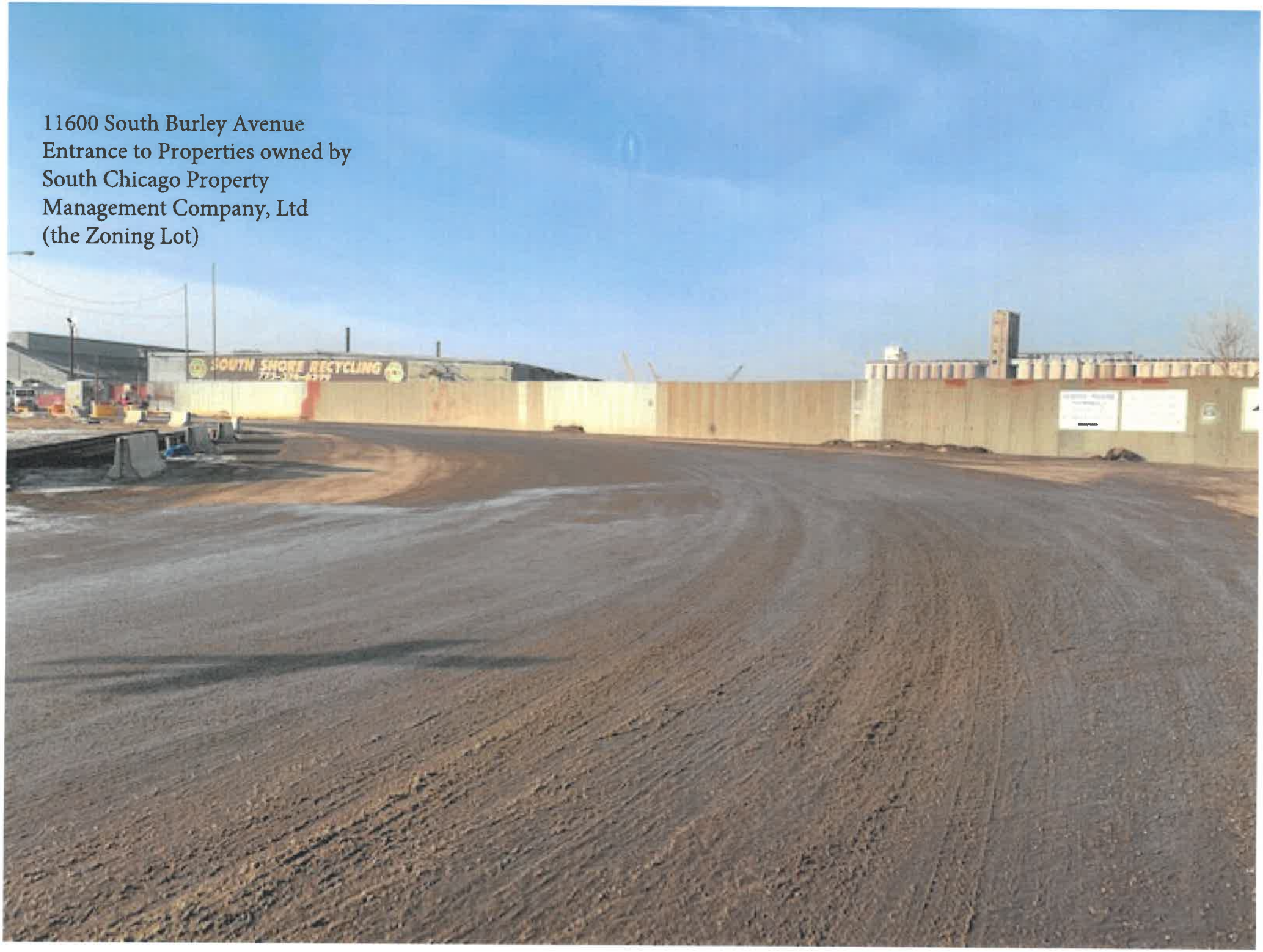
Project Number 702

W:\702-General III KnightA&E\30-CD-files
PLOT: UPLAND 2013


General III, LLC
Lease Area
Proposed Development Area

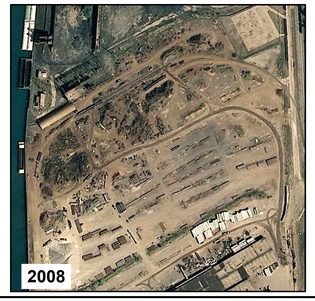

11600 South Burley Avenue
Active Use of Waterway

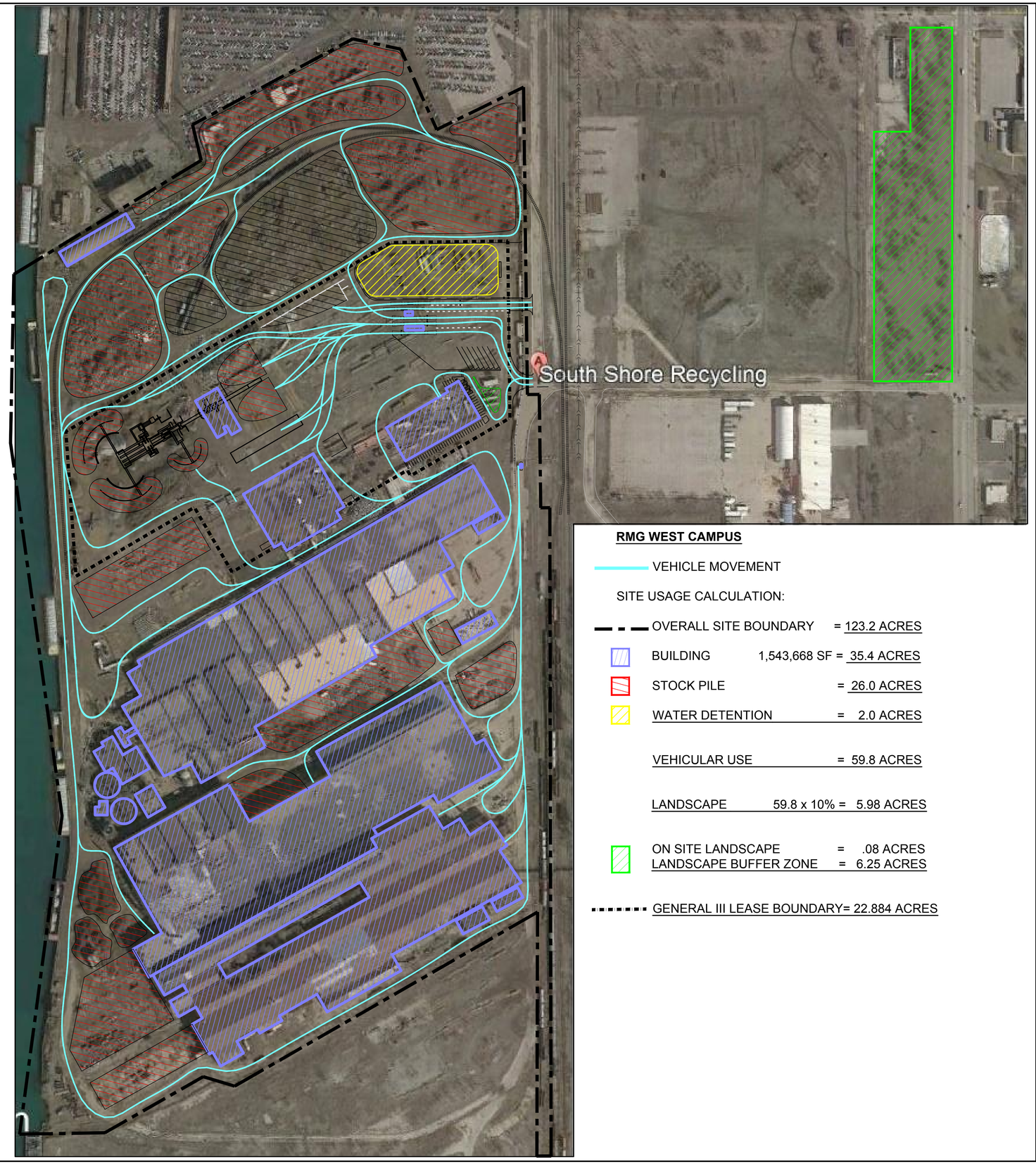

11600 South Burley Avenue
Properties owned by
South Chicago Property
Management Comany, Ltd.
Active Waterway



11600 South Burley Avenue
Entrance to Properties owned by
South Chicago Property
Management Company, Ltd
(the Zoning Lot)

HISTORIC VIEWS OF NORTH END OF THE SITE
NOTED FOR STOCK PILE LOCATION HISTORY





RMG WEST CAMPUS

VEHICLE MOVEMENT

SITE USAGE CALCULATION:

OVERALL SITE BOUNDARY = 123.2 ACRES

BUILDING 1,543,668 SF = 35.4 ACRES

STOCK PILE = 26.0 ACRES

WATER DETENTION = 2.0 ACRES

VEHICULAR USE = 59.8 ACRES

LANDSCAPE 59.8 x 10% = 5.98 ACRES

ON SITE LANDSCAPE = .08 ACRES

LANDSCAPE BUFFER ZONE = 6.25 ACRES

GENERAL III LEASE BOUNDARY= 22.884 ACRES

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
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knightea.com

PROJECT:
GENERAL III
11600 S BURLEY AVE
CHICAGO, IL 60617

XX-XX-XX ISSUE FOR REVIEW

NON-VEHICULAR ZONE

PROJECT #: 7563

DATE:

SHEET #:
K

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment B

Site Plan Delineating Location of Barge Loading

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STRUCTURE GROUP LEGEND

A - OFFICE / MAITENANCE BUILDING
- A.1 - OFFICE BUILDING
- A.2 - MAITENANCE BUILDING

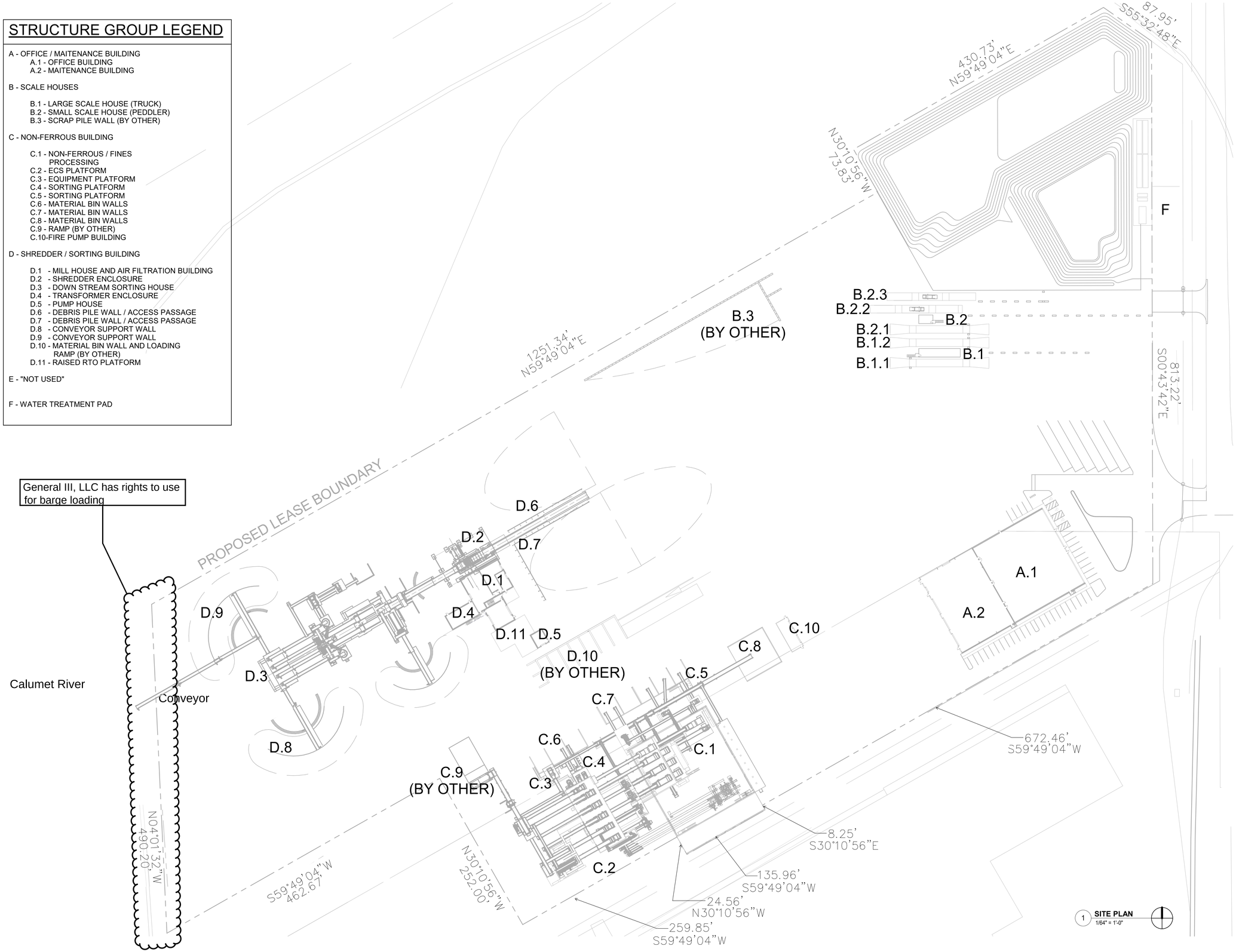
B - SCALE HOUSES
- B.1 - LARGE SCALE HOUSE (TRUCK)
- B.2 - SMALL SCALE HOUSE (PEDDLER)
- B.3 - SCRAP PILE WALL (BY OTHER)

C - NON-FERROUS BUILDING
- C.1 - NON-FERROUS / FINES PROCESSING
- C.2 - ECS PLATFORM
- C.3 - EQUIPMENT PLATFORM
- C.4 - SORTING PLATFORM
- C.5 - SORTING PLATFORM
- C.6 - MATERIAL BIN WALLS
- C.7 - MATERIAL BIN WALLS
- C.8 - MATERIAL BIN WALLS
- C.9 - RAMP (BY OTHER)
- C.10-FIRE PUMP BUILDING

D - SHREDDER / SORTING BUILDING
- D.1 - MILL HOUSE AND AIR FILTRATION BUILDING
- D.2 - SHREDDER ENCLOSURE
- D.3 - DOWN STREAM SORTING HOUSE
- D.4 - TRANSFORMER ENCLOSURE
- D.5 - PUMP HOUSE
- D.6 - DEBRIS PILE WALL / ACCESS PASSAGE
- D.7 - DEBRIS PILE WALL / ACCESS PASSAGE
- D.8 - CONVEYOR SUPPORT WALL
- D.9 - CONVEYOR SUPPORT WALL
- D.10 - MATERIAL BIN WALL AND LOADING RAMP (BY OTHER)
- D.11 - RAISED RTO PLATFORM

E - "NOT USED"

F - WATER TREATMENT PAD



1 SITE PLAN
1/64" = 1'-0"

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 N. LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knighttea.com

PROJECT:
GENERAL III
STRUCTURE C - NON-FERROUS BUILDINGS
11554 S AVE. O
CHICAGO, IL 60617

#	DATE	ISSUE
6	10/08/2020	REISSUE FOR CONSTRUCTION
5	9/18/2020	REVISION
4	08/14/2020	REVISION
3	06/22/2020	REVISION TO PERMIT
2	04/01/2020	ISSUE FOR REVISION TO PERMIT
1	08/09/2019	ISSUED FOR PERMIT REVIEW

BUILDING SITE PLAN

PROJECT #:	DATE:
7563	07/29/19

G-1.2

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment C

Updated Site Plan with Final Pavement Layout and Pavement Maintenance Plan

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LEGEND

PAVEMENT SURFACES

- GRAVEL PAVEMENT
- 9'' CONCRETE
- 12'' CONCRETE
- 14'' CONCRETE
- ASPHALT
- POND SURFACES

GRAVEL

8,231 sf

ASPHALT

43,316.94 sf

22,022.83 sf

14,023.73 sf

asphalt in area changed to concrete

12,426.81 sf

98'-0"

50'

20'-0"

ASPHALT POND PAVEMENT SHALL BE PROVIDED ON POND OVERFLOW WIER

ASPHALT POND PAVEMENT SHALL BE PROVIDED AROUND WATER TREATMENT PAD

12" CONCRETE
4480 SQ FT

GRAVEL PAVEMENT
24,470 SQ FT

ASPHALT
187,020 SQ FT

GRAVEL PAVEMENT
105,426 SQ FT

GRAVEL PAVEMENT
2,177 SQ FT

12" CONCRETE
11,218 SQ FT

12" CONCRETE
5,880.0 SQ FT

14" CONCRETE
80,855 SQ FT

9" CONCRETE
194,094 SQ FT

12" CONCRETE
23,019 SQ FT

14" CONCRETE
22,714 SQ FT

GRAVEL PAVEMENT
75,143 SQ FT

12" CONCRETE
153,825 SQ FT

9" CONCRETE
14,082 SQ FT

STA. 25+16.0
179.0' LT

STA. 24+63.23
138.9' LT

STA. 24+63.23
139.0' LT

STA. 25+16.0
138.9' LT

STA. 23+86.75
71.9' LT

STA. 23+38.8
139.9' LT

STA. 23+86.75
14.0' RT

STA. 23+38.8
71.9' LT

STA. 23+53.87
54.0' RT

MATERIAL LAYDOWN AREA

STA. 22+38.16
14.0' RT

STA. 22+38.16
54.0' RT

STA. 21+78.16
54.0' LT

STA. 20+50.0
71.9' LT

STA. 18+35.6
139.9' LT

STA. 17+93.3
139.9' LT

STA. 16+81.9
66.2' RT

STA. 16+83.7
40.0' RT

STA. 16+83.7
41.1' LT

STA. 15+01.4
179.0' LT

STA. 15+01.4
75.0' LT

STA. 13+87.3
75.0' LT

STA. 12+57.6
75.0' LT

STA. 14+10.0
41.1' LT

STA. 14+10.0
41.1' RT

STA. 14+16.0
66.2' RT

STA. 15+93
41.1' RT

STA. 15+93
57.5' RT

STA. 16+27.9
40.0' RT

STA. 16+27.9
57.5' RT

STA. 15+72.3
226.0' RT

STA. 14+16.0
226.0' RT

STA. 16+38.7
296.4' RT

STA. 16+38.7
326.4' RT

STA. 15+72.3
400.4' RT

STA. 16+10.7
400.4' RT

STA. 16+10.7
511.9' RT

STA. 18+11.7
284.8' RT

STA. 17+72.7
296.4 RT

STA. 19+57.7
217.3' RT

STA. 19+57.7
285.4' RT

STA. 18+11.7
314.3' RT

STA. 18+11.7
363.1' RT

STA. 19+56.1
513.0' RT

STA. 17+72.7
326.4' RT

STA. 17+72.7
363.1' RT

STA. 19+56.1
534.75' RT

STA 20+56.1
534.75' RT

STA 20+56.1
513.0' RT

STA. 18+35.6
145.6' RT

STA. 18+22.6
158.1' RT

STA. 18+22.6
177.3' RT

STA. 20+50.0
145.6' RT

STA. 20+50.0
158.1' RT

STA. 19+55.9
314.4 RT

STA. 19+89.7
302.4' RT

STA. 20+87.7
302.4' RT

STA. 19+89.7
362.4' RT

STA. 20+87.7
362.4' RT

STA 20+56.2
362.4' RT

STA. 21+78.16
177.3' RT

STA. 22+90.2
354.0' RT

STA. 22+90.2
361.0' RT

STA. 22+90.2
483.6' RT

STA. 22+44.9
483.6' RT

STA. 24+61.5
302.0' RT

STA. 24+61.5
353.7' RT

STA. 25+54.8
167.5' RT

STA. 25+85.4
234.8' RT

STA. 25+85.4
302.0' RT

STA.
28+48.4
145.6' LT

IN-PLANT ROAD

116TH. ST.

DEPRESSED C&G

C&G TYPE B-6.12 BARRIER

C&G TYPE B-6.12 BARRIER

C&G TYPE B-6.12 BARRIER

PROPOSED LEASE LINE

PROPOSED LEASE LINE

CALUMET RIVER

EXISTING BUILDING N.I.C.

160'-2 1/2"

160'-2 1/2"

30.00°

L10+00

L20+00

L28

L27

L25

L24

L23

L22

L21

L13

L12

L11

N

60 0 60 120

HORIZONTAL SCALE IN FEET

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

LUKASZ P. SLODZ
062-068653
LICENSED PROFESSIONAL ENGINEER
OF
ILLINOIS
04-01-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

SITE GEOMETRY
PAVEMENT PLAN

PROJECT #:	DATE:
7563	04-01-2020

C-1.5

SITE GENERAL CONTRACTORS
ASPHALT PAVING MIXTURES
PAVING CONTRACTORS

18100 South Indiana Avenue
Thornton, IL 60476-1299
708.877.7160 ♦ Fax: 708.877.5222
www.gallagherasphalt.com

July 27, 2020

The George Sollitt Construction Co.
Michael J. Polacheck
790 N. Central Avenue
Wood Dale, IL. 60191

RE: General Iron – Aggregate Base Course

Mr. Polacheck,

Gallagher Asphalt is submitting the following aggregate base course material and gradations for General Iron in Chicago, IL.

- Phoenix Services – CM6 - 111-CM06

Any questions or concerns please let me know. Thank you.

Best Regards,

Jon Gallagher
Gallagher Asphalt

Illinois Department of Transportation
Office of Highways Project Implementation / Bureau of Materials
2300 South Dirksen Parkway / Springfield, Illinois 62764

April 27, 2020

Harry Ruwersma
Quality Control Technician
Phoenix Services LLC
1190 E. Loop Rd
Portage, IN 46308

The District has reviewed the Master Band request for the Phoenix Services location in East Chicago, IN. The master band and target specific gravity are approved as follows:

Phoenix Services Harbor West (#52103-23)

Coarse Aggregate Master Bands

	1 1/2"	1	1/2"	#4	#16	#200
053CM06	100	87-97	55-85	45-71	17-47	4-12

This letter should be presented to anyone requesting proof of IDOT accepted AGCS Master Bands.

If you have any questions or need additional information, please contact Mr. Tyree Dean, District Aggregate Supervisor, at (847) 705-4453

Very truly yours,

Anthony J. Quigley, P.E.
Region One Engineer

By:
Stephen Jones, P.E.
Mixture Control Engineer

PHOENIX SERVICES LLC

Quality Test Report

Plant 2478-IHW (Main & Chip)
Product 111-CM06
Specification CM-6

502974309

Sample Information

Sample No 502974309
Date Sampled 03/11/2020 08:50
Sampled By Harry Ruwersma
Type Shipping
Method Stockpile

Split Sample ☐
Resample ☐

Test Note
West lot South face(11-37 piles)

Gradation Results

Date Completed 03/11/2020 14:06
Tested By Harry Ruwersma

Unit	Moist Mass	Dry Mass	Wash Mass	Moisture %	Wash Loss %	Procedure
g	5609.40	5184.60	4948.20	8.2	4.6	

Sieve	Mass Retained	Cum Mass Retained	Ind % Retained	% Retained	% Passing	Target	Specification	Comment
1 1/2" (37.5mm)	0.00	0.00	0.0	0.0	100.0			
1" (25mm)	561.80	561.80	10.8	10.8	89.2		88-98	
3/4" (19mm)	572.90	1134.70	11.1	21.9	78.1			
5/8" (16mm)	301.10	1435.80	5.8	27.7	72.3			
1/2" (12.5mm)	570.60	2006.40	11.0	38.7	61.3		58-88	
3/8" (9.5mm)	331.30	2337.70	6.4	45.1	54.9			
1/4" (6.3mm)	55.90	2393.60	1.1	46.2	53.8			
#4 (4.75mm)	75.60	2469.20	1.5	47.6	52.4		47-73	
#8 (2.36mm)	565.70	3034.90	10.9	58.5	41.5			
#16 (1.18mm)	626.70	3661.60	12.1	70.6	29.4		17-47	
#30 (0.6mm)	481.10	4142.70	9.3	79.9	20.1			
#50 (0.3mm)	351.40	4494.10	6.8	86.7	13.3			
#100 (0.15mm)	243.40	4737.50	4.7	91.4	8.6			
#200 (75µm)	163.50	4901.00	3.15	94.53	5.47		4-12	
Pan	43.30	4944.30	5.47	100.00	0.00			

Pavement Maintenance Plan

Visual pavement inspections will be conducted on a quarterly basis by the Plant Manager (PM), or other qualified personnel, as designated by the PM. The purpose of this Plan is to ensure the integrity of paved surfaces so that storm water does not travel off-site and so standing water does not occur.

The PM (if not performing the inspection) will be notified if an inspection reveals that any paved areas may be in need for repair. Potential deficiencies will be monitored. Routine repairs (i.e. potholes) will be scheduled as soon as possible, or deferred to a regular cyclic repair schedule, as appropriate.

In accordance with the Fugitive Particulate Operating Program for the Facility, sweeping of the most frequently traveled routes with a street sweeper will occur at least once per day when the Facility is operating, subject to weather conditions. Sweeping of less frequently traveled routes will occur at a frequency required to mitigate visible emissions. Operation of the sweeper will be documented in a sweeper log.

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment D

ComEd E-mail and Transformer Load Capability Reports

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Kevin Trant

Subject: FW: [EXTERNAL]Re: General Iron - ComEd
Attachments: ESS Z715 TR3 Thermal Rating Report.doc; ESS Z715 TR2 Thermal Rating Report].doc

From: Sandoval, Angeles:(ComEd) <Angeles.Sandoval@exeloncorp.com>
Sent: Friday, October 11, 2019 8:52 AM
To: Pelkey, Jeffrey <jpelkey@knightea.com>; Bloxsom, Bryce <bbloxsom@mchughconstruction.com>
Cc: Tapas, Chris <ctapas@mchughconstruction.com>; Bedwell, Jeff <jbedwell@knightea.com>; Wiley, Steve <swiley@mchughconstruction.com>; Davis, Bruce:(ComEd) <Bruce.Davis@ComEd.com>; Kirk, Steven J:(ComEd) <Steven.Kirk3@ComEd.com>; Wilk, Stanley A:(ComEd) <Stanley.Wilk@ComEd.com>; Stephenson, Peter <pstephenson@knightea.com>; Ayyad, Ahmed:(ComEd) <Ahmed.Ayyad@ComEd.com>; Westendorf, Alex M:(ComEd) <Alex.Westendorf@exeloncorp.com>
Subject: RE: [EXTERNAL]Re: General Iron - ComEd requests

Good Morning Jeff –

Per our conversation earlier in the week, I am sending you the report conducted by our Capacity Plan team on the points of service that serve 11600 S Burley Ave. Per our group TR3 can support 22.4 MVA normal and TR2 can handle 16.7 MVA Normal. As inspected both Z-715 transformers are currently in good health.

I believe this is the most urgent information that is needed regarding the sites ability to handle the anticipated load. If there is additional information needed, please let me know and I will assist in coordinating with our internal groups at ComEd.

Angie Sandoval | **Large Customer Services** - **Chicago North**
ComEd | Cell: 312-618-7890| angeles.sandoval@comed.com
Visit ComEd.com **Follow ComEd on Twitter** **Like us on Facebook**

Note: The references to TR2 and TR3 are the transformers that are housed in the 122nd Street switchyard substation.

T & S EQUIPMENT STANDARDS & FP ENGINEERING
LOAD CAPABILITY REPORT
ON

ESS Z715 REPUBLIC STEEL
Transformer #2

Wagner S/N: 9X1308
10/13.3/16.7 MVA (55ºC) 3Φ OA/FA/FA
132 – 13.2 GRD.Y

1. MVA load capabilities are given for balanced loads at 13200 Volts. The Ampere capability applies for voltages no greater than 13500 volts.

PEAK LOAD CAPABILITIES								
	Summer (May 1 – Oct 15)				Winter (October 16 – Apr 30)			
	Normal		Emergency		Normal		Emergency	
	Sec Amps	MVA Out	Sec Amps	MVA Out	Sec Amps	MVA Out	Sec Amps	MVA Out
TR #2	731	16.7	910	20.8	731	16.7	1081	24.7

Notes:

No T67-59 testing report was available. Without this report to verify values, all calculations were based on 55ºC rise.

Based on effective peak load duration as follows:

Summer 24 Hrs.
Winter 24 Hrs.

Prepared by: Lonnie Grote
Date: 08/15/2018

T & S EQUIPMENT STANDARDS & FP ENGINEERING
LOAD CAPABILITY REPORT
ON

ESS Z715 REPUBLIC STEEL
Transformer #3

Westinghouse S/N: 6990619
20 MVA (55ºC) 3Φ OA
132 – 13.8Y- 12.6Y

1. MVA load capabilities are given for balanced loads at 13800 Volts.
2. When carrying loads approaching the normal and emergency ratings, transformer top-oil temperatures may approach 105°C and 110°C respectively. The Rating Group of T&D planning should be notified if it is expected that top-oil temperature will exceed 105°C.
3. The guidelines provided by EP-4035-C were used to determine the MVA load capabilities for the winter emergency ratings.

PEAK LOAD CAPABILITIES								
	Summer (May 1 – Oct 15)				Winter (October 16 – Apr 30)			
	Normal		Emergency		Normal		Emergency	
	Sec Amps	MVA Out	Sec Amps	MVA Out	Sec Amps	MVA Out	Sec Amps	MVA Out
TR #3	**937**	**22.4**	**1283**	**30.6**	**937**	**22.4**	**1380**	**33**

Notes:
- Transformer verified as an OA by John Plachta 8/7/18.

Based on effective peak load duration as follows:
Summer 24 Hrs.
Winter 24 Hrs.

Prepared by: Lonnie Grote
Date: 08/15/2018

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment E

Annual Water Usage Estimates

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Calculations of Estimated Water Usage

Assumptions (estimated)

- 150 employees at Facility
- 286 work days per year
- Employees will use approximately 100 gallons of water per day
- Shredder will operate approximately 258 days per year
- Shredder will use approximately 25,000 gallons of water per day
- Dust Bosses and Water Truck will operate approximately 237 days per year
- Dust Bosses & Water Truck will use approximately 150,000 gallons of water per day

Employee Water Usage:

150 employees/day X 100 gallons/employee X 286 days/year =

4,290,000 gallons/year

Shredder Water Usage:

258 days/year X 25,000 gallons/day =

6,450,000 gallons/year

Water Usage for Dust Bosses & Water Truck:

237 days/year X 150,000 gallons/day =

35,500,000 gallons/year

Total Estimated Water Usage

4,290,000 gallons (Employees)
6,450,000 gallons (Shredder)
35,550,000 gallons (Dust Bosses & Water Truck)
46,290,000 gallons

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment F

Water Pump Schedules

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Response #5b - Fire Pump

AQUARIUS SYSTEM DATA SHEET

Job Name.....	General Iron	Quote Number.....	4846
Location.....	Chicago, IL	Quote Date.....	4/16/12
Sprinkler Contractor..	Metropolitan Fire Protection	Order Number.	n/a
		Order Date.....	

Pump Information:

Manufacturer:	Fairbanks Morse
Pump Type:	HSC
Pump Model:	6"1824BF
Flow Rate (GPM):	1500
Design (PSI):	100
Engine Horspower:	157
Engine Speed:	1760
Engine Voltage:	120v/12v
Engine:	Clarke
Engine Model:	JU4H-ADY8

Controller Information:

Manufacturer:	Metron
Starting Type:	Diesel
Model:	FD4
Horsepower:	n/a
Voltage:	120v
Phase:	1
Cycle:	60

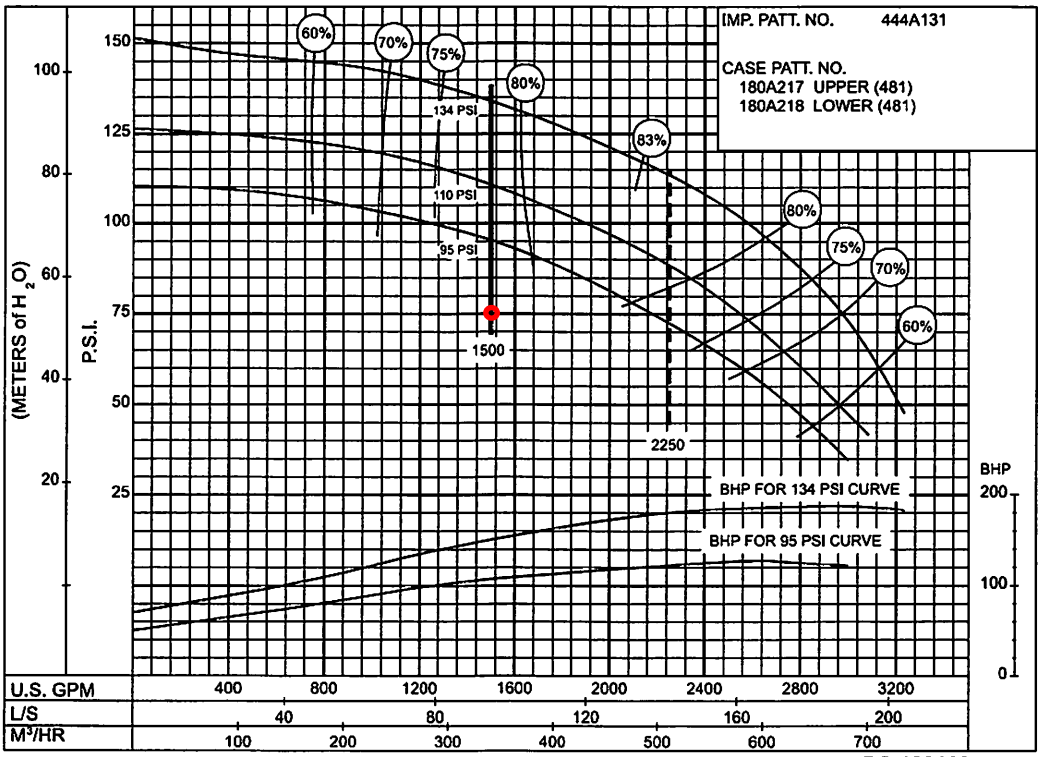
Jockey Pump Information:

Pump Model:	H10B14
Flow Rate (GPM):	10
Design (PSI):	125
Horsepower:	1.5
Voltage:	208
Phase:	3
Cycle:	60

Jockey Pump Controller Information:

Model:	M15B
Horsepower:	3
Voltage:	208
Phase:	3
Cycle:	60

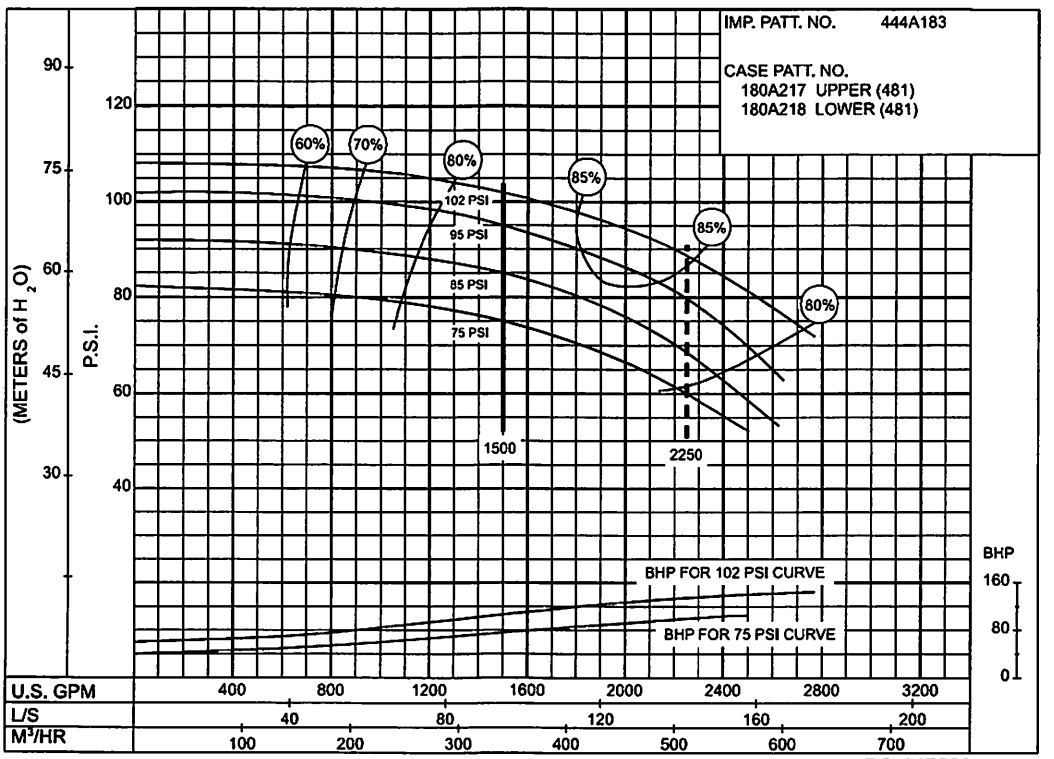
SIZE : 6"1824BF **MODEL: 1800** **IMPELLER : Enclosed** **R. P. M. : 1750**



PC-123160

95 to 134 P.S.I.

SIZE : 6"1824CF **MODEL: 1800** **IMPELLER : Enclosed** **R. P. M. : 1460**



PC-147583

75 to 102 P.S.I.

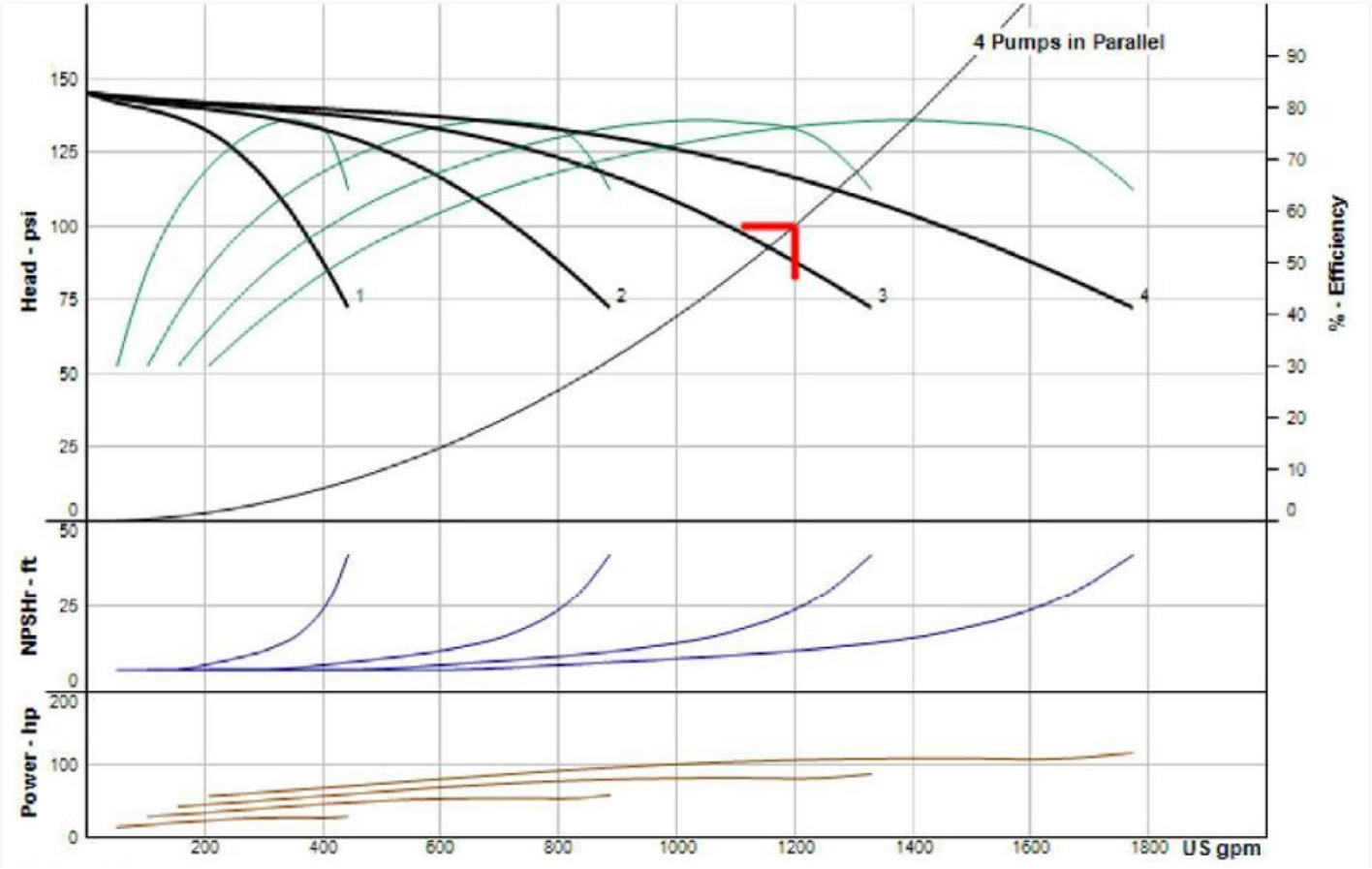
Fairbanks Morse
Pentair Water

Note: This pump curve is associated with Pump Package 3

Bell & Gossett
a xylem brand

PERFORMANCE CURVE

Quote Number: 9002-200429-022
Pump Model Number: 66SV32GN4F60
Station Model Number: V4VJF6N32E1GCK
30HP 2/60/3 TEPE 362 3STG



PLUMBING EQUIPMENT SCHEDULE

TAG	EQUIPMENT NAME	DESCRIPTION
ATP	AUTOMATIC TRAP PRIMER	PRECISION PLUMBING PRODUCTS #PR-500 "PRIME RITE", CORROSION RESISTANT BRASS BODY, "O" RING SEALS, 1/2" INLET AND OUTLET, AND INTEGRAL VACUUM BREAKER. INSTALL THE VALVE AT A MINIMUM OF 12" ABOVE FINISHED FLOOR.
TMV	THERMOSTATIC MIXING VALVE	LEONARD VALVE MODEL 170A-LF, LEAD-FREE CONSTRUCTION, INTEGRAL INLET CHECKS AND STAINLESS STEEL SCREENS. CAPABLE OF 4 GPM WITH A 45 PSI DIFFERENTIAL AND A MINIMUM FLOW RATE OF 0.25 GPM. MAXIMUM TEMPERATURE STOP SET FOR 110 DEG. F. MOUNT BELOW THE PLUMBING FIXTURE WHERE INDICATED ON PLAN(S).
WHA	WATER HAMMER ARRESTER	PRECISION PLUMBING PRODUCTS, HARD DRAWN COPPER BODY WITH WROUGHT COPPER FITTINGS, PISTON TYPE WITH LUBRICATED EPDM "O" RING SEALS, ASSE 1010 CERTIFICATION. PROVIDE PDI SIZES "A" THROUGH "F" AS SHOWN ON PLANS. PROVIDE SIZE "A" UNLESS SHOWN OTHERWISE ON PLANS.

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE NAME	DESCRIPTION	CW	HW	WASTE	VENT	COMMENTS
ESH-1	EMERGENCY COMBINATION SHOWER	STINGRAY SYSTEMS TEPID TO THE CORE COMBINATION SHOWER MODEL T5510-GA-FLT-ABAB. INTEGRATED ASSE1071 THERMOSTATIC EMERGENCY MIXING VALVE, THERMOSTATIC CONTROL AT THE FIXTURE. VERIFY FIXTURE SELECTION WITH OWNER PRIOR TO WORK.	1-1/4"	1-1/4"	1"	1"	
FCO	FLOOR CLEANOUT	JAY R. SMITH #4111L CAST IRON BODY, FLASHING FLANGE WITH CLAMPING COLLAR, ABS PLUG, AND ADJUSTABLE, ROUND SECURED, HEAVY DUTY SCORIATED NICKEL BRONZE TOP, REFER TO SPECIFICATIONS FOR INSTALLATION.	-	-	4"	-	
FD-1	FLOOR DRAIN	JAY R. SMITH #2005L (-A), CAST IRON BODY AND CLAMPING COLLAR, ADJUSTABLE 6" ROUND NICKEL BRONZE STRAINER. USE PUSH-ON JOINT OF OUTLET SIZE AS SHOWN ON PLANS.	-	-	4"	2"	
P-1							1-4
P-2							1-4
P-3							1-4
P-4							1-4

SITE PUMP SCHEDULE

TAG	* MANUFACTURER	MODEL	LOCATION	TYPE	GPM	HEAD	HP	VOLTAGE	PHASE	RPM	INLET SIZE	OUTLE TSIZE	UNIT WEIGHT (LBS)	COMMENTS
P-1	ARMSTRONG	4700 N370322S-30	-	SENSORLESS	300	100 PSIG	30	460V	3	3600	8"	-	1125	1-4
P-2	ARMSTRONG	4700 N370322S-30	-	SENSORLESS	300	100 PSIG	30	460V	3	3600	-	-	1125	1-4
P-3	ARMSTRONG	4700 N370322S-30	-	SENSORLESS	300	100 PSIG	30	460V	3	3600	-	-	1125	1-4
P-4	ARMSTRONG	4700 N370322S-30	-	SENSORLESS	300	100 PSIG	30	460V	3	3600	-	8"	1125	1-4

NOTES:
1. INTEGRAL FUSED DISCONNECT, SENSORLESS CONTROL, CONSTANT PRESSURE CONTROL
2. 90 PSI DELIVERY PRESSURE AT ANY PROCESS LOAD
3. THE DIGITAL PUMP CONTROLLER TO BE ENERGIZED AT ANY OR ALL OF THE FOUR PUMPS ON THE SKID TO MEET THE VARIABLE DEMAND
4. THE RESIDUAL PRESSURE TO BE MEASURED AND REPORTED BY THE CFD IS 37 PSI AND AVAILABLE PRESSURE AT THE RPZ ASSOCIATED WITH THE PUMP SKID AT THE SHREDDER BUILDING IS 32 PSI.

PEAK DEMAND FLOW	PEAK PRESSURE LOSSES:	PRESSURE REQUIREMENTS
1. (5) DUST BOSS X 27 GPM EACH = 135	1. SHREDDER BLDG PUMPS RPZ = 9 PSI	1. AVAILABLE RESIDUAL PRESSURE = 32 PSI (SUCTION PRESSURE)
2. (5) YARD HYDRANTS X 150 GPM EACH = 750 GPM	2. FITTINGS = 12 PSI	2. PRESSURE LOSS = 41 PSI
3. (1) SHREDDER NOZZLE SYST. X 300 GPM = 300 GPM	3. PIPING = 10 PSI	3. REQUIRED PRESSURE DELIVERY = 90 PSI
TOTAL DEMAND = 1185 GPM	4. VALVES = 10 PSI	4. PROVIDED PRESSURE DELIVERY = 91 PSI = 32 PSI AVAILABLE + 100 PSI PUMP - 41 PSI LOSS
TOTAL PROVIDED = 1200 GPM	TOTAL PEAK SYSTEM PRESSURE LOSS = 41 PSI	

* Engineer approved pump package from Bell & Gossett

PLUMBING FIXTURE UNIT SCHEDULE

FIXTURE	QUANTITY	DFU (TOTAL)	WSFU (TOTAL)
ESH-1	1	4	35
FCO	5	0	0
FD-1	6	24	0
TOTAL		28	35

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE NAME	DESCRIPTION	CW	HW	WASTE	VENT	COMMENTS
ESH-1	EMERGENCY COMBINATION SHOWER	STINGRAY SYSTEMS TEPID TO THE CORE COMBINATION SHOWER MODEL T5510-GA-FLT-ABAB. INTEGRATED ASSE1071 THERMOSTATIC EMERGENCY MIXING VALVE, THERMOSTATIC CONTROL AT THE FIXTURE. VERIFY FIXTURE SELECTION WITH OWNER PRIOR TO WORK.	1-1/4"	1-1/4"	1"	1"	
FCO	FLOOR CLEANOUT	JAY R. SMITH #4111L CAST IRON BODY, FLASHING FLANGE WITH CLAMPING COLLAR, ABS PLUG, AND ADJUSTABLE, ROUND SECURED, HEAVY DUTY SCORIATED NICKEL BRONZE TOP, REFER TO SPECIFICATIONS FOR INSTALLATION.	-	-	4"	-	
FD-1	FLOOR DRAIN	JAY R. SMITH #2005L (-A), CAST IRON BODY AND CLAMPING COLLAR, ADJUSTABLE 6" ROUND NICKEL BRONZE STRAINER. USE PUSH-ON JOINT OF OUTLET SIZE AS SHOWN ON PLANS.	-	-	4"	2"	
P-1							1-4
P-2							1-4
P-3							1-4
P-4							1-4

PLUMBING STANDARD MOUNTING HEIGHTS

ADA ACCESSIBLE DRINKING FOUNTAIN	17" FLOOR TO RIM
ADA ACCESSIBLE LAVATORIES	34" FLOOR TO RIM
ADA ACCESSIBLE SHOWER VALVES	38" MINIMUM TO 48" MAXIMUM FLOOR TO CENTERLINE
ADA ACCESSIBLE TUB VALVES	CENTER BETWEEN GRAB BAR AND TUB RIM
ADA ACCESSIBLE URINALS	17" FLOOR TO RIM
ADA ACCESSIBLE WATER CLOSET	17" TO 19" FLOOR TO TOP OF SEAT
ADA ACCESSIBLE WATER COOLER	35" FLOOR TO RIM
ADULT STANDARD DRINKING FOUNTAIN	40" FLOOR TO RIM
ADULT STANDARD WATER COOLER	30" FLOOR TO RIM
CHILD STANDARD DRINKING FOUNTAIN	30" FLOOR TO RIM
CHILD STANDARD WATER COOLER	14" FLOOR TO RIM
CHILD URINAL	14" FLOOR TO RIM
CLINIC SERVICE SINKS	30" FLOOR TO RIM
HOSE BIBBS	36" AFF TO CENTERLINE
ICE MAKER OUTLET BOXES	24" FLOOR TO CENTER OF BOX
JANITOR'S SINK FAUCET FITTINGS	42" FLOOR TO CENTERLINE
LAVATORY OR SINK	31" FLOOR TO RIM
NON FREEZE HYDRANT	18" AFG TO CENTERLINE
SHOWER HEADS	6'-0" MEN & 5'-6" WOMEN FLOOR TO CENTERLINE
SHOWER VALVES	48" MEN & 42" WOMEN FLOW TO CENTERLINE
STANDARD URINALS	22" FLOOR TO RIM
SURGEON'S SCRUB-UP SINKS	35" FLOOR TO CENTERLINE
TUB VALVES	32" FLOOR TO CENTERLINE
WASHING MACHINE OUTLET BOXES	42" FLOOR TO RIM
WATER CLOSET	15" FLOOR TO RIM

WATER HEATER SCHEDULE

TAG	MANUFACTURER	MODEL	GALLONS	INPUT	VOLTAGE	COMMENTS
WH-D.4-1	Stingray Systems	S9300	118	1500 W	120	INTEGRAL TMV

PLUMBING PIPE MATERIAL SCHEDULE

PIPING SYSTEM	ABBREVIATION	PIPING MATERIAL
COMPRESSED AIR	CA	TYPE L HARD DRAWN COPPER OR SCHEDULE 40 GALVANIZED STEEL
GARAGE DRAINAGE AND VENT (BELOW GRADE)	S, W, OR V	EXTRA-HEAVY HUB AND SPIGOT CAST IRON
NATURAL GAS (ABOVE GRADE AND ON ROOF)	G	SCHEDULE 40 BLACK STEEL
NATURAL GAS (BELOW GRADE)	G	APPROVED 'PE' PIPE FOR GAS
POTABLE WATER (ABOVE GRADE)	CW, HW, OR HWR	TYLE L HARD DRAWN COPPER
POTABLE WATER - 2" AND SMALLER (BELOW GRADE)	CW, HW, OR HWR	TYPE K SOFT ANNEALED COPPER
SANITARY DRAINAGE AND VENT (ABOVE GRADE)	S, W, OR V	HUB AND SPIGOT CAST IRON
SANITARY DRAINAGE AND VENT (BELOW GRADE)	S, W, OR V	SERVICE WEIGHT CAST IRON

NATURAL GAS EQUIPMENT SCHEDULE

TAG	LOCATION	DESCRIPTION	INPUT (MBH)	CONNECTION SIZE	MINIMUM GAS PRESSURE	HOURS OF OPERATION
MUA-D.1-1	SHREDDER ROOF	DIRECT GAS FIRED MAKEUP AIR UNIT	1985	1"	12.5" W.C TO 5 PSI	24
MUA-D.3-1	SORTING HOUSE ROOF	BLOWER	275	3/4"	8"-14" W.C.	24
TOTAL			2260			

TOTAL GAS DEMAND OF 2,260 MBH. PROVIDE XX" GAS PIPING (10 PSI).
VERIFY GAS PRESSURE REQUIREMENTS WITH MANUFACTURER RECOMMENDATIONS.

PLUMBING ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT
CO	CLEANOUT
CPVC	CHLORINATED POLYVINYL CHLORIDE
CW	COLD WATER
DFU	DRAINAGE FIXTURE UNIT
DN	DOWN
DS	DOWN SPOUT
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FF	FINISHED FLOOR
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FFD	FUNNEL FLOOR DRAIN
FL	FLOW LINE
FLA	FULL LOAD AMPS
FLR	FLOOR
GPM	GALLONS PER MINUTE
HD	HUB DRAIN
HW	HOT WATER
IE	INVERT ELEVATION
IN WC	INCHES OF WATER COLUMN
kW	KILOWATT
MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MH	MANHOLE
MIN	MINIMUM
MUA	MAKEUP AIR UNIT
N/C	NORMALLY CLOSED
N/O	NORMALLY OPEN
ORD	OVERFLOW ROOF DRAIN
PDI	PLUMBING DRAINAGE INSTITUTE
PDW	PROCESS DOMESTIC WATER
PRV	PRESSURE REDUCING VALVE
PVC	POLYVINYL CHLORIDE
RD	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
S	SANITARY WASTE
SD	STORM DRAINAGE
SF	SQUARE FEET
SP	SUMP PUMP
SS	STAINLESS STEEL
ST	STORM
TB	TRIPLE BASIN
TDH	TOTAL DYNAMIC HEAD
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
V	VENT PIPING
VCP	VITRIFIED CLAY PIPE
VS	VENT STACK
VTR	VENT THROUGH ROOF
W	WASTE
W/	WITH
W/O	WITHOUT
WC	WATER COLUMN
WCO	WALL CLEANOUT
WS	WASTE STACK
WSFU	WATER SUPPLY FIXTURE UNIT

KNIGHT
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PROJECT:
GENERAL III, LLC
STRUCTURE D - SHREDDER BUILDING
11551 S. AVENUE O
CHICAGO, IL., 60617

#	DATE	ISSUE
5	01/05/2020	CDPH UPDATE
4	10/08/2020	RE-ISSUE FOR CONSTRUCTION
3	08/07/2020	ISSUE FOR PERMIT REVISION
2	01/06/2020	ISSUE FOR BID
1	09/27/2019	ISSUE FOR PERMIT REVIEW

PLUMBING SCHEDULES, SYMBOLS, AND ABBREVIATIONS

PROJECT #: 7563.01
DATE: 07/24/19

P-0.2

RK & Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment G

Specifications of Equipment Identified in CDPH APC Permit and IEPA Construction Permit

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# of Items	Equipment Description	Manufacturer	Model #	Equipment Additional Description	Dimensions/ Capacity	Location at Facility	Corresponding IEPA System
1	652 - SHREDDER	Riverside Engineering	M-122			Ferrous	Hammermill Shredder System: Hammermill Shredder with Integral Water Injection System equipped with capture hood
1	033 - FILTER, SIMPLE	Pedcon/APC Technologies	518 UHF			Ferrous	Hammermill Shredder System: Roll-Media Filter
1	031 - CYCLONE, HIGH EFFICIENCY	Pedcon/APC Technologies				Ferrous	Hammermill Shredder System: Cyclone
1	006 - AFTER BURNER, THERMAL	Catalytic Products International	Triton 80.95			Ferrous	Hammermill Shredder System: Regenerative Thermal Oxidizer
1	042 - SCRUBBER, WET	Jardar Systems, Inc.	PT-080			Ferrous	Hammermill Shredder System: Quench/Packed Tower Scrubber
1	516 - SORTERS	Wendt Corporation		Poker Picker		Ferrous	Ferrous Material Separation System: Not Included in IEPA Permit

# of Items	*Equipment Description*	*Manufacturer*	*Model #*	*Equipment Additional Description*	*Dimensions/ Capacity*	*Location at Facility*	*Corresponding IEPA System*
3	516 - SORTERS	Steinert	MTE180280QP	Magnets	72 x 110	Ferrous	Ferrous Material Separation System: 1, 2 & 3 of 7 Magnetic Separators
1	516 - SORTERS	Steinert	MTE180240Q	Magnets	72 x 96	Ferrous	Ferrous Material Separation System: 4 of 7 Magnetic Separators
2	516 - SORTERS	Steinert	MTE150240Q	Magnets	60 x 96	Ferrous	Ferrous Material Separation System: 5 & 6 of 7 Magnetic Separators
2	582 - AIR SEPARATORS	Wendt Corporation		Z-Box separators with cyclones	72	Ferrous	Ferrous Material Separation System: 2 Z-Box Separators with Cyclones
1	516 - SORTERS	Sterns		Dual Magnet	48 x 60	Ferrous	Ferrous Material Separation System: 7 of 7 Magnetic Separators
1	582 - AIR SEPARATORS	US Conveyor		Air Separator	60	Ferrous	Ferrous Material Separation System: Not Included in IEPA Permit

# of Items	Equipment Description	Manufacturer	Model #	Equipment Additional Description	Dimensions/ Capacity	Location at Facility	Corresponding IEPA System
1	703 - CONVEYOR, OTHER	GK	Oscillating Feeder	Product Feeder (UMO)		Ferrous	Hammermill Shredder System: Vibratory Conveyor
1	703 - CONVEYOR, OTHER	General Kinematics	40 yard Batch Feeder	Vibratory Feeder	120 x 36 feet	Nonferrous	Nonferrous Material Separation System: 1 ASR Feed Hopper with Vibratory Batch Feeder
1	516 - SORTERS	Eriez	SE-7625-SC-2	Crossbelt Magnet		Nonferrous	Nonferrous Material Separation System: 1 of 10 Magnetic Separators (IEPA Permit lists 20 Magnetic Separator transfer points, not actual magnetic separators)
1	580 - SCREEN, OTHER	AEI	EcoStar 1600 x 6	Screener		Nonferrous	Nonferrous Material Separation System: 1 of 1 AEI Ecostar Screeners (IEPA Permit lists 6 AEI Ecostar screener transfer points, not actual screeners)
2	580 - SCREEN, OTHER	AEI	Bivi Tech 3000 x 8	Screener		Nonferrous	Nonferrous Material Separation System: 2 of 2 Tec Screeners (IEPA Permit lists 6 Tec screener transfer points, not actual screeners)

# of Items	Equipment Description	Manufacturer	Model #	Equipment Additional Description	Dimensions/ Capacity	Location at Facility	Corresponding IEPA System
5	516 - SORTERS	Steinert	80 MRB 200MT40BR30	Magnetic Separator		Nonferrous	Nonferrous Material Separation System: 2, 3, 4, 5 & 6 of 10 Magnetic Separators (IEPA Permit lists 20 Magnetic Separator transfer points, not actual magnetic separators)
5	516 - SORTERS	Steinert	4T(2); 6119(2); 5009	80 in ECS Nonferrous Separator		Nonferrous	Nonferrous Material Separation System: 1, 2, 3, 4 & 5 of 9 Eddy Current Separators (IEPA Permit lists 14 Eddy Current Separator transfer points, not actual Eddy Current Separators)
3	516 - SORTERS	Steinert	5009(2); 4T(1)	60 in Nonferrous Separator		Nonferrous	Nonferrous Material Separation System: 6, 7 & 8 of 9 Eddy Current Separators (IEPA Permit lists 14 Eddy Current Separator transfer points, not actual Eddy Current Separators)
1	516 - SORTERS	Steinert	60 in MOR 165 MT 40	Magnetic Separator		Nonferrous	Nonferrous Material Separation System: 7 of 10 Magnetic Separators (IEPA Permit lists 20 Magnetic Separator transfer points, not actual magnetic separators)

# of Items	*Equipment Description*	*Manufacturer*	*Model #*	*Equipment Additional Description*	*Dimensions/ Capacity*	*Location at Facility*	*Corresponding IEPA System*
1	516 - SORTERS	SGM	40 in HFECS TVIS-A40	40 in ECS Nonferrous Separator		Nonferrous	Nonferrous Material Separation System: 9 of 9 Eddy Current Separators (IEPA Permit lists 14 Eddy Current Separator transfer points, not actual Eddy Current Separators)
1	582 - AIR SEPARATORS	Joest	700mm x 350mm	Air Sifter with Cyclone		Nonferrous	Nonferrous Material Separation System: 1 of 4 Wind Sifters (IEPA Permit lists 6 Wind Sifter transfer points, not actual Wind Sifters)
3	516 - SORTERS	Dings	CHI-15-06-8	Crossbelt Magnet		Nonferrous	Nonferrous Material Separation System: 8, 9 & 10 of 10 Magnetic Separators
3	582 - AIR SEPARATORS	Joest	2m x 250mm	Air Sifter with Cyclone		Nonferrous	Nonferrous Material Separation System: 2, 3 & 4 of 4 Wind Sifters (IEPA Permit lists 6 Wind Sifter transfer points, not actual Wind Sifters)
6	516 - SORTERS	Tomra	Finder 2400	Induction Sensor Sorter (Finders)		Nonferrous	Nonferrous Material Separation System: Not included in IEPA Permit

# of Items	*Equipment Description*	*Manufacturer*	*Model #*	*Equipment Additional Description*	*Dimensions/ Capacity*	*Location at Facility*	*Corresponding IEPA System*
2	516 - SORTERS	Steinert	80 in ISS	Induction Sensor Sorter (ISS)		Nonferrous	Nonferrous Material Separation System: Not included in IEPA Permit
5	582 - AIR SEPARATORS	US Conveyor	60 in Polisher	Air Sifter		Nonferrous	Nonferrous Material Separation System: 5 Polishers
1	652 - SHREDDER	SSI	Q55	Quad Shredder		Nonferrous	Nonferrous Material Separation System: Low Speed Shredder for Size Reduction of Clean Non-Ferrous Material
1	582 - AIR SEPARATORS	Joest	Air Vibe	Air Separator with Cyclone		Nonferrous	Nonferrous Material Separation System: Air Vibe with Cyclone
9	516 - SORTERS	Midwestern	60 in Circle Shaker	Vibratory Separator		Nonferrous	Nonferrous Material Separation System: Equipment located in Fines Processing Building with All Equipment Controlled by Dust Collector
1	516 - SORTERS	Midwestern	36 in Circle Shaker	Vibratory Separator (Feeding)		Nonferrous	Nonferrous Material Separation System: Equipment located in Fines Processing Building with All Equipment Controlled by Dust Collector

# of Items	Equipment Description	Manufacturer	Model #	Equipment Additional Description	Dimensions/ Capacity	Location at Facility	Corresponding IEPA System
6	703 - CONVEYOR, OTHER	Eriez		Vibratory Batch Feeder		Nonferrous	Nonferrous Material Separation System: Equipment located in Fines Processing Building with All Equipment Controlled by Dust Collector
11	516 - SORTERS	Triple S	S22 Stoner	Nonferrous Separation (Density Table)		Nonferrous	Nonferrous Material Separation System: Equipment located in Fines Processing Building with All Equipment Controlled by Dust Collector
3	703 - CONVEYOR, OTHER	GK	90 x 84 Feeder	Vibratory Feeder		Nonferrous	Nonferrous Material Separation System: Vibratory Feeder
2	703 - CONVEYOR, OTHER	GK	53 x 84	Vibratory Feeder		Nonferrous	Nonferrous Material Separation System: 1 of 2 Vibratory Batch Feeders (other Vibratory Batch Feeder located in Fines Processing Building with All Equipment
1	703 - CONVEYOR, OTHER	BPS		40 in Vibratory Feeder		Nonferrous	Nonferrous Material Separation System: Equipment located in Fines Processing Building with All Equipment Controlled by Dust Collector
2	709 - BUCKET ELEVATORS	Universal		Elevator		Nonferrous	Nonferrous Material Separation System: Equipment located in Fines Processing Building with All Equipment Controlled by Dust Collector

# of Items	Equipment Description	Manufacturer	Model #	Equipment Additional Description	Dimensions/ Capacity	Location at Facility	Corresponding IEPA System
4	035 - BAGHOUSE, REVERSE JET	Camfil		12,000 CFM Baghouse		Nonferrous	Nonferrous Material Separation System: Not included in IEPA Permit because Dust Collector exhaust will be directed back into Fines Building
1	035 - BAGHOUSE, REVERSE JET	Camfil		3,000 CFM Baghouse		Nonferrous	Nonferrous Material Separation System: Dust Collector DC-01
2	703 - CONVEYOR, OTHER	Joest	76 x 84	Vibratory Feeder		Nonferrous	Nonferrous Material Separation System: Not included in IEPA Permit
1	703 - CONVEYOR, OTHER	Hustler		Shredder Infeed Conveyor		Ferrous	Hammermill Shredder System: Shredder Infeed Conveyor
3	700 - AREA, GENERAL CONVEYING	Wendt		Ferrous Conveyor System		Ferrous	Ferrous Material Separation System: 2 Ferrous Metal Stacking Conveyors & 1 Auto Shredder Residue Stacking Conveyor
62	700 - AREA, GENERAL CONVEYING	Wendt		Nonferrous Conveyor System		Nonferrous	Nonferrous Material Separation System: 53 Conveyors as part of 88 Uncontrolled Transfer Points and 9 conveyors as part of 11 Controlled Transfer Points

# of Items	Equipment Description	Manufacturer	Model #	Equipment Additional Description	Dimensions/ Capacity	Location at Facility	Corresponding IEPA System
1	703 - CONVEYOR, OTHER	JM Conveyor/Riverside Engineering		Barge Loading Conveyor System		Ferrous	Ferrous Material Separation System: Not Included in IEPA Permit
1	804 - AREA, MATERIAL PROCESSING	Wendt		Fines Processing Building			Nonferrous Material Separation System: Fines Processing Building with All Equipment in Building Controlled by Dust Collector DC-01
2	748 - BULK STORAGE PILE	N/A		Poker Picker Stockpiles			Ferrous Material Separation System: 2 Poker Picker Stockpiles as part of 7 material stockpiles
2	745 - RAILROAD/BARGE LOAD/UNLOAD	N/A		Truck/Rail Loading Areas			Ferrous Material Separation System: 2 Truck/Rail Loading Areas
1	152- BARGE LOADING/UNLOADING	N/A		Barge Loading Area			Ferrous Material Separation System: 1 Barge Loading Point
2	748 - BULK STORAGE PILE	N/A		Ferrous Metal Stockpiles			Ferrous Material Separation System: 2 Ferrous Metal Stockpiles as part of 7 material stockpiles

# of Items	Equipment Description	Manufacturer	Model #	Equipment Additional Description	Dimensions/ Capacity	Location at Facility	Corresponding IEPA System
1	748 - BULK STORAGE PILE	N/A		ASR Stockpile			Ferrous Material Separation System: 1 ASR Stockpile as part of 7 material stockpiles
1	748 - BULK STORAGE PILE	N/A		Raw Material Stockpile			Ferrous Material Separation System: 1 Raw Material Stockpile as part of 7 material stockpiles
1	756 - AREA, STORAGE BIN	N/A		Fluff Stockpile			Ferrous Material Separation System: 1 Fluff Stockpile as part of 7 material stockpiles
13	899 - AREA, MISCELLANEOUS	N/A		Stockpile Loading Points			Nonferrous Material Separation System: 13 Stockpile Loading Points
1	899 - AREA, MISCELLANEOUS	N/A		Raw Material Unloading/Handling			Miscellaneous Fugitive Sources: Raw Material Unloading/Handling
1	748 - BULK STORAGE PILE	N/A		Intermediate Ferrous Material and Product Stockpiles			Miscellaneous Fugitive Sources: Intermediate Ferrous Material and Product Stockpiles

# of Items	Equipment Description	Manufacturer	Model #	Equipment Additional Description	Dimensions/ Capacity	Location at Facility	Corresponding IEPA System
1	899 - AREA, MISCELLANEOUS	N/A		Fluff Storage and Loadout			Miscellaneous Fugitive Sources: Fluff Storage and Loadout
1	712 - AREA, TRUCKING	N/A		Roadways			Miscellaneous Fugitive Sources: Roadways - Paved and Unpaved
1	899 - AREA, MISCELLANEOUS	N/A		Parking Areas			Miscellaneous Fugitive Sources: Parking Areas

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Addendum 1 – Attachment H

Equipment Operation and Maintenance Plans

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Shredder System O&M

Inspect infeed conveyor for loose, worn and damaged flight pads. Repair or replace as needed. Repairs may involve welding.

Inspect hydraulic hoses associated with the mill for damage. Replace as needed.

Inspect wear parts inside mill for wear or damage. Repair or replace as needed. Repairs may involve welding.

Inspect liner bolts for tightness. Tighten as needed.

Inspect mill housing for wear. Filet weld as needed.

Inspect downstream conveyor belts for wear, damage and tracking. Replace worn conveyor belts as needed. Repair damaged belting. Adjust the tracking of the conveyors as needed. Inspect head pulleys and tail pulleys for wear and damage. Repair or replace as needed.

Inspect transition chutes for wear. Repair or replace as needed. Involves welding.

Inspect magnets for wear or damage. Repair or replace as needed. May involve welding.

Inspect cyclones for wear. Repair as needed. May involve welding.

Inspect all motors and gearboxes on conveyors, magnets and cyclones for wear or damage. Repair or replace as needed. Top off oil in gearboxes as needed.

Inspect hydraulic power units for leaks. Tighten loose fittings and hoses as needed.

Inspect and test radiation detectors and infeed conveyor and shredder downstream.

Inspect air filtration equipment for wear or damage. Repair or replace wear parts as needed.

The above maintenance measures occur at varying frequencies depending upon the task. Some take place daily while others occur less frequently.

Non-Ferrous Plant O & M

Inspect feed hopper for wear or damage. Repair as needed. May involve welding.

Inspect vibratory screening equipment for wear or damage. Repair or replace as needed.

Inspect induction-sorting equipment for wear or damage. Repair or replace as needed.

Inspect electro-magnetic sensing equipment for wear or damage. Repair or replace as needed.

Inspect size reduction equipment for wear or damage. Repair or replace as needed.

Inspect conveyor belts for wear, damage and tracking. Replace worn conveyor belts as needed. Repair damaged belting. Adjust the tracking of the conveyors, as needed. Inspect head pulleys and tail pulleys for wear and damage. Repair or replace as needed.

Inspect transition chutes for wear. Repair or replace as needed. Involves welding.

Inspect cyclones for wear. Repair as needed. May involve welding.

Inspect all motors and gearboxes on conveyors, magnets and cyclones for wear or damage. Repair or replace as needed. Top off oil in gearboxes as needed.

Inspect air compressors and desiccant driers for leaks. Repair or replace parts as needed.

Inspect pollution control equipment for wear or damage. Repair or replace as needed.

The above maintenance measures occur at varying frequencies depending upon the task. Some take place daily while others occur less frequently.

Catalytic Products
INTERNATIONAL

OPERATION AND MAINTENANCE MANUAL

TRITON-80.95
REGENERATIVE THERMAL OXIDIZER

General Iron
Chicago, IL.

Customer PO # 48330
Contact: Kevin Trant
Ph: 773-332-8583

CPI # 18/10089

980 Ensell Road Lake Zurich, Illinois 60047 tel: 847-438-0334 fax: 847-438-0944
e-mail: info@cpilink.com website: www.cpilink.com

Catalytic Products INTERNATIONAL

When operated, monitored, and maintained correctly, this Regenerative Thermal Oxidizer will provide years of carefree service.

All personnel involved with this system should be thoroughly briefed with its operation and maintenance to insure uninterrupted operation, and the safety of all concerned.

Any difficulties, questions, or requests for information regarding this unit should be directed to our Technical Services Department:

phone: 847-438-0334
fax: 847-438-0944
e-mail: service@cpilink.com

Thank you for allowing us to be of service to you.

_____

Patrick Sullivan
Project Manager

All products of the Company are sold and all services of the Company are offered, subject to the Company's Terms and Conditions of Sale, copies of which will be furnished upon formal request.

Catalytic Products INTERNATIONAL

Table of Contents

1.1 Advisory and Cautionary Statements

This Instruction Manual uses five levels of advisory and cautionary statements, described below. These statements alert personnel to special information, correct operating and maintenance procedures, and safety precautions.

In addition, CPI recommends tags with cautionary statements are clearly posted on the equipment where applicable. These tags are to be securely attached and legible.

Advisory Statements

There are two levels of advisory statements: **IMPORTANT** and **NOTE.**

IMPORTANT: *A specific advisory statement or procedure to prevent damage to the equipment.*

NOTE: *A general advisory statement affecting the equipment operation and maintenance procedures.*

Cautionary Statements

There are three levels of cautionary statements: **DANGER, WARNING**, and **CAUTION**. Cautionary statements use international safety alert symbols.

DANGER

Indicates a hazard that will cause personal injury or death if the danger is ignored.

WARNING

Indicates a hazard that can cause personal injury or death if the warning is ignored.

CAUTION

Indicates a hazard that will or can cause minor personal injury or property damage if the caution is ignored.

1.2 Safety Program

CPI recommends that the owners and operators of the oxidizer establish an effective safety program.

The safety program should incorporate the safety information in this manual, company safety standards, and all applicable federal, State, and local laws and regulations.

Requirements, precautions and hazards related to the operation of the oxidizer must be fully understood by all personnel.

Failure to observe safety rules and precautions can cause death, injury, or damage to the equipment.

1.3 Acceptable Work Areas

For maintenance purposes, all areas of the oxidizer must be accessible. Observe the following restrictions and warnings when operating and maintaining the oxidizer.

1. Install temporary handrails when working on top of the oxidizer.

2. Before performing any maintenance, the oxidizer must be locked out and tagged out. Refer to the lockout / tagout procedure in Section 1.7.

The interior of the oxidizer is a confined space. The customer must develop confined space entry procedures to permit safe oxidizer entry before allowing personnel into the oxidizer

1.4 Equipment Safety Features

The following safety devices are based on the recommended practices of the Factory Mutual or Industrial Risk Insurers Insurance Companies and the National Fire Protection Association.

1. Access doors provide access to the interior.

2. The purge timer interrupts the oxidizer start-up sequence until four or more complete air changes occur. This eliminates any pockets of volatile fumes before the burner is enabled.

3. Interlocks are a series of hard-wired safety checks of motor contacts and pressure switches that collectively serve as a burner enable.

4. The flame safeguard unit checks for a pilot flame and enables the main gas supply.

5. A flame out or manual disabling of the burner automatically shuts the main gas blocking valves to the gas burner.

6. The high temperature limit controller shuts down the burner if the setpoint temperature is exceeded. Reset the controller using the operator interface.

1.5 Safety Precautions

The following safety precautions are classified as either immediate hazards or potential hazards.

Immediate Hazards

1. Faulty electrical wiring can cause electrical shock or death. Electrical components must be repaired immediately by qualified personnel.

2. The oxidizer interiors must be ventilated and checked for acceptable O_2 levels before entering the oxidizer for inspections or maintenance. In addition, moving equipment must be lock and tagged out and all process connections are to be secured close or blinded. Refer to section 1.2, 1.3 and 1.7

3. Guards, covers, boxes, or protective equipment must be installed and fastened before the equipment is operated. Serious injury or equipment damage could result from contact with exposed or moving components.

4. Do not bypass or shorten the purge cycle. The purge timer must remain at the factory setting to prevent a potential burner fuel pocket explosion, which can cause serious injury or equipment damage.

5. Repair all burner fuel train leaks immediately. Fuel leaks can cause a hazardous explosive condition or asphyxiation.

Potential Hazards

1. Close the electrical enclosure doors before enabling the main oxidizer disconnect switch. Defective wiring or a sudden component failure can cause an electrical explosion capable of injury.

2. Do not turn off the main disconnect switch except when performing maintenance. The oxidizer's safety systems require continuous electrical power to operate properly.

3. Do not bypass, modify, or change settings of oxidizer safety devices. Safety devices protect operators from injury and equipment from damage.

4. Use care when working around the outside of a hot oxidizer. High air temperatures cause heat retention after oxidizer shutdown. Wear gloves when working around any hot equipment surfaces.

5. Avoid working on the inside of the oxidizer while it is hot. Allow the oxidizer to cool before performing maintenance.

6. Wear gloves while cleaning any areas of the oxidizer. This protects hands from cuts, scrapes, and solvents.

7. On a weekly basis, check the burner fuel train, blocking valves, pilot fuel solenoid valves, and process block valve for leakage or sticking. Faulty or leaking valves could allow fuel flow into the oxidizer or work area when shutdown. Fuel leaks are an explosion hazard and should be repaired immediately.

8. Wear safety glasses to protect eyes from flying debris when working near operating air moving equipment.

9. Wear hearing protection when working in areas where loud noise can cause hearing damage.

1.6 Fire Fighting Information

Any fires that occur within the oxidizer and its related equipment should not be extinguished with water. These fires would most likely be caused by either a build-up of flammable substances or a faulty electrical circuit. The proper fire fighting equipment must be available and operators must be trained in the use of the fire-fighting equipment.

1.7 Lockout / Tagout

WARNING

The lockout / tagout procedure must be followed completely before servicing the oxidizer. Personnel must not attempt to energize, start, or use the oxidizer when it is locked out / tagged out. Only authorized personnel should perform a lockout / tagout.

The lockout/tagout procedure places the oxidizer in a safe condition for servicing. It ensures that the oxidizer and all its components are stopped and isolated from all potentially hazardous energy sources.

The equipment owner or operator must supply safety lockout devices and "DANGER - DO NOT START" safety tags for use during the lockout / tagout procedure.

Lockout / Tagout Procedure

1. Notify all affected personnel that the oxidizer will be shut down and locked out / tagged out for servicing.
   a)
2. Refer to company documentation for the types of energy sources used by the oxidizer, energy source hazards, and methods to control the energy sources.

3. If the oxidizer is operating, shut it down using the normal shut down procedure.

4. Deactivate the energy isolating devices so the oxidizer is isolated from all energy sources. Energy sources include:

   a. Three phase electrical power.

   b. Single phase electrical power.

   c. Burner fuel source.

   d. Process stream

5. Lockout the energy isolating devices with their assigned individual lockouts.

6. Place "DANGER - DO NOT START" safety tags on the energy sources and oxidizer controls.

7. Bleed any fuel remaining in the burner fuel lines by removing the pressure gauge near the low gas pressure switch. Reinstall the gauge after the lines are bled.

8. Make sure that no personnel are near the oxidizer, and then verify that it is isolated from its energy sources by trying to start it.

WARNING

Return the oxidizer operating controls to their neutral or off position after verifying the isolation of the equipment.

The equipment is now locked out.

Returning the Oxidizer to Service

When the oxidizer is done being serviced, perform the following steps to return it to operating condition.

1. Check the interior and exterior of the oxidizer to ensure that all personnel are in safe locations.

2. Check that all access doors are installed and bolted tightly with gasketing.

3. Check the area around the oxidizer to ensure that all maintenance equipment is removed, and the oxidizer components are ready for operation.

4. Check that all controls are in their neutral or off position.

5. Remove all "DANGER - DO NOT START" safety tags from the energy sources and oxidizer controls.

6. Remove all lockout devices from the energy sources.

NOTE: *Some oxidizer components may have to be energized before some blocking devices can be removed.*

7. Reactivate the oxidizer's energy sources.

8. Notify all affected personnel that the oxidizer is ready for operation.

1.8 System Installation

To properly prepare the installation site, lift and install the oxidizer, and refer to the specifications and drawings. Contact CPI Service Department for any additional information.

1.9 Equipment Description

The Triton regenerative thermal oxidizer consists of a heat exchanger media tower, filled with structured block style ceramic heat exchanging material. The outlet of this media tower is connected to a common combustion chamber. Two (2) poppet valves control the flow and direction of the exhaust stream in and out of the regenerative thermal oxidizer.

Air from the process is pulled into the manifold through the booster fan and is directed up into the preheated media tower "A" through the poppet valve. The incoming process air absorbs heat from the preheated ceramic media and is raised close to the oxidation temperature (approximately 1,400 to 1,500 °F). The stream then enters the combustion chamber, where it is heated further to reach the combustion chamber set point temperature of 1,500 F to 1,600 F by the preheat burner. All the VOC's are oxidized to harmless CO2 & water vapor. The hot clean air is drawn down through a second ceramic media tower "B", where the ceramic media material absorbs heat from the clean air. The clean air then passes through the exhaust valve, through the booster fan and is finally expelled to the atmosphere at relatively low temperatures (typically 75-150 °F higher than the inlet process gas temperature). When media tower "A" has lost sufficient heat to the incoming contaminated air stream, and media tower "B" has pulled enough heat from the cleaned air stream, the unit will undergo a valve cycle.

The poppet valve for media tower "B" then opens and the poppet valve for tower "A" closes. Air from the process is directed up into the preheated media tower "B". The incoming process air absorbs heat from the preheated ceramic media and is raised close to the oxidation temperature. The stream then enters the combustion chamber, where it is heated further to reach the combustion chamber set point temperature of 1,500 F to 1,600 °F by the preheat burner. All the VOC's are oxidized to harmless CO2 & water vapor. The hot clean air is drawn down through the media tower "A", where the ceramic media material absorbs heat from the clean air. The clean air then is finally expelled to the atmosphere at relatively low temperatures (typically 75-150 F delta T across the unit). When media tower "B" has lost sufficient heat to the incoming contaminated air stream, and media tower "A" has pulled enough heat from the cleaned air stream, the unit will undergo a valve cycle.

This cycle will continue with the valves switching every 2-3 minutes until the system is shut off, or a system safety fault occurs.

Bake-out Operation:

The TRITON Regenerative Thermal Oxidizer has an off-line bake-out feature where the lower media and cold face support can have mild buildup of condensates volatilized and baked off by holding the valve positions longer, thus increasing the exhaust temperatures. As the exhaust temperatures increases, the lower ceramic media heats up, along with the cold face support. Care must be taken to assure that the condensate buildup level is not sufficient to auto ignite and cause a fire in the bottom of the unit. The condensate level must be checked by inspecting the cold face support for buildup. If condensate buildup is significant, the cold face support must be manually cleaned prior to initiating a bake-out cycle. **WARNING: VISUALLY CONFIRM CONDENSATE BUILDUP LEVELS PRIOR TO STARTING A BAKE-OUT CYCLE AND ONCE THE BAKE-OUT CYCLE HAS BEEN STARTED, AN OPERATOR MUST OBSERVE THE OPERATION OR SEVERE DAMAGE TO THE OXIDZER MAY OCCUR.**

Oxidizer Tower Chambers:

The TRITON Regenerative Thermal Oxidizer is supplied with (2) media tower chambers (Tower A and Tower B). Each tower chamber is internally insulated and contains the ceramic structured media heat recovery blocks. The ceramic media is sized for a nominal 95% thermal efficiency. The tower has a stainless steel cold face bar style support covered with expanded metal. The media blocks sit on top of this. The cold face support should be inspected for condensate buildup after 3 months of operation. If condensate is found, the unit should be placed in bake-out self-cleaning mode. Do not let condensate buildup to flammable levels and then initiate a bake off or an uncontrolled fire (or heat release) could occur and damage the equipment. Each tower has three (3) bed thermocouples to provide temperature gradient profile information.

Combustion Chamber:

The TRITON Regenerative Thermal Oxidizer is supplied with a combustion chamber designed to treat 4,000 scfm from the process, plus the small amount of combustion air to convert or oxidize the VOC's into CO2 and water vapor. The combustion chamber is internally insulated with ceramic module insulation, and rated for a maximum of 1,900 F. Normal operational setpoint is between 1,500-1,600 F. There are (3) thermocouples (TE190, 191, 192) located in the ceiling of the combustion chamber, (1) thermocouple is the high temperature limit, and the other two are used for combustion temperature control.

Poppet Valves (CYL501/511):

There are (2) two poppet valves which open to provide a path for the process air to either enter or exit each oxidizer. One poppet valve is open in the open position and the other poppet valve is closed at any given time during operation. These valves are pneumatically actuated open/close with external proximity limit switches. Both the proximity switches and their sensing plates on the shafts are adjustable. Do not work on these valves without installing the mechanical valve lockouts (wired to each valve assembly) or severe injury or death could result. These valves have internal seals which must be set and adjusted to ensure high VOC destruction. Do not modify or adjust valve seats without contacting CPI. Minimum air requirement is 80 PSIG of clean, dry (-40 F dew point) compressed air.

Booster Fan (FN251):

Each system utilizes an induced draft fan to pull the process air through the inlet ducting and oxidizer, finally pushing it out the exhaust stack. The fan speed is VFD controlled during process operation based upon a 4-20mA control signal from the PLC processor. During purge, warm-up, and cool-down, the blower operates off a pre-set speed. The PLC looks for a control set point based off the inlet duct static pressure transmitter PIT249. Do not attempt to change the oxidizer volume by increasing the negative set point.

Combustion Air Blower (BLO213):

The combustion air blower provides a small amount of combustion air to the burner throughout the firing range. The combustion air flow is controlled by the modulating flow control valve (CV218). As the heat demand increase, the valve will open, as the demand decreases, the valve will close.

Gas Train Assembly:

Each gas train assembly is sized for 5-10 PSIG pressure at the inlet and for the required BTU/Hr (CFH) operation. The gas train is a double block and bleed configuration with dual pilot solenoids. There is an inlet gas strainer which should be cleaned after startup and then annually. The gas train complies with NFPA 86 and IRI requirements. The train includes (2) automatic safety shutoff valves (SOV134 & BV137) which close immediately upon a fault, thus shutting off the flame, and a modulating gas control valve (CV142) that opens or closes based upon the heat demand in the combustion chamber. The gas control valve has an external low fire start switch (ZSL144) that must be closed prior to allowing the unit to start its purge/ignition sequence.

Fresh Air Purge Damper Assembly (FAD278):

There is a fresh air purge damper located on the inlet ducting to the oxidizer. This damper utilizes internal limit switches inside the actuator for open and closed indication. This damper is designed to provide a minimum amount of
air flow to the oxidizer at all times, as well as be the fresh air source for the oxidizer during purge, warm up and cool down operations. During purge, warm up and cool down cycles, the fresh air purge damper provides clean air to pass through the system. During process operation, the fresh air purge damper normally will remain closed unless process flow drops below the design flow.

WARNING

Entry into this Vessel is considered a confined space. Refer to sections 1.3 and 1.5 for confirmed spaces

WARNING

Insulation is a glass fiber insulation requiring skin, eye, and breathing protection.

IMPORTANT! Insulation can be damaged if walked on.

1.10 Electrical Controls

Control circuits distribute the operating power for fans, motors, relays, controllers, and electrically controlled pneumatic systems. The controls monitor the safe sequencing, start-up and operation of the various equipment systems. The controls provide for the safety of personnel and equipment.

Temperature Sensors

The following temperature sensors send information to the controller.

- A Temperature Element in the combustion chamber is used for a high temperature alarm.
- A Temperature Element in the combustion chamber is used in PID loop for Temperature control.

Temperature Control

The temperature control is based on combustion chamber temperature.

When the setpoint temperature (SP=Set Point) is below the actual temperature (PV=Process Variable) the controller will increase the controller output (CV=Control Variable) up to a limit of 100%.

When the setpoint temperature (SP=Set Point) is above the actual temperature (PV=Process Variable) the controller will decrease the controller output (CV=Control Variable) down to a limit of 0%

Safety Interlocks

The safety interlocks are made up of switches and relays that are monitored. The switches and relays must be closed, and the burners will ignite. The switches and relays close automatically during a normal oxidizer start-up. If one or more of the switches or relays opens during oxidizer operation, the line stops, and the burners shut off.

The safety interlocks include:

- Minimum process fan pressure switches
- Minimum combustion air fan pressure switches
- High temperature limit controller relay
- The burner low and high fuel pressure switches

1.11 Spare Parts

CPI recommends the customer maintain an inventory of service parts. Please refer to the "Spare Parts" section of this manual for specific recommendations. CPI can obtain these parts for the customer and will manufacture or special-order items, as needed. Substitution or modification of original parts without written permission may void the warranty.

CPI is committed to offering its customers the best possible service. Please have the following information available before calling.

1. The type of equipment.

2. The CPI job number.

3. The part number(s) or description of parts being ordered. Refer to parts drawings shipped with job.

4. A description of the problem with the part(s).

5. The date the equipment was installed.

6. A contact person with complete shipping and billing address.

7. The date parts are required.

8. Warranty parts returned to CPI for exchange must include a Return Goods Authorization form. This numbered authorization form is sent with the ordered part(s). The customer must return the authorization form with the defective warranty part(s) within 10 working days.

9. A company purchase order is required for all shipments, including warranty shipments.

NOTE: CPI provides freight charges for warranty replacement parts shipped UPS Ground Service only. Charges incurred for shipment other than UPS Ground Service will be charged to the customer. Only parts with a Return Goods Authorization form will be accepted at CPI. Any parts shipped to CPI either C.O.D. or Collect will be returned to the shipper.

For emergency service or parts, CALL:

1-847-438-0334

1-847-438-0944 Service / Parts Fax.

1.12 Decommissioning the Oxidizer

The oxidizer is constructed mainly of mild and stainless steel, high temperature insulation, and electrical equipment. When the oxidizer is decommissioned, its different parts must be disposed of by a specialist company in accordance with all applicable environmental regulations.

Catalytic Products INTERNATIONAL

TRITON RTO
Sequence of Operation

RTO PRESTART INITIAL CONDITIONS:

1. No level 1 or 2 faults are present.

If any of the above conditions are not met, the PLC will indicate with an alarm. When the initial conditions are met the alarms may be cleared and the machine can be started.

OPERATOR INTERFACE SCREENS

1. START SCREEN - Start and stop function of the RTO system.
2. STATUS SCREEN - Displays pressures, temperatures, motors status.
3. SYSTEM SETTINGS – PASSWORD PROTECTED – PID trending and adjustment.
4. SYSTEM MAINTENANCE- PASSWORD PROTECTED – Allows manual movement of devices while machine is offline.
5. SYSTEM ALARMS- This screen shows history of alarms.

RTO SEQUENCE:

STEP	Step Name	Step Advance Condition	STEP	Time
0	STOPPED - WAITING FOR START	START PUSHBUTTON	0	
10	OPENING FRESH AIR DAMPER	ZSH279 - DAMPER OPEN	10	
20	START THE BLOWERS /SCRUBBER	BLOWERS RUNNING AND PRESSURE SWITCHES MADE, SCRUBBER RAMPS UP FOR 60 SECS	20	
30	PLC PURGING	TIME	30	10 SEC
40	PURGE & LIGHTING FLAME	FLAME SAFETY REPORTS ON, MAIN AND BLOCK OPEN, NO FLAME LOSS, <= 3 ATTEMPTS TO LIGHT	40	
50	FLAME STABILIZE	TIME	50	10 SEC
55	IDLE MODE	HOLDS TEMP TO A SP FROM THE HMI	55	
60	RAMP UP TEMPERATURE	TE190&TE191_AVG UP TO READY TEMPERATURE	60	
70	TEMPERATURE STABILIZE	TIME	70	120 SEC
80	READY - WAITING FOR PRODUCTION OR BAKE OUT	IF CUST REQ TO RUN: REQUESTED BTD's OPEN, FAD CLOSES, THEN GO TO (STEP 90)	80	

		OR PB PUSHED TO SHUTDOWN (STEP 100) OR BAKE OUT REQUESTED GO TO BAKE OUT MODE		
90	VOLUME CONTROL – BOOSTER FAN IN PID	REQ TO RUN LOST THEN GO TO (STEP 80) OR PB PUSHED TO SHUTDOWN (STEP 100) OR TEMP REACHED GO TO SELF SUSTAIN (STEP 95)	90	
95	SELF SUSTAIN	GAS TRAIN OFF RUN ON PROCESS. GO TO STEP 90 AT TEMPERATURE SETPOINT	95	HMI SP
100	EVACUATE UNIT	ISO CLOSED & FRESH AIR OPEN THEN TIME	100	30 SEC
120	MAIN FLAME OFF	MAIN AND BLOCKING VALVES CLOSED	120	
130	COOL DOWN	TIME	130	
140	FANS OFF - COASTING TO A STOP	BLOWERS PRESSURE SWITCHES OFF	140	HMI SP

SYSTEM SEQUENCE DESCRIPTION:

OX_STEP 0 - The operator presses the "START" key to initiate the machine sequence to OX_STEP 10.

OX_STEP 10 – The fresh air damper FAD 278 opens. When the open limit switch ZSL279 is lost go to OX_STEP 20.

OX_STEP 20 – The RTO blowers start. Booster Fan FN251, Combustion Blower BLO213 ramp up. When the pressure switches PDS252 & PDS217 are made go to OX_STEP 30. Scrubber pumps turns on and runs for 60 secs before going into next step.

OX_STEP 30 – The blowers run for a preset purge time of 10 sec. The VFD for FN251 is run at an adjustable set point speed. When the 10 sec timer expires go to OX_STEP 40.

OX_STEP 40 – The RTO flame safety relay is energized. The flame safety first continues running the blowers for a 90sec purge then lights the pilot flame. When the UV sensor UV177 sees the flame, the flame safety opens the main gas valve and blocking valve. The flame safety will attempt to light (3) times. If unsuccessful after the third attempt the sequence is halted and the sequence returns to OX_STEP 0. When the flame is successfully lit go to OX_STEP 50.

OX_STEP 50 – Flame stabilization timer of 10 sec. When the timer expires go to OX_STEP 60.

OX_STEP 60 – The RTO ramps up to operating temperature. The ramp rate in °F/min is adjustable on the operator interface. Final operating temperature is adjusted through the operator interface. When the final operating temperature is reached go to OX_STEP 70.

OX_STEP 70 - temperature stabilization timer of 60 sec. When the timer expires go to OX_STEP 80.

OX_STEP 80 – The RTO is now in an idle state, at temperature, and ready to run process. When the request to run process comes from the customer the sequence will advance to OX_STEP 90.

OX_STEP 90 – System is running in process volume control. The booster fan goes into PID control with PIT249 as the process variable. The process t-damper opens, the fresh air damper goes to its preset/closed position. Once the process t-damper ZSH301 open limit switch is made the run permissive is sent to the customer. Process gasses are now being oxidized. The system may be sent back to idle OX_STEP 80 as described above and the process of returning to run process can be repeated as long as no alarms occur.

OX_STEP 95 – The RTO will go into **SELF SUSTAIN MODE** when one of the RTO thermocouples exceeds the set point and the low fire start switch is made for a preset time. If (1) of the thermocouples (TE190, TE191, TE192, TE196, TE197, TE199, TE200, TE201, TE203) rise above an adjustable set point from a secured screen for 30 seconds and the gas CV low fire input, the main gas valves are turned off. When the valves are de-energized we do not look at the main gas valve open and main block valve open limit alarms. The system will continue to run this way until the hottest thermocouple drops below a set point temperature plus self-sustain value (adjustable from secured screen) for 15 seconds. At this point the main gas valves are re-energized and the sequence returns to OX_STEP 90.

BOTTLE-UP SHUT DOWN:

The operator selects the "BOTTLE-UP SHUTDOWN" function key from the operator interface. The following sequence is initiated...

1. The operator interface will display **"BOTTLE-UP SELECTED".**
2. The PLC will:
3. Remove the "RUN PERMISSIVE"
   - Close the isolation damper
   - Open the bypass damper
   - Force the sequence to OX_STEP=0.
   - De-energize the booster fan VFD start. Shutting down the booster fan.
   - Continue running the combustion air blower until the combustion air blower shutdown set point is met.
   - Stop the valve sequencing. De-energize the poppet valve solenoids.
   - The operator interface will display **"OFFLINE AWAITING RESTART".**

SYSTEM SEQUENCE STOP:

If the Stop PB is pressed in OX_STEP 10 – 30, the RTO will come to an immediate stop.
If the Stop PB is pressed in OX_STEP 40 – 90, the RTO will go into a controlled stop starting with OX_STEP 100. The RTO can be restarted in OX_STEP 100-130 by pressing the Start PB.

OX_STEP 100 – Booster Fan is set to HMI set point. Run permissive is removed, the fresh air damper is opened, the bypass t-damper closes and vents to atmosphere. When the damper is in position a 30 sec timer is run to evacuate the RTO. When the timer expires go to OX_STEP 110.

OX_STEP 120 – The flame is turned off. When the main gas and blocking gas valves are closed go to OX_STEP 130.

OX_STEP 130 – RTO cool down. Run the blowers for an adjustable time period. When the timer expires go to OX_STEP 140.

OX_STEP 140 – Coast to stop. Shut down blowers and wait for pressure switches to show stop. Sequence terminates to OX_STEP 0 with this step. Fresh air damper closes when OX_STEP = 0.

BAKE OUT MODE ***THIS LOGIC IS AFI OUT***:

This is active when the system is in the idle mode OX_STEP 80. The objective is to get both beds to achieve a bake out temperature. The bake out mode is can be selected when the system is at "READY TEMPERATURE" in idle OX_STEP 80. Once the bake mode is active, the PLC will:

- Display on the operator interface "BAKE OUT MODE ACTIVE".
- Remove run permissive.
- Hold the booster fan VFD at the Idle Speed set point; adjustable (20-60HZ) from operator interface.
- Force the poppet valve timing to the bake out valve time set point (adjustable 120 to 1200 seconds).
- The gas/air control valve will continue to operate trying to hold temperature of the RTO temperature set point.

1. The PLC will watch the bed temperatures (TE199 and TE203). If the temperature rises above the bake out temperature set point (adjustable set point located inside a secured screen) prior to the bake out valve timer expiring, the valves will switch automatically.
2. If the valve timer expires before the bake out temperature set point is achieved the valves will switch.

3. The PLC will keep switching back and forth until BOTH beds have achieved the temperature set point.
4. When both beds have achieved the exhaust temperature set points, the PLC will start a bake out stabilization timer, 120 to 1200 seconds. Once the timer times out the sequence will continue in idle OX_STEP 80.

RTO EMERGENCY SHUT DOWN (ESTOP):

The operator presses the emergency stop button. The MCR (Master Control Relay) will turn off all PLC outputs. The PLC sequence is terminated and set to OX_STEP 0. Blowers will coast to a stop and an alarm will be displayed.

ALARMS:

Alarms are grouped into (4) alarm levels. Level 1 alarms cause a bottle up shutdown. Level 2 alarms isolate process, turn off gas, and put RTO into cool down. In addition, if a Level 1 or Level 2 alarm exists, the oxidizer cannot start. Level 3 put the RTO into the idle state OX_STEP 80 until the alarm has been cleared. Level 4 alarms are advisory only

SCRUBBER OPERATION:

Notes:

1. The scrubber system starts when the oxidizer is started.
2. Will run for 60 secs to get the flow going.
3. The scrubber will continue to run for an additional 5-mins after the oxidizer is in OX_STEP 0.
4. Scrubber will also run if the CAB is running. This provides for cooling.
5. SV605 & SV635 are normally open valves that will remain energized to closed until they are requested to open during normal operation, or a power outage occurs.

DEMISTER CONTROL:

When the scrubber is running, while the oxidizer is running normally, the demister control is activated. SV652 is opened and VFD651 is placed in PID control with FT650 as the process

variable. The demister control will run this way until the oxidizer is shut down and the exhaust temperature is consistently below activation setpoint. It will run for an additional five minutes.

DRAIN CONTROL:

When scrubber is running the drain control is activated FCV614 is put into PID control with FT661 as the process variable. The drain control will continue to run this way until the oxidizer stops or a shutdown alarm occurs.

PH CONTROL:

PH levels are monitored by AIT660. When PH levels are not within allowable limits, PMP662 is turned on and placed into PID control with AIT660 as the process variable, once PH levels are within allowable limits or a shutdown alarm occurs PMP662 is turned off.

WATER LEVEL CONTROL:

The water level is monitored by LIT611 when the level is lower than allowable operating limits SV612 is de-energized to open until the water level is within operating limits. Once the water level is within operating limits SV612 is energized to closed.

EMERGENCY QUENCH:

When TE210 oxidizer exhaust temperature rises above an allowable temperature the PLC will de-energize SV605 to open. Once the temperature is within an allowable temperature the PLC will energize SV605 to closed.

3.1 Maintenance Check List

WARNING

The following is a recommended, but not limited to, maintenance check list. Each component has a specific manufacturer installation, operation, and maintenance procedure located in the specification sheet. It is the customers' responsibility to implement the manufactures detailed procedures into their maintenance plans. The detailed manufacturers installation, operation, and maintenance specification sheets are located in the CPI supplied manuals. If the customer cannot find the correct specification sheet, it is up to the customer to contact CPI or the manufacturer for the correct specification sheet. If the maintenance is not followed, the component warranty could be voided.

DANGER

Refer to the Data Sheet for correct air pressures, switch settings, and other operating values. Do not adjust any safety devices without first confirming adjustments setting or contacting CPI Service Department.

WARNING

The lockout / tagout procedure in *TOC-1 Cautions & Safety* Section 1.7 must be followed completely before servicing the oxidizer, gas piping, and process piping. Personnel must not attempt to energize, start, or use the oxidizer when it is locked out / tagged out. Only authorized personnel should perform a lockout / tagout.

WARNING

The interior of the oxidizer is a confined space. Personnel must follow all confined space entry procedures when working inside the oxidizer. Customer is responsible for implementing and maintaining all safety practices for confined entry

CAUTION

If the oxidizer fans and/or blowers are not in use for an extended period of time, the bearings may require special care to avoid damage. Refer to fan manufacturers' literature.

Weekly Maintenance (160 Hours)

- Visual inspection of gas train for leaks or broken gauges.
- Visual inspection of all TEFC 480V motor intakes for buildup of debris or trash, clean as required.
- Visual inspections of process Ductwork - open ducting or support stand failures.
- Visual inspection of outside of Oxidizer for hot spots or anything out of the ordinary.
- Visually inspection for expansion joint tears/rips on oxidizer system.
- Visually inspect flame for proper combustion.
- Check that all equipment guards, doors, and safety tags are in place and are properly attached. Replace any missing or damaged safety tags immediately. Keep all tags and warning labels in readable condition

Monthly Maintenance (640 Hours)

- Clean out all sensing lines and ports to transmitters and switches.
- Drain compressed air manifold.
- Inspect poppet proximity sensors for tightness.
- Lubrication of all fan shaft bearings
- Lubrication of all damper bearings
- Check burner actuator for correct operation.

Semi-annual Maintenance (3800 Hours)

- Check media tower cold face support and media tower bottom for condensate and/or particulate buildup.
- Check all transmitters for correct readings, calibrate as needed.
- Check the spark igniter on the burner, clean as required.
- Leak test natural gas piping connections with bubble solution
- Visually Check Vibration levels on all fans
- Tighten all bolts on poppet valves and coupling

Annual Maintenance (7600 Hours)

- Check the pressure gauges for proper operation, replace if necessary.
- Check all thermocouples for accurate sensing. Replace if necessary.
- Check the UV Sensor and clean sensor site tube. Replace if necessary.

- Clean site glass. Replace if necessary.
- Check bolt tightness on oxidizer access doors.
- Test all safeties by tripping each component individually to ensure all components are working correctly.
- Inspect the interior of the oxidizer. Inspect media bed levels. Inspect valve seal.
- Re-gasket and reseal all access doors with new gasketing and cerawool strips.
- Cycle all valves, check all limits, and check all strokes of actuators for correct setup.

3.2 Inspection - Gas Train

Visually check natural gas piping for cracks or unreported damage, walk around piping, bubble test for natural gas coming from natural gas piping connections and unions and check for unusual or excessive vibration.

A natural gas leak is an explosion threat that can cause property damage and death. If a leak is detected, the system is to be shutdown and gas train is to be isolated by closing hand valve on the gas train inlet piping until leak can be found and eliminated.

3.3 Inspection – Inlet Duct

Visually check inlet duct for cracks, leaks, or unreported damage, walk around ducting and check for VOC coming from process (valves, flex joints, etc.), and check for unusual or excessive vibration.

Note: Inlet piping, prior to the process fan, will leak inwards due to the negative suction pressure.

3.4 Visual Inspection - Outside of Oxidizer

A visual inspection of outside of oxidizer is done by looking for areas of discoloration and check for unusual or excessive vibration. At this time a visual inspection of the booster fan inlet duct and outlet ducts, should be checked for any leaks.

NOTE: Some slight changes color may occur during the break in period. This is normal, however if noted changes occur after this period the oxidizer should be shutdown and inspected internally.

CAUTION

Oxidizer shell temperatures can excess 160° F during daylight hours due to exposure to sunlight. Temperatures above 160° F when in direct contact with skin will cause a burn. Protective clothing and gloves are to be worn when working on the oxidizer.

DANGER

Repair work requiring entry into oxidizer is considered a confined space where there is a risk death by asphyxiation and / or heat stroke. Customer is responsible for implementing and maintaining all safety practices (Refer to *TOC-1 Cautions & Safety* sections 1.2-1.3, 1.5, and 1.7)

WARNING

Oxidizer is to be cooled to an acceptable temperature where personnel can work without danger of fainting, server dehydration, heat stroke or death.

WARNING

Skin, eye and breathing protection are required in addition to requirement of a confined space entry due to fiber insulation irritation to skin, eyes and lungs. Prolong unprotected exposure may cause permanent lung damage.

3.5 Check Lubrication on Fans

- Lubricate all fan bearings as specified by the bearings manufacturer. Rotate the shaft and apply grease.
- Lubricate the fan bearings according to the schedule on the fan housing or in the Vendor Data section.
- Lubricate the fan motor bearings, as specified by the fan motor manufacturer, while rotating the shaft.
- Tighten and torque all taper lock bushing bolts. Refer to fan manufacturers' specification.
- Torque all fan bolts to manufacture specifications. Re-torque after initial start-up, after 48 hours of heat cycling, and every six months. Refer to fan manufacturers' specification.
- Check and clean inlet screens. Check for broken or loose inlet screens.
- Reinstall all guards before operating the oxidizer.

WARNING

Excessive lubrication can shorten bearing life.

WARNING

Customer is responsible for implementing and maintaining all safety practices (Refer to *TOC-1 Cautions & Safety* sections 1.2-1.3, 1.5, and 1.7).

3.6 Check Spark Ignitor

- The part number for the spark ignitor depends on the burner model. Please contact CPI for replacement part.
- Remove the electrical connector from the spark ignitor.
- Unscrew the locking bushing at the base of the connector. Withdraw the spark ignitor.
- Check if the quartz is cracked, the ignitor is bent or burned, or the probe is coated. Replace the spark ignitor if any of these conditions exist.
- NOTE: A coated spark ignitor that is undamaged can be cleaned with a wire brush and reused.
- Over tightening can damage the quartz insulator or the ring.
- Reinstall the spark ignitor.

WARNING

Customer is responsible for implementing and maintaining all safety practices (Refer to *TOC-1 Cautions & Safety* sections 1.2-1.3, 1.5, and 1.7).

3.7 Check Actuators for Correct Operation

Cycle all valves, check all limits, and check all strokes of actuators for correct setup. Check the actuator connection to ensure coupling is secure. A loose coupling can cause the loss of burner control. Adjustments must be made by qualified technicians. Refer to the Vender Data section for service and calibration information.

The burner limits must be adjusted by qualified technicians from Low and High-Fire setting. The coupling is marked at initial start-up and must be checked for tightness every six months.

Grease all damper bearings.

WARNING

Customer is responsible for implementing and maintaining all safety practices (Refer to *TOC-1 Cautions & Safety* sections 1.2-1.3, 1.5, and 1.7).

3.8 Leak Test Gas Piping with Bubble Solution

Check natural gas piping for small un-detected gas leaks with bubble solutions. Soak threaded and flanged connections with bubble solution with piping under pressure. If threaded or flanged connection produce bubbles re-tighten connection, repair, or replaced piping.

DANGER

A natural gas leak is an explosion threat that can cause property damage and death. If a leak is detected, the system is to be shutdown and gas train is to be isolated by closing hand valve on the gas train inlet piping until leak can be found and eliminated.

WARNING

Customer is responsible for implementing and maintaining all safety practices (Refer to *TOC-1 Cautions & Safety* sections 1.2-1.3, 1.5, and 1.7).

3.9 Check Vibration Levels on All Fans

Check vibration levels of all fans and blowers when first installed as a base line. Compare readings to earlier readings. If there is change, verify fan or Blower is level and firmly anchored to concrete. If required retighten anchor bolts and rebalance fan.

CAUTION

High Vibration levels can shorten the life of fan and blowers and may void CPI warranties if not corrected.

WARNING

Customer is responsible for implementing and maintaining all safety practices (Refer to *TOC-1 Cautions & Safety* sections 1.2-1.3, 1.5, and 1.7).

3.10 Visual Inspection - Inside of Oxidizer

Check internal structure for signs of high temperature or fatigue due to stress.

DANGER

Repair work requiring entry into oxidizer is considered a confined space where there is a risk death by asphyxiation and / or heat stroke. Customer is responsible for implementing and maintaining all safety practices (Refer to *TOC-1 Cautions & Safety* sections 1.2-1.3, 1.5, and 1.7)

WARNING

Oxidizer is to be cooled to acceptable temperature where personnel can work without danger of fainting, severe dehydration, heat stroke or death.

WARNING

Skin, eye and breathing protection are required in addition to requirement of a confined space entry due to fiber insulation irritation to skin, eyes and lungs. Prolong unprotected exposure may cause permanent lung damage.

Catalytic Products INTERNATIONAL

AIR POLLUTION CONTROL EQUIPMENT
SPARE PARTS LIST

Customer:
Name: General Iron
Address: 1909 N. Clifton Ave.

Submitted to:
Contact: Jim Kallas
Phone: 773-327-9600 x431

Miscellaneous
Quote Date: 8/29/2019
Model: 80.95
Commissioned: Summer 2019

Submitted by:
Contact: Jeff Nasticky
Phone: 847-550-4108

PACKAGE A: MINIMUM RECOMMENDED

ITEM NUMBER	PID NUMBER	Part Number	DESCRIPTION	UNIT PRICE
1	PI 132 / PI 140	101341	Press Gauge 0-5 PSI	$104.64
2	SV 102 / SV 103	103235	AVLV SOL .5 NEMA4 2WAY NC	$456.96
3	PI 104	100669	Press Gauge 0-35" WC	$109.98
4	PI 130	100671	Press Gauge 0-15 PSI	$24.34
5	PSH 248	100060	PS A 2-20 H 1/4NPT NEMA4	$109.44
6	PDS 252	100090	PS A .16-1.2 H 1/4NPT NEMA4	$109.44
7			Booster Fan Drive Bearings	$10,652.00
8			Booster Fan Inboard Bearings	$9,228.00
9			Booster Fan Inlet Cone	$5,784.00
10	ZSL 502/ ZSH 512	101488	SENSOR, PROXIMITY, QD SHIELDED	$374.22
11	ZSH 503/ ZSH 513	101488	SENSOR, PROXIMITY, QD SHIELDED	$374.22
12	SI 175	100341	SPARK IGNITOR	$660.80
13	UV 177	100032	UVS, 3/4" NPT, 120VaC, -40F	$1,129.82
14	TE 190-TE 210	100085	K Thermocouple 18" Dual (price ea - need 11)	$172.00
15	CV142	103918	VALVE, BTFY AIR-CTL M-10"	$4,176.20
16	E143	100234	ACT E 150"# 120VAC 4-20 HW	$700.00

TOTAL PRICE FOR PACKAGE A: $34,166.06

PACKAGE B: CPI SUGGESTED SPARES IN ADDITION TO PACKAGE A

ITEM NUMBER	PID NUMBER		DESCRIPTION	UNIT PRICE
1	PGR 101	103813	REGULATOR, 496, 3/4"	$150.00
2	PSH 139	100217	PS G/A 12-60 H F IP54	$60.40
3	PSL 133	103996	LOW GAS PRESS SWITCHRANGE 1.5 - 7psi	$89.04
4	MGR 131	103922	REGULATOR, 121-8HP, 1.25	$2,092.00
5	PIT 249. PDIT 259	101512	PIT SITRANS	$2,045.70
6	SV 504 / SV 514	102111	VALVE, SOL, PNEU, 3/4" 24V	$950.60
7	CYL 501 / CYL 511	103287	CYL AIR 8"BORE, 16" STK 24V VL	$5,564.00
8	CYL 501/511 REBUILD KIT	103384	REBUILD KIT, PISTON 8 X 16 CYL	$285.64
9	CYL 501/511 REBUILD KIT	103386	REBUILD KIT, ROD, 6 & 8 CYL	$219.36
10	PSL 408	100666	PS G/A 0-100PSI C 1/4NPT NEMA4	$324.00
11		100218	ACT E 75"# 120VAC O/CL HW	$428.24
12		103535	FLEX CONN 6 5/8" ID X 5 3/4"	$43.26
13			Booster Fan 5720 Size 5712 Arr. 8 - Rotor	$31,480.00
			FAD Positioner	$6,112.00

TOTAL PRICE FOR PACKAGE B: $49,844.24

PACKAGE C: CPI SUGGESTED SPARES IN ADDITION TO PACKAGES A AND B

ITEM NUMBER	PID NUMBER		DESCRIPTION	UNIT PRICE
1	E	103829	PLC Compactlogix	$1,840.00
2	E	100279	DI Module 16PT Compactlogix	$408.86
3	E	102594	HMI PANELVIEW PLUS 7 TERMINAL	$6,132.12
4	E	100095	High Temp Controller	$946.08
5	VFD 251	103885	VFD 600 HP 675A	$39,624.00

6		103886	VFD 40 HP 58A	$6,074.00
7		103887	VFD 25 HP 38A	$3,290.00
8		103888	1/2 HP 1.2A	$558.00
9	E	100031	Flame Saftey Hwell RM 7800	$1,421.66
10	E	100350	Timer, Purge 90sec	$49.18
11	BLO 213 MOTOR	9999-D	25hp motor	$2,278.00
12	BLO 213 WHEEL	9999-E	Wheel 2210A PB	$1,856.00
13			Filter Element A9802604	$1,564.00
14	B 176	103581	BURNER Kinemax 6"	$7,638.00

TOTAL PRICE FOR PACKAGE C: $73,679.90

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PACKAGE D: SCRUBBER and RE-CIRCULATION PUMP SKID:

ITEM NUMBER	PID NUMBER		DESCRIPTION	UNIT PRICE
1		104175	pH Probe.	$1,022.00
2		104176	pH Transmitter.	$884.00
3		104177	Pressure transducer.	$2,112.00
4		104178	Pressure transducer.	$1,672.00
5		104179	Pump.	$23,986.00
6		104180	Scrubber Temp. Transmitter	$490.00
7		104181	Make-up & Drain Flowmeters	$3,082.00
8		104182	Solenoid 2"	$1,642.00
9		104183	Solenoid 1.50"	$882.00
10		104184	Solenoid .50"	$214.00
11		104185	Solenoid 1.00"	$1,322.00
12		104186	Scrubber Mag. Flowmeter	$6,202.00
13		104187	Pump Skid Blowdown/Drain Valve	$3,362.00
14		104188	Caustic Pump	$9,774.00
15		104189	Column Packing	$1,980.00
16		104190	Demister Pad	$50,414.00
17			Nozzles - Demister	$1,994.24
18			Nozzles - Packing	$332.96
19			Nozzles - Transition	$312.56
20				

Pricing shown is valid for 30 days from dated submitted on this document. If after 30 days of document date, please call to confirm pricing. Component parts will be shipped from CPI with the PID number printed on each component. CPI reserves the right to adjust prices when the price increases come from the component manufacturer.

TERMS OF SALE: Net 10 days upon receipt of invoice.

SHIPMENT: 3 to 4 weeks, ARO

ACCEPTANCE

☐ **PACKAGE A:** Minumum reccomended spare parts

☐ **PACKAGE B:** Suggested spare parts

☐ **PACKAGE C:** Complete spare parts

Authorized Representative Signature

Date Accepted

Printed Name of Representative

Purchase Order Number to be Applied

TROUBLESHOOTING FAULTS/ALARMS

This is a troubleshooting guideline. Actions and Terminology may vary pending on the problem which exists. Please refer to the component trouble shooting guidelines found inside the manual for additional support.

1. **PSL 133 LOW GAS PRESSURE SWITCH FAULT:** The PLC has detected the natural gas pressure has fallen below a safe operating limit by looking at the switch position. The PLC will display:

"LOW GAS PRESSURE SWITCH FAULT"

Condition	Action
Gas supply has been shut off	Turn gas back on
Hand valve is closed	Open hand valve
Main gas regulator is set too low	Adjust spring to rise gas pressure on
Pressure variation in main feed	Check the incoming pressure
Bad Switch	Replace Switch

2. **SOV 134 MAIN GAS VALVE FAILED TO CLOSE:** The PLC has detected the limit switch on the main shutoff valve has gone open, indicating a valve not closed. The PLC will display:

"MAIN GAS VALVE FAILED TO CLOSE"

Condition	Action
Limit switch has Failed	Replace limit switch
Limit switch needs adjustment	Adjust limit switch until the limit makes when valve is closed
Faulty valve	Replace valve
Power interruptions dropping out	Check power and wire terminations

3. **SOV 134 MAIN GAS VALVE FAILED TO OPEN:** The PLC has detected the limit switch on the main shutoff valve has gone open, indicating a valve not open. The PLC will display:

"MAIN GAS VALVE FAILED TO OPEN"

Condition	Action
Limit switch has Failed	Replace limit switch
Limit switch needs adjustments to make	Adjust limit switch until the limit makes when valve is open
Faulty valve	Replace valve
Power interruptions	Check power and wire terminations

4. **BV 137 BLOCK VALVE FAILURE TO CLOSE:** The PLC has detected the limit switch on the main gas blocking valve has gone open, indicating a valve not closed. The PLC will display:

"BLOCK VALVE FAILURE TO CLOSE"

Condition	Action
Limit switch has Failed	Replace limit switch
Limit switch needs adjustment	Adjust limit switch until the limit makes when valve is closed
Faulty valve	Replace valve
Power interruptions	Check power and wire terminations

5. **BV 137 BLOCK VALVE FAILED TO OPEN:** The PLC has detected the limit switch on the main gas blocking valve has gone open, indicating a valve not open. The PLC will display:

"BLOCK VALVE FAILED TO OPEN"

Condition	Action
Limit has Failed	Replace limit switch
Limit switch needs adjustments to make	Adjust limit switch until the limit makes when valve is open

Faulty valve	Replace valve
Power interruptions	Check power and wire terminations

6. **PSH 139 HIGH GAS PRESSURE SWITCH FAULT:** The PLC has detected the natural gas pressure has risen above a safe operating limit by looking at the switch position. The PLC will display:

"HIGH GAS PRESSURE SWITCH FAULT"

Condition	Action
Supply gas pressure is too high	Lower supply gas pressure
Main gas regulator has failed	Replace main regulator
Main gas regulator is set too high	Adjust spring to lower gas pressure on
Main gas supply has increased	Check the incoming gas pressure
Bad Switch	Replace Switch

7. **ZSL 144 GAS CONTROL VALVE FAILED TO CLOSE:** The PLC has detected the limit switch on the natural gas control valve has gone open, indicating a valve not closed. The PLC will display:

"GAS CONTROL VALVE FAILED TO CLOSE"

Condition	Action
Limit switch has Failed	Replace limit switch
Limit switch needs adjustments	Adjust limit switch until the limit makes when valve is closed
Linkage bound up	Reset actuator linkage for 100% open to 100% closed.
Faulty actuator	Replace actuator
Power interruptions	Check power and wire terminations

8. **TE 190 OXIDIZER LOW TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has fallen below the established temperature limit by temperature switch. The PLC will display:

"LOW OXIDIZER TEMPERATURE"

Condition	Action
Low amount of VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	1) Check actuation of actuator. 2) Check that the actuator is opening. 3) Faulty actuator – replace.
Gas control valve not working correctly	4) Verify burner gas control valve is operational and in its low fire position. 5) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 6) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	7) Check actuation of actuator.

9. **TE 190 SENSOR ERROR:** The PLC is reading an invalid signal from TE 190. The PLC will display:

"TE 190 SENSOR ERROR"

Condition	Action
TE 190 is sending an invalid signal	Check thermocouple. Check wiring.

10. **TE 191 OXIDIZER LOW TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has fallen below the established temperature limit by temperature switch. The PLC will display:

"LOW OXIDIZER TEMPERATURE"

Condition	Action
Low amount of VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	8) Check actuation of actuator. 9) Check that the actuator is opening. 10) Faulty actuator – replace.
Gas control valve not working correctly	11) Verify burner gas control valve is operational and in its low fire position. 12) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 13) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	14) Check actuation of actuator.

11. **TE 191 SENSOR ERROR:** The PLC is reading an invalid signal from TE 191. The PLC will display:

"TE 191 SENSOR ERROR"

Condition	Action
TE 191 is sending an invalid signal	Check thermocouple. Check wiring.

12. **TE 192 OXIDIZER HIGH TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH OXIDIZER TEMPERATURE"

Condition	Action

Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	15) Check actuation of actuator. 16) Check that the actuator is opening. 17) Faulty actuator – replace.
Gas control valve not working correctly	18) Verify burner gas control valve is operational and in its low fire position. 19) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 20) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	21) Check actuation of actuator.

13. **TE 192 OXIDIZER HIGH HIGH TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH HIGH OXIDIZER TEMPERATURE"

Condition	Action
Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	22) Check actuation of actuator. 23) Check that the actuator is opening. 24) Faulty actuator – replace.
Gas control valve not working correctly	25) Verify burner gas control valve is operational and in its low fire position.

	26) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 27) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	28) Check actuation of actuator.

14. **TE 192 SENSOR ERROR:** The PLC is reading an invalid signal from TE 192. The PLC will display:

"TE 192 SENSOR ERROR"

Condition	Action
TE 192 is sending an invalid signal	Check thermocouple. Check wiring.

15. **TE 196 OXIDIZER LOW TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has fallen below the established temperature limit by temperature switch. The PLC will display:

"LOW OXIDIZER TEMPERATURE"

Condition	Action
Low amount of VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	29) Check actuation of actuator. 30) Check that the actuator is opening. 31) Faulty actuator – replace.
Gas control valve not working correctly	32) Verify burner gas control valve is operational and in its low fire position. 33) Verify CV output has been driven to 0% output before unit

	shuts down and temperature has reached Shutdown alarm 34) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	35) Check actuation of actuator.

16. **<u>TE 196 OXIDIZER HIGH TEMPERATURE:</u>** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH OXIDIZER TEMPERATURE"

Condition	Action
Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	36) Check actuation of actuator. 37) Check that the actuator is opening. 38) Faulty actuator – replace.
Gas control valve not working correctly	39) Verify burner gas control valve is operational and in its low fire position. 40) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 41) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	42) Check actuation of actuator.

17. **<u>TE 196 SENSOR ERROR:</u>** The PLC is reading an invalid signal from TE 196. The PLC will display:

"TE 196 SENSOR ERROR"

Condition	Action
TE 196 is sending an invalid signal	Check thermocouple. Check wiring.

18. **<u>TE 197 OXIDIZER LOW TEMPERATURE:</u>** The PLC has detected the oxidizer chamber temperature has fallen below the established temperature limit by temperature switch. The PLC will display:

"LOW OXIDIZER TEMPERATURE"

Condition	Action
Low amount of VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	43) Check actuation of actuator. 44) Check that the actuator is opening. 45) Faulty actuator – replace.
Gas control valve not working correctly	46) Verify burner gas control valve is operational and in its low fire position. 47) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 48) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	49) Check actuation of actuator.

19. **<u>TE 197 OXIDIZER HIGH TEMPERATURE:</u>** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH OXIDIZER TEMPERATURE"

Condition	Action

Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	50) Check actuation of actuator. 51) Check that the actuator is opening. 52) Faulty actuator – replace.
Gas control valve not working correctly	53) Verify burner gas control valve is operational and in its low fire position. 54) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 55) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	56) Check actuation of actuator.

20. **<u>TE 197 SENSOR ERROR:</u>** The PLC is reading an invalid signal from TE197. The PLC will display:

"TE 197 SENSOR ERROR"

Condition	Action
TE197 is sending an invalid signal	Check thermocouple. Check wiring.

21. **<u>TE 199 OXIDIZER LOW TEMPERATURE:</u>** The PLC has detected the oxidizer chamber temperature has fallen below the established temperature limit by temperature switch. The PLC will display:

"LOW OXIDIZER TEMPERATURE"

Condition	Action

Low amount of VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	57) Check actuation of actuator. 58) Check that the actuator is opening. 59) Faulty actuator – replace.
Gas control valve not working correctly	60) Verify burner gas control valve is operational and in its low fire position. 61) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 62) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	63) Check actuation of actuator.

22. **TE 199 OXIDIZER HIGH TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH OXIDIZER TEMPERATURE"

Condition	Action
Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	64) Check actuation of actuator. 65) Check that the actuator is opening. 66) Faulty actuator – replace.
Gas control valve not working correctly	67) Verify burner gas control valve is operational and in its low fire position.

	68) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 69) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	70) Check actuation of actuator.

23. **TE 199 SENSOR ERROR:** The PLC is reading an invalid signal from TE 199. The PLC will display:

"TE 199 SENSOR ERROR"

Condition	Action
TE 199 is sending an invalid signal	Check thermocouple. Check wiring.

24. **TE 200 OXIDIZER LOW TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has fallen below the established temperature limit by temperature switch. The PLC will display:

"LOW OXIDIZER TEMPERATURE"

Condition	Action
Low amount of VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	71) Check actuation of actuator. 72) Check that the actuator is opening. 73) Faulty actuator – replace.
Gas control valve not working correctly	74) Verify burner gas control valve is operational and in its low fire position. 75) Verify CV output has been driven to 0% output before unit

	shuts down and temperature has reached Shutdown alarm 76) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	77) Check actuation of actuator.

25. **<u>TE 200 OXIDIZER HIGH TEMPERATURE:</u>** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH OXIDIZER TEMPERATURE"

Condition	Action
Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	78) Check actuation of actuator. 79) Check that the actuator is opening. 80) Faulty actuator – replace.
Gas control valve not working correctly	81) Verify burner gas control valve is operational and in its low fire position. 82) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 83) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	84) Check actuation of actuator.

26. **<u>TE 200 SENSOR ERROR:</u>** The PLC is reading an invalid signal from TE 200. The PLC will display:

"TE 200 SENSOR ERROR"

Condition	Action
TE 200 is sending an invalid signal	Check thermocouple. Check wiring.

27. **<u>TE 201 OXIDIZER LOW TEMPERATURE:</u>** The PLC has detected the oxidizer chamber temperature has fallen below the established temperature limit by temperature switch. The PLC will display:

"LOW OXIDIZER TEMPERATURE"

Condition	Action
Low amount of VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	85) Check actuation of actuator. 86) Check that the actuator is opening. 87) Faulty actuator – replace.
Gas control valve not working correctly	88) Verify burner gas control valve is operational and in its low fire position. 89) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 90) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	91) Check actuation of actuator.

28. **<u>TE 201 OXIDIZER HIGH TEMPERATURE:</u>** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH OXIDIZER TEMPERATURE"

Condition	Action

Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	92) Check actuation of actuator. 93) Check that the actuator is opening. 94) Faulty actuator – replace.
Gas control valve not working correctly	95) Verify burner gas control valve is operational and in its low fire position. 96) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 97) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	98) Check actuation of actuator.

29. **TE 201 SENSOR ERROR:** The PLC is reading an invalid signal from TE 201. The PLC will display:

"TE 201 SENSOR ERROR"

Condition	Action
TE 201 is sending an invalid signal	Check thermocouple. Check wiring.

30. **TE 203 OXIDIZER LOW TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has fallen below the established temperature limit by temperature switch. The PLC will display:

"LOW OXIDIZER TEMPERATURE"

Condition	Action

Low amount of VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	99) Check actuation of actuator. 100) Check that the actuator is opening. 101) Faulty actuator – replace.
Gas control valve not working correctly	102) Verify burner gas control valve is operational and in its low fire position. 103) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 104) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	105) Check actuation of actuator.

31. **TE 203 OXIDIZER HIGH TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH OXIDIZER TEMPERATURE"

Condition	Action
Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	106) Check actuation of actuator. 107) Check that the actuator is opening. 108) Faulty actuator – replace.
Gas control valve not working correctly	109) Verify burner gas control valve is operational and in its low fire position.

	110) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 111) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	112) Check actuation of actuator.

32. **TE 203 SENSOR ERROR:** The PLC is reading an invalid signal from TE 203. The PLC will display:

"TE 203 SENSOR ERROR"

Condition	Action
TE 203 is sending an invalid signal	Check thermocouple. Check wiring.

33. **TE 209 OXIDIZER INLET HIGH TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH OXIDIZER INLET TEMPERATURE"

Condition	Action
Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	113) Check actuation of actuator. 114) Check that the actuator is opening. 115) Faulty actuator – replace.
Gas control valve not working correctly	116) Verify burner gas control valve is operational and in its low fire position. 117) Verify CV output has been driven to 0% output before unit

	shuts down and temperature has reached Shutdown alarm 118) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	119) Check actuation of actuator.

34. **<u>TE 209 OXIDIZER INLET HIGH HIGH TEMPERATURE:</u>** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH HIGH OXIDIZER INLET TEMPERATURE"

Condition	Action
Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	120) Check actuation of actuator. 121) Check that the actuator is opening. 122) Faulty actuator – replace.
Gas control valve not working correctly	123) Verify burner gas control valve is operational and in its low fire position. 124) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 125) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	126) Check actuation of actuator.

35. **<u>TE 209 SENSOR ERROR:</u>** The PLC is reading an invalid signal from TE 209. The PLC will display:

"TE 209 SENSOR ERROR"

Condition	Action
TE 209 is sending an invalid signal	Check thermocouple. Check wiring.

36. **TE 210 OXIDIZER OUTLET HIGH TEMPERATURE:** The PLC has detected the oxidizer outlet temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH OXIDIZER OUTLET TEMPERATURE"

Condition	Action
Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	127) Check actuation of actuator. 128) Check that the actuator is opening. 129) Faulty actuator – replace.
Gas control valve not working correctly	130) Verify burner gas control valve is operational and in its low fire position. 131) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 132) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	133) Check actuation of actuator.

37. **TE 210 OXIDIZER INLET HIGH HIGH TEMPERATURE:** The PLC has detected the oxidizer chamber temperature has risen above the established temperature limit by temperature switch. The PLC will display:

"HIGH HIGH OXIDIZER INLET TEMPERATURE"

Condition	Action

Greater VOC loading than Oxidizer was designed for	Verify flow rates and concentrations of VOC being supplied to oxidizer are not out of range of oxidizer design
Fresh air damper not working correctly	134) Check actuation of actuator. 135) Check that the actuator is opening. 136) Faulty actuator – replace.
Gas control valve not working correctly	137) Verify burner gas control valve is operational and in its low fire position. 138) Verify CV output has been driven to 0% output before unit shuts down and temperature has reached Shutdown alarm 139) Verify thermocouple temperature is correct.
Hot Gas bypass not working correctly	140) Check actuation of actuator.

38. **TE 210 SENSOR ERROR:** The PLC is reading an invalid signal from TE 210. The PLC will display:

"TE 210 SENSOR ERROR"

Condition	Action
TE 210 is sending an invalid signal	Check thermocouple. Check wiring.

39. **FMD 213 COMBUSTION AIR BLOWER DISCONNECT FAULT:** The PLC has detected the booster fan disconnect auxiliary contact is not closed. The PLC will display:

"COMBUSTION AIR BLOWER DISCONNECT FAULT"

Condition	Action

The disconnect is in the off position when it should be in the on position.	Put disconnect switch back in the on position
Auxiliary contact has failed	Troubleshoot contact
Loose wire	Troubleshoot wiring

40. **BLO 213 COMBUSTION AIR BLOWER MOTOR STARTER FAULT:** The PLC has not received an input from the VFD that the booster fan VFD is running. The PLC will display:

"COMBUSTION AIR BLOWER MOTOR STARTER FAULT"

Condition	Action
Motor Starter not engaging	Check motor starter

41. **PDS 217 COMBUSTION AIR BLOWER PRESSURE SWITCH FAULT:** The PLC has detected the differential pressure between the booster fan outlet and inlet is too low, indicating a no flow condition by falling below established operating. The PLC will display:

"COMBUSTION AIR BLOWER PRESSURE SWITCH FAULT"

Condition	Action
The disconnect switch is in the off position when it should be in the on position.	Put disconnect switch back in the on position
Motor starter has failed	Troubleshoot motor starter
Belt failure	Replace belts
Blown fuses or tripped breakers on supply side	Replace fuses or reset breakers
Clogged sensing lines	Clean sensing lines
Bad switch	Replace switch

42. **PSH 248 HIGH DUCT PRESSURE SWITCH FAULT:** The PLC has detected the inlet duct pressure is too high, indicating a no flow condition by increasing above the established operating pressure. The PLC will display:

"HIGH DUCT PRESSURE SWITCH FAULT"

Condition	Action
Clogged sensing lines	Clean pressure switch sensing lines
Bad switch	Replace switch
High Pressure	Check dampers upstream for proper operation
High Pressure	Check booster fan transmitter sensing line
High Pressure	Check fan for proper operation and airflow

43. **PIT 249 LOW DUCT PRESSURE ALARM:** The PLC is sensing the pressure from PT249 is less than designed. The PLC will display:

"PIT 249 LOW DUCT PRESSURE ALARM"

Condition	Action
PIT 249 is reading to low of a pressure	Check pressure transmitter. Check booster fan set point

44. **PIT 249 HIGH DUCT PRESSURE ALARM:** The PLC is sensing the pressure from PT249 is less than designed. The PLC will display:

"PIT 249 HIGH DUCT PRESSURE ALARM"

Condition	Action
PIT 249 is reading to high of a pressure	Check pressure transmitter. Check booster fan set point

45. **PIT 249 SENSOR ERROR:** The PLC is reading an invalid signal from PT249. The PLC will display:

"PIT 249 SENSOR ERROR"

Condition	Action
PIT249 is sending an invalid signal	Check pressure transmitter. Check wiring.

46. **FMD 251 BOOSTER FAN DISCONNECT FAULT:** The PLC has detected the booster fan disconnect auxiliary contact is not closed. The PLC will display:

"BOOSTER FAN DISCONNECT FAULT"

Condition	Action
The disconnect is in the off position when it should be in the on position.	Put disconnect switch back in the on position
Auxiliary contact has failed	Troubleshoot contact
Loose wire	Troubleshoot wiring

47. **VFD 251 BOOSTER FAN VFD FAULT:** The PLC has received an input from the VFD that the booster fan VFD has faulted. The PLC will display:

"BOOSTER FAN VFD FAULT"

Condition	Action
VFD in Fault Condition	Check fault code in manual

48. **VFD 251 BOOSTER FAN VFD RUN FAULT:** The PLC has not received an input from the VFD that the booster fan VFD is running. The PLC will display:

"BOOSTER FAN VFD RUN FAULT"

Condition	Action
VFD in Fault Condition	Check fault code in manual

49. **VFD 251 SENSOR ERROR:** The PLC is reading an invalid signal from PT249. The PLC will display:

"VFD 251 SENSOR ERROR"

Condition	Action
PIT249 is sending an invalid signal	Check pressure transmitter. Check wiring.

50. **PDS 252 BOOSTER FAN PRESSURE SWITCH FAULT:** The PLC has detected the differential pressure between the booster fan outlet and inlet is too low, indicating a no flow condition by falling below established operating. The PLC will display:

"BOOSTER FAN PRESSURE SWITCH FAULT"

Condition	Action
The disconnect switch is in the off position when it should be in the on position.	Put disconnect switch back in the on position
VFD has failed	Troubleshoot VFD
belt failure	Replace belts
Blown fuses or tripped breakers on supply side	Replace fuses or reset breakers
Clogged sensing lines	Clean sensing lines
Bad switch	Replace switch

51. **PDIT 259 HIGH SYSTEM PRESSURE:** The PLC has detected the pressure from the pressure transmitter to be low. The PLC will display:

"HIGH DUCT PRESSURE – OUT OF RANGE"

Condition	Action
Sensing Line is clogged	Clean out sensing line
Transmitter is faulty	Replace transmitter

52. **PDIT 259 LOW SYSTEM PRESSURE:** The PLC has detected the pressure from the pressure transmitter to be high. The PLC will display:

"LOW DUCT PRESSURE – OUT OF RANGE"

Condition	Action
Sensing Line is clogged	Clean out sensing line
Transmitter is faulty	Replace transmitter

53. **PDIT 259 SENSOR ERROR:** The PLC is reading an invalid signal from PDIT259. The PLC will display:

"PDIT 259 SENSOR ERROR"

Condition	Action
PDIT259 is sending an invalid signal	Check pressure transmitter. Check wiring.

54. **FAD 278 FRESH AIR DAMPER FAILURE TO CLOSE:** The PLC has detected the limit switch on the fresh air damper has gone open, indicating a valve not closed. The PLC will display:

"FRESH AIR DAMPER FAILURE TO CLOSE"

Condition	Action
Limit switch has Failed	Replace limit switch
Limit switch needs adjustment	Adjust limit switch until the limit makes when valve is closed
Faulty valve	Replace valve
Power interruptions	Check power and wire terminations

55. **FAD 278 FRESH AIR DAMPER FAILED TO OPEN:** The PLC has detected the limit switch on the fresh air damper has gone closed, indicating a valve not open. The PLC will display:

"FRESH AIR DAMPER FAILED TO OPEN"

Condition	Action
Limit has Failed	Replace limit switch

Limit switch needs adjustments to make	Adjust limit switch until the limit makes when valve is open
Faulty valve	Replace valve
Power interruptions	Check power and wire terminations

56. **PSL 408 COMPRESSED AIR PRESSURE SWITCH FAULT:** The PLC has detected the differential pressure between the booster fan outlet and inlet is too low, indicating a no flow condition by falling below established operating. The PLC will display:

"COMPRESSED AIR PRESSURE SWITCH FAULT"

Condition	Action
The disconnect switch is in the off position when it should be in the on position.	Put disconnect switch back in the on position
VFD has failed	Troubleshoot VFD
belt failure	Replace belts
Blown fuses or tripped breakers on supply side	Replace fuses or reset breakers
Clogged sensing lines	Clean sensing lines
Bad switch	Replace switch

57. **ZAL 502 ON SWITCH ZSL 502 FAILED TO CLOSE:** The PLC has detected the limit switch on the valve has gone open, indicating the valve not closed. The PLC will display:

"SWITCH 502 FAILED TO CLOSE"

Condition	Action
Limit switch has Failed	Replace limit switch
Limit switch needs adjustments to make	Adjust limit switch until the limit makes when valve is open

Faulty Solenoid	Replace solenoid or ensure nothing is blocking the valve from opening
Power interruptions	Check power and wire terminations
Air interruptions	Check air pressure

58. **ZAH 503 SWITCH ZSH 503 FAILED TO OPEN:** The PLC has detected the limit switch on the valve has gone open, indicating the valve has not opened. The PLC will display:

"SWITCH 503 FAILED TO OPEN"

Condition	Action
Limit switch has Failed	Replace limit switch
Limit switch needs adjustments to make	Adjust limit switch until the limit makes when valve is open
Faulty Solenoid	Replace solenoid or ensure nothing is blocking the valve from opening
Power interruptions	Check power and wire terminations
Air interruptions	Check air pressure

59. **SV 504 SENSOR ERROR:** The PLC is reading an invalid signal from SV 504. The PLC will display:

"SV 504 SENSOR ERROR"

Condition	Action
SV 504 is sending an invalid signal	Check pressure transmitter. Check wiring.

60. **ZAL 512 SWITCH ZSL 512 FAILED TO CLOSE:** The PLC has detected the limit switch on the valve has gone open, indicating the valve not closed. The PLC will display:

"SWITCH 512 FAILED TO CLOSE"

Condition	Action
Limit switch has Failed	Replace limit switch
Limit switch needs adjustments to make	Adjust limit switch until the limit makes when valve is open
Faulty Solenoid	Replace solenoid or ensure nothing is blocking the valve from opening
Power interruptions	Check power and wire terminations
Air interruptions	Check air pressure

61. **ZAH 513 SWITCH ZSH 513 FAILED TO OPEN:** The PLC has detected the limit switch on the valve has gone open, indicating the valve has not opened. The PLC will display:

"POPPET VAVLE 513 FAILED TO OPEN"

Condition	Action
Limit switch has Failed	Replace limit switch
Limit switch needs adjustments to make	Adjust limit switch until the limit makes when valve is open
Faulty Solenoid	Replace solenoid or ensure nothing is blocking the valve from opening
Power interruptions	Check power and wire terminations
Air interruptions	Check air pressure

62. **SV 514 SENSOR ERROR:** The PLC is reading an invalid signal from SV 514. The PLC will display:

"SV 514 SENSOR ERROR"

Condition	Action
SV 514 is sending an invalid signal	Check pressure transmitter. Check wiring.

63. **FLAME LOSS:** The PLC has detected a loss of flame if the flame relay opens because a low or loss signal from the UV. The PLC will display:

"FLAME LOSS"

Condition	Action
UV scanner is dirty and cannot see flame	Remove and clean UV scanner and check compressed air for flow
UV scanner is burned out	Replace UV scanner
UV scanner tube is blocked with debris	Remove debris and reinstall UV scanner
The low fire setting is set too low	Adjust Low fire position on main gas control valve to maintain the smallest but stable flame when CV output is at 0% for all oxidizer flows

64. **FLAME SAFETY FAULT:** The Honeywell flame safety does not detect a flame. The PLC will display:

"FLAME SAFETY FAULT"

Condition	Action
UV Scanner dirty	Clean UV detector
Pilot valve closed	Operator needs to open valve

No Spark (View from Site port)	Check ignitor, ignitor cap, and ignitor wire
Pilot pressure to high or low	Adjust to original settings

65. **LOSS OF TEMPERATURE:** The oxidizer temperature falls below operating temperature. The PLC will display:

"TEMPERATURE LOSS"

Condition	Action
Not enough gas	Check gas line for correct pressure Check regulator for correct operating pressures and flow Check gas valve for proper actuation
Too much air	Check process air for correct airflow. Check fresh air damper- fresh air damper modulates to open and close from the pressure transmitter located on the outlet of booster fan. Check booster fan outlet transmitter for condensate in sensing line.

66. **E-STOP PRESSED:** The E-Stop has been pressed which will rapid stop the whole system.
The PLC will display:

"E – STOP PRESSED"

Condition	Action
Push button pressed	Pull out push button
High Temperature exceeded second set point	Check to make sure first high temp is working correctly.

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Handling, Installation and Operating Instructions

For Packed Tower Scrubbers

CAUTION

This equipment can cause severe bodily injury. Severe damage could occur to the equipment, surrounding property, and automobiles. Before operating this equipment, read the Installation, Operation, and Maintenance Instructions

1. Do not operate fan without liquid recirculation system on.
2. Do not operate fan when spray nozzles are plugged.
3. Do not operate fan if scrubber recirculation liquor is concentrated. Proper fresh water makeup and blowdown rates must be maintained.
4. Spray pattern should be adjusted so spray does not hit vessel side wall.
5. If fan and scrubber have been shut down for an extended period of time, recirculation system should be run while fan is off to test system internals.
6. If unit is equipped with a sump heater and freezing conditions exist, recirculation pump and heater should be in operation during periods of shut down unless sump is completely drained.
7. If heat trace and sump heaters are not used during cold weather, the equipment should be drained completely if not in use.
8. Improper pH setting could cause severe damage (see section on **pH control**).

Start-Up Service:
In addition to this installation, operation and maintenance manual, Jardar Systems, Inc. offers a factory trained service representative to perform, assist or advise in the installation and start-up of this equipment. The cost for this service is charged per man at the following rates:

A. First eight (8) hours of a single day

B. Overtime hours in a single day

C. Sunday or Holiday

D. Other expenses such as airfare, hotel, car rental, meals, parts, tax, freight, etc. if applicable will be charged at cost plus 15% administration fee.

E. Company Vehicles
1. Company car or truck @ $1.25/mile
2. Company truck and trailer @ $2.50/mile

Call Jardar Systems, Inc. for current Service rates.

INTRODUCTION - The performance of every system depends on many factors. The purpose of this manual is to make you aware of these factors, so you will obtain the utmost efficient and dependable performance from your Jardar Systems, Inc. equipment.

If the proper care is exercised installing this equipment, and it is given proper maintenance, you can be assured of trouble-free operation for years to come.

It is important that you study this manual prior to installing and operating this equipment to assure safe installation and operation.

SAFETY - The very nature of air handling equipment and accessories present a hazard to personnel during installation and maintenance. The following precautions should be observed prior to starting and maintaining the scrubber:

1. All system motors should be locked out. This is accomplished by padlocking the disconnect switch in the off position until installation or maintenance is complete.
2. The scrubber housing should be inspected for debris or any loose parts.
3. Installation should be complete with inlet and outlet accessories attached.
4. All guards should be in place and secured. Never remove or replace any guards unless pump is shut down and locked out.
5. All dampers in duct system should be locked in open position.
6. Never discharge corrosive or harmful fumes from the fan. The scrubber should always be operated with the proper amount of fresh water make-up.
7. Inspect ductwork for leaks of harmful or corrosive fumes.
8. Follow good safety practices when installing or maintaining this equipment.
9. Follow all company work rules and OSHA regulations when working on the equipment

RECEIVING AND INSPECTION - Upon receipt of shipment, check first to see that all items on bill of lading and/or packing slip have been received. By careful inspection, determine whether damage has occurred in transit. Any shortage or damage should be noted and a claim filed immediately.

HANDLING AND STORAGE - If installation of the scrubber is delayed and storage is made outdoors, provide reasonable weather protection. Special attention should be given to pump and motor to prevent the entrance of water. When transporting or installing a scrubber, the lifting eyes should be used to prevent damage. Never pick a scrubber up by its flanges. Do not tarp equipment or ductwork exposed to direct sunlight. Excessive heat can build-up causing distortion. Motors and pumps have been test-run prior to shipping. All scrubbers have been test-run and checked for leaks. See and read the additional specific handling instructions for the type of scrubber (PVC, PP, FRP) you have been provided

FOUNDATIONS - A rigid, level foundation is vitally essential for the operation and performance of a scrubber. A frequent error is to design a foundation for the weight of the scrubber only. Consideration should be given for weight of the scrubbing liquor. Make sure that the total flooded weight of the scrubber has been taken into account.

Poured concrete is preferred to steel or wood. Steel platforms should be heavily braced.

DUCT CONNECTIONS - Duct loads can cause distortion with consequent damage to the scrubber. With this is mind, please observe the following:

1. Support ducts independently of scrubber.
2. Use flexible connections between ductwork and scrubber.

GENERAL

1.Prior to installing this equipment inspect the name plates or other tags for special instructions.

2. It is recommended that this equipment be installed by personnel familiar with the installation of this type of equipment.

3. If the scrubber is roof mounted, a structural engineer should be consulted to determine if the roof can support the operating weight of the scrubber). Care should be exercised in handling this equipment during installation to prevent damage caused by external stress or shock.

OPERATING TEMPERATURES - PVC scrubbers should not be used on processes exceeding 130° F. Polypropylene should not be used on processes exceeding 160° F. FRP scrubbers should not be used on processes exceeding 180° F.

INSTALLATION INSTRUCTIONS

1. Prior to installation, inspect all equipment and parts to determine if damage has occurred during shipment. See and read the accompanying column packing Handling instructions.
2. See and read the accompanying Handling instructions for PVC, PP,or FRP vessels.
3. Inspect all equipment for damage or breakage and report to the shipper immediately.
4. All scrubbers are equipped with lifting eyes for rigging. Do not lift scrubbers by the flanges.
5. It is recommended that inlet/outlet transitions be bolted on after setting the scrubber. Prior to bolting transitions be sure the flanges are clean. Use adhesive backed, closed cell gasket or 100% silicone caulking material. Apply gasket starting at the center of the top flange horizontally. Continue around face of flange to starting point making sure gasket is within the inside of bolt holes.
6. Bolt transitions in place using stainless steel hardware.
7. The scrubber packed bed, scrubber body, mist eliminator, and transitions should be thoroughly cleaned with a hose to remove any foreign material from the parts. Debris can cause pump malfunction.

SUPPLY PIPING - Supply piping will have to be installed from pump skid discharge to scrubber spray header connection. A fresh water line to the make-up valve (see fresh water make-up page 4) is required. Starting at the scrubber, use the same diameter piping as the spray header connection on the scrubber. Continue with this diameter down to pump discharge. In most cases the diameter will reduce down at the pump discharge. All runs of piping should be heat traced and insulated to avoid freezing conditions in cold climates.

In certain cases, scrubbers equipped with mesh pad mist eliminators may include a washdown spray header connection. A fresh water supply line capable of delivering the specified liquid flow rate will need to be plumbed to this connection. The washdown will be periodic with the exhaust fan turned off. Under no condition should the washdown schedule be deviated from that which is suggested by Jardar Systems, Inc. without prior authorization.

WASTE PIPING - Scrubbers are supplied with overflow and drain connections. Install a valve immediately after the drain fitting if one is not provided.

FRESH WATER MAKE-UP - Fresh water must be continuously supplied to scrubber to maintain blowdown of contaminated sump water and evaporation. Blowdown rate should be maintained at 1% - 5% of scrubber recirculation rate.

Example: Scrubber recirculation rate 30 GPM, then overflow rate is 1% of 30 GPM or 0.30 GPM.

OPTIONAL BLOWDOWN SYSTEM

Scrubbers can be purchased with an automatic blow-down system. This system will conserve water and minimize effluent. The scrubber liquor should be monitored weekly for concentration. After a month or more of monitoring during normal operation, a schedule can be devised to blowdown a portion or all of the scrubber liquor. After or during blow-down, fresh water can be introduced into the system. Consult Jardar Systems, Inc. for specific details or price quotes.

PUMPS - Depending on the recirculation package purchased with your scrubber, some units are supplied with a CPVC, seal-less, vertical pump located on the scrubber sump or a remote tank. Horizontal pumps have a flush water

mechanical seal and operate at 3600 RPM. **DO NOT** allow pumps to run dry even for short periods of time, which can damage pump.

WARNING: Check pump rotation before filling the sump and final wiring. Read the pump O&M manual as reverse rotation can cause severe damage. Impeller should rotate CW when viewed from the motor end (see pump label).

PUMP MOTORS-Single Phase - Single phase pumps are supplied with dual voltage motors (115/230). Follow wiring instructions on motor nameplate. Make sure pump is wired for clockwise rotation as viewed from motor end. Always turn off, lock out, and tag out motors before working on the system.

PUMP MOTORS-Three Phase - Three phase pumps are supplied with dual voltage (230/460). Follow wiring instructions on motor nameplate.

1. After motor is wired, bump start motor.
2. Check motor to determine rotation.
3. If rotation is CCW when viewed from motor end, interchange any two leads for correct rotation.
4. Always turn off, lock out, and tag out motors before working on the system.

OPERATING DATA - The nature of this equipment is such that a record of operating data should be maintained to ensure proper maintenance and to simplify troubleshooting. Depending on the application it may be necessary to inspect the system on a weekly basis. In any case the maximum interval should be no more than one month. The responsible party should inspect and record the following:

1. Freshwater make-up setting.
2. Overflow valve in open position.
3. Air flow rate (velometer).
4. Spray Pattern.
5. Nozzles for plugging.
6. Packing for sludge build-up
7. Mist eliminator for plugging or build-up.
8. Mesh pad for plugging or saturation.
9. Record date and time of observations.

PRE-START-UP CHECKLIST - Prior to starting the system the following should be inspected:

1. Correct fan rotation.
2. Fan and pump motor wired for correct voltage.
3. Fan accessories installed.
4. All dampers locked in open position.
5. Ductwork clean and free of debris.
6. Ductwork sealed properly.
7. Plumbing connections leak tested.
8. Freshwater make-up set correctly.
9. Overflow and drain connected.
10. Packing and mist eliminator installed properly.
11. Correct spray pattern for nozzles.

SYSTEM START-UP AND OPERATION

It is critical that the scrubber system be started and checked out prior to plant operation.

1. Fill Scrubber sump or remote tank with fresh water until water begins to overflow
2. Set water make-up valve to proper GPM

3. Start pump
4. Adjust spray pattern to minimize spray hitting side wall of scrubber.
5. Immediately check stack discharge. If excessive misting is observed shut system down immediately and consult factory.
6. Adjust riser dampers to produce desired flow rate. Begin at riser furthest from exhaust fan and work towards fan. Measure velocity with pitot tube and average readings.

MAINTENANCE INSTRUCTIONS - The scrubber should be checked weekly for the first couple of weeks until a comfort level is established. The nature of the contaminant being scrubbed and proper maintenance procedures will determine the frequency of inspection. It is important that the pump, spray nozzles and column packing be properly maintained in order for the scrubber to achieve maximum efficiency.

PUMPS - Recirculation pumps, if properly maintained, seldom require maintenance. Should it be necessary to remove a pump, please observe the following:

1. Turn off and lock out power to the pump.
2. Disconnect pump wiring.
3. If supplied, shut off diaphragm valve on pump discharge.
4. If scrubber is not equipped with shut off valves, drain sump prior to removing pump.
5. Remove bolts on pump mounting plate and pull pump.
6. After repairs or installation of new pump, remember to turn valves to original position.

PUMP MOTOR - Remember a clean motor runs cooler. The motor should be cleaned and inspected at regular intervals. At this time, bearings should be checked for wear and greased if applicable.

COLUMN PACKING ACCESS - Scrubbers are equipped with bolt-on doors for packing removal and filling. The scrubber should always be shut down and locked out when removing the column packing. See the accompanying Column Packing Handling, Installation, and Operating Instructions for further information.

SPRAY NOZZLES - Scrubbers are supplied with spray headers; smaller units have removeable spray headers and larger units do not. See the attached General Arrangement drawing for your specific project.

SPRAY PATTERN - Spray pattern is critical to the performance of your wet scrubber. Observe spray pattern at start-up and adjust nozzle pattern to minimize water droplets colliding with side wall of scrubber. Make sure spray nozzles are pointing towards the packing

NOZZLE AND HEADER CLEANING - Periodically check nozzles for plugging. If spray nozzles become plugged, remove and clean as required. For smaller units:

A. Shut pump down and lock out disconnect switch.
B. Drain all plumbing lines of scrubbing liquor.
C. Remove each individual spray header.
D. Remove all nozzles from header and clean.
E. Remove threaded cap on opposite end of spray header and flush out header with clean water.
F. Reverse above steps to re-install. If plugging was caused by chemical build-up, adjust scrubbing liquor pH.

For larger systems, clean with Rydlyme® as described in section 3.2.1 of the accompanying Column Packing Handling, Installation, and Operating Instructions.

CHEVRON MIST ELIMINATOR – Some scrubbers use a fixed chevron type mist eliminator for removal of large droplets. Removable chevron mist eliminators are optional.

Inspect the mist eliminator periodically for plugging, broken pieces or shifting.

NOTE: If the eliminator is broken it must be replaced.

MESH PAD MIST ELIMINATORS - Mesh pad mist eliminators fabricated with multiple filament diameters offer a greater degree of mist elimination on smaller mist particles. Mesh pad mist eliminators are standard and sometimes used in conjunction with a chevron eliminator, the mesh eliminator is supplied in a removeable configuration. Due to the density of the mesh pad, the scrubber will operate under a higher negative pressure than chevron mist eliminator.

MESH PAD MAINTENANCE - Under normal operation with proper scrubber maintenance, the mesh eliminator requires little or no maintenance (see trouble shooting chart). If the mesh pad becomes plugged it can be cleaned as follows:

CLEANING PAD

1. Remove pad from scrubber and clean pad with pressurized water hose.
2. If the pressurized water hose is not effective the clean pad with Rydlyme® as described in the accompanying Rydlyme® literature.

   CAUTION: Follow proper safety precautions while cleaning pad. Wear protective clothing and safety goggles.

PHOTOHELIC GAUGE (optional) - Inspect photohelic gauge periodically. An increase or decrease in static pressure indicates a problem. See trouble shooting chart.

NOTE: Severe negative pressure in building can cause a change in static pressure.

INSTALLATION & MAINTENANCE-pH CONTROL SYSTEM (OPTIONAL)
All scrubbers utilize water as the main scrubbing agent. In certain cases, contaminants such as HCl require the addition of chemical additives (such as NaOH) to improve absorption through an acid-base reaction. This is accomplished by the addition of a pH control system to monitor and adjust the scrubbing liquor when necessary.

When using a pH control system, it is necessary to maintain a blowdown from scrubber sump or incorporate a manual or automatic blowdown system. This will insure that salts do not build up in sump or plug the spray nozzles and mist eliminator.

The following list describes all the parts associated with a standard chemical feed system:

1.PVC or Polyethylene holding tank with overflow and drain.

2.Chemical feed pump mounted on tank with pump suction pre-plumbed. The outlet plumbing must be supplied and installed by other.

NOTE: If holding tank was not purchased with scrubber, chemical feed pump will be supplied loose.

3.Mixer (optional).

4.pH Controller mounted in a NEMA box with pH probe

The panel is mounted on the scrubber unless otherwise specified. When wired properly, the pH controller signals the chemical feed pump when to pump neutralizing agent from a plastic tote or caustic (NaOH) tank into the scrubber recirculation circuit.

WARNING:

1.pH probe sensor will dry out if not in solution for extended periods of time. If this is allowed the controller cannot be programmed.

2. Depending on the chemicals involved, the pH probe may have to be replaced on a regular basis. It is recommended that back-up probes be kept in stock.

WIRING - See instructions supplied with unit (460, VAC,230/115 VAC, or 24VDC power).

SCRUBBER TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE
POOR SPRAY PATTERN	• Spray Nozzles plugged up • Spray Headers plugged up • Pump suction blocked • Pump discharge piping too small • Insufficient water in sump • Pump running backwards • Total head exceeds that of pump
UNIT WILL NOT DRAIN	• Drain line to remote tank is not submerged or trapped • Drain line is not sloped towards drain • Drain line plugged • Drain line too small
MOISTURE AFTER UNIT	• Re-Entrainment due to liquid loading • Gap or void in mist eliminator • Mist Eliminator damaged • Velocity too high through scrubber • Droplet size too small • Packing has settled (horizontal units) • Mesh pad mist eliminator plugged or saturated—liquid loading too high—throttle back nozzle spray pattern and clean mesh pad
LOW REMOVAL EFFICIENCY	• Insufficient or no water to spray nozzles • Mist Eliminator (if present) plugged or shifted • Velocity too high or too low • Improper pH of scrubbing liquor—inlet concentration too high • Packing plugged or settled
DECREASED EXHAUST VOLUME—EXHAUST SYSTEM NOT VENTING PROPERLY	• Check fan—RPM—belts—rotation—fuses • Packing plugged • Chevron mist eliminator and or mesh pad plugged • Dampers closed or broken in closed position • Ductwork plugged with solids • High negative pressure in building • Leaks in ductwork
pH SYSTEM NOT WORKING PROPERLY	• Remove protective cover from probe and check for build-up • System not programmed properly

	• Chemical feed pump not working properly • No neutralizer in chemical feed tank or tote • pH sensor located on probe has dried out due to lack of moisture—replace if necessary

JARDAR SYSTEMS, INC.
Specialists in Air Pollution Control

3266 RFD Middlesax Drive
LONG GROVE, IL 60047
P: 847-550-1686
E:sales@jardarsystems.com
www.jardarsystems.com

Handling, Installation and Operating Instructions

For Packed Tower Scrubbers

CAUTION

This equipment can cause severe bodily injury. Severe damage could occur to the equipment, surrounding property, and automobiles. Before operating this equipment, read the Installation, Operation, and Maintenance Instructions

1. Do not operate fan without liquid recirculation system on.
2. Do not operate fan when spray nozzles are plugged.
3. Do not operate fan if scrubber recirculation liquor is concentrated. Proper fresh water makeup and blowdown rates must be maintained.
4. Spray pattern should be adjusted so spray does not hit vessel side wall.
5. If fan and scrubber have been shut down for an extended period of time, recirculation system should be run while fan is off to test system internals.
6. If unit is equipped with a sump heater and freezing conditions exist, recirculation pump and heater should be in operation during periods of shut down unless sump is completely drained.
7. If heat trace and sump heaters are not used during cold weather, the equipment should be drained completely if not in use.
8. Improper pH setting could cause severe damage (see section on **pH control**).

Start-Up Service:
In addition to this installation, operation and maintenance manual, Jardar Systems, Inc. offers a factory trained service representative to perform, assist or advise in the installation and start-up of this equipment. The cost for this service is charged per man at the following rates:

A. First eight (8) hours of a single day

B. Overtime hours in a single day

C. Sunday or Holiday

D. Other expenses such as airfare, hotel, car rental, meals, parts, tax, freight, etc. if applicable will be charged at cost plus 15% administration fee.

E. Company Vehicles
1. Company car or truck @ $1.25/mile
2. Company truck and trailer @ $2.50/mile

Call Jardar Systems, Inc. for current Service rates.

INTRODUCTION - The performance of every system depends on many factors. The purpose of this manual is to make you aware of these factors, so you will obtain the utmost efficient and dependable performance from your Jardar Systems, Inc. equipment.

If the proper care is exercised installing this equipment, and it is given proper maintenance, you can be assured of trouble-free operation for years to come.

It is important that you study this manual prior to installing and operating this equipment to assure safe installation and operation.

SAFETY - The very nature of air handling equipment and accessories present a hazard to personnel during installation and maintenance. The following precautions should be observed prior to starting and maintaining the scrubber:

1. All system motors should be locked out. This is accomplished by padlocking the disconnect switch in the off position until installation or maintenance is complete.
2. The scrubber housing should be inspected for debris or any loose parts.
3. Installation should be complete with inlet and outlet accessories attached.
4. All guards should be in place and secured. Never remove or replace any guards unless pump is shut down and locked out.
5. All dampers in duct system should be locked in open position.
6. Never discharge corrosive or harmful fumes from the fan. The scrubber should always be operated with the proper amount of fresh water make-up.
7. Inspect ductwork for leaks of harmful or corrosive fumes.
8. Follow good safety practices when installing or maintaining this equipment.
9. Follow all company work rules and OSHA regulations when working on the equipment

RECEIVING AND INSPECTION - Upon receipt of shipment, check first to see that all items on bill of lading and/or packing slip have been received. By careful inspection, determine whether damage has occurred in transit. Any shortage or damage should be noted and a claim filed immediately.

HANDLING AND STORAGE - If installation of the scrubber is delayed and storage is made outdoors, provide reasonable weather protection. Special attention should be given to pump and motor to prevent the entrance of water. When transporting or installing a scrubber, the lifting eyes should be used to prevent damage. Never pick a scrubber up by its flanges. Do not tarp equipment or ductwork exposed to direct sunlight. Excessive heat can build-up causing distortion. Motors and pumps have been test-run prior to shipping. All scrubbers have been test-run and checked for leaks. See and read the additional specific handling instructions for the type of scrubber (PVC, PP, FRP) you have been provided

FOUNDATIONS - A rigid, level foundation is vitally essential for the operation and performance of a scrubber. A frequent error is to design a foundation for the weight of the scrubber only. Consideration should be given for weight of the scrubbing liquor. Make sure that the total flooded weight of the scrubber has been taken into account.

Poured concrete is preferred to steel or wood. Steel platforms should be heavily braced.

DUCT CONNECTIONS - Duct loads can cause distortion with consequent damage to the scrubber. With this is mind, please observe the following:

1. Support ducts independently of scrubber.
2. Use flexible connections between ductwork and scrubber.

GENERAL

1.Prior to installing this equipment inspect the name plates or other tags for special instructions.

2. It is recommended that this equipment be installed by personnel familiar with the installation of this type of equipment.

3. If the scrubber is roof mounted, a structural engineer should be consulted to determine if the roof can support the operating weight of the scrubber). Care should be exercised in handling this equipment during installation to prevent damage caused by external stress or shock.

OPERATING TEMPERATURES - PVC scrubbers should not be used on processes exceeding 130° F. Polypropylene should not be used on processes exceeding 160° F. FRP scrubbers should not be used on processes exceeding 180° F.

INSTALLATION INSTRUCTIONS

1. Prior to installation, inspect all equipment and parts to determine if damage has occurred during shipment. See and read the accompanying column packing Handling instructions.
2. See and read the accompanying Handling instructions for PVC, PP,or FRP vessels.
3. Inspect all equipment for damage or breakage and report to the shipper immediately.
4. All scrubbers are equipped with lifting eyes for rigging. Do not lift scrubbers by the flanges.
5. It is recommended that inlet/outlet transitions be bolted on after setting the scrubber. Prior to bolting transitions be sure the flanges are clean. Use adhesive backed, closed cell gasket or 100% silicone caulking material. Apply gasket starting at the center of the top flange horizontally. Continue around face of flange to starting point making sure gasket is within the inside of bolt holes.
6. Bolt transitions in place using stainless steel hardware.
7. The scrubber packed bed, scrubber body, mist eliminator, and transitions should be thoroughly cleaned with a hose to remove any foreign material from the parts. Debris can cause pump malfunction.

SUPPLY PIPING - Supply piping will have to be installed from pump skid discharge to scrubber spray header connection. A fresh water line to the make-up valve (see fresh water make-up page 4) is required. Starting at the scrubber, use the same diameter piping as the spray header connection on the scrubber. Continue with this diameter down to pump discharge. In most cases the diameter will reduce down at the pump discharge. All runs of piping should be heat traced and insulated to avoid freezing conditions in cold climates.

In certain cases, scrubbers equipped with mesh pad mist eliminators may include a washdown spray header connection. A fresh water supply line capable of delivering the specified liquid flow rate will need to be plumbed to this connection. The washdown will be periodic with the exhaust fan turned off. Under no condition should the washdown schedule be deviated from that which is suggested by Jardar Systems, Inc. without prior authorization.

WASTE PIPING - Scrubbers are supplied with overflow and drain connections. Install a valve immediately after the drain fitting if one is not provided.

FRESH WATER MAKE-UP - Fresh water must be continuously supplied to scrubber to maintain blowdown of contaminated sump water and evaporation. Blowdown rate should be maintained at 1% - 5% of scrubber recirculation rate.

Example: Scrubber recirculation rate 30 GPM, then overflow rate is 1% of 30 GPM or 0.30 GPM.

OPTIONAL BLOWDOWN SYSTEM

Scrubbers can be purchased with an automatic blow-down system. This system will conserve water and minimize effluent. The scrubber liquor should be monitored weekly for concentration. After a month or more of monitoring during normal operation, a schedule can be devised to blowdown a portion or all of the scrubber liquor. After or during blow-down, fresh water can be introduced into the system. Consult Jardar Systems, Inc. for specific details or price quotes.

PUMPS - Depending on the recirculation package purchased with your scrubber, some units are supplied with a CPVC, seal-less, vertical pump located on the scrubber sump or a remote tank. Horizontal pumps have a flush water

mechanical seal and operate at 3600 RPM. **DO NOT** allow pumps to run dry even for short periods of time, which can damage pump.

WARNING: Check pump rotation before filling the sump and final wiring. Read the pump O&M manual as reverse rotation can cause severe damage. Impeller should rotate CW when viewed from the motor end (see pump label).

PUMP MOTORS-Single Phase - Single phase pumps are supplied with dual voltage motors (115/230). Follow wiring instructions on motor nameplate. Make sure pump is wired for clockwise rotation as viewed from motor end. Always turn off, lock out, and tag out motors before working on the system.

PUMP MOTORS-Three Phase - Three phase pumps are supplied with dual voltage (230/460). Follow wiring instructions on motor nameplate.

1. After motor is wired, bump start motor.
2. Check motor to determine rotation.
3. If rotation is CCW when viewed from motor end, interchange any two leads for correct rotation.
4. Always turn off, lock out, and tag out motors before working on the system.

OPERATING DATA - The nature of this equipment is such that a record of operating data should be maintained to ensure proper maintenance and to simplify troubleshooting. Depending on the application it may be necessary to inspect the system on a weekly basis. In any case the maximum interval should be no more than one month. The responsible party should inspect and record the following:

1. Freshwater make-up setting.
2. Overflow valve in open position.
3. Air flow rate (velometer).
4. Spray Pattern.
5. Nozzles for plugging.
6. Packing for sludge build-up
7. Mist eliminator for plugging or build-up.
8. Mesh pad for plugging or saturation.
9. Record date and time of observations.

PRE-START-UP CHECKLIST - Prior to starting the system the following should be inspected:

1. Correct fan rotation.
2. Fan and pump motor wired for correct voltage.
3. Fan accessories installed.
4. All dampers locked in open position.
5. Ductwork clean and free of debris.
6. Ductwork sealed properly.
7. Plumbing connections leak tested.
8. Freshwater make-up set correctly.
9. Overflow and drain connected.
10. Packing and mist eliminator installed properly.
11. Correct spray pattern for nozzles.

SYSTEM START-UP AND OPERATION

It is critical that the scrubber system be started and checked out prior to plant operation.

1. Fill Scrubber sump or remote tank with fresh water until water begins to overflow
2. Set water make-up valve to proper GPM

3. Start pump
4. Adjust spray pattern to minimize spray hitting side wall of scrubber.
5. Immediately check stack discharge. If excessive misting is observed shut system down immediately and consult factory.
6. Adjust riser dampers to produce desired flow rate. Begin at riser furthest from exhaust fan and work towards fan. Measure velocity with pitot tube and average readings.

MAINTENANCE INSTRUCTIONS - The scrubber should be checked weekly for the first couple of weeks until a comfort level is established. The nature of the contaminant being scrubbed and proper maintenance procedures will determine the frequency of inspection. It is important that the pump, spray nozzles and column packing be properly maintained in order for the scrubber to achieve maximum efficiency.

PUMPS - Recirculation pumps, if properly maintained, seldom require maintenance. Should it be necessary to remove a pump, please observe the following:

1. Turn off and lock out power to the pump.
2. Disconnect pump wiring.
3. If supplied, shut off diaphragm valve on pump discharge.
4. If scrubber is not equipped with shut off valves, drain sump prior to removing pump.
5. Remove bolts on pump mounting plate and pull pump.
6. After repairs or installation of new pump, remember to turn valves to original position.

PUMP MOTOR - Remember a clean motor runs cooler. The motor should be cleaned and inspected at regular intervals. At this time, bearings should be checked for wear and greased if applicable.

COLUMN PACKING ACCESS - Scrubbers are equipped with bolt-on doors for packing removal and filling. The scrubber should always be shut down and locked out when removing the column packing. See the accompanying Column Packing Handling, Installation, and Operating Instructions for further information.

SPRAY NOZZLES - Scrubbers are supplied with spray headers; smaller units have removeable spray headers and larger units do not. See the attached General Arrangement drawing for your specific project.

SPRAY PATTERN - Spray pattern is critical to the performance of your wet scrubber. Observe spray pattern at start-up and adjust nozzle pattern to minimize water droplets colliding with side wall of scrubber. Make sure spray nozzles are pointing towards the packing

NOZZLE AND HEADER CLEANING - Periodically check nozzles for plugging. If spray nozzles become plugged, remove and clean as required. For smaller units:

A. Shut pump down and lock out disconnect switch.
B. Drain all plumbing lines of scrubbing liquor.
C. Remove each individual spray header.
D. Remove all nozzles from header and clean.
E. Remove threaded cap on opposite end of spray header and flush out header with clean water.
F. Reverse above steps to re-install. If plugging was caused by chemical build-up, adjust scrubbing liquor pH.

For larger systems, clean with Rydlyme® as described in section 3.2.1 of the accompanying Column Packing Handling, Installation, and Operating Instructions.

CHEVRON MIST ELIMINATOR – Some scrubbers use a fixed chevron type mist eliminator for removal of large droplets. Removable chevron mist eliminators are optional.

Inspect the mist eliminator periodically for plugging, broken pieces or shifting.

NOTE: If the eliminator is broken it must be replaced.

MESH PAD MIST ELIMINATORS - Mesh pad mist eliminators fabricated with multiple filament diameters offer a greater degree of mist elimination on smaller mist particles. Mesh pad mist eliminators are standard and sometimes used in conjunction with a chevron eliminator, the mesh eliminator is supplied in a removeable configuration. Due to the density of the mesh pad, the scrubber will operate under a higher negative pressure than chevron mist eliminator.

MESH PAD MAINTENANCE - Under normal operation with proper scrubber maintenance, the mesh eliminator requires little or no maintenance (see trouble shooting chart). If the mesh pad becomes plugged it can be cleaned as follows:

CLEANING PAD

1. Remove pad from scrubber and clean pad with pressurized water hose.
2. If the pressurized water hose is not effective then clean pad with Rydlyme® as described in the accompanying Rydlyme® literature.

   CAUTION: Follow proper safety precautions while cleaning pad. Wear protective clothing and safety goggles.

PHOTOHELIC GAUGE (optional) - Inspect photohelic gauge periodically. An increase or decrease in static pressure indicates a problem. See trouble shooting chart.

NOTE: Severe negative pressure in building can cause a change in static pressure.

INSTALLATION & MAINTENANCE-pH CONTROL SYSTEM (OPTIONAL)
All scrubbers utilize water as the main scrubbing agent. In certain cases, contaminants such as HCl require the addition of chemical additives (such as NaOH) to improve absorption through an acid-base reaction. This is accomplished by the addition of a pH control system to monitor and adjust the scrubbing liquor when necessary.

When using a pH control system, it is necessary to maintain a blowdown from scrubber sump or incorporate a manual or automatic blowdown system. This will insure that salts do not build up in sump or plug the spray nozzles and mist eliminator.

The following list describes all the parts associated with a standard chemical feed system:

1.PVC or Polyethylene holding tank with overflow and drain.

2.Chemical feed pump mounted on tank with pump suction pre-plumbed. The outlet plumbing must be supplied and installed by other.

NOTE: If holding tank was not purchased with scrubber, chemical feed pump will be supplied loose.

3.Mixer (optional).

4.pH Controller mounted in a NEMA box with pH probe

The panel is mounted on the scrubber unless otherwise specified. When wired properly, the pH controller signals the chemical feed pump when to pump neutralizing agent from a plastic tote or caustic (NaOH) tank into the scrubber recirculation circuit.

WARNING:

1.pH probe sensor will dry out if not in solution for extended periods of time. If this is allowed the controller cannot be programmed.

2. Depending on the chemicals involved, the pH probe may have to be replaced on a regular basis. It is recommended that back-up probes be kept in stock.

WIRING - See instructions supplied with unit (460, VAC,230/115 VAC, or 24VDC power).

SCRUBBER TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE
POOR SPRAY PATTERN	• Spray Nozzles plugged up • Spray Headers plugged up • Pump suction blocked • Pump discharge piping too small • Insufficient water in sump • Pump running backwards • Total head exceeds that of pump
UNIT WILL NOT DRAIN	• Drain line to remote tank is not submerged or trapped • Drain line is not sloped towards drain • Drain line plugged • Drain line too small
MOISTURE AFTER UNIT	• Re-Entrainment due to liquid loading • Gap or void in mist eliminator • Mist Eliminator damaged • Velocity too high through scrubber • Droplet size too small • Packing has settled (horizontal units) • Mesh pad mist eliminator plugged or saturated—liquid loading too high—throttle back nozzle spray pattern and clean mesh pad
LOW REMOVAL EFFICIENCY	• Insufficient or no water to spray nozzles • Mist Eliminator (if present) plugged or shifted • Velocity too high or too low • Improper pH of scrubbing liquor—inlet concentration too high • Packing plugged or settled
DECREASED EXHAUST VOLUME—EXHAUST SYSTEM NOT VENTING PROPERLY	• Check fan—RPM—belts—rotation—fuses • Packing plugged • Chevron mist eliminator and or mesh pad plugged • Dampers closed or broken in closed position • Ductwork plugged with solids • High negative pressure in building • Leaks in ductwork
pH SYSTEM NOT WORKING PROPERLY	• Remove protective cover from probe and check for build-up • System not programmed properly

	• Chemical feed pump not working properly • No neutralizer in chemical feed tank or tote • pH sensor located on probe has dried out due to lack of moisture—replace if necessary

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& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment I

Site Plan Delineating Locations for Unloading, Staging and Storage of Materials

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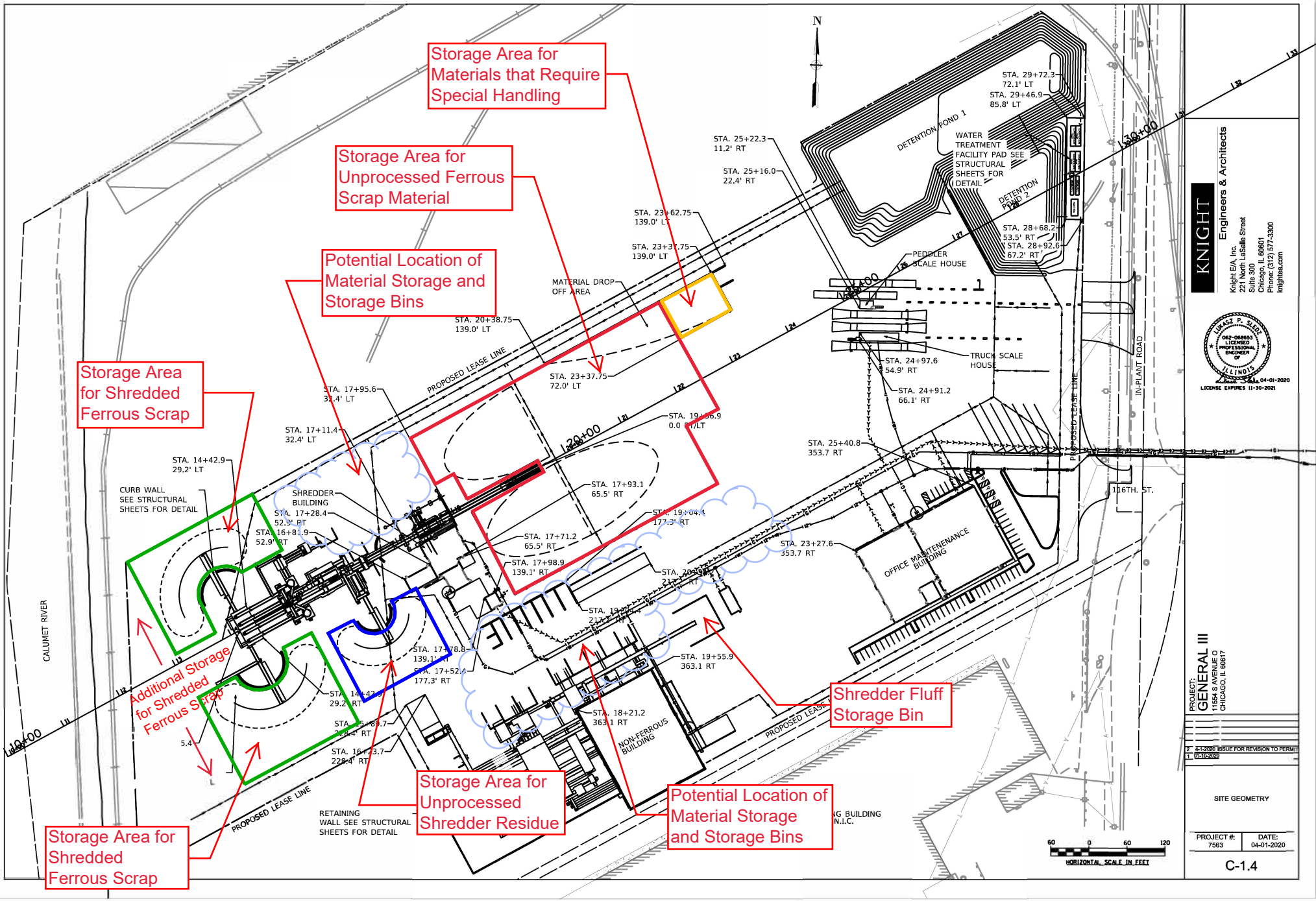
Storage Area for Materials that Require Special Handling
Storage Area for Unprocessed Ferrous Scrap Material
Potential Location of Material Storage and Storage Bins
Storage Area for Shredded Ferrous Scrap
Additional Storage for Shredded Ferrous Scrap
Storage Area for Unprocessed Shredder Residue
Potential Location of Material Storage and Storage Bins
Shredder Fluff Storage Bin
Storage Area for Shredded Ferrous Scrap
N
DETENTION POND 1
DETENTION POND 2
WATER TREATMENT FACILITY PAD SEE STRUCTURAL SHEETS FOR DETAIL
PEDDLER SCALE HOUSE
TRUCK SCALE HOUSE
MATERIAL DROP OFF AREA
PROPOSED LEASE LINE
IN-PLANT ROAD
116TH. ST.
CALUMET RIVER
SHREDDER BUILDING
CURB WALL SEE STRUCTURAL SHEETS FOR DETAIL
OFFICE MAINTENANCE BUILDING
NON-FERROUS BUILDING
RETAINING WALL SEE STRUCTURAL SHEETS FOR DETAIL
HORIZONTAL SCALE IN FEET
KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knighthea.com
LICENSE EXPIRES 11-30-2021
PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617
2 4-1-2020 ISSUE FOR REVISION TO PERMIT
1 01-10-2020
SITE GEOMETRY
PROJECT #: 7563
DATE: 04-01-2020
C-1.4

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January 2021

Addendum 1 – Attachment J

Shredder Fluff Storage Bin Drawings

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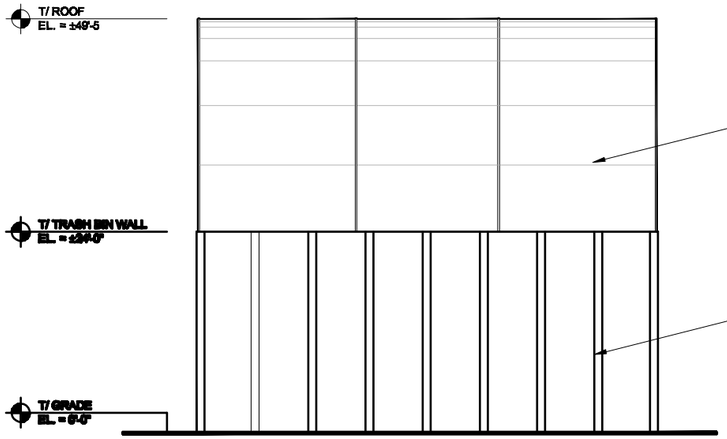
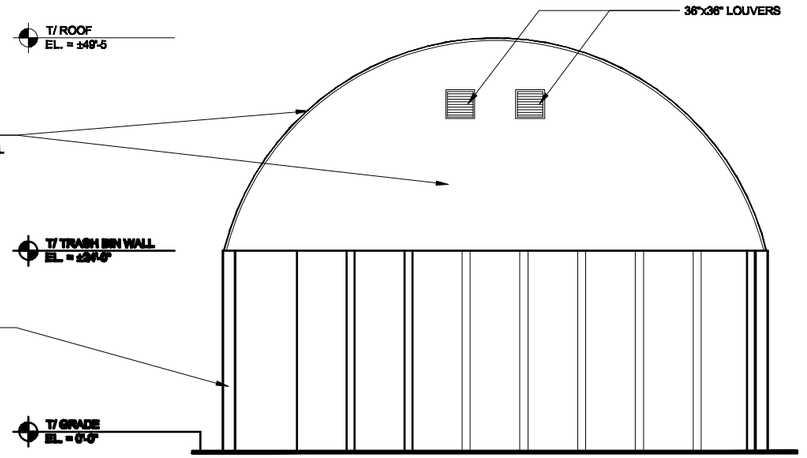


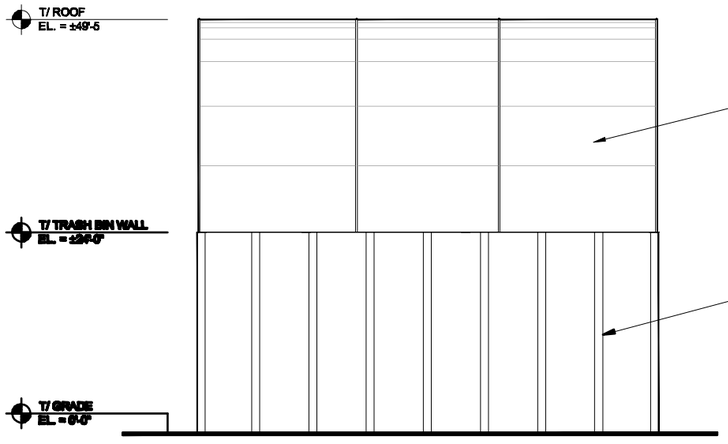
1 A2.0 **WEST ELEVATION**

PREFABRICATED CANOPY OVER STEEL TRUSS

STEEL COLUMNS



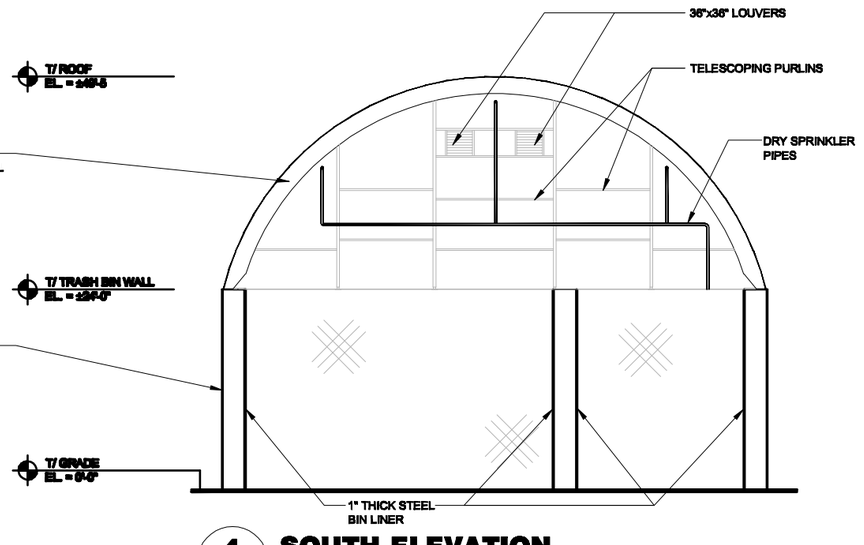
2 A2.0 **NORTH ELEVATION**



3 A2.0 **EAST ELEVATION**

PREFABRICATED CANOPY OVER STEEL TRUSS

STEEL COLUMNS



4 A2.0 **SOUTH ELEVATION**
(OPEN-END OF TRASH BIN STRUCTURE)

GRAPHIC SCALE
16' 8" 0 8' 16'

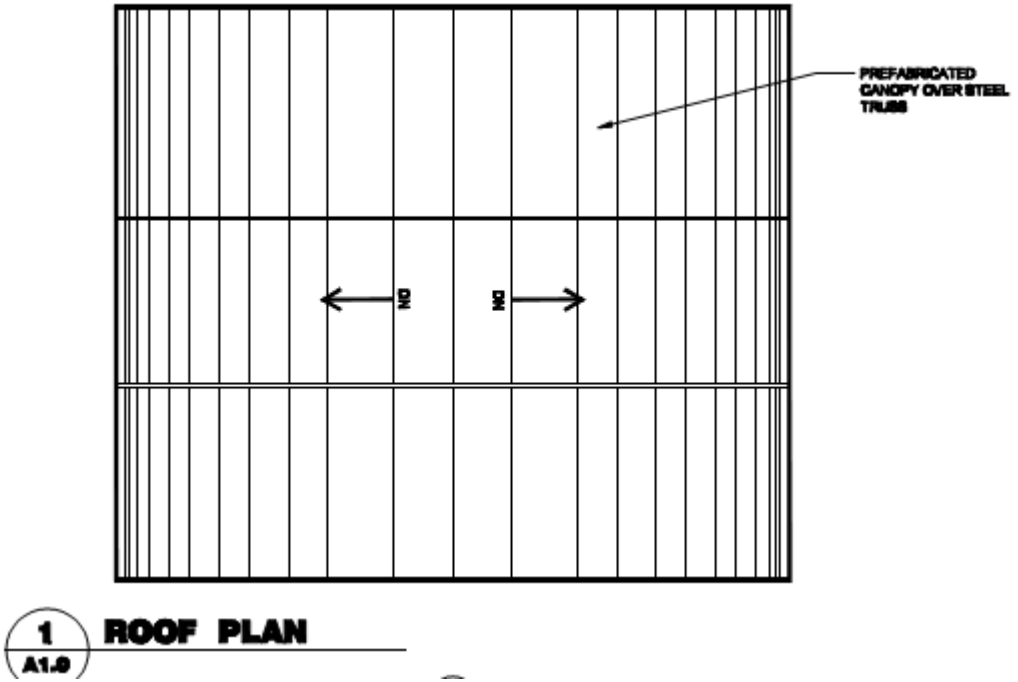
SONOC ARCHITECTS & ASSOCIATES
735 WEST DIVISION STREET
CHICAGO ILLINOIS 60610
312 266-5954
FAX 266-5968
SONOC@SONOC.COM
WWW.SONOC.COM

DESCRIPTION
ELEVATIONS

DRAWN BY | CHECKED BY
PROJECT NO.
DRAWING NO.

A2.0

Plan view. ASR storage enclosure.



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Addendum 1 – Attachment K

NPDES General Permit for Construction Activities

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-2829

217/782-0610

2/4/2020

GENERAL III LLC
HAL TOLIN
11600 S BURLEY AVE
CHICAGO, IL 60617

RE: FACILITY : General III Recycling Facility, CHICAGO, IL
COUNTY : COOK, NPDES Permit No : ILR10BE80
Notice of Coverage Under Construction Site Activity Storm Water General Permit

Dear NPDES Permittee:

We have reviewed your application and determined that storm water discharges associated with industrial activity from construction sites are appropriately covered by the attached General NPDES Permit issued by the Agency. Your discharge is covered by this permit effective as of the date of this letter or as identified by the conditions of the permit. The Permit as issued covers application requirements, a storm water pollution prevention plan and reporting requirements.

As a Permit Holder, it is your responsibility to:

1. Submit a modified Notice of Intent of any **ownership or address change** to the Permit Section within 30 days;
2. A **Notice of Termination** must be sent to the Agency, at the address indicated on the Notice of Termination, once your construction project has been **completed and the site is properly stabilized.** A Notice of Termination form has been enclosed for your convenience;

This letter shows your facility permit number below the construction site name. Please save this number and reference it in all future correspondence. Should you have any questions concerning the Permit, please contact Melissa Parrott at (217) 782-0610.

Very truly yours,

Amy L. Dragovich, P.E.
Manager, Permit Section
Division of Water Pollution Control

CC: Records Unit, Knight Engineers, North Cook County SWCD, Will - South Cook County SWCD, Region : DesPlaines

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11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment L

Stormwater Treatment System Operation and Maintenance and Triple Basin Drawing

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Safety Data Sheet

according to 29 CFR 1910.1200 and 1907/2006/EC, Article 31

Version 8 Date Reviewed: 09/11/2018

Date Printed: 09/11/2018

* Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

· **Product Identifier:** **Liquid Caustic Soda 50% Membrane Grade**

· **Synonyms:** Sodium Hydroxide 50%

· **REACH Registration Number:** 01-xxxxxxxxxx-xx-0201

· **Product Use:**
Strong chemical base in the manufacture of pulp and paper, textiles, drinking water, soaps and detergents.

· **Manufacturer/Supplier:**
Formosa Plastics Corporation, Americas
201 Formosa Drive
Point Comfort, TX 77978 USA
+1 (361) 987-7000
E-Mail: MSDS@fpcusa.com
Distributor:
Rowell Chemical Corporation
15 Salt Creek Lane, Suite 205
Hinsdale, IL 60521

· **European REACH Representative:** Intertek France

· **Business Division:** Chlor-Alkali

· **Emergency Telephone Number:**
In case of a chemical emergency, contact CHEMTREC (24 hrs) at:
+1 (800) 424-9300 (United States, Canada, Puerto Rico, Virgin Islands)
+1 (703) 527-3887 (International & Maritime)

Section 2: Hazards Identification

· **Hazard Classification:**

GHS05

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.

· **Signal Word:** DANGER

· **Precautionary Statements:**

P260	Do not breathe mist.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a doctor.
P309	IF EXPOSED OR IF YOU FEEL UNWELL:
P363	Wash contaminated clothing before reuse.
P501	Dispose of contents/container in accordance with local regulations.

· **NFPA Ratings (scale 0 - 4):**

Health = 3
Fire = 0

Reactivity = 1

(Contd. on Page 2)

Safety Data Sheet

according to 29 CFR 1910.1200 and 1907/2006/EC, Article 31

Date Printed: 09/11/2018 Version 8 Date Reviewed: 09/11/2018

Product Identifier: Liquid Caustic Soda 50% Membrane Grade

(Contd. from Page 1)

· **Additional Information:**
If you do not understand the hazards or safety precautions described in this data sheet, contact your supervisor or safety administrator before handling this product.

Section 3: Composition/Information on Ingredients

· **Dangerous Components:**
· **CAS No. Description**

1310-73-2 sodium hydroxide 50%
~ Skin Corr. 1A, H314

Section 4: First Aid Measures

· **General information:**
Rescue personnel must wear appropriate protective equipment during removal of victims from contaminated areas.

· **After Inhalation:**
Remove victim to fresh air.
Administer oxygen if breathing is difficult.
Administer artifical respiration if breathing has stopped.
Onset of symptoms may be delayed up to 48 hours.
Get immediate medical attention.

· **After Skin Contact:**
Remove contaminated clothing and shoes. Wash affected area with soap and water.
Use caution to avoid spreading contamination while washing.
Delayed skin damage is possible if product is not completely washed off.
Get immediate medical attention.

· **After Eye Contact:**
In case of accidental contact, immediately flush eyes with water.
Hold eyelids open to ensure adequate flushing.
Remove contact lenses, if present and easy to do. Continue rinsing.
Get immediate medical attention.

· **After Swallowing:**
Rinse mouth.
Administer 1-2 glasses of water to dilute ingested material.
Do NOT induce vomiting.
Never give anything by mouth to an unconscious person.
Get immediate medical attention.

· **Most Important Symptoms and Effects:** No further relevant information available.

Section 5: Firefighting Measures

· **Suitable Extinguishing Agents:**
CO2, extinguishing powder or water spray. Fight larger fires with water spray.

· **Special Firefighting Hazards:** No special firefighting hazards expected.

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· **Protective Equipment:**
In the event of a fire, wear a NIOSH (USA) or CEN (EU) approved self-contained breathing apparatus (SCBA) and full protective clothing.

· **Additional Information:** Evacuate all non-essential personnel from the danger area.

Section 6: Accidental Release Measures

· **Personal Precautions, Protective Equipment and Emergency Procedures:**
In case of a spill or other accidental release of this material, contact your supervisor, safety administrator, or emergency response team immediately.
Restrict access to keep out unauthorized or unprotected personnel.
Stay upwind of spilled material.
Wear appropriate personal protective equipment during all clean-up activities. See Section 8 for more information.
Avoid inhalation and direct contact.
All clean-up personnel must be properly trained.

· **Environmental Precautions:**
Keep spilled material out of sewage/drainage systems and waterways.
This product contains a U.S. EPA Reportable Quantity (RQ) substance. If amounts exceeding the Reportable Quantity are released, notification of the National Response Center +1 (800) 424-8802 is required. See Section 15 for more information.

· **Methods for Containment and Clean-Up:**
Secure the source of the leak if conditions are safe.
Use neutralizing agent.
Collect using an appropriate absorbent material such as clay or sand.
Place waste in an appropriate container for disposal.
Use care during clean-up to avoid exposure to the material and injury from broken containers.

Section 7: Handling and Storage

· **Precautions for Safe Handling:**
When diluting, always stir the product into water, not water to product.
Do not mix with water without dilution and agitation to prevent potentially violent reaction.
Avoid inhalation and direct contact.
Wear appropriate personal protective equipment.
Do not mix with acids, ammonia, alcohol, ethers or hydrocarbons.

· **Protection Against Fires and Explosions:** Contact with metals may form hydrogen gas.

· **Conditions for Safe Storage:**
Store in closed, properly labeled containers.
Protect containers from heat, physical damage, ignition sources and incompatible materials.
Have emergency equipment for fires and spills readily available.
Absorbs carbon dioxide. Keep container closed.
There is no specific limit on shelf-life if material is stored in a closed container.

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· **Additional Information:**
If you do not understand the hazards or safety precautions described in this data sheet, contact your supervisor or safety administrator before handling this product.

Section 8: Exposure Controls/Personal Protection

· **Occupational Exposure Limits:**

1310-73-2 sodium hydroxide

PEL (USA)	Eight-Hour Value: 2 mg/m³
REL (USA)	Ceiling Limit Value: 2 mg/m³
TLV (USA)	Ceiling Limit Value: 2 mg/m³
EL (Canada)	Ceiling Limit Value: 2 mg/m³
EV (Canada)	Ceiling Limit Value: 2 mg/m³
WEL (Great Britain)	Short-Term Value: 2 mg/m³

· **Exposure Controls:** Ensure emergency eyewash and shower facilities are available.

· **General Protective and Hygienic Measures:**
Wash thoroughly after handling.
Follow all safety precautions, posted signs and warnings.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.

· **Respiratory Protection:**
An industrial hygiene risk assessment is required to determine appropriate respiratory protection.
An air-purifying respirator may be appropriate under limited exposure conditions.
Perform a respirator fit/seal check after donning.
Protection provided by air-purifying respirators is limited.
Wear a self-contained breathing apparatus (SCBA) if there is a potential for uncontrolled release, exposure levels are not known, or in other circumstances where air-purifying respirators may not provide adequate protection.

· **Hand Protection:**

Chemical resistant gloves.

Work gloves may be worn over chemical resistant gloves.
Wear a second pair of chemical resistant gloves for added protection.
Tape gloves to coveralls or suit, if worn.
Use caution when removing gloves to avoid exposure to hazardous chemicals.

· **Eye/Face Protection:**

Safety glasses with side shields.

Splash goggles/mono-goggles recommended during tasks with high potential for exposure.

· **Body Protection:**
Lab coat recommended for small scale operations.

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Tasks with a high probability for splashing or skin contact may require:
Chemical resistant coveralls or apron.
Heavy duty chemical resistant boots.

· **Additional Information:**
If unusual exposures are expected, an industrial hygiene review of work practices, engineering controls and personal protective equipment is recommended.

Section 9: Physical/Chemical Properties

· **Form:**	Liquid
· **Color:**	Colorless
· **Odor:**	Odorless
· **Odor Threshold:**	Not determined.
· **pH Value at 20 °C (68 °F):**	13.7
· **Melting Point:**	5-12 °C (41-53.6 °F) (Freezing Point)
· **Boiling Point:**	221 °C (429.8 °F)
· **Flash Point:**	Not applicable.
· **Autoignition Temperature:**	Not determined.
· **Decomposition Temperature:**	Not determined.
· **Lower Explosive Limit (LEL):**	Not determined.
· **Upper Explosive Limit (UEL):**	Not determined.
· **Vapor Pressure:**	Not determined.
· **Density at 20 °C (68 °F):**	1.52 g/cm³ (12.68 lbs/gal)
· **Vapor Density:**	Not determined.
· **Evaporation Rate:**	Not determined.
· **Solubility in Water:**	Soluble.
· **Partition Coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	Not determined.

*

Section 10: Stability and Reactivity

· **Chemical Stability/Reactivity:** Stable if used and stored according to the specifications listed below.

· **Conditions to Avoid:**
Keep away from heat, sparks and open flames.
Keep away from incompatible materials.
Absorbs carbon dioxide. Keep container closed.

· **Possibility of Hazardous Reactions/Incompatible Materials:**
Keep away from strong oxidizers.
Keep away from halogenated compounds.
Do not mix with acids, ammonia, alcohol, ethers or hydrocarbons.

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Contact with metals may form hydrogen gas.

· **Hazardous Decomposition Products:** No data available.

Section 11: Toxicological Information

· **Acute Toxicity:** Based on available data, the classification criteria are not met.

· **Relevant LD/LC50 Values:**

1310-73-2 sodium hydroxide

Oral LD50 2000 mg/kg (rat)

· **Skin Irritation:**
Causes severe skin burns and eye damage.

· **Eye Irritation:**
Causes serious eye damage.

· **Respiratory Irritation:** Corrosive to the respiratory tract.

· **Sensitization/Allergic Reaction:** No data available.

Section 12: Ecological Information

· **Aquatic Toxicity:** No data available.

· **Persistence and Degradability:** No data available.

· **Bioaccumulative Potential:** No data available.

Section 13: Disposal Considerations

· **Disposal Instructions:**
Keep spilled material out of sewage/drainage systems and waterways.
Maximize product recovery for reuse or recycling.
Waste materials may be hazardous due to the pH/corrosivity.
Dispose of waste in accordance with applicable laws and regulations.

· **Additional Information:**
It is the responsiblity of the product user to determine at the time of disposal whether a material containing or derived from this product should be classified as hazardous waste.

Section 14: Transport Information

· **UN Number:**

· **DOT, ADR, IMDG, IATA** UN1824

· **UN Proper Shipping Name:**

· **DOT:** Sodium hydroxide solution

· **ADR:** 1824 Sodium hydroxide solution

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· **IMDG, IATA** SODIUM HYDROXIDE SOLUTION

· **Transport Hazard Class(es):**

· **DOT:**

· **Class:** 8 Corrosive substances

· **Label:** 8

· **ADR, IMDG, IATA**

· **Class:** 8 Corrosive substances

· **Label:** 8

· **Packing Group:**

· **DOT, ADR, IMDG, IATA** II

· **Environmental Hazards:** Not applicable.

· **Marine Pollutant:** No

· **Special Precautions:** Warning: Corrosive substances

· **Danger Code (Kemler):** 80

· **EMS Number:** F-A,S-B

· **Segregation Groups:** Alkalis

· **Additional Information:** Shippers must consult transportation regulations for packaging instructions, quantity limitations and other regulatory information applicable to the desired mode of transport.

· **DOT:**

· **Quantity Limitations:** On passenger aircraft/rail: 1 L
On cargo aircraft only: 30 L

· **Remarks:** This product contains a U.S. EPA Reportable Quantity (RQ) substance. If amounts exceeding the Reportable Quantity are released, notification of the National Response Center +1 (800) 424-8802 is required. See Section 15 for more information.
.
Shippers must consult transportation regulations for packaging instructions, quantity limitations and other regulatory information applicable to the desired mode of transport.

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· **ADR:**
· **Excepted Quantities (EQ):** Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml
· **Tunnel Restriction Code:** E

· **IMDG:**
· **Limited Quantities (LQ):** 1L
· **Excepted Quantities (EQ):** Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml

Section 15: Regulatory Information

· **U.S. Superfund Amendments & Reauthorization Act (SARA) 355 (Extremely Hazardous Substances):**
None of the ingredients are listed.

· **U.S. Superfund Amendments & Reauthorization Act (SARA) 313 (Specific Toxic Chemical Listings):**
None of the ingredients is listed.

· **U.S. Environmental Protection Agency Reportable Quantity:**
1310-73-2 sodium hydroxide: 1,000 lbs.

· **U.S. Toxic Substances Control Act (TSCA):**
All ingredients are listed.

· **California Proposition 65 Carcinogens:**
Materials used in the manufacturing process may result in contamination with trace quantities (<0.0001%) of various metals listed under Proposition 65. Contact Formosa Plastics Corporation, U.S.A. for more information.
None of the ingredients is listed.

· **Canadian Domestic Substances List (DSL):**
All ingredients are listed.

· **Canadian Ingredient Disclosure List (limit 0.1%)**
None of the ingredients are listed.

· **Canadian Ingredient Disclosure List (limit 1%):**
1310-73-2 sodium hydroxide

· **Container Labeling:** The product is classified and labeled according to the CLP regulation.

· **Hazard Pictograms:**

GHS05

· **Signal Word:** DANGER

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· **Hazard Statements:**
H314 Causes severe skin burns and eye damage.

· **Precautionary Statements:**

P260	Do not breathe mist.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a doctor.
P309	IF EXPOSED OR IF YOU FEEL UNWELL:
P363	Wash contaminated clothing before reuse.
P501	Dispose of contents/container in accordance with local regulations.

· **Directive 2012/18/EU Major Accident Hazards Involving Dangerous Substances:**

· **Annex 1 Named Dangerous Substances:** None of the ingredients are listed.

Section 16: Other Information

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Formosa Plastics Corporation, U.S.A. at the time it was prepared. Formosa Plastics Corporation, U.S.A. does not assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, Formosa Plastics Corporation, U.S.A. and its subsidiaries cannot guarantee that these are the only hazards that exist. Formosa Plastics Corporation, U.S.A. assumes no legal responsibility for loss, damage or expense arising out of, or in any way connected with, the handling, storage, use or disposal of this product.

· **Department Issuing Safety Data Sheet:** Corporate Environment, Health & Safety

· **Sources & References:**
This Safety Data Sheet conforms to regulation 1907/2006/EC (REACH). This product has been classified in accordance with European CLP regulations (1272/2008/EC) and the U.S. Hazard Communication standard (29 CFR 1910.1200).

* - Indicates that data has been updated from the previous version.

ACISTBox™

By

WATERTECTONICS

General III AcistBox Stormwater Treatment System

Operation and Maintenance Manual

Document # 907334

Rev	Description	Date
1	Initial Release	10/1/2020

6300 Merrill Creek Pkwy, Suite C-100 Everett, WA 98203 T 425.349.4200 F 425.349.4890 www.watertectonics.com

Table of Contents

1. Safety Information

Read this entire manual before operating this equipment. Pay attention to all danger, warning, and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

To ensure that the safety and protection mechanisms designed into this equipment are not impaired, do not use or install this equipment in any manner other than that specified in this manual.

1.1 Operational Safeguards

The system is equipped with an external power disconnect panel to provide a single point for power management.

1.2 Safety Notations and Symbols

The following notations emphasize important safety information in this manual:

DANGER: Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

WARNING: Indicates a potentially hazardous situation that may result in minor or moderate injury.

NOTE: Information that requires special emphasis.

TABLE 1: SAFETY SYMBOLS

Symbol	Description
	This symbol, if noted on the instrument, references the instruction manual for operation and/or safety information.
	This symbol, when noted on a product enclosure or barrier, indicates that a risk of electrical shock and/or electrocution exists.

2. Terminology

The following table explains the terminology used in this document.

Term	Definition
bbl	Barrel, a measurement of volume. 1 bbl equals 42 gallons.
Coagulation	The process of forming semisolid lumps in a liquid.
CO_2	Carbon dioxide; a gas that becomes a weak acid when dissolved in water; used for pH adjustment.
Conex	The shipping container that houses the main control panel, VFD cabinet, media filter pump, treatment polymer tote and pump, treatment pH probe, turbidity probe, and the discharge and recirc valves.
Flocculation	Separation of solid particles from water to form loose aggregations.
gpm	Gallons per Minute.
HMI	Human Machine Interface, the system touchscreen.
IGBT	Insulated Gate Bipolar Transistor, provides a high switching speed necessary for pulse width modulation VFD operation.
mls	Milliliters.
PLC	Programmable Logic Controller.
psi	Pounds per Square Inch.
VAC	Volts Alternating Current.
VDC	Volts Direct Current.

3. Introduction

The General III AcistBox Stormwater Treatment System is a multi-stage stormwater treatment system designed to reduce pH and turbidity to customer-defined target levels. This manual contains instructions for the operation and maintenance of the system. The intended audience for this document includes trained operators, technicians, and WaterTectonics personnel.

3.1 Treatment Train

Water enters the in-ground stormwater detention pond and is pumped into the four pre-treatment tanks by the source pump submerged in the detention pond. The source pump is called to run by the system's programmable logic controller (PLC), which is located in the main control panel (MCP) inside the Conex. The PLC calls the source pump only if the level transmitter and the level switch low low in the detention pond indicate enough water is present to avoid running the pump dry. For the source pump to run, a level transmitter and a level switch high high, located in the second pre-treatment tank, must also indicate that the water level in the pre-treatment tanks has not reached the high high level. Pump speed is controlled by a variable frequency drive (VFD) located inside the AcistBox.

On the piping that leads through the heated chemical shed to the pre-treatment tanks, polymer is injected into the water stream by an injection quill. Polymer is a chemical flocculant used to encourage aggregation of particles suspended in the water. Next to the polymer injection quill, a second injection quill injects caustic into the water stream. Caustic is used to raise the water's pH into the range at which dissolved metals can be removed. The chemical pumps that supply these injection quills, as well as the chemicals the pumps supply are also located in the heated chemical shed.

The amount of chemical injected was programmed into the system based on testing of samples submitted to WaterTectonics. If influent water characteristics change, the amount can be adjusted using the system's human machine interface (HMI). Sample valves located before and after the injection quills allow the operator to test influent pH and pH after caustic injection.

A pH probe is also located on the piping that leads through the heated chemical shed to the pre-treatment tanks, immediately downstream of the caustic injection quill. This pH probe measures influent water pH and communicates its measurement to the pre-treatment Hach sc200 controller, one of two Hach sc200 controllers located on the main control panel door inside the Conex. The pre-treatment Hach sc200 controller communicates its measurement to the PLC, which is also in the main control panel inside the Conex. If the reading communicated by the pH probe is already within the pre-programmed range, no caustic injection will take place.

Immediately downstream of the pH probe, a static mixer ensures thorough mixing of the chemicals and the water, and a flow switch indicates to the PLC that water is flowing through the system. In order to avoid wasting chemicals, the PLC is programmed to cut power to the chemical pump receptacles so the pumps cannot run if the flow switch signal indicates no water is flowing.

In the pre-treatment tanks, baffles slow the water stream and allow time for particulates to flocculate and form larger solids, which sink to the floor of each tank. As the water exits each of the pre-treatment tanks, it enters a manifold, which provides a steady flow to the media filter pump inside the Conex. Pre-treatment tank drain valves connect to a manifold that ends with a blind flange to facilitate periodic cleaning of the pre-treatment tanks.

A level transmitter and two level switches are located in pre-treatment tank T-102. One level switch is used to communicate a high high tank level so the PLC can, if necessary, stop the source pump in the detention pond to prevent overflow of the pre-treatment tanks. The PLC uses the signal from the level transmitter to turn on or off the media filter pump inside the Conex. The second level switch is used as a backup for the level transmitter. If either the level transmitter or the second level switch indicates the water level in the pre-treatment tanks is too low, the PLC will not turn on the media filter pump, or will stop it if it has been running. This prevents damage to the media filter pump that may occur if the pump runs without sufficient water.

The media filter pump draws water from the pre-treatment tanks into the piping inside the Conex, where a second injection of chemical flocculant takes place through the third injection quill. A plate mixer thoroughly mixes the water and chemical flocculant, and a flow switch provides indication to the PLC that water is flowing through the system. To avoid wasting chemical, if the flow switch indicates no flow, the PLC cuts power to the chemical pump receptacle and no chemical is injected. The water stream then leaves the Conex and enters the media filters.

The General III AcistBox Stormwater Treatment System includes two media filter units. Each media filter (MF) includes five filter vessels filled with four layers of filtration media that consists of crushed gravel, two different sizes of crushed garnet and anthracite.

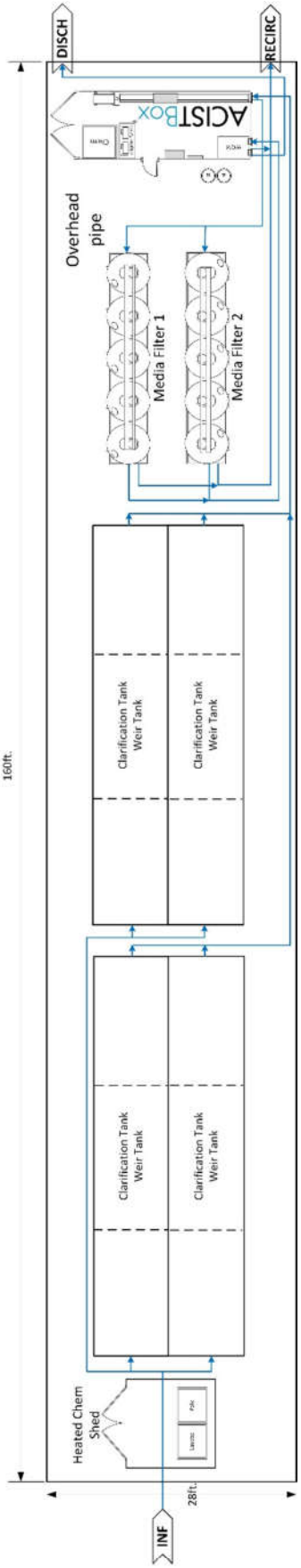
Water is pumped into the MF filter vessels through three-way valves located at the top of each filter vessel. As the water is forced down through the filtration media in the filter vessel, solids are filtered out and remain in the media bed. Each MF unit also includes a media filter controller that can be programmed to manage periodic backflushing of clean water backwards up through the media beds to lift and wash away filtered solids. Backflush water is sent back to the detention pond for re-treatment.

Clean, filtered water leaves each media filter unit through its pressure sustaining valve, which opens in response to pressures greater than the media filter working pressure, typically 35-40 psi. The clean discharge water from the media filter enters the water quality management (WQM) section of the AcistBox.

In the WQM section, CO_2 is injected into the water stream if the WQM pH probe, located immediately downstream of the CO_2 injection quill, indicates pH is higher than the range of discharge values pre-programmed into the system. The water then passes through another inline static mixer.

The water then re-enters the AB725 Conex, where pH and turbidity probe readings are used to determine whether the water meets user-defined discharge parameters or whether it needs to be recirculated back to the stormwater collection vault for re-treatment. Before the water exits the AB725 Conex through either the discharge or the recirculate valve, a flowmeter communicates the real-time flowrate to the PLC. This provides the operator with daily flow totals.

3.2 System Diagram



4. External System Components

This section describes components located outside the AcistBox Conex and outside the Chemical Shed.

4.1 Detention Ponds

The main detention pond holds influent water before it is pumped into the AcistBox system. A second detention pond holds backflush from the media filters and recirculated water that has been through the AcistBox system but does not meet customer-specified discharge requirements. Overflow from the second detention pond flows to the main detention pond.

4.2 Source Pump

Located in the main detention pond, the Ebara Model 200DLFU615 source pump (P-101) pumps water into the pre-treatment tanks.

The source pump operates whenever the following conditions are in effect:

- The level transmitter (LT-101) in the detention pond indicates the water level is at or above the start setpoint, AND has not reached or gone below the stop setpoint, AND
- The level switch low low (LSLL-101) in the detention pond also indicates the water level is high enough not to run the pump dry, AND
- The level transmitter (LT-102) and the level switch high high (LSHH-103) in the pre-treatment tanks do NOT indicate a high water level.

Figure 1: Source Pump

The source pump requires a daily check to verify that it has not become clogged with foreign material. Additional inspections and maintenance are required to keep the pump functioning optimally. Refer to the *Ebara 200DLFU615 Submersible Pump Operating Instructions Installation & Maintenance Manual* for instructions.

4.3 Detention Pond Level Transmitter

The level transmitter (LT-101) in the main detention pond measures the water level in the pond and transmits that measurement to the PLC. If this level transmitter indicates that the water level in the main detention pond is at or above the start setpoint, the PLC will run the source pump. The source pump will continue to run until the water level is at or below the stop setpoint. Start and stop setpoints are entered for the detention pond on the HMI System Page.

Figure 2: Detention Pond Level Transmitter

4.4 Detention Pond Level Switch Low Low

Located near the bottom of the main detention pond, the SJE Rhombus SignalMaster SPDT level switch low low (LSLL-101) alerts the system to a water level that is too low to operate the source pump without damaging it. The level switch is normally open and closes when the float tips slightly above horizontal at a low water level.

Figure 3: Detention Pond Level Switch Low Low

4.5 Pre-Treatment Polymer Injection Quill

The pre-treatment polymer injection quill (INJ-161) injects polymer into the water before the pre-treatment tanks. Polymer injected into the water stream encourages coagulation of solid particles in the water. Particles that have flocculated together into solids settle out more easily while the water is in the pre-treatment tanks.

Pre-treatment polymer is pumped by the pre-treatment polymer chemical pump to the injection quill from a chemical tote. Both the chemical pump and the tote are located in the heated chemical shed.

Figure 4: Polymer Injection Quill

4.6 Caustic Injection Quill

Located beside the polymer injection quill, the caustic injection quill (INJ-163) injects caustic into the water stream before the water enters the pre-treatment tanks.

Caustic is pumped by the pre-treatment caustic chemical pump to the injection quill from a chemical tote. Both the chemical pump and the tote are located in the heated chemical shed.

Figure 5: Caustic Injection Quill

4.7 Pre-Treatment Plate Mixer

Located between two flanges of the piping that leads to the pre-treatment tanks, the plate mixer (U-101) thoroughly mixes the two chemicals injected into the water stream by the polymer and caustic injection quills with the water.

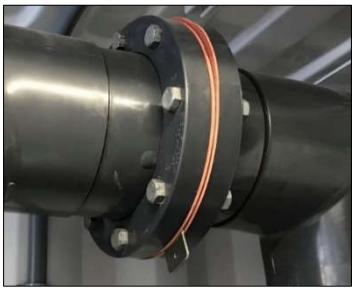


Figure 6: Pre-Treatment Plate Mixer

4.8 Pre-Treatment Flow Switch

The pre-treatment flow switch (FS-101) is a McDonnell & Miller SPDT Model G0616917, located in the heated chemical shed on the piping that leads to the pre-treatment tanks. The source pump and caustic and pre-treatment polymer chemical pumps only operate when this flow switch indicates water is flowing through the system.

Figure 7: Pre-Treatment Flow Switch

4.9 Pre-Treatment Sample Valves

Sample valves (V-131 and V-133) are provided before and after chemical injection to allow the operator to check water quality parameters.

Figure 8: Pre-Treatment Sample Valve

4.10 Pre-Treatment Tanks

The four pre-treatment tanks are 500 bbl (barrels, or 21,000-gallon), open-top rectangular tanks with corrugated steel walls and a V-shaped bottom. Each tank has two internal baffles that allow water to flow over one and under the other. This weir configuration slows the flow of the water and gently mixes it, which promotes flocculation of dissolved solids.

Figure 9: Pre-Treatment Tank

Each pre-treatment tank includes an influent and an effluent isolation valve. The pre-treatment pH probe, a level transmitter, a level switch high and a level switch low low are also inside pre-treatment tank T-102.

4.11 Pre-Treatment pH Probe

The pre-treatment pH probe (AE-101), located at the top of the pre-treatment tank T-102, measures pH before the water is pumped into the media filter.

Figure 10: pH Probe

WARNING: To avoid probe damage, do NOT store pH probes at temperatures below **40° F** or above **158° F**.

WARNING: Allowing a pH probe's salt bridge to dry out will permanently damage the probe. The pH probe is shipped with a black plastic cap that has a damp sponge inside it to protect the salt bridge from drying out. Before the probe is put into service, remove the reusable cap and sponge and store

in a safe, easily accessible place. Whenever the system is to be drained of water for more than one hour, unscrew the collar, remove the probe from the casing, wet the sponge, and put the cap and sponge on the end of the probe to keep the salt bridge wet. If temperatures are expected to fall below 40° F during the storage period, store the probe in a heated area. refer to the instructions in *Section 11.7 pH Probe Storage* on Page 57 for instructions on how to store the pH probe. Replace the pH probe salt bridge and fill solution annually.

NOTE: To function accurately, pH probes require periodic calibration. For instructions, refer to *Section 11.6 pH Probe Calibration* on Page 56.

4.12 Pre-Treatment Tank Level Transmitter

The pre-treatment tank level transmitter (LT-102) measures the water level in the tank and transmits that measurement to the PLC. If this level transmitter indicates that the water level in the pre-treatment tank is at or above the start (high) setpoint, the PLC will stop the source pump to prevent tank overflow. The PLC also uses this level transmitter to start and stop the media filter pump. If this level transmitter indicates that the water level in the pre-treatment tanks is at or above the start setpoint, the PLC will start the media filter pump, and stop the media filter pump when the water level is at or below the stop setpoint. Start and stop setpoints are entered for the pre-treatment tanks on the HMI System Page.

Figure 11: Pre-Treatment Tank Level Transmitter

4.13 Pre-Treatment Tank Level Switch Low Low

Located near the bottom of pre-treatment tank T-102, the SJE Rhombus SignalMaster SPDT level switch low low (LSLL-102) alerts the system to a water level that is too low to operate the media filter pump. The level switch is normally open and closes when the float tips slightly above horizontal at a low water level.

Figure 12: Pre-Treatment Tank Level Switch Low Low

4.14 Pre-Treatment Tank Level Switch High High

Located near the top of pre-treatment tank T-102, the SJE Rhombus SignalMaster SPDT level switch high high (LSHH-103) alerts the system to a water level that is close to overflowing the pre-treatment tanks. When the PLC receives a signal from this level switch, it will stop the source pump. The level switch is normally closed and opens when the float tips slightly above horizontal at a high water level.

Figure 13: Pre-Treatment Tank Level Switch High High

4.15 Media Filter

The AcistBox system includes two media filter units, each with five filter vessels. Each filter vessel holds a filtration media bed consisting of crushed glass (sand) above a layer of crushed rock. Water typically flows into each filter vessel from the influent manifold (located above the row of filter vessels), through each filter vessel's three-way valve, and down through the filtration media. Contaminants adhere to the filtration media and the filtered water exits the filter vessels to an effluent manifold, which is located below the row of filter vessels. At the end of the effluent manifold, a pressure sustaining valve (PSV) controls release of the filtered water to maintain a constant operating pressure (typically 35-40 psi) inside the filter vessels.

When the filter vessels are first filled with water, such as during startup or after the filtration media has been replaced, air vent valves are opened to allow the incoming water to displace as much air as possible, and then are closed once the filter vessels are filled and operation begins.

Periodic backflushing to remove filtered sediment and debris from the filtration media is essential for system performance and maintaining treatment flows. The backflush process is managed by each media filter's control panel using user-configurable settings. **NOTE:** Any configuration changes made at the control panel must be saved either to local memory or to a USB drive or they will be lost if there is a power outage or the control panel is reset. Filter vessels are backflushed one at a time in sequence for a specific length of time. Backflushing can be manual, timed, or automatic. The automatic backflush feature is based on the pressure differential between the influent and effluent sides of the filter. If manual backflushing is required, refer to *Section 11.2.2 Performing a Manual Backflush* on Page 51 for instructions.

During backflushing, the solenoid valve for the backflushing filter vessel is opened by the controller to allow air from the AcistBox system air compressor to move a plunger inside that filter vessel's three-way valve. The three-way valve is designed and positioned so that the plunger shuts off inflow from the influent manifold to only the backflushing filter vessel, and opens outflow to the backflush manifold for only the backflushing filter vessel. The backflush manifold is also located above the row of filter vessels. Water flowing into the effluent manifold from the other filter vessels that are not being backflushed then seeks the path of least resistance, which is the lower pressure in the backflushing filter vessel. The water moves up through the backflushing filter vessel, lifting contaminants from the filtration media and passes out through the outlet port of the three-way valve and into the backflush manifold.

The filtration media is a consumable and must be replaced periodically. When backflushing no longer lowers the differential pressure sufficiently, does so only for a short period, or when water turbidity remains high, refer to *Section 11.2.1 Filtration Media Replacement* on Page 51 of this manual, and the *Yardney IL 5436-5AS Industrial Sand Media Filter Installation and Operation Instruction Manual* for instructions on replacing the filtration media.

Figure 14: Media Filter

4.16 MF Control Panels

Each media filter has a control panel, which is used to configure media filter settings, backflush timing, and initiate manual backflushes.

NOTE: Any configuration changes must be saved either to local memory or to a USB drive or they will be lost if there is a power outage or the controller is reset.

For additional instructions on using the control panel, refer to the *Synergy Instruction Manual*.

Figure 15: Media Filter Control Panel

4.17 MF Pressure Gauges

Each media filter uses two pressure gauges. One shows the pressure of water flow as it goes into the media filter and the other shows the pressure of the water flow as it exits the media filter. The difference between the influent and the effluent pressure is shown by the pressure differential sensor. When the pressure differential sensor shows a 10 psid pressure drop, a backflush cycle is initiated if the backflush cycle is set to automatic.

Figure 16: Media Filter Pressure Sensors

4.18 MF Pressure Differential Indicator

Located underneath each media filter control box, the pressure differential indicator (PD-201 or PD-301) shows the difference between the pressure of the water going into the media filter and the pressure of the water as it exits the media filter. When the pressure differential indicator shows a 10 psid pressure drop between these two pressures, a backflush cycle is initiated if the backflush cycle is set to Pressure Differential AUTO.

Figure 17: Media Filter Pressure Differential Indicator

4.19 MF Air-Actuated Three-Way Valves

Each of the media filter vessels on both MF units is fitted with a three-way valve (MF 1: V-211 through V-215 and MF 2: V-311 through V--315). Under normal operation, water flows into each filter vessel through the inlet port of its three-way valve. During a backflush cycle, the inlet port is closed and the outlet port opens. Clean, filtered water from the other filter vessels is forced upwards through the filter vessel being cleaned. As it is forced upward, the water lifts the contaminants that have collected on the sand and rocks in the filter vessels. The water and contaminants flow out the outlet port of the three-way valve, through the backflush manifold to the brine manifold to containment.

Figure 18: Three-Way Valve

4.20 MF Vent Valves

The media filter vent valves (V-241 through V-245 and V-341 through V-345) are used to vent air from the media filter during initial startup or after the media beds have been changed.

Figure 19: Media Filter Vent Valve

4.21 MF Sight Glasses

When the backflush flowrate is being set, if sand accumulates in the sight glasses (SG-231 and SG-331), the flowrate should be lowered. Any accumulated sand should clear out of the sight glass once water is flowing at the correct flowrate. If regular flow does not clear the sight glass and a large amount of sand has accumulated, stop the system, unscrew the bolt, remove the sight glass, empty the sand, and replace the sight glass.

Figure 20: Media Filter Sight Glass

4.22 MF Backflush Valves

The backflush valves (V-235 and V-335) on the end of the media filter backflush manifolds regulate the flowrate of backflush water into the backflush hose for each MF unit. The backflush valves are gate valves encased in padlocked covers. During system setup, the amount each backflush valve is open is adjusted so that the backflush flowrate is not so great that it removes sand from the filter vessels.

If it becomes necessary to adjust the backflush valve after commissioning, refer to the *Yardney Media Filter IL 5436-5AS Operation Instruction Manual*.

Figure 21: Media Filter Backflush Valve

4.23 MF Pressure Sustaining Valves

Located below the filter vessel at the effluent end of each media filter unit, the 6-inch Nelson 800 series pressure sustaining valves (V-221 and V-321) are hydraulic, sleeve-type valves with a pressure controller. When the set knob on top of the valve is set to AUTO, the pressure controller will automatically sustain the upstream pressure on the valve to maintain the correct operating pressure in the media filter. The valve is closed at 35-40 psi, the typical media filter operating pressure, and opens at pressures above 35-40 psi to release enough water to maintain operating pressure.

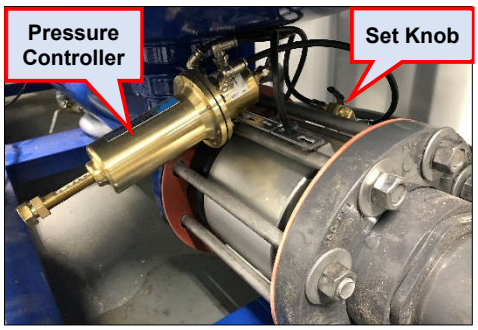


Figure 22: Media Filter Pressure Sustaining Valve

The pressure can be changed by turning the set bolt on the end of the pressure controller until the desired pressure marked on the set bolt's calibration scale is flush against the bottom of the pressure controller housing.

Each pressure sustaining valve is mostly closed during a media filter backflush cycle to allow most of the water to flow out the gate valve and into the backflush hose.

4.24 Air Compressor

The Ingersoll Rand P1IU-A9 air compressor (C-101) supplies air to the three-way valves on the top of each MF filter vessel when a backflush is initiated.

Adjust the pressure to the MF's operating pressure, which is typically 40 psi, by turning the compressor's pressure regulator knob clockwise to increase the pressure and counterclockwise to decrease the pressure. Use the compressor's built-in pressure gauge to see when the correct pressure is reached.

Figure 23: Air Compressor

4.25 CO_2 Injection Quill

After the water stream exits the media filters, CO_2 is injected into it by the CO_2 injection quill (INJ-164) to lower the pH.

CO_2 is stored in a dewar tank that is fitted with a heated regulator. A solenoid valve (V-162) opens to allow CO_2 to exit the tank for injection.

Figure 24: CO_2 Injection Quill

4.26 CO_2 Dewar Tank

The CO_2 supplied to the AcistBox system is stored as a liquid in a customer-provided pressurized dewar tank. CO_2 becomes a gas when it is released from the pressurized dewar tank into the water. CO_2 is used to lower the pH to meet discharge requirements.

4.27 CO_2 Tank Heated Regulator

The regulator (V-163) is located on the CO_2 tank. When the CO_2 solenoid valve opens, the regulator lowers the pressure of the CO_2 as it exits the tank to the working pressure of the injection quills, which is typically 25-30 psi. When the pressure is lowered, the CO_2 changes from a liquid to a gas, which can result in water from the surrounding air condensing and freezing on the regulator and solenoid valves, even on warm days. Keep the heater plugged in to avoid interruption of CO_2 injection.

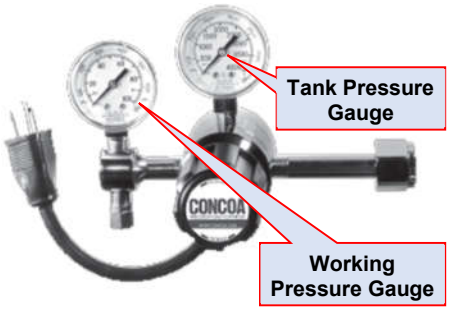


Figure 25: CO_2 Tank Regulator

The regulator is fitted with two gauges. One gauge shows the pressure inside the tank. When this gauge drops suddenly to approximately 25-30 psi, the

tank will need to be replaced or refilled. The second gauge shows the pressure at which the CO_2 exits the regulator. To reduce the pressure, turn the regulator's adjusting screw counterclockwise.

4.28 CO_2 Solenoid Valve

The CO_2 solenoid valve (V-162) is located on the CO_2 regulator.

When the treatment pH probe returns a pH above the pre-programmed range, the Hach sc200 controller that receives its signal communicates this to the PLC, which opens the solenoid valve to allow CO_2 to be injected into the water through the injection quill.

Figure 26: CO_2 Solenoid Valve

4.29 Post-CO_2 Injection Plate Mixer

Located between two flanges on the piping immediately downstream of the CO_2 injection quill, the post-CO_2 injection plate mixer (U-104) mixes the effluent water with CO_2 before the water exits the Conex.

Figure 27: Post-CO_2 Injection Plate Mixer

4.30 Junction Box

The junction box contains terminal blocks for connecting the devices such as the flow switch and float switch to power.

Figure 28: Junction Box

4.31 System Disconnect

The system power disconnect is actuated by a lever on the right side of the fused disconnect on the Conex exterior. To disconnect all power to the system, pull the lever DOWN until it locks in position.

WARNING: Follow all company lockout/tagout procedures prior to performing any electrical service or maintenance.

Figure 29: System Disconnect

4.32 Pole Light and Audible Alarm

An amber pole light and an audible alarm alert the operator when the system is recirculating water. These alarms indicate the system is recirculating water because the treatment pH probe or treatment turbidity probe has returned a reading that is outside the treatment Hach sc200 controller's pre-programmed limits. The alarm will sound for approximately 25 seconds while the discharge valve is closing and the recirc valve is opening.

Figure 30: Pole Light

4.33 Outdoor Thermostat

Located on the outside of the Conex wall, the outdoor thermostat alerts the PLC to temperatures below 35° F. When the PLC receives this alert, the system goes into freeze protection mode, during which the following events occur:

- The chemical dosing pumps stop.
- The sump and media filter pumps slow.
- The discharge valve closes and the recirculate valve opens.

Figure 31: Outdoor Thermostat

5. Chemical Shed System Components

This section describes components located inside the chemical shed.

5.1 Caustic Chemical Tote

Caustic, or sodium hydroxide (NaOH), is stored in a 275-gallon chemical tote (T-163) located in the heated chemical shed. Caustic is used to increase the water's pH before the water enters the pre-treatment tanks. This is done to make the metals in the water less soluble and more inclined to flocculate with other particles. They are then easier to remove in the media filter.

A PVC hose with a suction foot valve on the end of it supplies the chemical pump (P-163) with caustic.

Figure 32: Caustic Chemical Tote

5.2 Caustic Chemical Pump

The caustic chemical metering pump (P-163) supplies caustic from the caustic tote to the caustic injection quill (INJ-162). The pump is a Chem-Pro C3V242XVA with a variable speed drive and built-in leak and diaphragm failure detection.

Caustic pumping takes place when the chemical pump is in AUTO mode.

Figure 33: Caustic Chemical Pump

The caustic chemical pump is interlocked with the source pump (P-101) and the pH probe (AE-101) in pre-treatment tank T-102: If the source pump is not running, and/or the pre-treatment tank pH probe reads a pH greater than the setpoint, the chemical pump does not pump caustic to the caustic injection quill.

5.3 Pre-Treatment Polymer Chemical Tote

Pre-treatment polymer is stored in a 275-gallon chemical tote (T-161) located in the heated chemical shed. Do NOT allow the chemical shed temperature to approach freezing, as the polymer will solidify into a gel and become ineffective as a coagulant for the system.

A PVC hose with a suction foot valve on the end of it supplies the chemical pump (P-161) with polymer.

Figure 34: Pre-Treatment Polymer Chemical Tote

5.4 Pre-Treatment Polymer Chemical Pump

The polymer chemical metering pump (P-161) supplies polymer from the chemical tote to the pre-treatment injection quill. The pump is a Chem-Pro C3V242XVA with a variable speed drive and built-in leak and diaphragm failure detection.

Figure 35: Pre-Treatment Polymer Chemical Pump

Polymer pumping takes place when the chemical pump is in AUTO mode.

The polymer chemical pump is interlocked with the source pump (P-101): If the source pump is not running, the pre-treatment polymer chemical pump does not pump polymer to the injection quill.

6. Internal System Components

This section describes components located inside the AB725 Conex.

6.1 Media Filter Pump

The media filter pump (P-102) is a Goulds Model 10BF1S9E0 with a 50-hp, 60-Hz motor that runs on 480V power.

The media filter pump pumps water from the pre-treatment tanks into the media filters.

Two isolation valves (V-101 and V-102) on either side of the pump assist with priming the pump. A sample port (V-132) immediately downstream can be opened to vent air from the piping during priming.

Figure 36: Media Filter Pump

6.2 Pressure Gauge

The pressure gauge provides a visual indication that the MF pump is operating correctly.

Figure 37: Pressure Gauge

6.3 Treatment Flow Switch

The treatment flow switch (FS-102) is a Zoro McDonnell & Miller SPDT Model G0616917, located downstream of the MF pump. The MF pump and the treatment polymer chemical pump only operate when this flow switch indicates water is flowing through the system. In addition, the CO_2 solenoid valve (V-162) only opens when this flow switch indicates water is flowing through the system.

NOTE: Water must be passing this flow switch at 180 gpm for the flow switch to register flow.

Figure 38: Treatment Flow Switch

6.4 Treatment Plate Mixer

Located between two flanges of the piping between the treatment flow switch and the treatment polymer injection quill, the plate mixer (U-103) thoroughly mixes polymer with the water.

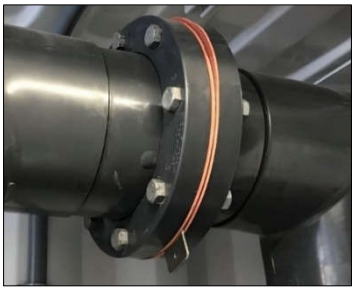


Figure 39: Treatment Plate Mixer

6.5 Treatment Polymer Injection Quill

The treatment polymer injection quill (INJ-162) injects polymer into the water before it enters the media filters.

Treatment polymer is pumped by the treatment polymer chemical pump to the injection quill from a chemical tote. Both the chemical pump and the tote are located in the AcistBox Conex.

Figure 40: Treatment Polymer Injection Quill

6.6 Treatment Polymer Chemical Tote

Treatment polymer is stored in a 275-gallon chemical tote (T-162) located in the AcistBox Conex. The AcistBox Conex is heated to prevent gelling of the polymer.

A PVC hose with a suction foot valve on the end of it supplies the chemical pump (P-162) with polymer.

Figure 41: Treatment Polymer Chemical Tote

6.7 Treatment Polymer Chemical Pump

The polymer chemical metering pump (P-162) supplies polymer from the chemical tote to the treatment polymer injection quill. The pump is a Chem-Pro C3V242XVA with a variable speed drive and built-in leak and diaphragm failure detection. Polymer pumping takes place when the chemical pump is in AUTO mode.

Figure 42: Treatment Polymer Chemical Pump

The polymer chemical pump is interlocked with the media filter pump (P-102): If the media filter pump is not running, the treatment polymer chemical pump does not pump polymer to the injection quill.

6.8 Treatment Polymer Pump Calibration Cylinder

The calibration cylinder is used to verify that each chemical pump is supplying the correct amount of chemical. Refer to *Section 11.4 Verifying Correct Polymer Pump Dosage* on Page 53 for instructions on how to use the calibration cylinder.

Figure 43: Chemical Pump Calibration Cylinder

6.9 Treatment pH Probe

The treatment pH probe (AE-102) is located on the piping leading to the recirculate and discharge valves. The treatment pH probe communicates its reading to the treatment Hach sc200 controller. If this reading is outside the user-settable range, the Hach sc200 controller communicates this to the PLC, which closes the discharge valve and opens the recirculate valve. This prevents discharge of water that does not meet discharge criteria. If the reading from this pH probe is below the low setpoint, the PLC closes the CO_2 solenoid valve (V-162).

Figure 44: Treatment pH Probe

WARNING: To avoid damage, do NOT store pH probes at temperatures below **40° F** or above **158° F**.

WARNING: Allowing a pH probe's salt bridge to dry out will permanently damage the probe. The pH probe is shipped with a black plastic cap that has a damp sponge inside it to protect the salt bridge from drying out. Before the probe is put into service, remove the reusable cap and sponge and store in a safe, easily accessible place. Whenever the system is to be drained of water for more than one hour, unscrew the collar, remove the probe from the casing, wet the sponge, and put the cap and sponge on the end of the probe to keep the salt bridge wet. If temperatures are expected to fall below 40° F during the storage period, store the probe in a heated area. Refer to the instructions in *Section 11.7 pH Probe Storage* on Page 57 for additional instructions. Replace the pH probe salt bridge and fill solution annually.

NOTE: To function effectively, pH probes require monthly calibration. Refer to *Section 11.6 pH Probe Calibration* on Page 56 for instructions.

6.10 Turbidity Probe

The turbidity probe (AE-103) is Hach Solitax Inline Model LXV424.99.00100 with an automatic wiper cleaning system. The turbidity probe uses light scatter to measure the quantity and size of suspended particles in the water after it has been through the media filters.

Figure 45: Turbidity Probe

Readings taken by the turbidity probe are monitored by the treatment Hach sc200 controller. The treatment Hach sc200 controller uses readings from the turbidity probe, together with readings from the treatment pH probe to determine whether to open the recirculation valve (V-104) or the discharge valve (V-103). If readings from the turbidity probe AND from the pH probe are within the user-defined range, the discharge valve is opened. Either a high turbidity reading or a high/low pH reading will cause the recirculation valve to be opened and the discharge valve to be closed.

NOTE: To function effectively, the turbidity probe requires monthly calibration. For instructions, refer to *Section 11.5 Turbidity Probe Calibration* on Page 54.

6.11 Effluent Sample Valve

Use the effluent sample valve (V-135) to take grab samples of treated water.

Figure 46: Effluent Sample Port

6.12 Effluent Flow Meter

The effluent flow meter (FIT-102) is a Siemens SITRANS F M with a MAG 5000 transmitter. It is located on the piping immediately upstream of the recirculate and discharge valves.

Figure 47: Effluent Flow Meter

The effluent flow meter measures the flowrate of the water after it has gone through the system and before it exits through either the discharge valve or the recirculate valve. This flow meter provides daily flow totals that can be viewed on the HMI Flow Trends Page.

The treatment polymer chemical pump (P-162) only runs, and the CO_2 solenoid valve (V-162) is opened only if there is flow through the effluent flow meter.

For more information and instructions on how to use the transmitter, refer to the *Siemens Sitrans F M MAG 5100 W Electromagnetic Flow Meter Operating Instructions*.

6.13 Discharge and Recirculate Valves

The General III AcistBox Stormwater Treatment System uses two electrically actuated, bi-position butterfly valves to control the path of water after treatment. If the reading from either the treatment pH probe or the turbidity probe is outside the programmed discharge range, the Hach sc200 controller opens the recirculate valve (V-104) and closes the discharge valve (V-103) to recirculate water back to the second detention pond for additional treatment. If the readings from both probes are within range, the Hach sc200 controller will close the recirculate valve, if it is open, and open the discharge valve to allow clean water to exit the system.

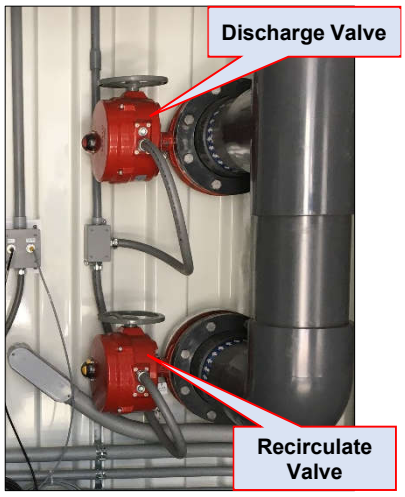


Figure 48: Discharge and Recirculate Valves

NOTE: These valves can take 15-20 seconds to transition between open and closed and vice versa. This time delay is built into the valve failure alarm to stop the PLC from generating nuisance alarms. Instructions for changing the time delay, if necessary, can be found in *Section 7.8 Configuration Page 1* on Page 40.

6.14 Main Control Panel (MCP)

The system control panel door includes the HMI, two Hach sc200 controller interfaces, a panel of lights that indicate pump and valve function, a bank of switches for controlling pumps and valves, and the emergency stop button.

The Main Control Panel cabinet houses the PLC, DC power supply, modem, TosiBox, ethernet switch, MCP fan and thermostat, AC and DC breakers, the media filter compressor contactor, and relays.

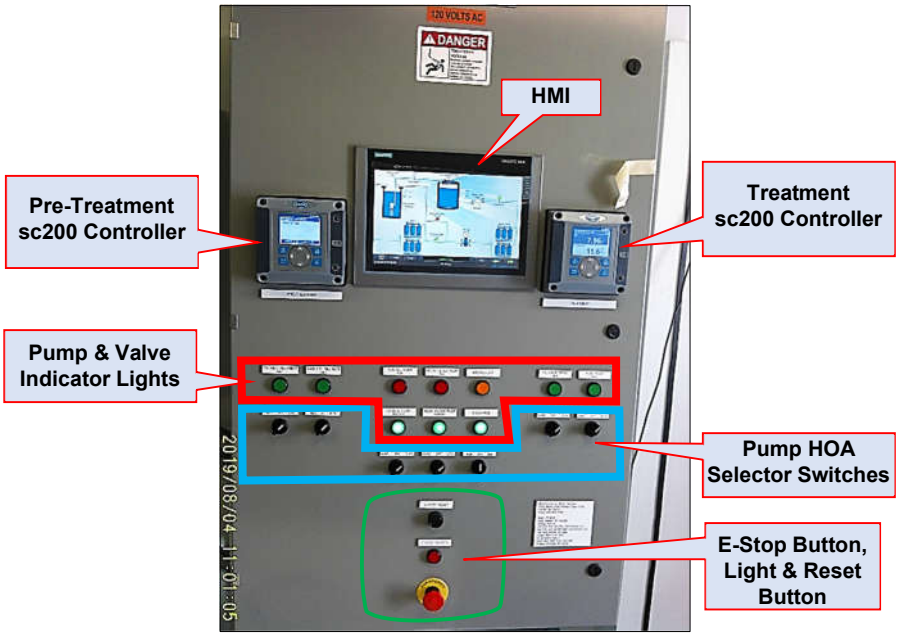


Figure 49: Main Control Panel Door

6.15 Emergency Stop

When activated, the fail-safe emergency stop (E-Stop) stops all the pumps and closes the electrically actuated recirc and discharge valves. Lighting, the media filter controllers, the air compressor, the HMI, and the PLC stay on. The E-Stop button is located on the MCP cabinet door.

To reset the E-Stop, first rotate the button clockwise. Then press the E-STOP RESET button.

6.16 Siemens Human Machine Interface (HMI)

Located on the system control panel door, the Siemens Simatic TP1200 Comfort Panel HMI is the main system control interface. Refer to *Section 7 Using the HMI Interface Screens* on Page 30 for instructions on how to use the HMI and what each of the different pages are for.

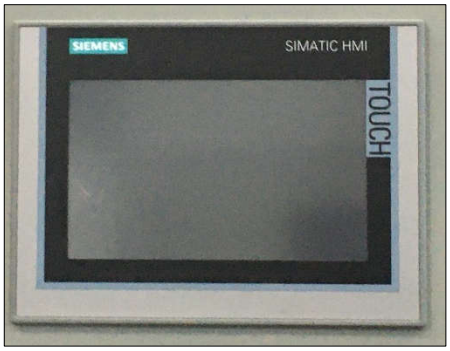


Figure 50: HMI Touchscreen

6.17 Hach sc200 Controllers

The two Hach sc200 controllers include display modules (located on the MCP door) and receive data from the four digital sensors used in the system: the two pH probes and the turbidity probe. One monitors influent pretreatment water characteristics and the other monitors effluent water characteristics to determine if the water is within specification or requires additional treatment. Each sc200 is programmed to store water quality probe data on a secure digital (SD) card in configurable time intervals (in minutes).

Figure 51: Hach sc200 Controller

The pH and turbidity range limits are programmed into the sc200 controllers during commissioning. These limits serve as water quality verification, should a regulatory body require such verification.

When programming the limits into the sc200, include a small dead band, or neutral zone, to keep the recirculation/discharge valve from continuously cycling when the water is close to discharge limits. Excessive cycling will prematurely wear out the valve actuators.

6.18 Programmable Logic Controller (PLC)

The Siemens SIMATIC S7-1200 PLC is the primary system controller. The PLC monitors electrical inputs from system components and provides control signals.

Figure 52: PLC

6.19 Unmanaged Ethernet Switch

The Siemens Scalance Model XB008 6GK5008-0BA00-1AB2 8-port 24 VDC unmanaged ethernet switch connects the system's ethernet-enabled equipment, such as the main PLC, HMI, and pump VFDs.

Figure 53: Unmanaged Ethernet Switch

6.20 TosiBox

The TosiBox Model TBL2US Lock 200 acts as a router and provides VPN connectivity for the digital components of the General III AcistBox Stormwater Treatment System. This allows the operator to remotely access the PLC, VFDs, and HMI pages.

Figure 54: TosiBox

6.21 Cellular Modem

The Digi International Model WR21-M52B-DE1-SB cellular modem connects the General III AcistBox Stormwater Treatment System to the internet.

Figure 55: Cellular Modem

6.22 AC to DC Power Supply

The AC to DC Power Supply converts alternating current (120 VAC) to direct current (24 VDC) for some equipment, such as the PLC, TosiBox, ethernet switch, modem, HMI, and flowmeter.

Figure 56: AC to DC Power Supply

6.23 Variable Frequency Drives (VFDs)

The source pump and the media filter pump are controlled by separate VFDs. When a pump starts, its VFD ramps up pump speed slowly to greatly reduce water hammer in the system. Safe operational minimum and maximum frequencies are programmed into each VFD. The VFDs are housed in the VFD control panel cabinet.

Figure 57: VFDs

6.24 480 V Panelboard

The 480 V panelboard houses the 480 V breakers.

Figure 58: 480 V Panelboard

6.25 120/240 V Load Center

The 120/240 V load center houses the 120/240 V breakers.

Figure 59: 120/240 V Load Center

6.26 15 kVA Transformer

The 15 kVA transformer is a Hammond Fortress Model C1F015LES that converts 480 V to 120/240 V.

Figure 60: 15 kVA Transformer

7. Using the HMI Interface Screens

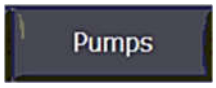
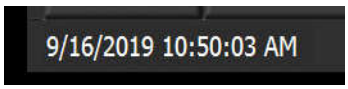
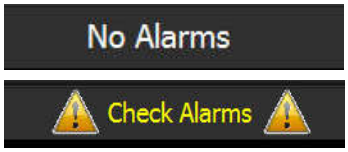
Use the HMI to control and monitor the General III AcistBox Stormwater Treatment System and to set user-configurable system parameters.

7.1 Navigation Bar

A Navigation Bar is provided at the bottom of each page. Navigate to other pages by pressing the labeled buttons on the Navigation Bar. Use the green arrows to scroll to pages that do not have buttons on the Navigation Bar.

Figure 61: HMI Navigation Bar

TABLE 2: NAVIGATION BAR BUTTONS

Icon	Function
	Displays the current page name (Not a button).
	Press this button to go to the System or Home Page.
	Press this button to view graphs of treatment and pre-treatment system flow, pH, and turbidity readings over time, as well as treatment media filter flow.
	Press this button to view source and media filter pump information, as well as flow totals.
	Press this button to go to the Help Page for the IOM Manual (this document) and to log in as an an administrator.
	Press to scroll left or right to other pages.
	Displays current date and time (Not a button).
	The Alarms Button has two states, one for when the system is in alarm and one for when it is not. Press this button to go to the Alarms Page to view current and past alarms.

7.2 System Page

The System Page is the default page and shows the entire system. The System Page can be accessed from any page by pressing the System Home Button on the Navigation Bar. The System Page provides a real-time snapshot of overall system function and performance including the following:

- Whether the source and media filter pumps are in standby, failed, or running, and the pump speed;
- Whether valves are open, closed, or transitioning between these two states;
- Whether freeze protection is active;
- Flowrate of water after the media filter; and,
- Detention pond and pre-treatment tank water levels.

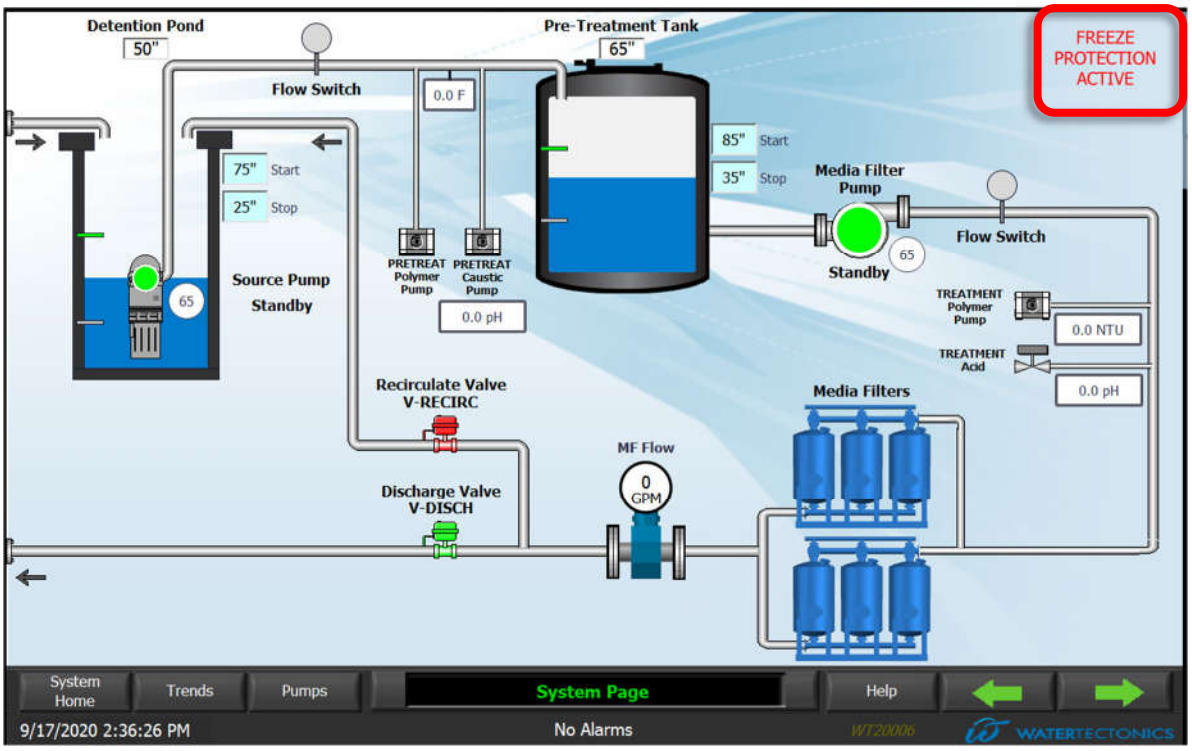


Figure 62: System Page showing Freeze Protection Active

7.2.1 System Page Icons

Icon appearance changes to reflect component status during operation. Refer to the following four tables for an explanation of icon appearance changes.

TABLE 3: PIPING ICON STATES

Component	Icon First State	Icon Second State
Hydraulic Piping	No Water is Flowing	Water is Flowing *

*** NOTE:** Although the flow path is open, water may or may not be flowing, depending on pump conditions or water supply.

TABLE 4: PUMP ICON STATES

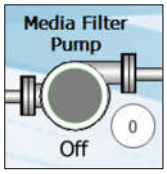
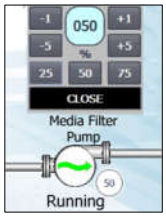
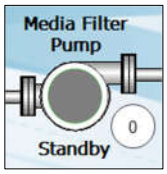
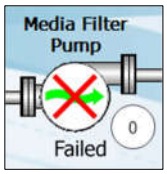
Icon	Meaning
	Pump off
	Pump running The number in the circle next to the pump icon is the pump speed as a percentage of 60 Hz (the pump's maximum speed).
	Change Pump Speed Popup Click on the circle with a number in it to open the popup. Press 25, 50, or 75 to run the pump at 25%, 50%, or 75% of full speed. Press +1, +5, -1, or -5 to add or subtract from the chosen pump speed percentage.
	Pump in standby mode
	Pump failed

TABLE 5: VALVE ICON STATES

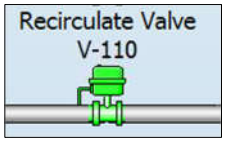
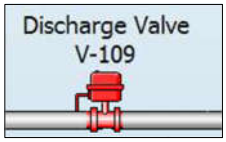
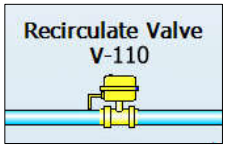
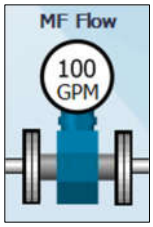
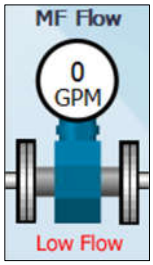
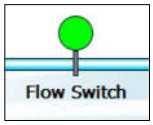
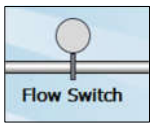
Icon	Meaning
	Valve open
	Valve closed
	Valve transitioning

TABLE 6: FLOW METER ICON STATES

Icon	Meaning
	Flow meter registering a flow of 100 gpm
	Flow meter Low Flow Alarm
	Flow switch registering flow
	Flow switch registering no flow

7.3 Pumps Page

Press a pump icon on the System Page, or press one of the green arrows on the Navigation Bar to scroll to the Pumps Page. Use the Pumps Page to do the following:

- View whether the source pump and the media filter pump are off, in standby mode, failed, or running.
- View pump and VFD runtime hours.
- Reset total pump runtime hours.
- View the speed the source and media filter pumps are set at (Commanded Speed) as well as the actual speed and the amperage the pump motor is drawing.
- View the estimated usage of the main VFD component (IGBT Usage).
- View current flow and flow totals as measured by the flow meter.
- View daily totals of how many gallons have gone through the discharge and recirc valves.

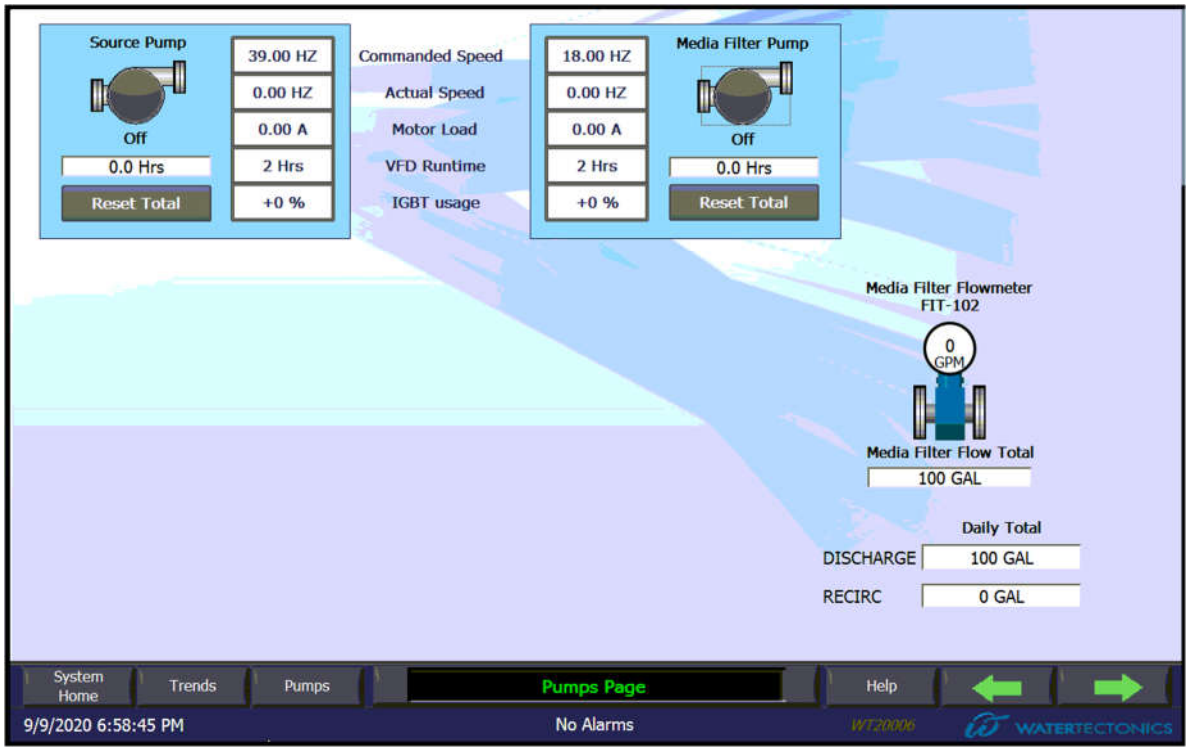


Figure 63: Pumps Page

7.4 Media Filter Page

Press the media filter icon on the System Page, or one of the green arrows on the Navigation Bar to go to the Media Filter Page. Use the Media Filter Page to do the following:

- View flow totals for water going through the media filter, as measured by the media filter flow meter.
- View flow totals for water going through the recirc and discharge valves.
- Reset trip totals for the flow meter and the recirc and discharge valves. The Trip Totalizers allow the operator to see how much water has gone through the system since the last reset of the Trip Totalizer.

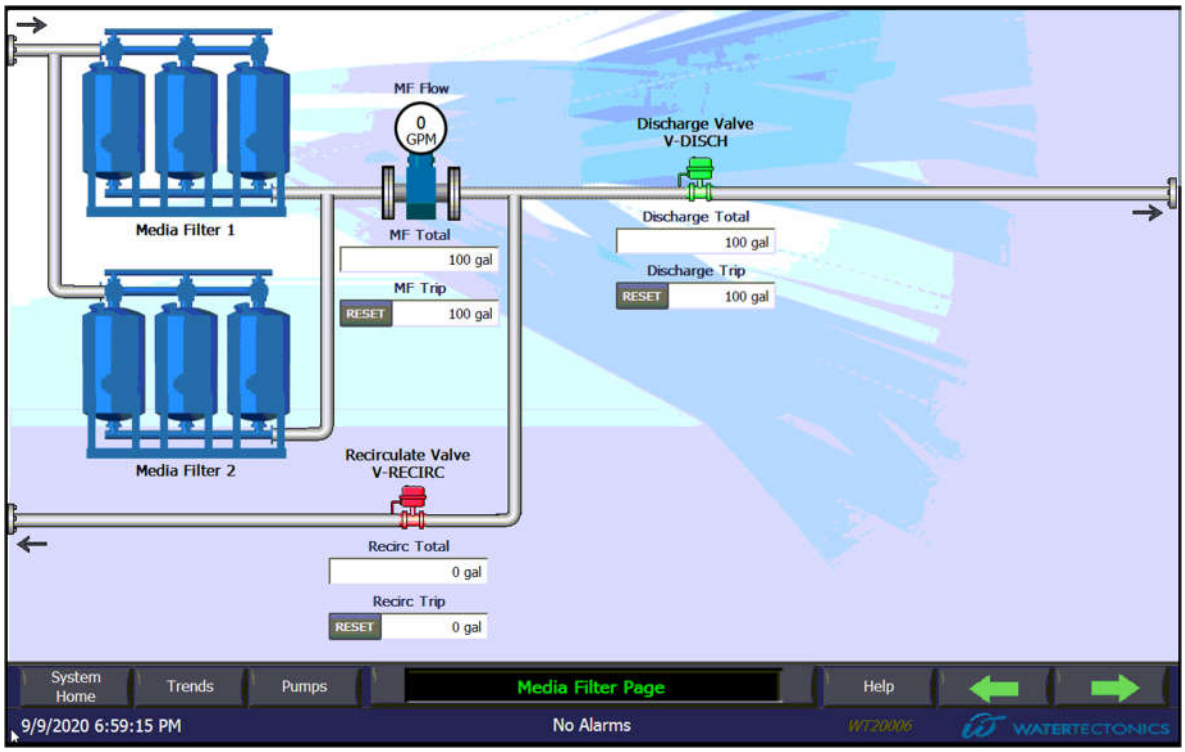


Figure 64: Media Filter Page

7.5 Trends Pages

Press the Trends Button on the Navigation Bar to navigate to the Trends Page. Two separate Trends pages provide graphs of pre-treatment and treatment pH, treatment turbidity and media filter flow over time. Press either of the two buttons above the Navigation Bar to access the different Trends pages.

NOTE: A USB memory stick must be installed in the HMI USB port for the Trends Pages to retain data.

7.5.1 Pre-Treatment Trends Page

Press the Pre-Treatment Button to view water pH as measured by the pre-treatment pH probe (AE-101) over time.

Readings from each probe are represented by a colored line that matches the text color in the Tag Connection Box.

NOTE: Graphs on this page show readings taken every 30 seconds.

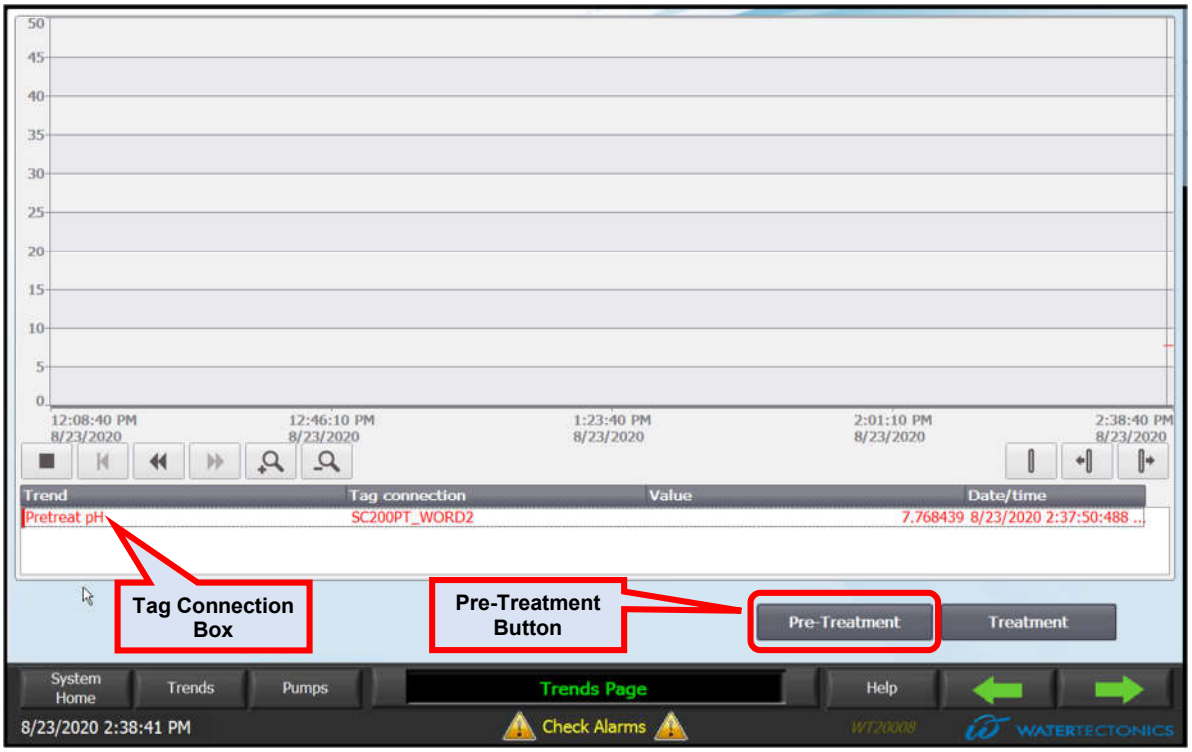


Figure 65: Example Pre-Treatment Trends Page

7.5.2 Treatment Trends Page

Press the Treatment Button on any Trends Page to view graphs of the following:

- pH readings from the treatment pH probe (AE-102) over time.
- Turbidity readings from the treatment turbidity probe (AE-103) over time.
- Flow rate of water going into the media filter as measured by the effluent flowmeter (FIT-102) over time.

Readings from each probe are represented by a colored line that matches the text color in the Tag Connection Box.

NOTE: Graphs on this page show readings taken every 30 seconds.

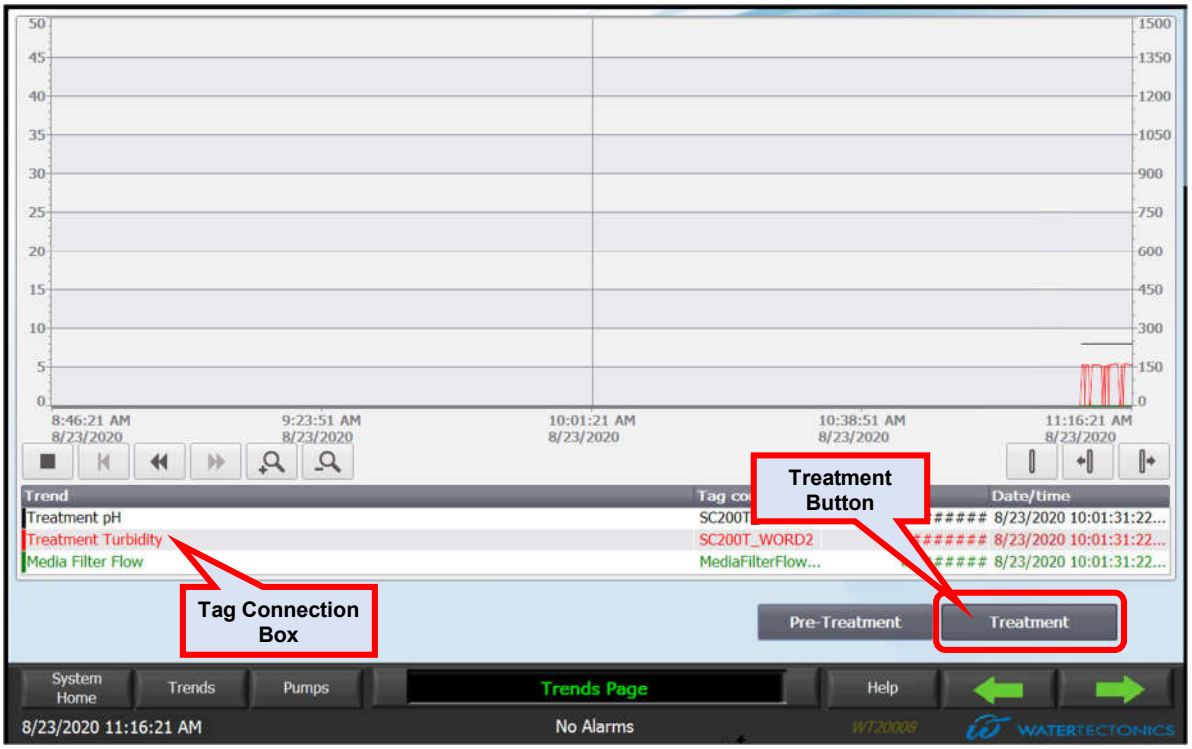


Figure 66: Example Treatment Trends Page

7.6 Alarms Page

Press the Check Alarms Button on the Navigation Bar to access the Alarms Page. The Alarms Page displays the date, time, and a description of the alarm condition and allows the operator to acknowledge and clear alarms.

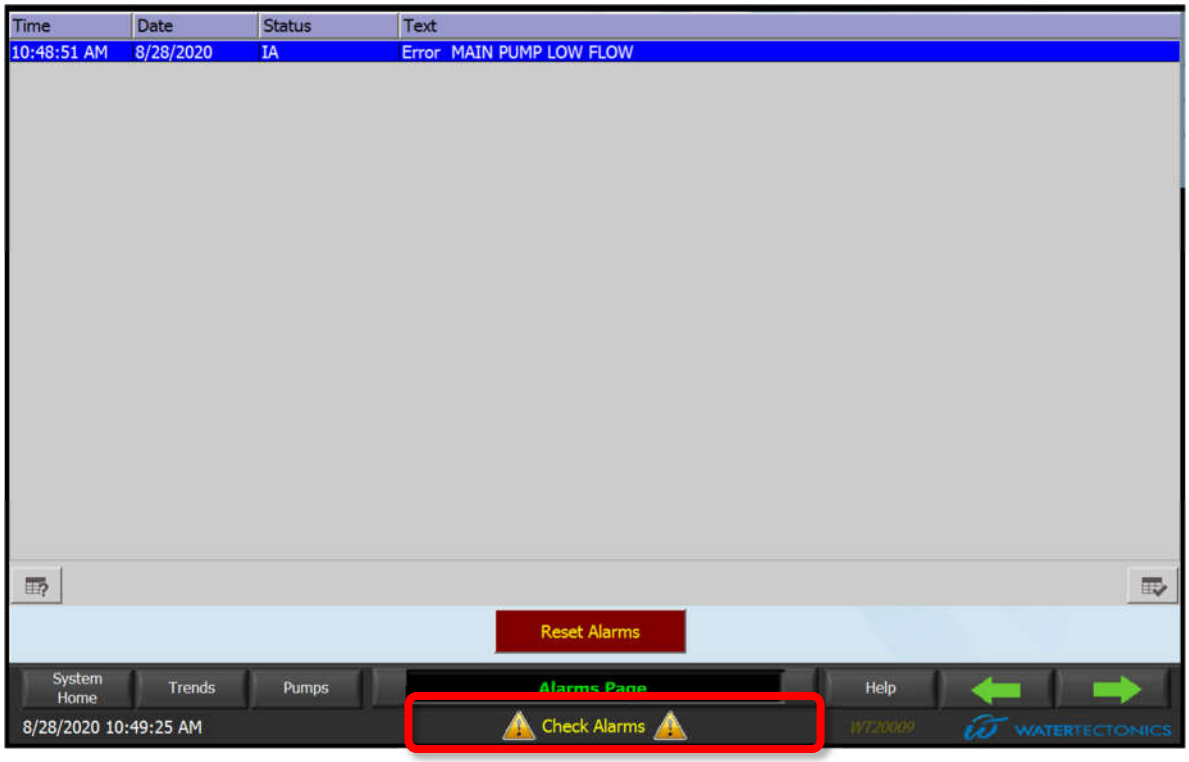


Figure 67: Example Alarms Page

7.6.1 Alarms Page Stat Column Legend

The following symbols in the Stat Column indicate what has happened since the alarm condition occurred:

I – The alarm has not been cleared, acknowledged, or reset. The alarm condition can be continuously occurring or input once.

IO – The alarm condition has been cleared.

IA – The alarm condition did not clear, but the operator acknowledged the alarm.

TABLE 7: ALARMS PAGE BUTTONS

Button	Function
	Press this button to acknowledge the selected alarm. If the alarm condition has been cleared, the alarm will be removed from the list when this button is pressed.
	Press this button to view more information about the selected alarm. Refer to the Troubleshooting section for possible causes of error messages.
	Press this button to reset all alarms.

7.7 Help Page

Press the "Help" Button on the Navigation Bar to navigate to the Help Page.

The Help Page provides access to the setup pages and technician-only pages. After logging in as Admin, press the buttons in the "Technician Screens" Box to access the admin-only pages.

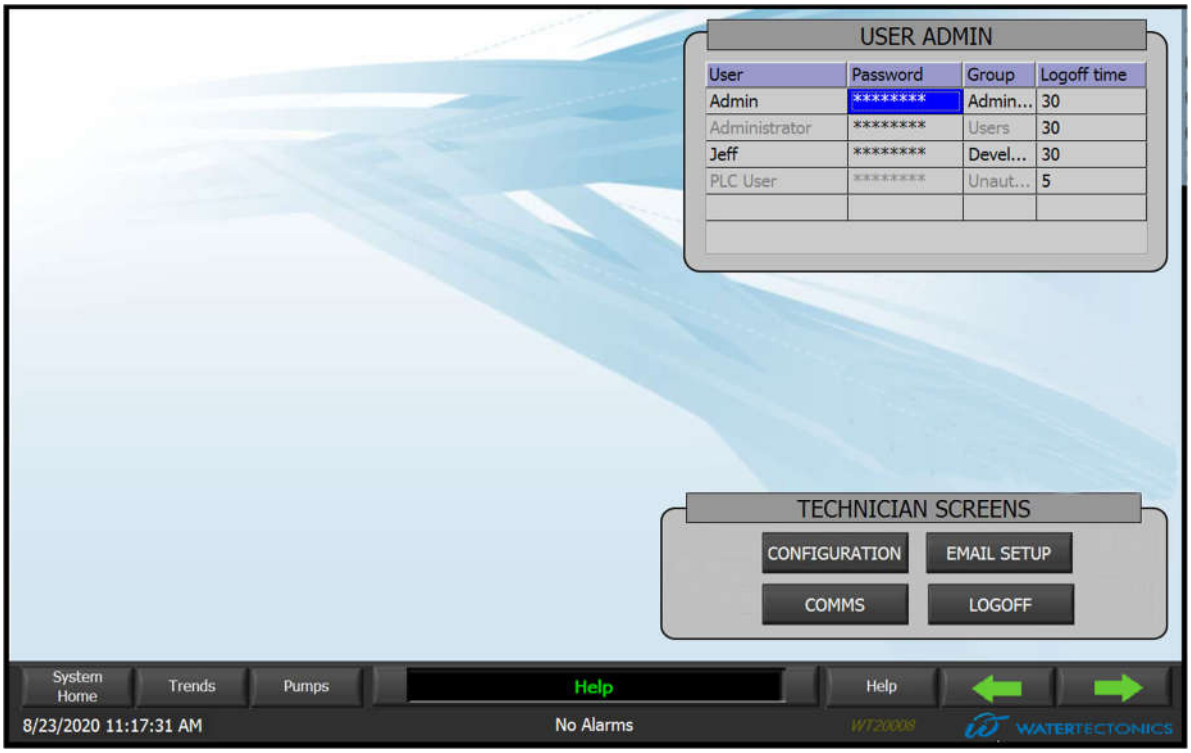


Figure 68: Help Page

7.8 Configuration Page 1

Access Configuration Page 1 from the Help Page by pressing the Communications Button in the Technician Screens Box. Configuration Page 1 can only be accessed when the user is logged in as an administrator and should be used ONLY by, or under the direction of, WaterTectonics personnel.

Configuration Page 1 allows a user logged in as an administrator to do the following:

- Configure flow meter and level transmitter analog/transducer scaling.
  NOTE: The values in the Analog/Transducer Scaling Box must first be configured on the flow meter display before the proper analog signal (4-20 mA DC), totalizing pulse frequency (1 pulse per 100 gallons) and full scale flow measurement (1000 gallons per minute) can be output to the PLC. Once that is done the full scale flow and gallons per pulse values can be entered at the Analog/Transducer Scaling Box. Configuration is done at the factory and should only need to be done again in the event of a flowmeter replacement.
- Adjust low flow alarm setpoints and set the delay before an alarm is triggered after the the low flow setpoint has been reached. This delay reduces nuisance alarms and compensates for reading errors, etc., when the water level is close to the setpoint.
- Adjust source reservoir and pre-treatment tank water level alarm and notification setpoints.

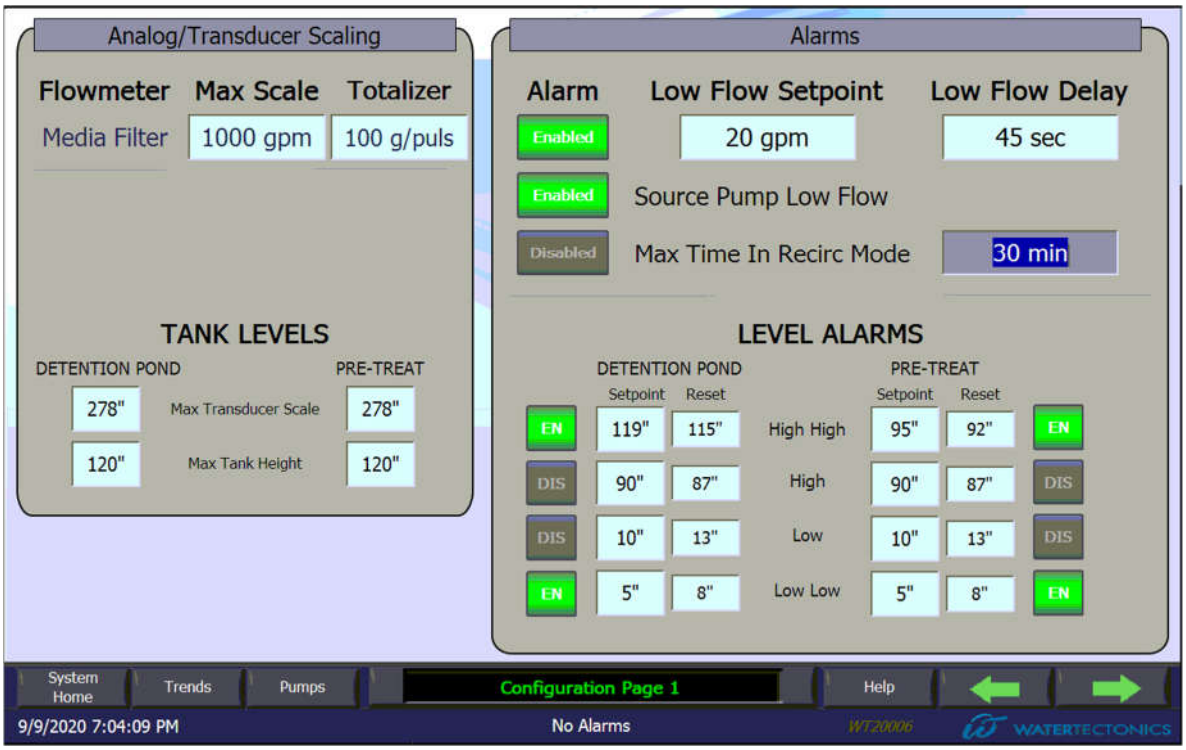


Figure 69: Configuration Page 1

7.9 Configuration Page 2

Access Configuration Page 2 by pressing the right-hand green arrow on the Navigation Bar while on Configuration Page 1. Configuration Page 2 can only be accessed when the user is logged in as an administrator and should be used ONLY by, or under the direction of, WaterTectonics personnel.

Configuration Page 2 allows an administrator to do the following:

- Adjust the open/close fail delay time for the recirc and discharge valves. This is the length of time the PLC will wait for a valve open/close confirmation signal before generating a "Valve Fail" alarm. (This is a necessary precaution against nuisance alarms, because the electrically actuated valves typically take approximately 15-20 seconds to transition between open and closed and vice versa.)
- Enable freeze protection,
- Adjust water level setpoints for when the source and media filter pumps start running, and adjust pump speed.
- Disable the horn and light. The horn sounds and the pole light flashes for 25 seconds when the discharge valve is closing and the recirc valve is opening and the system begins to recirculate water instead of discharging it to the GAC filters.
- Reset all or any of the flow totalizers from one place. Press the appropriate button(s) in the Reset Master Flow Totals Box.

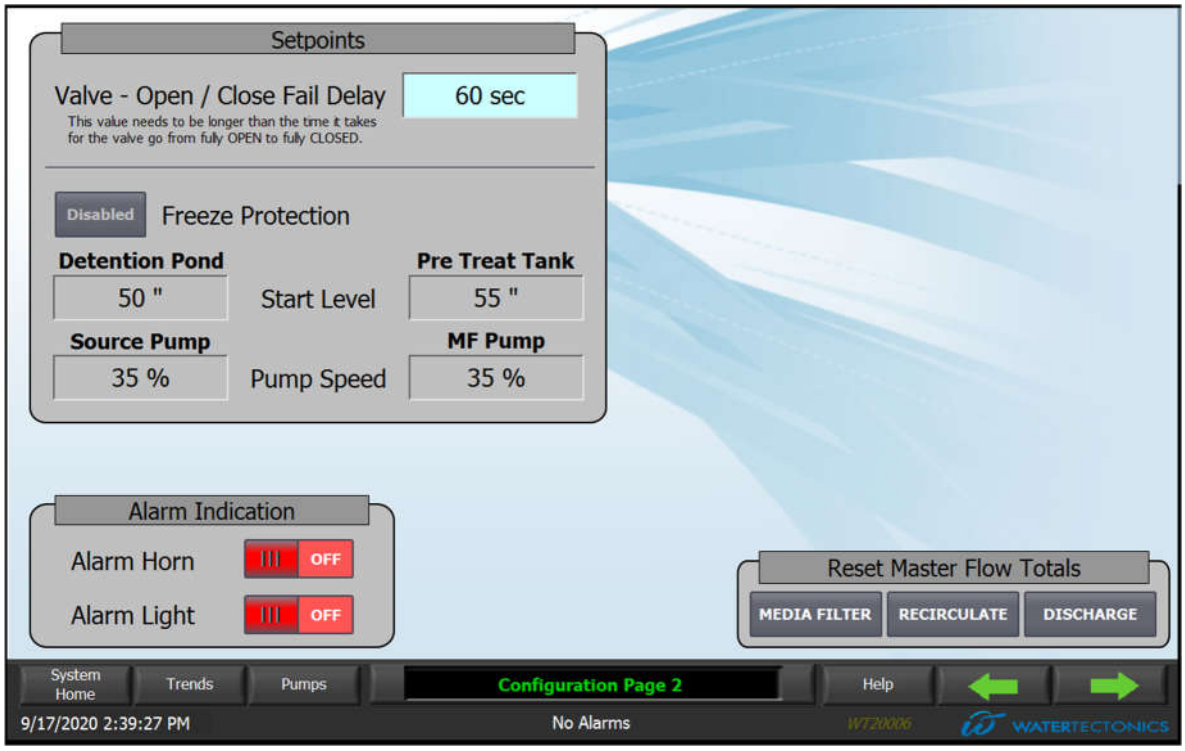


Figure 70: Configuration Page 2

7.10 Communications Page

Access the Communications Page from the Help Page by pressing the Comms Button in the Technician Screen Box. The Communications Page can only be accessed when the user is logged in as an administrator and should be used ONLY by, or under the direction of, WaterTectonics personnel.

Use the Communications Page to configure settings for:

- ModBus TCP. In this system, the ModBus TCP enables the PLC to communicate with the email server and send data about system operation, including alarm states. Use the ModBus TCP Settings Box to make changes to the IP address, port, and message length, if necessary.
- Hach sc200 Controller Profibus. Use the Profibus Communications Box to make changes to the probe reading values sent to the PLC that trigger alarms.
- Reset the time and date for the system. This is displayed on the lower left of each HMI screen. In the event of an extended power failure, the time the PLC displays on the HMI may need to be corrected to the current time.

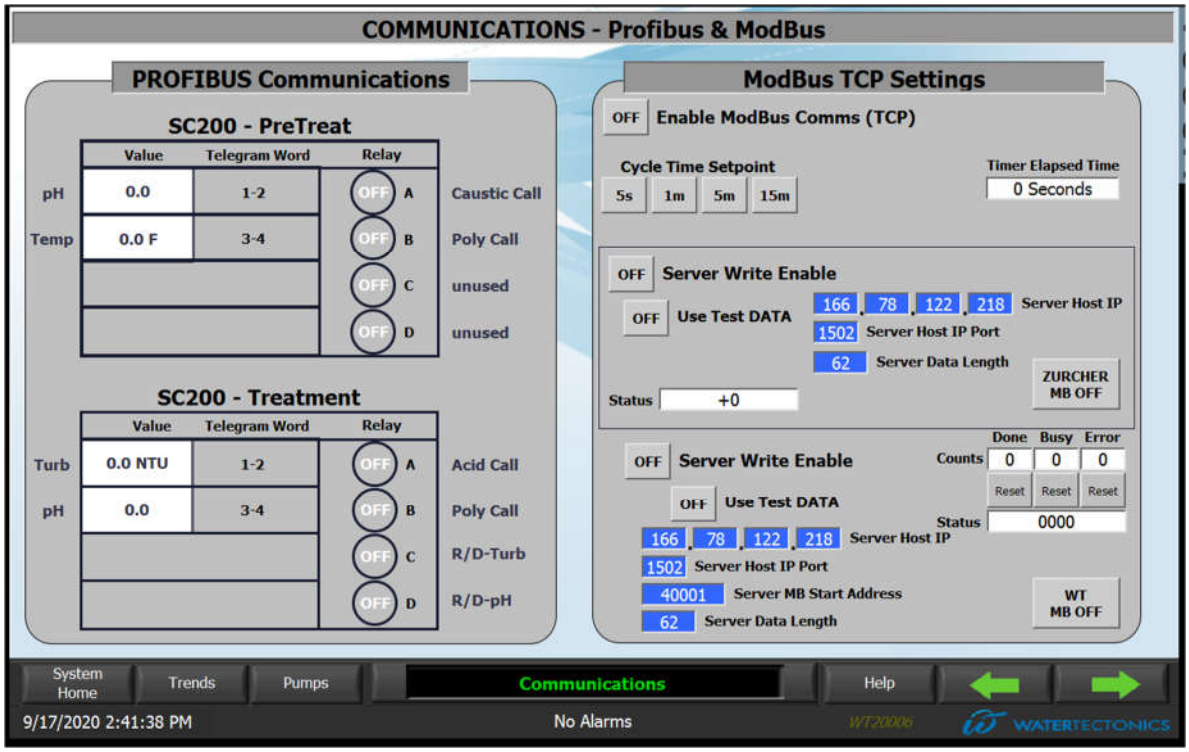


Figure 71: Communications Page

7.11 Email Page

Use this page to resend the previous day's totals to selected email recipients. This page is only available when the user is logged in as an admin. Select and send only one email at a time.

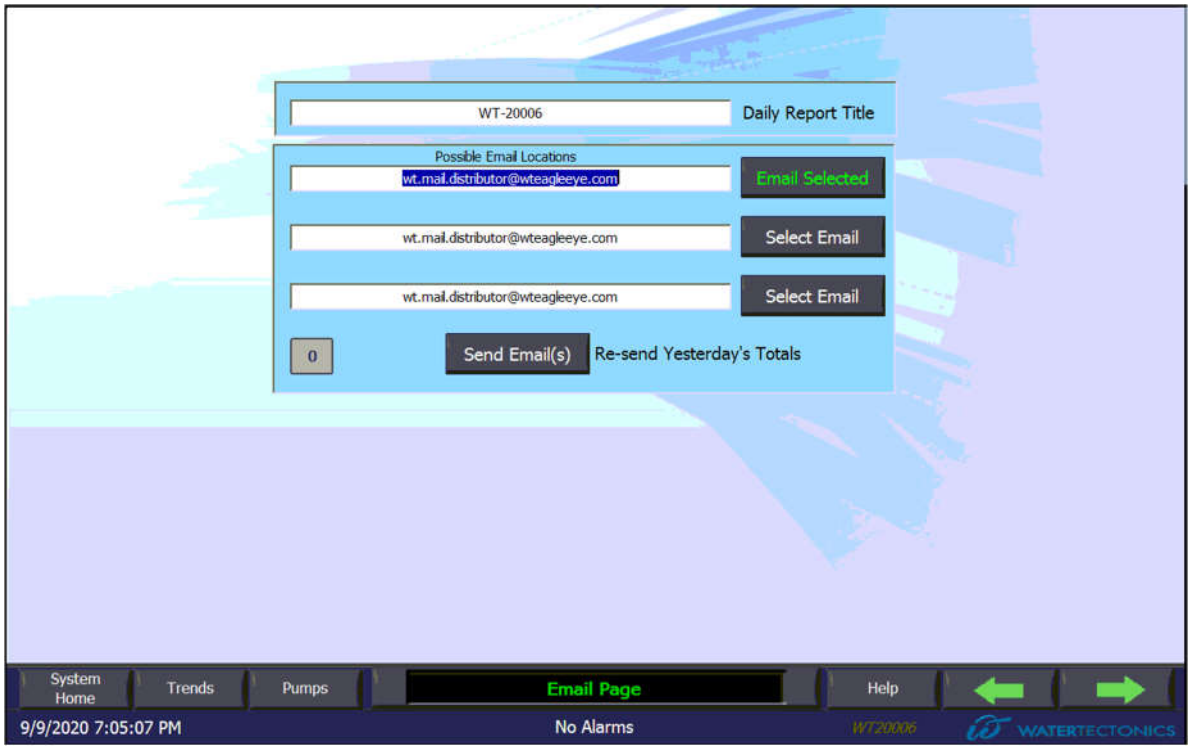


Figure 72: Email Page

8. Commissioning and Startup after Downtime

The following procedures should be conducted (generally in order) for proper system commissioning. Make notes and inform the project supervisor of any and all necessary repairs to complete prior to system start up. Many pieces of equipment included in the overall system have technical manuals beyond the scope of this document and should be referenced for detailed operating and troubleshooting information.

8.1 Visual Inspection

Complete the following steps to perform a visual system inspection.

1. Visually inspect hydraulic fittings for damage or leakage. Make notes if any issues are observed and replace components, as necessary.
2. Visually inspect the service disconnect on the exterior of the Conex for damage.
3. Visually observe all exterior (influent/effluent) piping for damage or leakage.
4. Visually inspect control panels for dents, scratches, or other damage.
5. Visually inspect the chemical totes and CO_2 tank for damage. If damage or leakage is observed, photograph the leakage, verify that chemical containment is in place below the chemical tote, and notify the project manager immediately.
6. Visually inspect the pH and turbidity probes, pressure gauges, flow switches, and flow meter for damage.
7. Visually inspect chemical metering pumps and connections for leaks.
8. Ensure all electric power cords for items such as the chemical metering pumps, media filters, and air compressor are plugged in.
9. Ensure the compressed air pneumatic line is connected from the air compressor to both media filters.
10. Ensure the air compressor is properly serviced, such as checking the oil level and air filter.
11. During commissioning, connect the source pump to power using the bundle of heavier gauge wires. Cap off and carefully stow the bundle of lighter gauge wires. The lighter gauge wires will not be used in this system.

Figure 73: Stow Unused Source Pump Smaller, Lighter Gauge Wires

8.2 System Startup

1. Set all main control panel selector switches to the OFF position.
2. Verify that all breakers are in the ON position.
3. Set the system disconnect lever to the ON position.
4. During the initial startup, set the system to recirculate by turning the RECIRC/DISCHARGE selector switch on the main control panel door to RECIRC.
5. Make sure the E-Stop button is pulled out by rotating it in the clockwise direction. Press the E-Stop reset button on the control panel.
6. Verify all pre-treatment tank, and other manual hydraulic path valves are open.
7. Verify that all drain valves and sample valves are closed.
8. Verify the water level in the detention pond is sufficient to allow the system to operate properly.
9. Turn the SOURCE PUMP selector switch on the MCP door to the AUTO position to start the source pump.
10. While the system is filling with water, open the drain valve on the bottom of the media filter pump.
11. When water starts to come out the MF pump drain valve, close the drain valve, and open the sample valve above the pump.
12. Turn the MEDIA FILTER PUMP selector switch on the MCP door to the HAND position and set the pump speed to 15-20% using the Pump Speed Popup on the HMI System Page.
13. When water starts to spurt out the sample valve above the pump, close the sample valve.
14. Turn the MEDIA FILTER PUMP selector switch on the MCP door to the AUTO position.
15. Refer to the MF flow meter icon on the HMI System Page to view the flow rate. Adjust the media filter pump speed to obtain the desired flow rate by pressing the MF pump icon and entering the speed in the popup keypad.

    NOTE: Pump speed adjustments may take a moment to complete as the VFD processes the signal request and adjusts the pump speed. The VFD is programmed with a 10-second ramp time.
16. Allow the system sufficient time to fill all hydraulic paths, MF filter vessels, and other components to ensure an accurate flowrate measurement.

    NOTE: A low flow error will occur if the flowrate is below 30 gpm for more than 30 seconds.
17. Open the air vent valves on the top of the MF filter vessels to allow air to escape as the filter vessels fill with water. Close each air vent valve when water spurts out of it.
18. Verify the media filter backflush intervals and pressure settings.
19. Verify the amber pole light is illuminated.

20. Record initial pH and turbidity readings on a daily log. See *Appendix A - Operations Log* on Page 59 for an example log.

21. Turn the following selector switches on the MCP door to the AUTO position:
    - POLYMER PRE-TREAT
    - CAUSTIC PRE-TREAT
    - POLYMER TREAT
    - ACID TREAT

22. Take grab samples and use field instruments calibrated to manufacturer's specifications to cross-check system pH and turbidity probe readings. Make note of variations outside of specified limits and do not discharge until acceptable limits are achieved.

23. When all equipment calibration and system inspections are complete, turn the RECIRC/DISCHARGE switch to the AUTO position. The AUTO position governs whether or not the system discharges water to the GAC filters based on readings from the treatment Hach sc200 controller.

9. Operation

9.1 Cold Weather Operation

When the outdoor thermostat registers 35° F, the system goes into freeze protection mode, during which the following events occur:

- The chemical dosing pumps stop.
- The source and media filter pumps run at a slow rate.
- The discharge valve closes and the recirc valve opens.

9.2 Media Filter Operation

The following section describes media filter operation and components.

1. **Direction of Flow:** Water flows in through the top of the filter vessel and down through the filtration media bed. The filtration media captures the suspended solids.
2. **Air Pressure:** A media filter with new or clean media will operate at similar influent and effluent pressures. These pressures are indicated by gauges on the top and bottom of the media filter. The air pressure supplied by the air compressor should be approximately 5-10 psi higher than the pressure on the influent (inlet) upper manifold pressure gauge. Overall pressure should be 35 to 65 psi.
3. **Differential Pressure:** As sediment loading occurs in the media bed, the influent pressure will increase. The influent pressure is visible on the influent (inlet) manifold pressure gauge. The effluent pressure is visible on the effluent header pressure gauge. Calculate the differential pressure by subtracting the effluent pressure from the influent pressure. Differential pressure (if used) should be 10-15 psi.
4. **Differential Pressure Setting:** The pressure differential (PD) indicators for the MF are located just below the control panel. The setting for this indicator determines when an automatic backflush is triggered. When the differential pressure meets or exceeds the PD indicator setpoint, the backflush cycle begins automatically. A typical setpoint is 8-12 psi.
5. **Pressure Sustaining Valve (PSV):** On the effluent side of the media filter is a PSV. This valve maintains a constant back pressure on the media filter to enable proper backflushing. The setscrew for the PSV should be set to maintain approximately 35-40 psi.

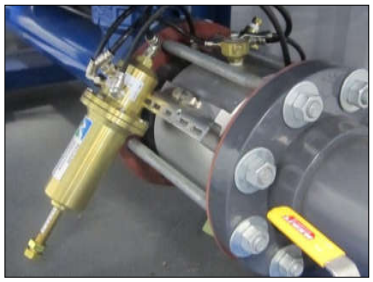


Figure 74: Example Pressure Sustaining Valve

6. **Backflush Line:** The backflush line is located at the end of the backflush manifold and has a smaller diameter than the backflush manifold.

7. **Backflush Gate Valve:** The backflush gate valve is mounted to the backflush line on the top of the media filter. The backflush gate valve is a critical component for proper backflushing operations. If the gate valve is opened too far, loss of filtration media can occur as the filtration media is flushed out of the filter vessel during backflushing. If the valve is overly restrictive, sediment deposited on the filtration media will not be fully discharged during a backflush. The PSV and the backflush gate valve are directly related to each other and are set for optimum backflush performance.

   If sand accumulates in the site glass during backflush cycles, backflush pressure is too high, and the backflush valve is too far closed. Use the key to open the red cover on the backflush gate valve, remove the cover, and turn the handle clockwise to open the valve further. During commissioning, WaterTectonics personnel will adjust the backflush gate valve to the correct setting for this system. Only qualified operators or WaterTectonics personnel should attempt to adjust the backflush gate valve if it becomes necessary after commissioning is complete.

8. **Backflush Cycle:** During a backflush cycle, each filter vessel will clean in series. Water filters down as normal through all the vessels that are not in a backflush cycle. The PSV creates pressure high enough to force water upward through the filter vessel that is backflushing. An automated sequence controls the rate at which each filter vessel cycles through the backflush based on automatic filter controller settings.

9. **Media Filter Control Panel:** Media filter backflush settings, such as length of time between backflush cycles and how long each filter vessel will be backflushed, are programmed into the MF control panel, which is located on the front of each media filter. Refer to the manufacturer's documentation for information on the controls, switches, and indicators on the MF control panel.

The following typical timed backflush settings are provided for reference purposes:

- Periodic Flush (Hours): 2
- Flush Duration (Minutes): 4
- Delay (Seconds): 0

Figure 75: Media Filter Control Panel

10. Shutdown

10.1 Warm Weather/Short Term Shutdown

Use the following instructions if freezing temperatures are NOT anticipated, water will be left in the system, and/or the shutdown is NOT expected to last longer than 3-4 hours:

1. Press the emergency stop button.
2. Turn off the air compressor.
3. To prevent irreparable damage to the pH probes, the probes must be kept wet. If the shutdown will result in either of the pH probes being out of the water for longer than an hour, remove the pH probes and store using the instructions in *Section 11.7 pH Probe Storage* on Page 57.
4. Leave power ON.
   CAUTION: Polymer coagulant begins to gel at 40° F. This greatly decreases its effectiveness. Leaving power to the heating system in both the chemical shed and the Conex when temperatures are low, but not necessarily freezing, prevents waste.

10.2 Freezing Weather/Long Term Shutdown

In the event of an extended shutdown, several options will need to be evaluated by the project management team. These options include, but are not limited to:

- Arranging temporary on-site storage of stormwater for clarification at a later time.
- Arranging temporary water discharge to sanitary sewer in accordance with local guidelines, requirements, and regulations for treatment at a Publicly Owned Treatment Works/Plant (POTW).
- Arranging off-site water trucking for authorized disposal.
- Arranging a replacement system and/or components of the system for on-site use prior to discharge.
- Draining the water from the system piping and pumps and removing chemicals to prevent freezing.

Use the following instructions if freezing temperatures are anticipated, or the shutdown is expected to last longer than 3-4 hours:

1. Turn the POLYMER PRE-TREAT selector switch on the front of the MCP to OFF.
2. Turn the CAUSTIC PRE-TREAT selector switch on the front of the MCP to OFF.
3. Turn the SOURCE PUMP selector switch on the front of the MCP to OFF.
4. Remove the source pump from the detention pond using the guided rail system, and store.
5. Close all eight of the pre-treatment tank isolation valves.
   NOTE: The pre-treatment tanks can be drained using the blind flanges at the ends of the manifolds, or they can be left full for 2-3 days at 32° F or below before the top of the water starts to freeze.

6. Open the sample valves (V-131 and V-133) on the piping leadng to the pre-treatment tanks and drain the piping from the detention pond to the tanks.
7. Turn the POLYMER TREAT selector switch on the front of the MCP to OFF.
8. Run media filter pump to empty the piping to the media filters until the treatment flow switch (FIT-102) registers no flow.
9. Turn off the air compressor.
10. Turn the MEDIA FILTER PUMP selector switch on the front of the MCP to OFF.
11. Turn pump breakers to the OFF position.
12. Close the media filter isolation valves (V-207 and V-208 for MF 1, and V-307 and V-308 for MF 2).
13. Open the 3/4-inch ball drain valves on the lower effluent header of each media filter unit, and drain all the filter vessels in both media filter units. Leave the ball valve open during the shutdown period.
14. Remove the pH probes and store using the instructions in *Section 11.7 pH Probe Storage* on Page 57.
15. Turn the ACID TREAT selector switch on the front of the MCP to OFF.
16. Remove regulator from CO_2 dewar tank and seal the tank.
17. Empty all the chemical hoses.
18. Store chemicals in a heated environment.

11. Maintenance

11.1 Solids Management

The pre-treatment tanks provide space and time for heavy solids to settle out of the water. Heavier solids sink to the bottom while lighter contaminants float to the surface and may become trapped against tank walls. After a period of operation the pre-treatment tanks need to be drained and cleaned.

11.2 Media Filter

11.2.1 Filtration Media Replacement

The filtration media must be periodically removed with a vacuum truck and replaced with an equal amount and proportion of new media. For example, if the media bed is 8 inches of crushed rock below 24 inches of sand, the same approximate proportions must be preserved when replacing the filtration media. An exception is if site water conditions change and authorized personnel determine a new media filtration configuration.

11.2.2 Performing a Manual Backflush

All Filter Vessels, Normal Operation, *Low TDS*, Pump Operating *Above 60%*:

Use the following steps to perform a manual backflush when the media filter is operating normally, with low TDS and the pump is operating at above 60%:

1. Open the media filter control panel.
2. Press and hold the START button for three (3) seconds.

Figure 76: Media Filter Control Panel START Button

3. Close the media filter control panel.

The media filter will backflush each filter vessel in sequence for the set amount of time (typically 2 minutes) and go back to normal operation.

All Filter Vessels, Normal Operation, *High TDS*, Pump Operating *Below 60%*:

Use the following steps to perform a manual backflush when TDS is high and the pump is operating at below 60%:

1. On the HMI System Page, press the media filter pump icon to open the MF Pump Popup.
2. In the MF Pump Popup, change the Auto Speed Command to 65%.
3. Put the Nelson valve to AUTO by turning the selector handle to AUTO. Refer to *Figure 77* below.

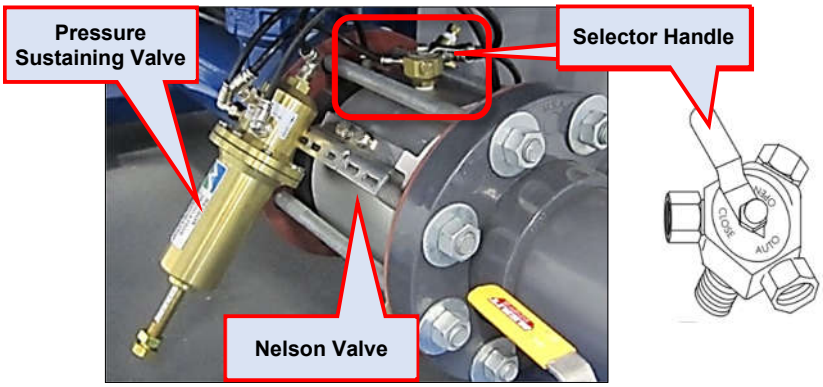


Figure 77: Setting the Nelson Valve to AUTO

4. Set the pressure at the pressure sustaining valve (PSV) to 35-40 psi by turning the set bolt on the valve until the desired pressure on the calibrated scale is level with the end of the valve body.

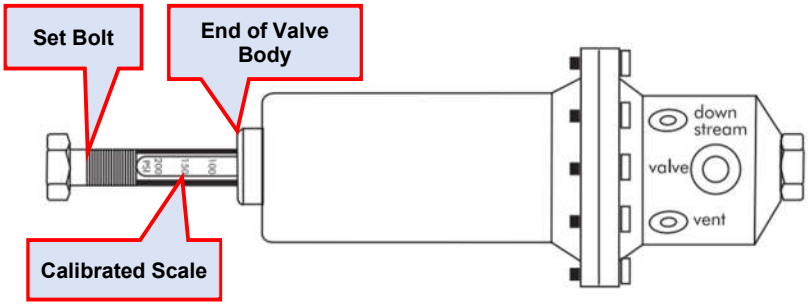


Figure 78: Setting the Pressure Sustaining Valve Pressure

5. Open the media filter control panel.
6. Press and hold the START button for three (3) seconds.
7. Close the media filter control panel.
8. When the backflush has finished and TDS is running high, change the Nelson valve selector to OPEN.
9. Lower the pump speed to achieve desired TDS amount.

Individual Filter Vessel Manual Backflush:

A manual backflush can also be performed for an individual filter vessel by opening the backflush solenoid located on the side of the MF control panel.

NOTE: Do NOT open all the solenoid valves at one time. Wait until the previous filter vessel has finished backflushing *and its solenoid valve has been closed* before opening the solenoid valve for the next filter vessel.

NOTE: Performing a manual backflush by opening the backflush solenoid is **not recommended**. Manually open a backflush solenoid ONLY when a backflush is immediately required to avoid other problems.

11.3 Air Compressor

The following is only a partial list of maintenance activities that may be required. Refer to the *Ingersoll Rand Air Compressor Model P1IU-A9 Owner's Manual* for additional information and instructions.

11.3.1 Daily

1. Drain receiver tank condensate.
2. Check lubricant level. Fill if necessary.
3. Check for unusual noise or vibration. Verify that guards and covers are securely in place.

11.3.2 Weekly

1. Inspect air filter element. Clean or replace, as necessary.

11.3.3 Monthly

1. Squirt soapy water around joints during operation and watch for bubbles that indicate air leaks.

11.3.4 Every Six Months

1. Change lubricants.

11.4 Verifying Correct Polymer Pump Dosage

If the effective dose rate has been determined but does not result in water that meets the discharge criteria, check the chemical pumps to verify that the stated dose rate is actually being delivered.

This section describes how to use the graduated calibration cylinder for pump dose rate verification.

1. Stop the polymer pump (P-162).
2. To fill the calibration cylinder, close the chemical pump isolation valve (V-166).
3. Leave open the polymer tote isolation valve (V-164) and allow the calibration cylinder to fill to a set level, for example 400 or 500 ml.
   NOTE: Zero is the *highest* line on the calibration cylinder, not the lowest.
4. Close the valve to the polymer tote isolation valve (V-164).

5. Reopen the polymer chemical pump isolation valve (V-166).
6. On the MCP door, turn to the TREATMENT Polymer Injection selector switch to the HAND position.
7. Using a timer, run the chemical pump for exactly one minute.
8. Turn the Polymer Injection selector switch on the MCP door to the OFF position.
9. Note the level of the calibration cylinder. If the amount of polymer pumped out of the calibration cylinder is markedly different from the calculated dose rate, inspect the pump's diaphragm to determine if replacement is necessary.

11.5 Turbidity Probe Calibration

Perform this calibration every month. Keep a record of each calibration using the *Turbidity Probe Calibration Record* form or similar provided on Page 55.

1. Assemble the following items for this calibration:
    a. Hach calibration kit (No. 57330-00), which includes a calibration chamber and clamp, as well as two bottles of 800 NTU turbidity standard solution.

       NOTE: If NOT using a calibration kit, obtain a clean, black plastic container that will hold approximately 1200 mls, a blackout cloth to cover it completely, and two bottles of 800 NTU turbidity standard solution (PN 2660549 or WT# 100118).

    b. Approximately 200 mls deionized water.
2. Set the Outmode:
    a. At the TREAT Hach controller's Main Menu, select **Sensor Setup** and press the green check mark symbol.

    b. Select the name of the sensor being calibrated and press the green check mark symbol.

    c. Select **Calibrate** and press the green check mark symbol.

    d. Select **Set Outmode**. The options are Active, Hold and Transfer. Select **Hold** to hold the output at its present state during the calibration procedure. Press the green check mark symbol.
3. Place the sensor in the calibration cylinder with deionized water and hold in place using the clamp. The tip of the probe should be approximately 1 inch below the surface of the water. If not using a kit with a clamp, hold the probe in the water and cover the probe and black plastic container with a blackout cloth. **The measurement must be taken with as little ambient light as possible.**
4. On the Hach controller, select **Sensor Measure** and press the green check mark symbol. Record the reading in the "Initial Reading" box on the *Turbidity Probe Calibration Record* form provided on Page 55.
5. Press "Back" to return to the Calibrate menu. Select **Offset**. Multiply the reading obtained in step 5 by -1, and enter that value. For example, if the reading obtained in Step 4 was 10 NTU, enter -10. Press Enter to save this value.

6. Rinse clean the outside of each bottle of 800 NTU turbidity standard solution to avoid contaminating the solution when the bottle is opened.
7. Gently invert both bottles of 800 NTU turbidity standard solution a minimum of **50 times**. Remove the lid and seal from each bottle.
8. Leaving the deionized water in the calibration cylinder or black plastic container, slowly pour the contents of both bottles into the calibration cylinder or black plastic container. **Do NOT create bubbles.**
9. Immediately place the probe tip in the calibration cylinder and hold in place with the clamp, or hold the probe in the black plastic container. The tip of the probe should be approximately 1 inch below the surface of the 800 NTU turbidity standard solution.
10. On the Hach controller, select **Sensor Measure** again. Allow the reading to become stable and record the value in the "Measured Value" box on the *Turbidity Probe Calibration Record* form below.
11. Calculate the factor using the following formula:

    NEW FACTOR = SOLUTION NTU / MEASURED VALUE

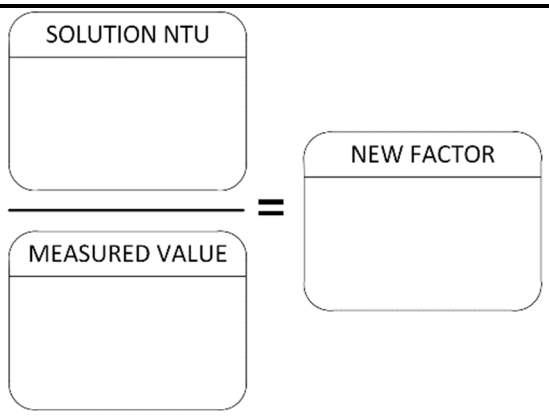
12. For example, if the standard solution used is 800 NTU and the probe measures the turbidity of the sample at 750 NTU, the new factor would be calculated as:

    New Factor = 800 / 750 = 1.07.

13. Write the calculation result in the "New Factor" box on the *Turbidity Probe Calibration Record* form below.
14. On the Hach controller, go back to the Main Menu and select **Sensor Setup**.
15. Select **Calibrate** and then open the **Factor Menu** and enter the factor that was calculated in Step 11.
16. Complete the remainder of the *Turbidity Probe Calibration Record* form below.

TURBIDITY PROBE CALIBRATION RECORD

Date	
Time	
Operator	
Probe Tag No.	
Probe Serial No.	
Initial Reading	



11.6 pH Probe Calibration

To ensure proper operation, the pH probes should be calibrated monthly or any time grab samples taken from the effluent sample port do not match the pH probe readings. Use the PRE-TREAT sc200 controller to calibrate AE-101 (in the pre-treatment tank T-102). Use the TREAT sc200 controller to calibrate AE-102 (on the piping in the WQM section of the Conex). Keep records of the calibrations of each probe on a copy of the sample *pH Probe Calibration Record* form or similar on Page 57.

The sc200 controllers are capable of four different calibration types. WaterTectonics recommends performing the 2 Point Manual Calibration.

To calibrate the pH probes, complete the following steps. Refer also to the Hach DPD1P1 probe documentation.

1. For this calibration, obtain two different pH buffer solutions (a buffer solution with a pH of 4.0 and a second buffer solution with a pH of 7.0 are recommended).
2. Before performing the calibration, isolate the pH probe from the water stream by disabling the pump. Follow lockout tagout procedures. If necessary, drain the pipe before removing the pH probe.
3. Unscrew the collar at the top of the probe mount and remove the pH probe from the casing.
4. Clean probes before calibration. Use a soft cloth and clean water. Do NOT use cleaning agents or abrasives as this will damage the glass lens located on the bottom of the probe.
5. From the Hach sc200 controller's Main Menu, select **Sensor Setup** and press the green check mark symbol.
6. Select the pH probe to be calibrated from the menu and press the green check mark symbol.
7. Select **Calibrate** and press the green check mark symbol.
8. Select **2 Point Manual**. Select the **Output Mode**: The choices are Active, Hold, or Transfer. Choose **Hold** to hold the output at its present state during the calibration procedure. Press the green check mark symbol.
9. Place the pH probe in the pH 4.0 buffer solution and press the green check mark symbol.
10. Record the reading in the "Before pH 4 Calibration" box on the *pH Probe Calibration Record* form below.
11. On the Hach controller screen, change the reading to pH 4.0, if the reading is not the same as the pH of the buffer solution.
12. Rinse the pH probe thoroughly with deionized or clean, potable water to prevent crossover contamination from one buffer solution to the next.
13. Place the pH probe in the pH 7.0 buffer solution and press the green check mark symbol.
14. Record the reading in the "Before pH 7 Calibration" box on the *pH Probe Calibration Record* form on Page 57.
15. On the Hach controller screen, change the reading to pH of 7.0 if the reading is not the same as the pH of the buffer solution.

A screen will display **2 Point Calibration Complete** and the slope (XX.X mV).

16. Record the slope on the *pH Probe Calibration Record* form below.
17. Select the available **Output Mode**. Choose **Active** to return the probe to active data measurement.
18. Complete the remainder of the *pH Probe Calibration Record* form.
19. Return the probe to the probe mount and tighten the collar finger-tight.
20. Restore function to any equipment that was taken out of service in Step 2.

PH PROBE CALIBRATION RECORD

Date	
Time	
Operator	
Before pH 4 Calibration	
Before pH 7 Calibration	
Slope	
Probe Tag No.	
Probe Serial No.	

11.7 pH Probe Storage

In the event of an extended system shutdown, the pH probes must be protected from drying out or freezing. Once the system has been shut down and drained of water, perform the following steps to maintain the pH probes for future use:

NOTE: In case some water is still in the piping, open the nearest upstream sample port valve and drain any remaining water into a bucket before removing a probe.

1. Unscrew the collar at the top of the probe mount and pull the probe out of the casing.
2. Fill the black protective cap enough with pH 4.0 buffer solution or deionized water to soak the sponge inside the cap. Refer to *Figure 79* below.

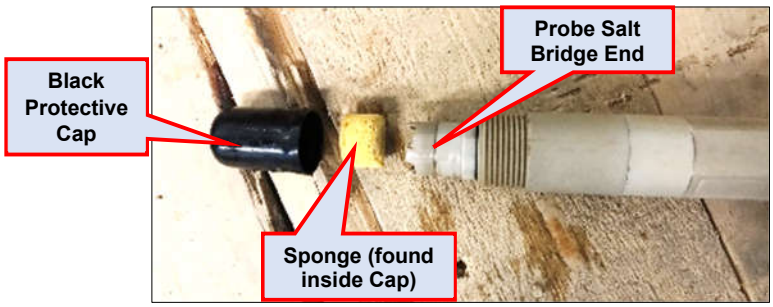


Figure 79: Preparing pH Probe for Storage

3. Place the protective cap securely on the end of the probe. This will prevent the salt bridge from drying out.
4. Repeat steps 1 and 2 every 2 to 4 weeks while the probe is removed from the water treatment train.

Appendix A - Operations Log

OPERATIONS LOG					
Site		**Operator**		**Date**	
Chemical Tote ID		**Start Time**		**End Time**	
Tote Quantity	Full 3/4 1/2 1/4	**Flow Totalizer**	Initial: Final:		
Pre-treat Dose Rate	gph ml/min = ppm	**Flow Rate (gpm)**	Note changes in Comments below.		
Standard Dose Rate	gph ml/min = ppm	**Volume Discharged (gal)**			
Total Dose Rate (ppm) Pre + Standard Rates	ppm	**Media Filter Backflush Cycle Setting**	Timing: Pres. Diff.:		

Water Quality/Performance Monitoring						
Time	**Sample**	**Location**	**Turb (NTU)**	**pH**	**Comments**	
	Grab/Online					
	Grab/Online					
	Grab/Online					
	Grab/Online					
	Grab/Online					
	Grab/Online					
	Grab/Online					
	Grab/Online					
	Grab/Online					
	Grab/Online					
	Grab/Online					
	Grab/Online					
	Grab/Online					
Online meters performing correctly vs grab samples?			Y N			
If no, what was the corrective action taken:						
Comments:						
				Technician Signature		

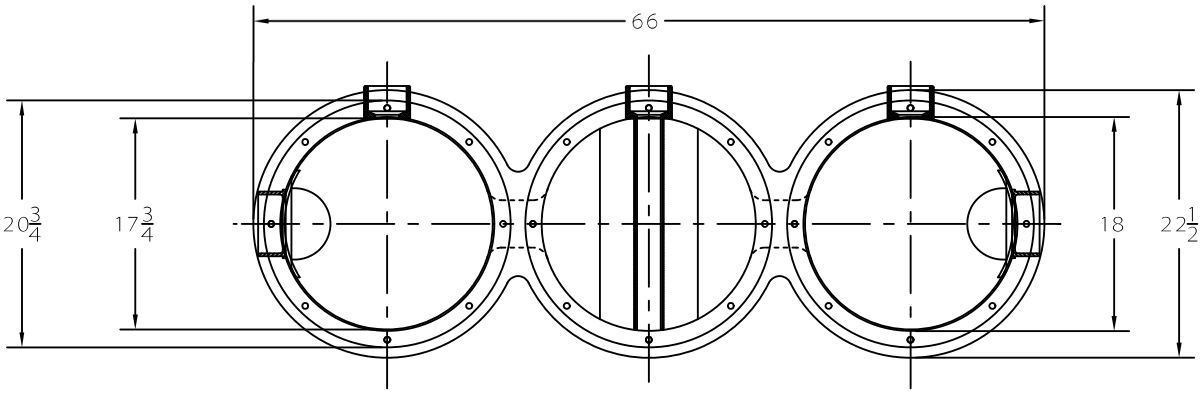
TB-1

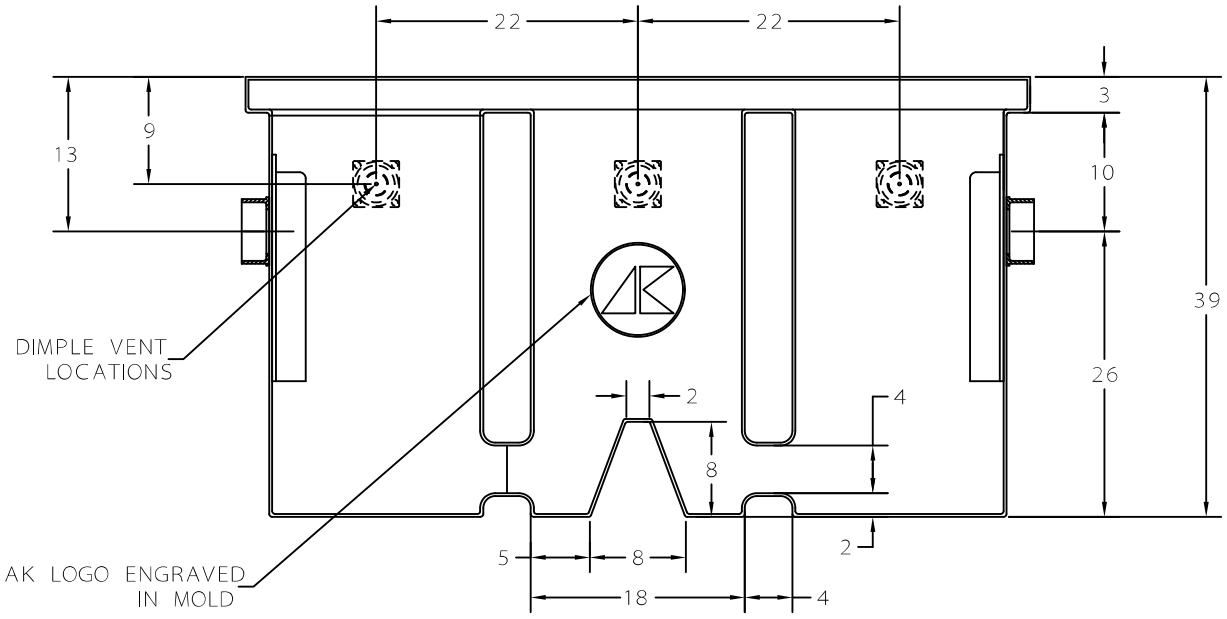
AK AKP-50650 PB-18X36 18"X38" VENT POLY TRIPLE GARAGE BASIN SET NEW DESIGN. MULTI-PURPOSE FOR NORTH AND SOUTH INSTALLATIONS
AK AKP-10260 PA-18X12EXTP 18"X12" POLY BASIN EXTENSION
AK AKP-10270 PA-18X6EXTP 18"X6" POLY BASIN EXTENSION

CAPACITY MINIMUM OF 100 GALLONS

APPROVED FOR USE IN OFFICE/MAINTENANCE BUILDING

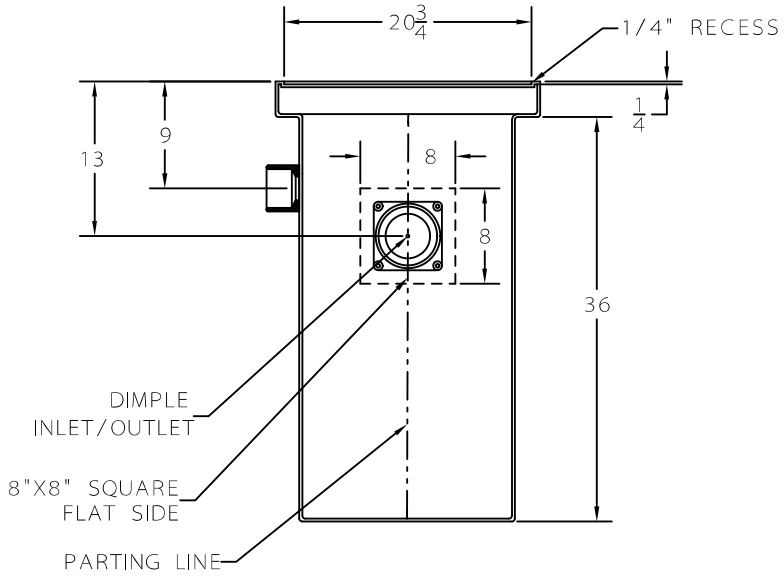
PART/PRINT NO.	PART DESCRIPTION	REVISION	DATE
AKP50650	TRIPLE GARAGE BASIN	001	12/18/15





B.O.M.

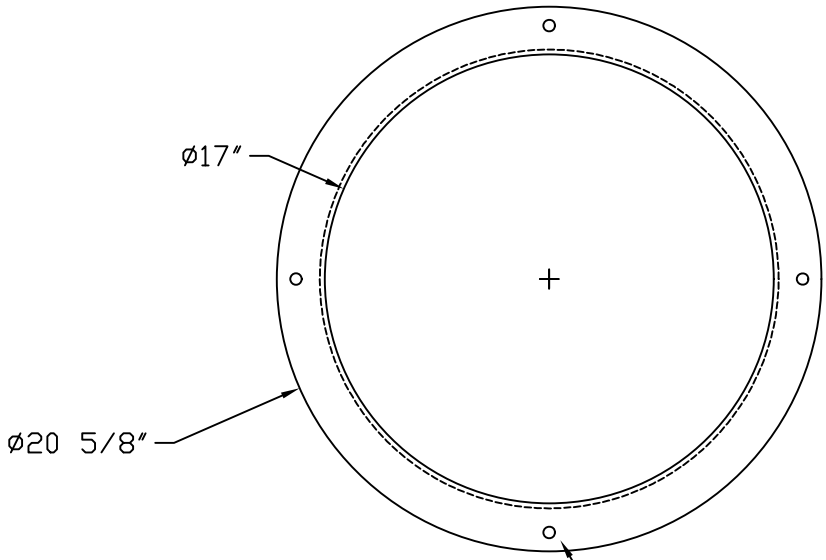
PART#	DESCRIPTION	QTY.
AKR51060	SOLID STEEL COVER	3
AKR30100	1/4-20 X 3/4" BOLT	12
AKR50110	1/4" FLAT WASHER	12
AKR70150	3/16" X 1" GASKET TAP	(3) 24" LONG
AKR20620	5/16" GASKET WASHER	32
AKR50840	5/16" NUT	32
AKR50800	5/16" X 1-1/2" BOLT	12
AKR50850	5/16" X 1-1/2" MS CS SLOT	20
AKR10160	2" CAST IRON HUB	3
AKR10180	4" CAST IRON HUB FLAT BACK	2
AKR10585	TRIPLE BAFFLE	2
AKR50070	1/4-20 ALUMINUM INSERT	24



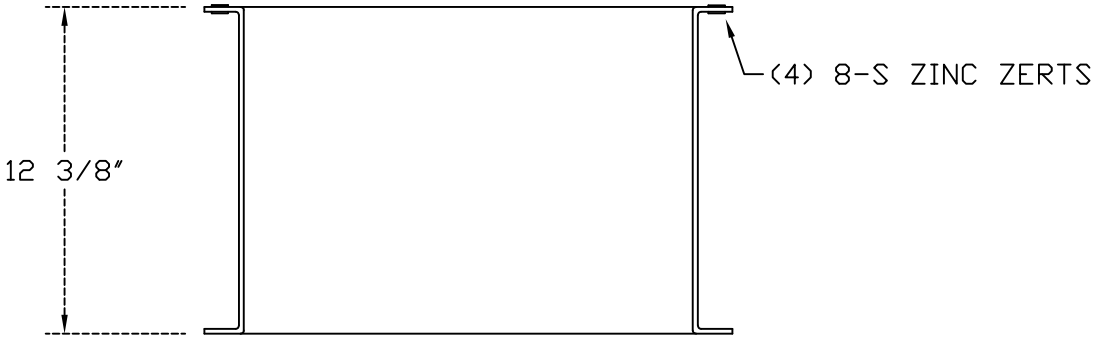
COMMENT:
1. THIS PRODUCT ACCEPTS 4"SCH40 PVC OR CAST IRON PIPE
2. PIPE MUST BE SEALED WITH EITHER A TRANSITION GASKET OR CAULKING.

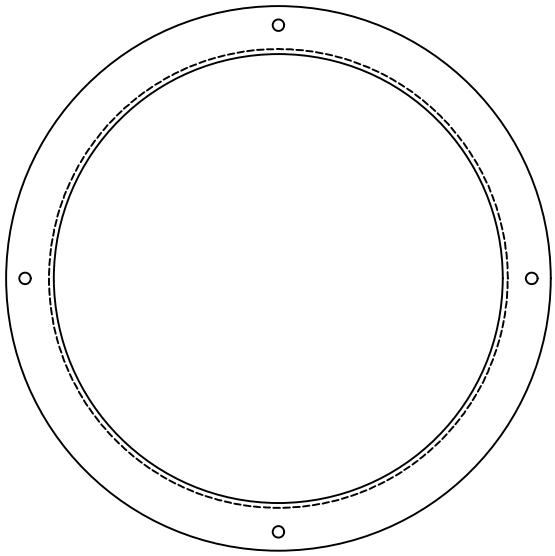
DRAWN	MATERIAL	TOLERANCE	SIGNATURE
A.DAVIS	POLYETHYLENE	+/- .250 UNLESS SPECIFIED OTHERWISE	

PART/PRINT #:	PART DESCRIPTION:	SCALE:	REVISION:	DATE:
AKP35000	POLYPROPLENE BASIN 18X22	NOT TO SCALE	002	8/29/03



NOTES:
4 ZERTS ARE INCLUDED ON TOP FLANGE



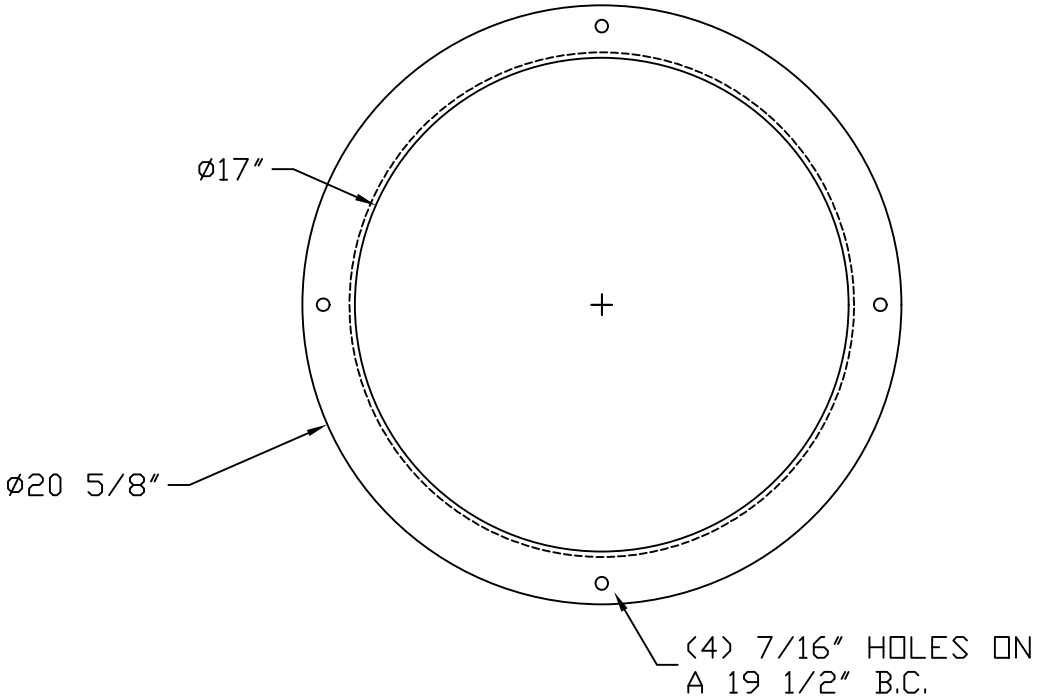


B.O.M.
AKP10506 GASKET PACK/EXTENSION/4 BOLT
AKR50900 8-S ZINC ZERTS

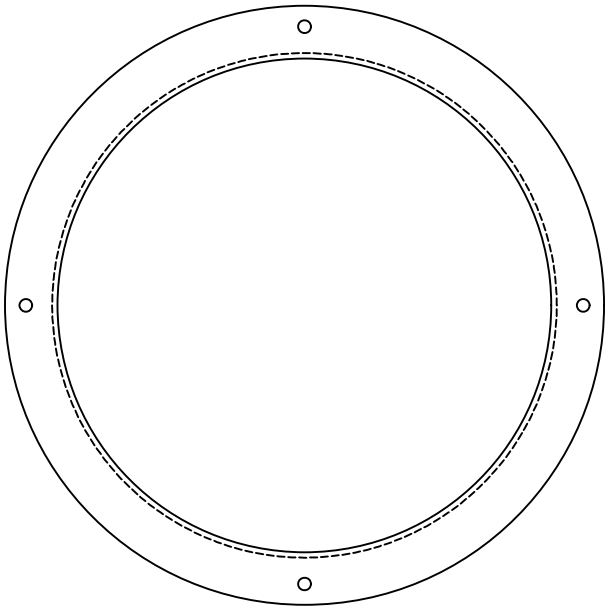
AK INDUSTRIES INC.
2055 PIDCO DR.
PLYMOUTH, IN. 46563
PHONE:(574) 936-6022

DRAWN BY:	TOLERANCE:	SIGNATURE:
M.OLIVAREZ	± 0.250 UNLESS SPECIFIED OTHERWISE	

PART/PRINT #:	PART DESCRIPTION:	SCALE:	REVISION:	DATE:
AKP10270	POLYETHYLENE EXTENSION 18 X 6"	NOT TO SCALE	004	2/6/03



NOTES:
4 ZERTS ARE INCLUDED ON TOP FLANGE



B.O.M.
AKP10506 GASKET PACK/EXTENSION/4 BOLT
AKR50900 8-S ZINC ZERTS

AK INDUSTRIES INC.
2055 PIDCO DR.
PLYMOUTH, IN. 46563
PHONE:(574) 936-6022

DRAWN BY:	TOLERANCE:	SIGNATURE:
M.OLIVAREZ	± 0.250 UNLESS SPECIFIED OTHERWISE	

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment M

Truck Stacking Plan

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Truck Stacking Plan

The company's scale operator and ground security will constantly monitor truck ingress and egress to ensure no traffic is backing up on the public right away. The Facility has significant capacity to stack up to 10 vehicles on the approach to our two inbound scales, an additional 10 trucks at the unloading areas and 16 trucks between scales and unloading area. If we use and average weight of 15 tons per truck and expected turn time rate of 60 trucks per hour, this provides 900 tons of truck unloading capacity every hour.

The estimated peak traffic is 600 tons/hour or 40 trucks/hour. The in-plant stacking capacity is estimated to be 1.5x the peak capacity. In addition, we estimate the private access road and property of our affiliated company provide an outlet to stack 40 trucks in the unlikely event it was needed.

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment N

Facility Traffic Study

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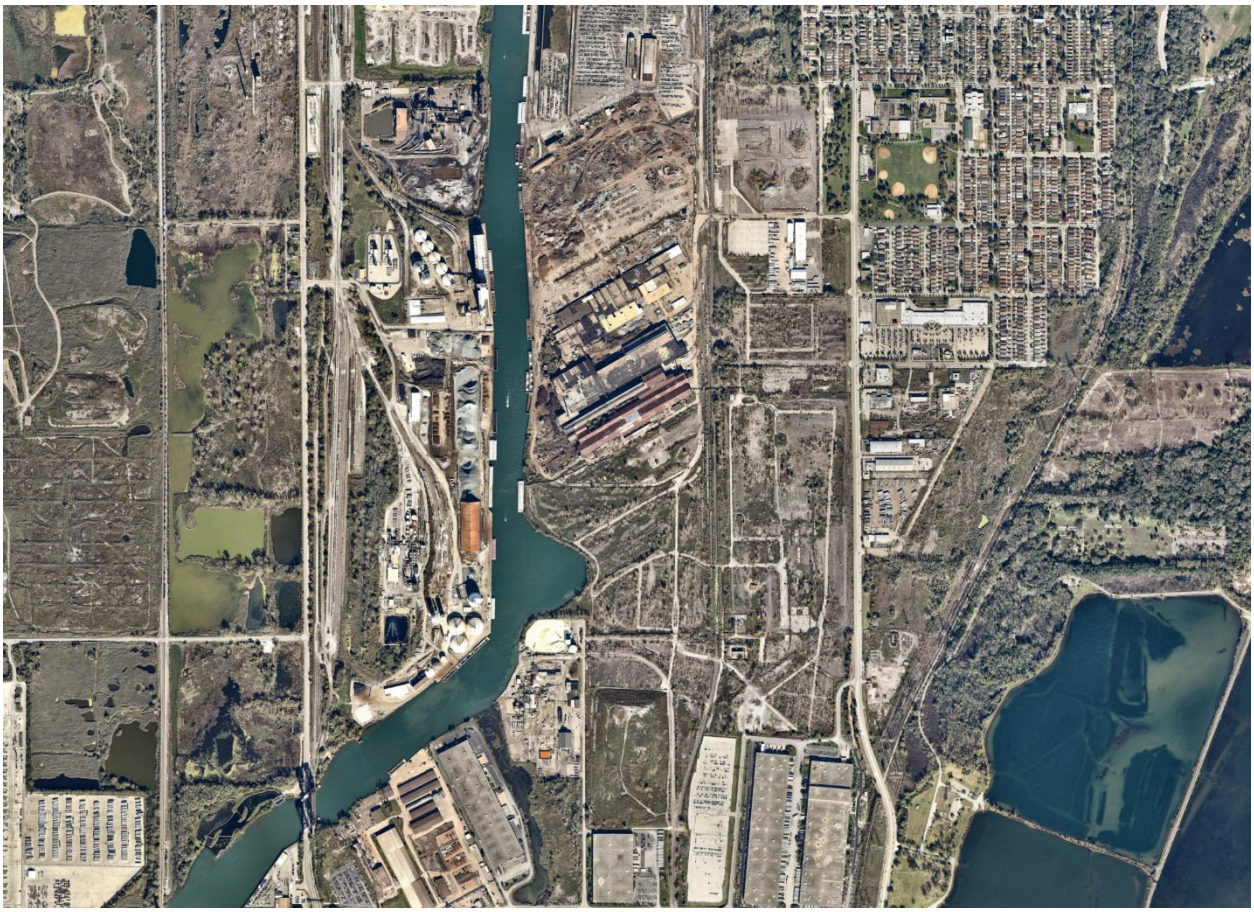
TRAFFIC IMPACT STUDY

Metal Recycling Facility
11600 South Burley Avenue
Chicago, Illinois



February 2019

Prepared for:
General III, LLC

Sam Schwartz
Transportation Consultants

TABLE OF CONTENTS

1.0 INTRODUCTION

Sam Schwartz Consulting (*Sam Schwartz*) was retained by General III, LLC ("G3") to conduct a traffic impact study ("TIS") to assess transportation impacts for the proposed expansion of an existing metal recycling center located at 11600 S. Burley Avenue ("Property") in the City of Chicago. The proposed operation will be part of the Reserve Management Group ("RMG"), which has 11 locations throughout the United States. RMG is a private company that supports the steel industry through recycling as an alternative to landfills. RMG deals with processing of different types of ferrous, non-ferrous, and electronic scrap. Their current Chicago location, which has operated since 1996, also has warehousing and water (barge) terminal services.

The Property is comprised of approximately 123 acres located along the Calumet River situated (north-south) between approximately 114th Street (extended) and 119th Street (extended), and (east – west) between the Calumet River and approximately 200 feet to the west of vacated Burley Avenue. Approximately 300 persons work at the Property. Most workers arrive between 5AM and 7AM and depart between 3PM and 5PM. As proposed, a metal recycling operation, further described below, will be located on 25 acres of the existing property ("Site") and will employ an additional 100-130 workers, on four primary shifts. Access to the Site will be from a controlled gated entrance located along a north-south industrial service drive adjacent to the Site. This service drive is located approximately 200 feet west of vacated Burley Avenue.

Plans are for G3 to build a new recycling operation at the Site next to the current RMG operations. The new metal recycling facility will convert obsolete metal products into raw materials for use by steel mills and foundries and smelters that, in turn, produce new metal for industrial needs. This recycling process mitigates the need to "dump" the unprocessed metals into a landfill. Specifically, the G3 operation will be improved with new buildings and equipment, sorting and processing areas, paved driveways, stormwater management systems, new cranes, and connections to shipping and barging on the Calumet River, and a new state-of-the-art shredder.

The location of the businesses will allow for recycling services that are facilitated by a network of waterways, rail and roadways for delivery and shipment of goods. The location of the Site is shown on ***Figure 1***. The Site will be serviced by large trucks or barges bringing in materials from construction sites, automobile recyclables, and other recycling facilities, and leaving with loads delivering to end users. Additionally, the business will take in metal scrap from individual small truck operators, who travel throughout the City and suburbs.

The following report presents and documents *Sam Schwartz's* methodology, data collection, and analyses and identifies any potential impacts from the G3 development. The report is completed in conformance with the Chicago Department of Transportation ("CDOT") standards. The analysis includes an annual traffic growth rate, provided by The Chicago Metropolitan Area for Planning ("CMAP"), of 1.5% to determine background growth for 2024 future conditions, which is anticipated buildout plus five years. Referenced items are included in the Appendix.

N

Not to Scale

Sam Schwartz Engineering D.P.C.

Figure 1

Site Location Map

2.0 EXISTING CONDITIONS

Sam Schwartz conducted field visits to collect relevant information pertaining to the site, the surrounding street network, traffic volumes, traffic controls, lane geometry, and infrastructure at the study intersections. Based on these characteristics, existing intersection capacity was evaluated to establish baseline operational conditions for the study area. This section of the report provides a description of these existing characteristics.

2.1 Area Land Uses & Connectivity

Located on 116th Street approximately 200 feet west of Burley Avenue, the subject parcel will be part of an existing 175-acre metal shredding and recycling center operated by Reserve Management Group. Adjacent land uses are generally industrial in nature, with some residential uses and a neighborhood shopping center east of Avenue O, approximately one-quarter mile from the site. The George Washington School is located north of the site at 114th Street.

The Calumet River runs along the western edge of the site, providing direct access to waterway shipping routes. Interstate 90 can be accessed via 106th Street approximately two miles northeast of the site, and Interstate 94 can be accessed via 130th Street approximately four and one-half miles southwest of the site, or at 103rd Street north of the site. It should be noted that the 106th Street bridge, which could provide access to the 103rd Street interchange, was out of service at the time of this study.

2.2 Existing Street Characteristics

Field data collection was performed along the primary study roadways of 130th Street, Brainard Avenue, Torrence Avenue, 126th Street, Avenue O, and 116th Street. Descriptions of these roadways are provided below.

130th Street is an east-west, four-lane roadway that is designated as a Strategic Regional Arterial (SRA) by the Illinois Department of Transportation (IDOT). The SRA system is designed to promote vehicle throughput with the use of such strategies as access management and limited signalization. At its signalized intersection with Torrence Avenue and Brainard Avenue, the eastbound approach of 130th Street provides two exclusive left-turn lanes, two through lanes, and one dedicated right-turn lane. A 35 MPH speed limit is posted on 130th Street, and it is under the jurisdiction of the Chicago Department of Transportation (CDOT).

Torrence Avenue is a north-south, four-lane roadway that is designated as an SRA by the Illinois Department of Transportation (IDOT). At its signalized intersection with 130th Street and Brainard Avenue, the northbound approach of Torrence Avenue provides one exclusive left-turn lane, two through lanes, and one dedicated right-turn lane. The southbound approach at this intersection provides two exclusive left-turn lanes, two through lanes, and one dedicated right-turn lane. At its signalized intersection with 126th Street, the northbound approach of Torrence Avenue provides one exclusive left-turn lane, two through lanes, and one dedicated right-turn lane. The southbound approach at this intersection provides one exclusive left-turn lane, a through lane, and a shared through/right-turn lane. A 40 MPH speed limit is posted within the study area. Torrence Avenue is under the jurisdiction of CDOT north of its intersection with 130th Street and IDOT south of 130th Street.

Brainard Avenue is an east-west, four-lane minor arterial that is approximately three miles south of the subject site. At its signalized intersection with Torrence Avenue and 130th Street, the eastbound approach of Brainard Avenue provides an exclusive left-turn lane, two through lanes, and one dedicated right-turn lane. A 35 MPH speed limit is posted on Brainard Avenue, and it is under the jurisdiction of CDOT.

126th Street is an east-west, two-lane major collector roadway that is approximately one and one-quarter miles south of the subject site. At its signalized intersection with Torrence Avenue, the westbound approach of 126th Street provides two exclusive left-turn lanes and one shared through/right-turn lane. The eastbound approach at this intersection, which is an access drive for the Ford assembly factory, provides an exclusive left-turn lane and one shared through/right-turn lane. At its signalized intersection with Avenue O, the eastbound approach of 126th Street provides one exclusive left-turn lane, and a shared through/right-turn lane. The westbound approach at this intersection, which is an access drive for the Wolf Lake Recreation Area, provides an exclusive left-turn lane and a shared through/right-turn lane. A 30 MPH speed limit is posted on 126th Street, and it is under the jurisdiction of CDOT.

Avenue O is a north-south, four-lane minor arterial that is approximately one quarter-mile east of the subject site. At its signalized intersection with 126th Street, the northbound and southbound approaches of Avenue O each provide an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. At its signalized intersection with 116th Street, the northbound approach of Avenue O provides an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. The southbound approach at this intersection provides a shared through/right-turn lane, and a shared through/left-turn lane. A 30 MPH speed limit is posted on Avenue O, and it is under the jurisdiction of CDOT.

The Chicago Transit Authority (CTA) provides transit service along Avenue O via bus route 30. At the study intersections, stops are provided at the southeast and southwest corners of Avenue O and 126th Street, and at the northwest and northeast corners of Avenue O and 116th Street. There is a bus shelter on the northeast side of 116th Street and Avenue O. Service operates approximately every 17- 20 minutes northbound and southbound during peak employee arrival and departure hours.

116th Street is an east-west, two-lane local road that ends at the eastern edge of the subject site. At its signalized intersection with Avenue O, the eastbound and westbound approaches of 116th Street are offset. Each of these approaches provide a single shared through/right-/left-turn lane. 116th Street is a private road west of Avenue O and is under the jurisdiction of CDOT east of Avenue O. No speed limit is posted on 116th Street.

2.3 Existing Traffic Volumes

Intersection turning movement counts were conducted in December 2018 and January 2019 in order to identify existing traffic volumes within the study area. The intersections that were counted for this study are listed below:

- Torrence Avenue at 130th Street and Brainard Avenue
- Torrence Avenue at 126th Street
- Avenue O at 126th Street

- Avenue O at 116th Street
- 116th Street at the Industrial Site Access Drive

Counts were performed during the weekday morning and weekday evening peak periods (6:00-9:00AM and 3:00-6:00PM, respectively) in order to coincide with peak activity on the area street network. Based on the resulting count data, the observed street peak hours took place from 7:15-8:15AM during the weekday morning and from 5:00-6:00PM during the weekday evening. Peak hour traffic volumes are illustrated on ***Figure 2***. Summaries of the raw count data are contained in the Appendix.

The standards for CDOT traffic studies generally call for an analysis of the peak hour of the area street network, which is shown in this report. However, it should be noted that this time period is different than the peak hour of the site traffic, as the majority of employees arrive for shifts that begin before and after the street peak hours. Consequently some vehicle volumes may be lower during this time period. Likewise large, and small truck deliveries mostly occur outside of the peak hour of the street. This is discussed further in Section 3.2 Trip Generation.

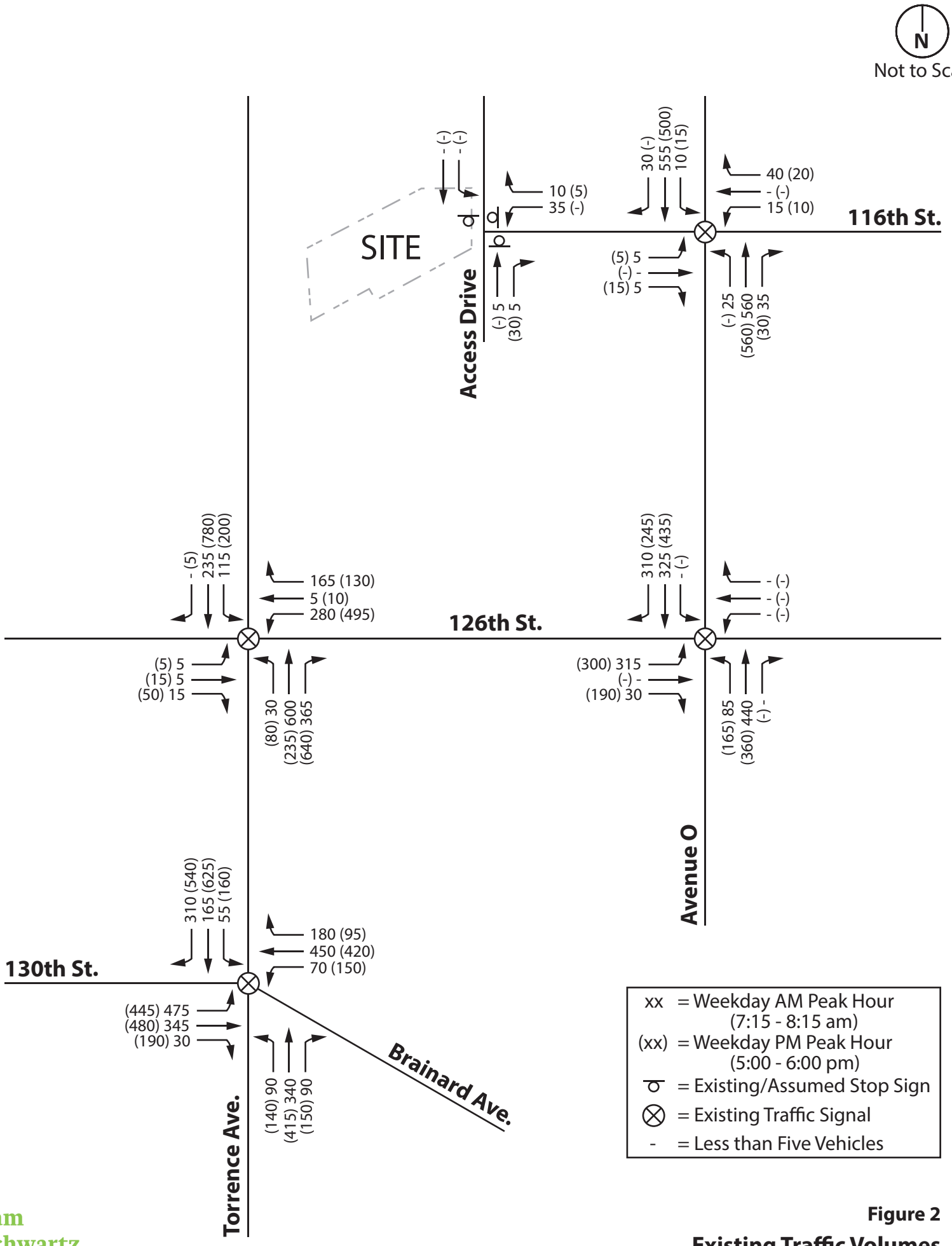


Figure 2

Existing Traffic Volumes

Sam Schwartz Engineering D.P.C.

2.4 Existing Intersection Operations

The operational effectiveness of transportation facilities is measured in terms of Level of Service (LOS). LOS ranges from LOS A to LOS F, with LOS A being the best level of operation for an intersection and LOS F being the worst. LOS A represents free-flow conditions where motorists experience a high level of comfort and convenience. LOS E represents saturated or at-capacity conditions, and LOS F represents oversaturated conditions.

LOS at a signalized intersection is defined in terms of average control delay (measured in seconds per vehicle), which is portion of total delay experienced by a motorist that is attributable to the traffic signal. LOS A describes operations with minimal delays (up to 10 seconds per vehicle), while LOS F describes operations with delays in excess of 80 seconds per vehicle. At intersections with long cycle lengths, the quantity of red time that is allocated to an approach or movement may near or exceed that 80-second threshold, increasing the likelihood of poor LOS. The LOS criteria for signalized intersections, as defined in the Highway Capacity Manual, Sixth Edition (HCM), are provided in ***Table 1***.

Table 1. LOS Criteria for Signalized Intersections

Level of Service (LOS)	Average Delay	Volume-to-Capacity (v/c) Ratio
A	≤ 10.0 seconds	< 1.0
B	> 10.0 and ≤ 20.0 seconds	< 1.0
C	> 20.0 and ≤ 35.0 seconds	< 1.0
D	> 35.0 and ≤ 55.0 seconds	< 1.0
E	> 55.0 and ≤ 80.0 seconds	< 1.0
F	> 80.0 seconds	≥ 1.0

Transportation Research Board. Highway Capacity Manual, Sixth Edition.

For unsignalized intersections, total delay is defined as the total elapsed time from the moment a vehicle stops at the back of the queue until the vehicle departs from the stop bar on the stop-sign controlled approach. This includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The LOS thresholds for unsignalized intersections, which differ from those for signalized intersections, are summarized in ***Table 2***.

Table 2. LOS Criteria for Unsignalized Intersections

Level of Service (LOS)	Average Delay	Volume-to-Capacity (v/c) Ratio
A	≤ 10.0 seconds	< 1.0
B	> 10.0 and ≤ 15.0 seconds	< 1.0
C	> 15.0 and ≤ 25.0 seconds	< 1.0
D	> 25.0 and ≤ 35.0 seconds	< 1.0
E	> 35.0 and ≤ 50.0 seconds	< 1.0
F	> 50.0 seconds	≥ 1.0

Transportation Research Board. Highway Capacity Manual, Sixth Edition.

Capacity analysis was performed to analyze the study intersections for the weekday peak hours using Synchro 10 capacity analysis software. Synchro's Lanes, Volumes, & Timings report was used to evaluate capacity at the signalized intersections under existing conditions. Synchro's HCM 2010 All-Way Stop Control report was used to evaluate capacity at the unsignalized intersection. These capacity results are summarized in ***Table 3***.

Table 3. Existing (Year 2018) Levels of Service

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Torrence Avenue/130th Street/Brainard Avenue[1]				
Eastbound	32.1	C	35.5	D
Westbound	30.4	C	23.6	C
Northbound	29.7	C	31.8	C
Southbound	20.2	C	33.9	C
Overall Intersection	*28.7*	*C*	*32.2*	*C*
Torrence Avenue/126th Street[1]				
Eastbound	16.8	B	17.0	B
Westbound	24.4	C	27.8	C
Northbound	17.4	B	13.0	B
Southbound	15.4	B	25.5	C
Overall Intersection	*18.8*	*B*	*21.3*	*C*
Avenue O/126th Street[1]				
Eastbound	107.7	F	36.8	D
Westbound	21.7	C	21.7	C
Northbound	7.5	A	7.3	A
Southbound	8.4	A	12.5	B
Overall Intersection	*30.8*	*C*	*18.0*	*B*
Avenue O/116th Street[1]				
Eastbound	40.6	D	30.1	C
Westbound	18.9	B	24.1	C
Northbound	15.7	B	14.4	B
Southbound	24.4	C	21.5	C
Overall Intersection	*20.1*	*C*	*18.1*	*B*
116th Street/Industrial Site Access[2]				
Westbound	8.6	A	8.5	A
Northbound	8.6	A	8.7	A
Southbound	8.9	A	8.1	A
Overall Intersection	*8.6*	*A*	*8.6*	*A*

[1]Signalized Intersection
[2]Unsignalized Intersection

As shown above, the majority of approaches at the study intersections currently operate acceptably, at LOS D or better, during the weekday morning and evening peak periods. The eastbound approach at Avenue O and 126th Street currently operates at LOS F during the weekday morning peak hour due to the limited green time provided for this approach compared to the north- and southbound approaches. Additional green time could be provided for the eastbound approach at this intersection with little impact to the operation of other approaches.

3.0 FUTURE CONDITIONS

In order to evaluate future intersection operations, traffic volume projections were forecasted for a build plus five-year design horizon in accordance with CDOT requirements. With the expectation that the proposed development would be completed in Year 2019, a Year 2024 design year was utilized. Future traffic forecasting was based on two main factors: background traffic growth and trips generated by the subject development. Based on the resulting projections, capacity analyses were prepared to evaluate operational conditions after completion of the proposed development. The findings and resulting recommendations are discussed in this section of the report.

3.1 Site Development Plan

As proposed, the subject development would consist of a 25-acre metal shredding and recycling center to be constructed on the development site which is part of an existing approximate123-acre RMG property at 11600 South Burley Avenue. The Site will take in recyclable metals from demolition projects, automobile and independent recyclers, other recycling facilities, from a variety of sources, including small businesses, and residences. In addition to employees entering and leaving on several shifts, the Site will be serviced by large trucks, as well as small pick-up type vehicles. Vehicular access to the Site would be provided via an access drive to be constructed as a west leg at the existing intersection of the private roadway known as 116th Street with a private north-south industrial access drive. A conceptual site plan illustrating these access locations and the internal roadway network can be found in the Appendix.

3.2 Trip Generation

In order to obtain data for trip generation for the new G3 proposed Site expansion, *Sam Schwartz* conducted 15-hour weekday traffic counts (5:00 AM - 8:00 PM) at an existing recycling facility to use as a model. Counts were taken at the General Iron Industries facility located at 1909 N. Clifton Ave. in Chicago. General Iron Industries will close by year 2020 and the G3 operation will assume much of its business. These counts were performed on Monday, December 10, 2018, in order to match the busiest day of the week at the site. Summaries of the raw count data are contained in the Appendix. The raw counts were then adjusted according to the following four factors to determine new trip generation at the G3 subject site:

1) The trip counts at 1909 N. Clifton Ave. were multiplied by a factor of 1.33 to account for seasonal variability. *Sam Schwartz* reviewed monthly data provided by General Iron and determined that the busiest month of operations (August) typically sees 33% more trips than December.
2) Passenger vehicle and single-unit truck trips were then reduced by 80% based on the results of a survey of existing customers at the 1909 N. Clifton Avenue site that indicate only 20% of existing customers would travel to the proposed new facility at 11600 S. Burley Ave.
3) The existing passenger vehicle and single-unit truck trip counts currently occurring at the RMG Property were multiplied by a factor of .60 to account for an expected 60% increase in business at the proposed expanded site. These were added to the adjusted trip counts from steps 1 and 2 above.

4) The current large truck trip counts at 1909 N. Clifton Ave. were increased by one truck per hour to account for new remote collections sites and the resulting transfer/delivery of material by truck to the new site.

The site-generated trip projections are summarized in ***Table 4***.

Table 4. Site-Generated Trips

Vehicle Class	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Passenger Vehicles	15	5	20	0	20	20
Single-Unit Trucks	5	5	10	0	0	0
Articulated Trucks	15	25	40	5	5	10
TOTAL NEW TRIPS	**35**	**35**	**70**	**5**	**25**	**30**

The standards for CDOT traffic studies generally call for an analysis of the peak hour of the area street network, which is shown in this report. However, it should be noted that this time period is different than the peak hour of the site traffic, as the majority of employees arrive for shifts that begin before or after the street peak hours, and truck deliveries likewise take place outside of the street peak periods. Consequently, site-generated vehicle volumes may be lower during this time period. The existing hourly volume distribution of trips, taken from the current RMG and current General Iron sites (used as a model), are shown on ***Figures 3a and 3b***.

Figure 3a. Current Hourly Vehicle Volume Distribution – General Iron Site

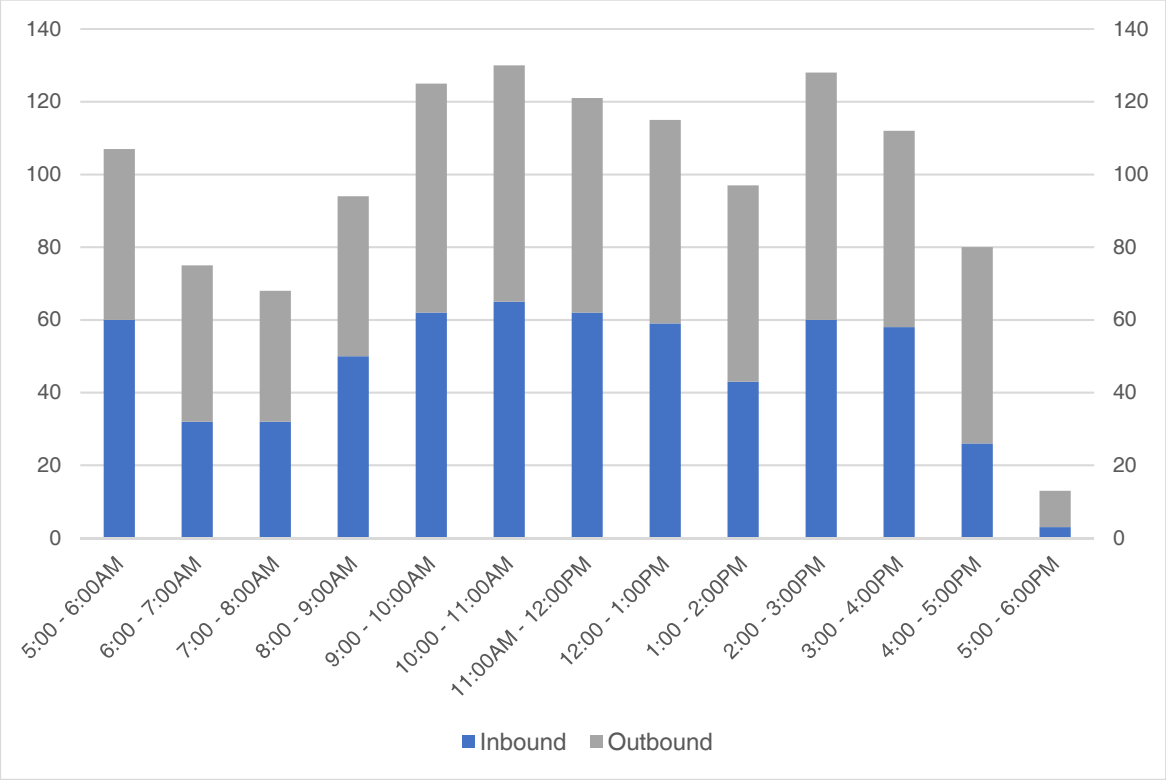
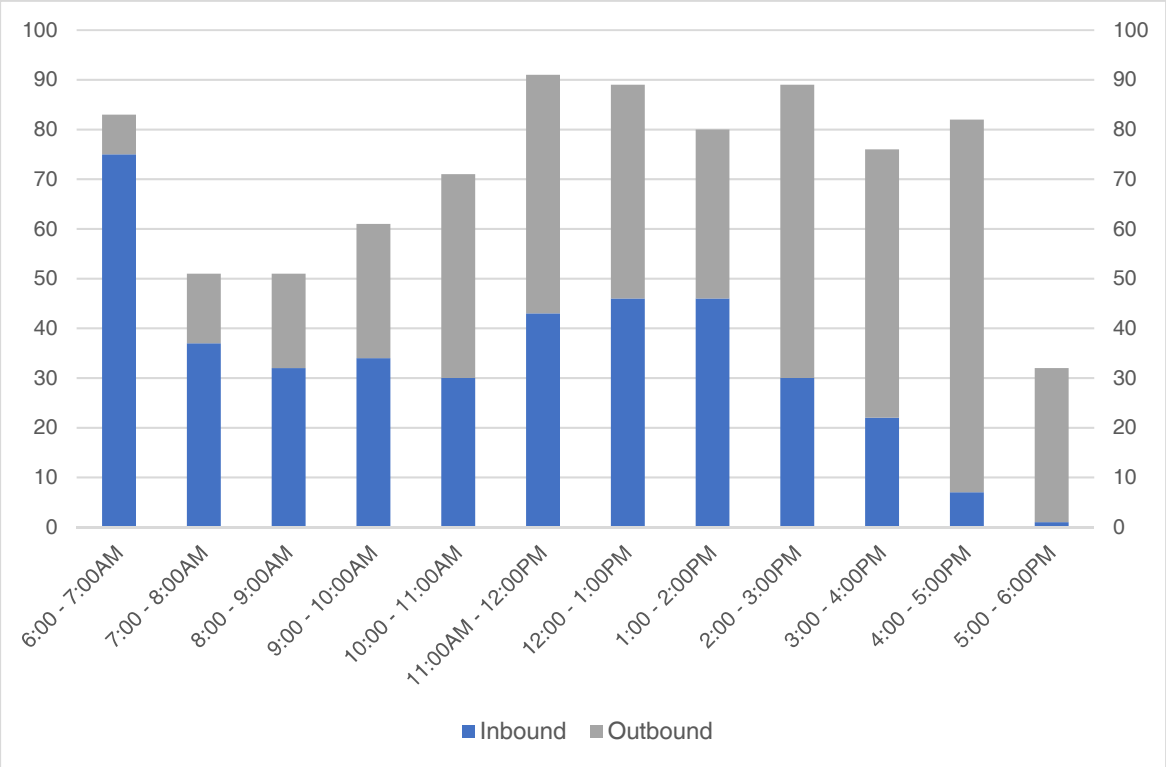


Figure 3b. Existing Hourly Vehicle Volume Distribution – RMG Site



3.3 Directional Distribution

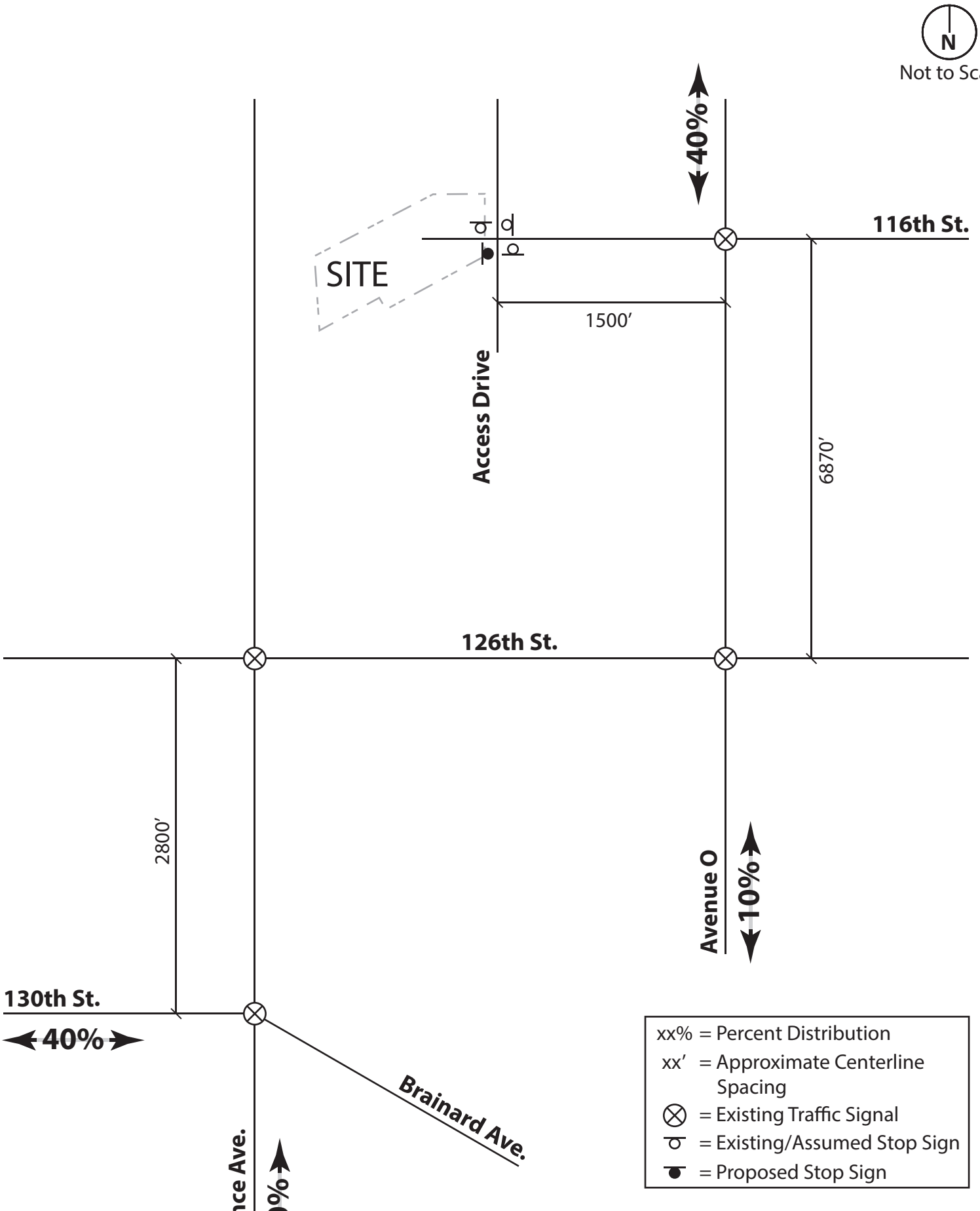
The directional distribution of site-generated traffic is a function of several variables, including existing travel patterns, characteristics of the area street network and traffic control, and peak hour congestion within the study area. The resulting percentages are a best estimate using engineering judgment, familiarity with the area, and logical travel paths to likely origins and destinations for site users. The anticipated directional distributions for passenger vehicle and truck trips to and from the site are shown in ***Figure 4*** and ***Figure 5***, respectively. Approximate centerline spacing for the existing site access driveways is also illustrated on these figures.

3.4 Site Trip Assignment

Trips generated by the proposed development were assigned to the street network based on the total trip generation estimates (Table 4) and the estimated trip distribution (Figures 4 and 5). The resulting trip assignments for passenger vehicles and trucks are illustrated in ***Figure 6*** and ***Figure 7***.

3.5 Future Traffic Projections

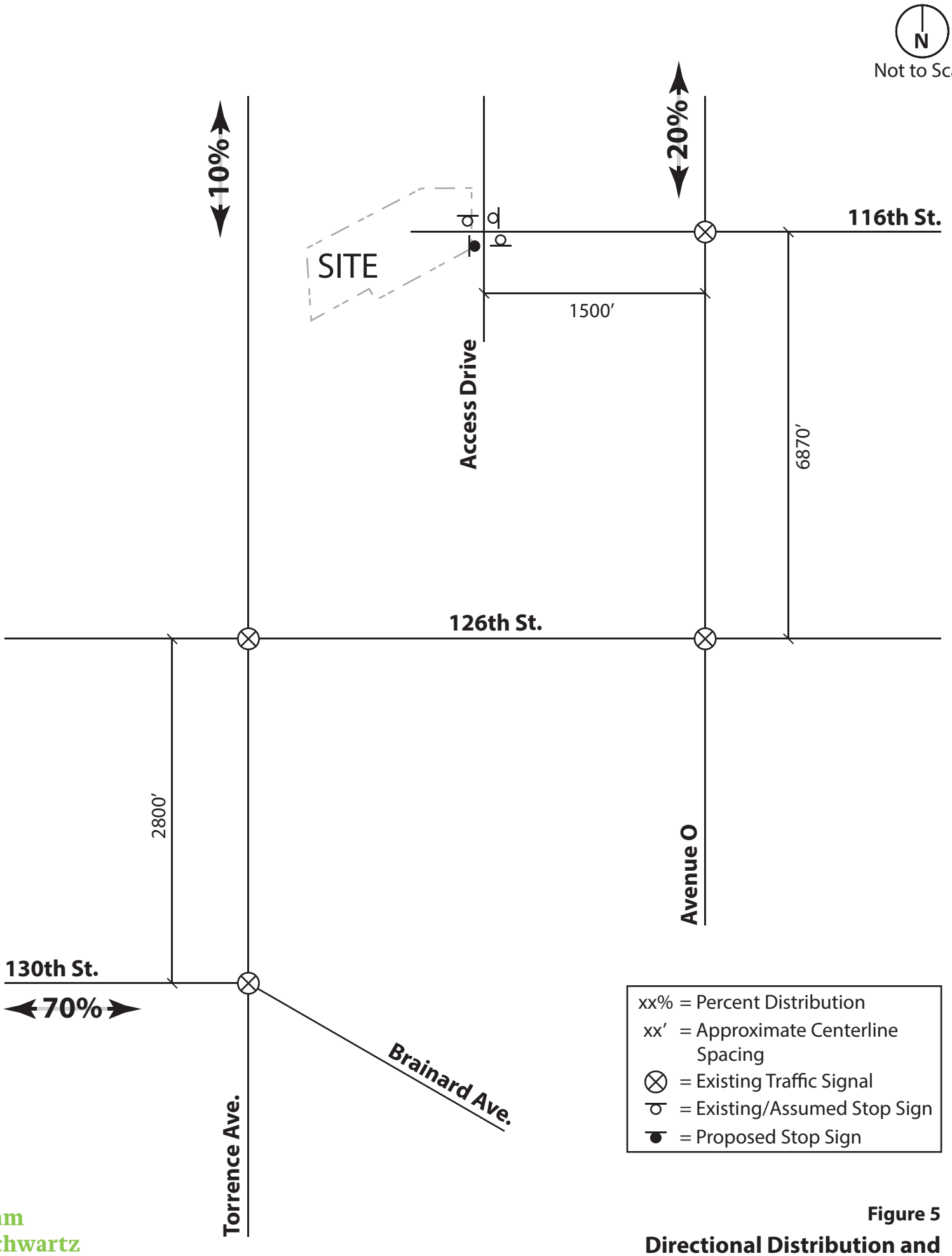
In order to estimate future background traffic for the Year 2024 design horizon, Year 2050 Average Daily Traffic (ADT) projections were obtained from the Chicago Metropolitan Agency for Planning (CMAP) for the roadways within the study area. Based on the projections provided, a compounded annual growth rate of 1.50% was derived for each street within the study area. This percentage was applied to existing traffic volumes as an estimate of Year 2024 background traffic. Background growth and site trips were added to the existing traffic volumes (shown in Figure 2) in order to obtain Year 2024 future traffic projections, illustrated in ***Figure 8***.



Sam Schwartz Engineering D.P.C.

Figure 4

Directional Distribution and Intersection Spacing - Cars



Sam Schwartz Engineering D.P.C.

Figure 5

Directional Distribution and Intersection Spacing - Trucks

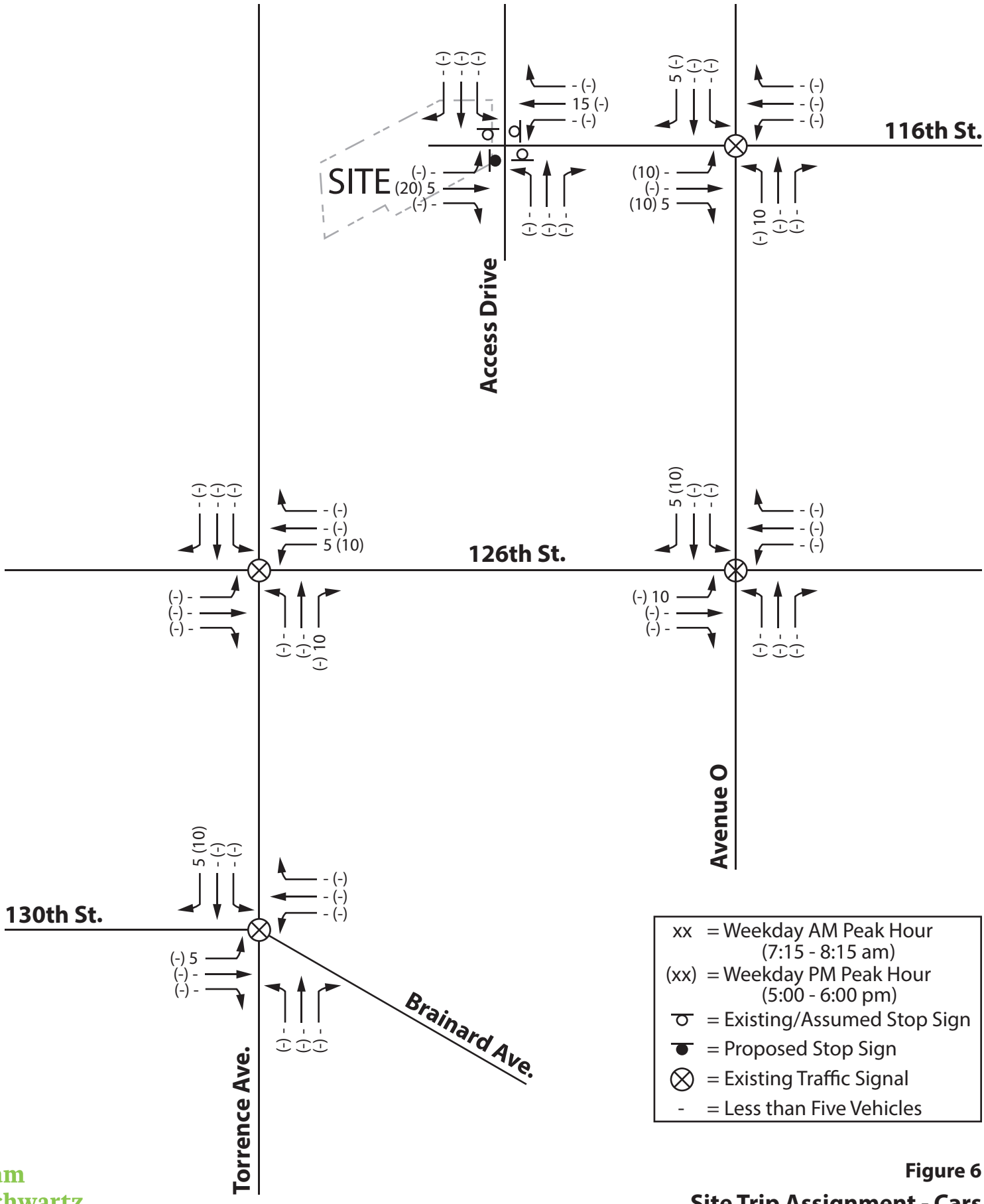


Figure 6

Site Trip Assignment - Cars

Sam Schwartz Engineering D.P.C.

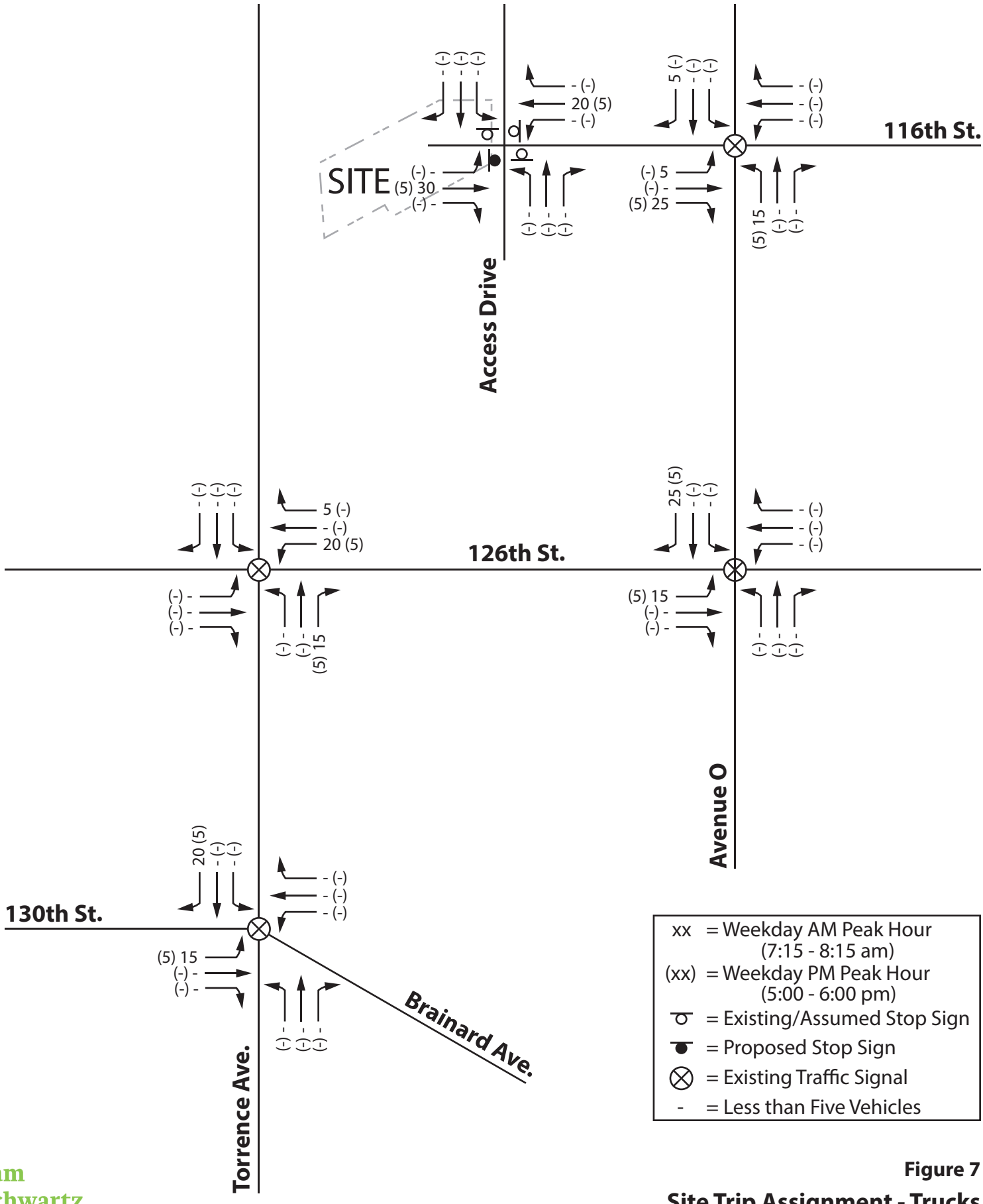


Figure 7

Site Trip Assignment - Trucks

Sam Schwartz Engineering D.P.C.

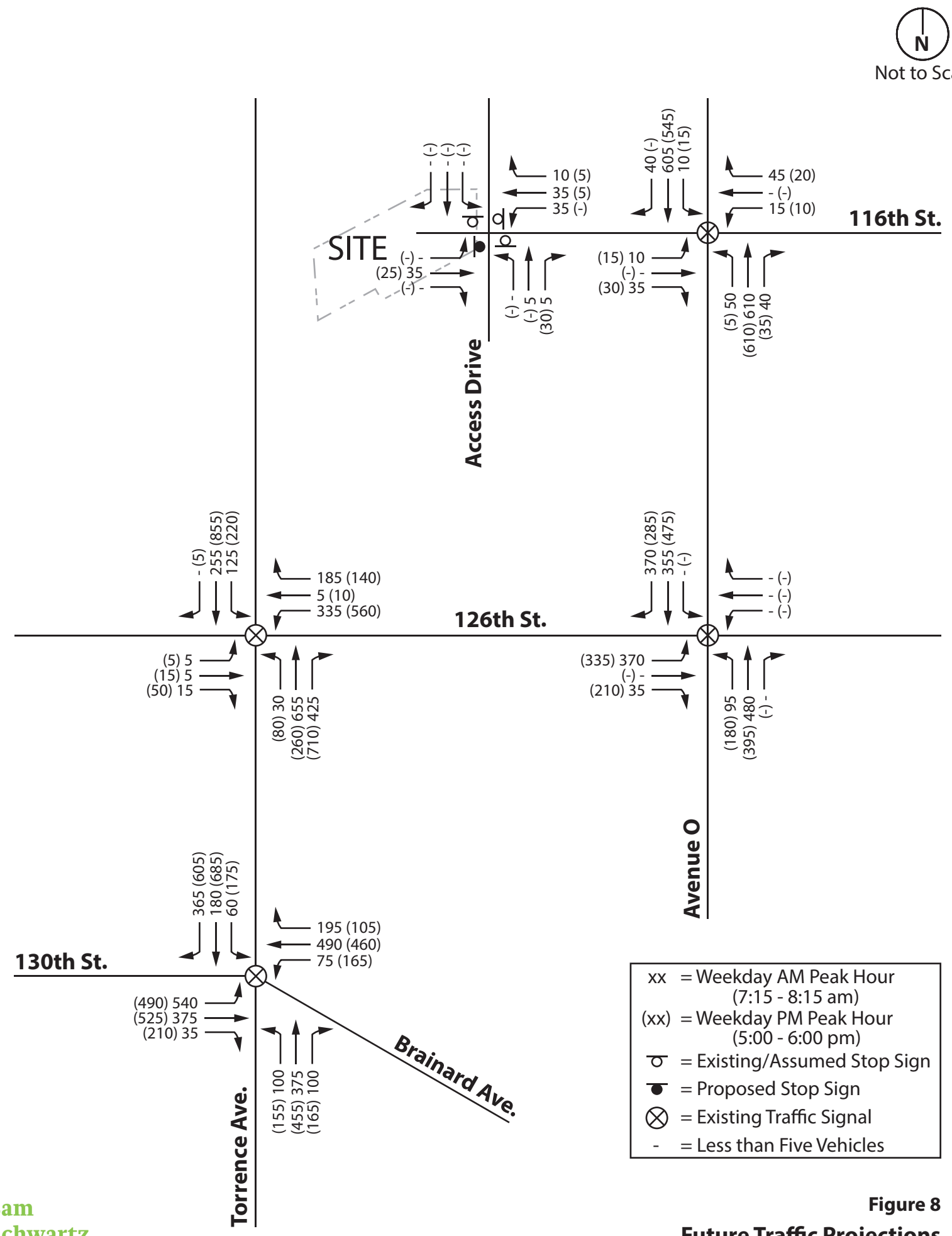


Figure 8

Future Traffic Projections

Sam Schwartz Engineering D.P.C.

3.6 Future Intersection Operations

Capacity analyses were conducted using Synchro 10 software to assess future traffic operation during the weekday morning and weekday evening peak hours. As part of this capacity analysis, additional green time was allocated to the eastbound movements at the intersection of Avenue O and 126th Street during the weekday morning peak period. This recommendation is detailed further in Section 4 of this report.

Summaries of the capacity analysis results under future (Year 2024) conditions are presented in ***Table 5***.

Table 5. Future (Year 2024) Conditions Levels of Service

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Torrence Avenue/130th Street/Brainard Avenue[1]				
Eastbound	32.7	C	41.5	D
Westbound	33.5	C	24.0	C
Northbound	30.2	C	34.0	C
Southbound	21.3	C	37.8	D
Overall Intersection	*30.0*	*C*	*35.8*	*D*
Torrence Avenue/126th Street[1]				
Eastbound	16.8	B	17.0	B
Westbound	24.4	C	28.9	C
Northbound	18.0	B	13.4	B
Southbound	16.7	B	27.1	C
Overall Intersection	*19.4*	*B*	*22.3*	*C*
Avenue O/126th Street[1]				
Eastbound	64.0	E	44.3	D
Westbound	16.0	B	21.7	C
Northbound	12.6	B	7.9	A
Southbound	16.7	B	13.4	B
Overall Intersection	*26.5*	*C*	*20.7*	*C*
Avenue O/116th Street[1]				
Eastbound	32.2	C	30.6	C
Westbound	18.9	B	23.9	C
Northbound	16.4	B	14.8	B
Southbound	25.6	C	22.0	C
Overall Intersection	*21.1*	*C*	*18.7*	*B*

[1]Signalized Intersection
[2]Unsignalized Intersection

Table 5. Future (Year 2024) Conditions Levels of Service (cont.)

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
116th Street/Industrial Site Access[2]				
Eastbound	7.3	A	7.2	A
Westbound	8.9	A	8.7	A
Northbound	7.1	A	6.7	A
Southbound	8.9	A	7.9	A
Overall Intersection	*8.3*	*A*	*7.2*	*A*

[1]Signalized Intersection
[2]Unsignalized Intersection

As shown above, the majority of movements at the study intersections continue to operate adequately at LOS D or better after site completion. With implementation of the recommended allocation of additional green time to the eastbound movements at Avenue O and 126th Street, the eastbound approach improves from a LOS F to a LOS E during the weekday morning peak hour. There is minimal impact to the north- and southbound movements, which each operate at LOS B during this period.

4.0 RECOMMENDATIONS AND CONCLUSIONS

Based on the analyses detailed in this report, the following recommendations were identified in order to accommodate future site-generated traffic resulting from the proposed development:

- All-way stop control should be posted at the intersection of vacated 116th Street, which is a private road, with the existing north-south access road and the new site access drive.
- An additional nine seconds of green time should be allocated to the eastbound movements at Avenue O and 126th Street during the weekday morning peak period to mitigate the high delay currently experienced by vehicles at this approach. This change improves the eastbound approach operation in the weekday morning peak hour from LOS F to LOS E. The overall intersection continues to operate at LOS C.
- Shuttle service should be expanded and coordinated with the CTA Route 30 schedule to meet most of the employee arrivals and departures. The shuttle service should be extended from the employee lot (current operation) to the bus shelters on Avenue O. This may require further study by the owner to ensure compatibility.
- A new bus shelter should be constructed at the existing southbound CTA bus stop at the intersection of Avenue O and 116th Street.

In conclusion, the surrounding roadway network is currently designed to accommodate commercial traffic, including large trucks. The G3 development Site is favorably situated to conduct recycling services with access to a favorable street network and excellent waterway shipment opportunities. With the above recommendations in place, it is anticipated that Site-generated trips and background traffic growth will be readily accommodated at the study intersections with minimal impacts. The recommended pedestrian improvements will serve employees in a more efficient manner and provide better access to public transit. The Site, as designed, should work well within the context of the surrounding transportation system and providing excellent access to major arterials and the Interstate system.

APPENDIX

Site Plan

2050 Traffic Projections from CMAP

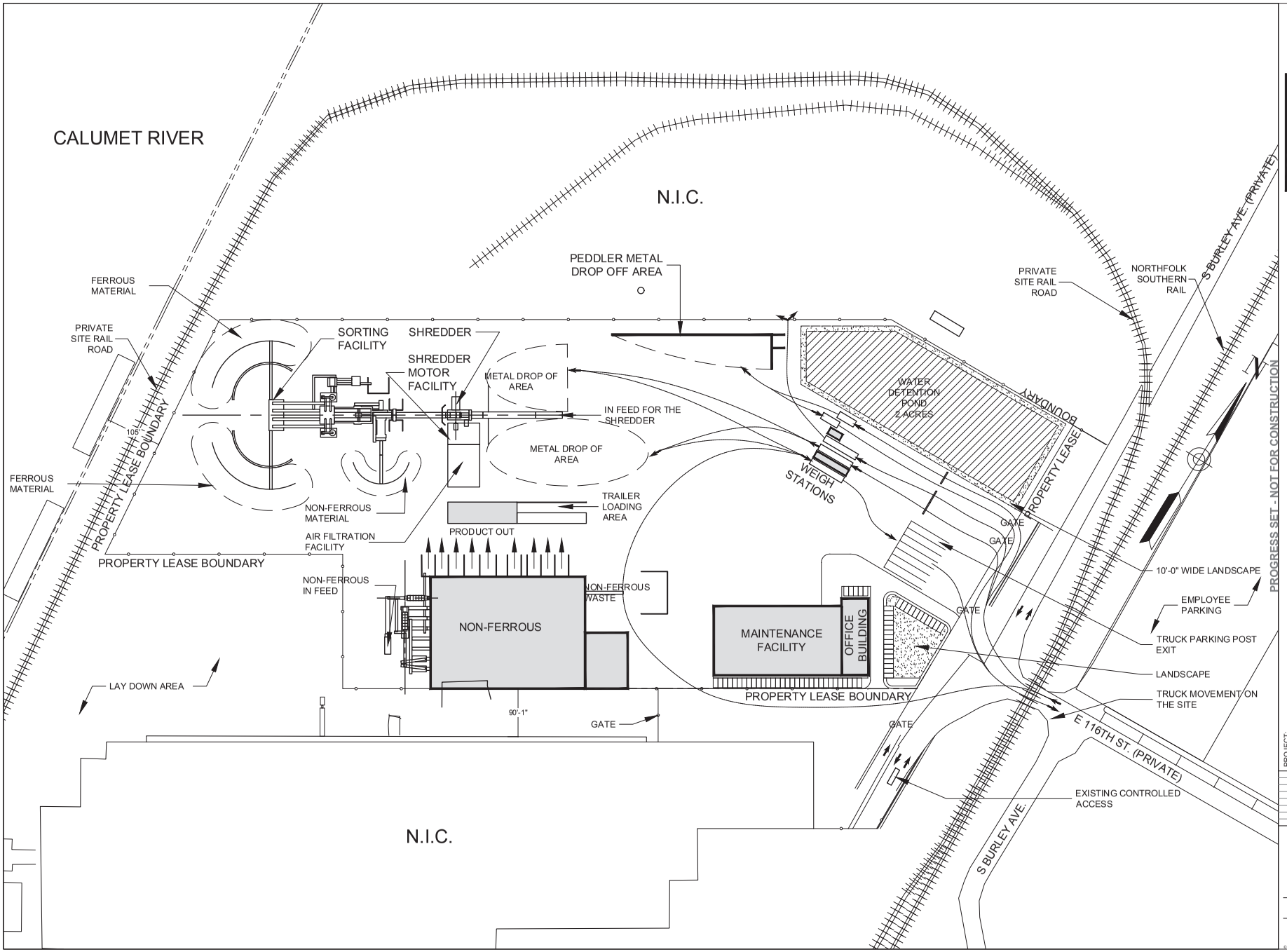
Trip Generation Data

Capacity Analysis Results

Raw Traffic Data

AutoTURN Exhibits

Site Plan



PROGRESS SET - NOT FOR CONSTRUCTION

KNIGHT Engineers & Architects

Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

SITE LOGISTICS

GENERAL IRON INC.
11600 BURLEY AVE. CHICAGO IL 606..
CHICAGO, IL 60617

PROJECT:
GENERAL IRON INC.
11600 S BURLEY AVE
CHICAGO, IL 60617

CLIENT:
CLIENT NAME
CLIENT STREET ADDRESS
CLIENT STATE & ZIP CODE
CLIENT CONTACT #

XX-XX-XX	ISSUE FOR REVIEW

SITE LOGISTICS

PROJECT #:	DATE:
7563	

SHEET #:
A

2050 Traffic Projections from CMAP

From: Kathleen Murphy
To: "Jose Rodriguez"
Subject: Traffic Projections Request
Date: Wednesday, January 02, 2019 1:47:00 PM
Attachments: Site Location Aerial.jpg

Hello Jose –

Sam Schwartz has been contracted to perform a traffic study for a proposed industrial facility in Chicago, IL. I've attached an aerial showing the location of the site, which is on 116th Street west of Avenue O. In order to comply with CDOT requirements, we are formally requesting Year 2050 Average Daily Traffic (ADT) projections for the study roadways in order to derive annual growth rates for the study area. A list of the study roadways and latest ADT volumes is provided below:

- 130th Street/Brainard Ave, west of Torrence Ave: 16,600 (Year 2014, IDOT)
- Brainard Ave/Saginaw Ave, east of Torrence Ave: 6,200 (Year 2014, IDOT)
- Torrence Ave: 10,900 (Year 2014, IDOT)
- 126th Street: 5,550 (Year 2014, IDOT)
- Avenue O @ 126th Street: 12,800 (Year 2014, IDOT)
- Avenue O @ 116th Street: 14,400 (Year 2014, IDOT)

Thank you for your help and let us know if you need any additional information.

Thanks,
Kathleen

Kathleen Murphy, P.E.
Transportation Engineer

Sam Schwartz
Transportation Consultants

kmurphy@samschwartz.com
office: 773.305.0800 x431

223 W. Jackson Blvd., Suite 1101
Chicago, IL 60606
samschwartz.com
TransCentral newsletter

TRAFFIC FORECAST RECORD

Record Number: ck-01-19

Type of Report: Projection

Year Sought: 2050

Analyst: JAR

Organization requesting forecast: Sam Schwartz Engineering

Contact: Kathleen Murphy, P.E.

Phone number: (773) 305-0800 x431

Sponsor: IDOT

Date request was received: January 2, 2019

Date that response was mailed or faxed: January 2, 2019

Facility Location: Avenue O / Torrence Avenue from 116th St to 130th Street

Municipality: City of Chicago

Chicago Metropolitan Agency for Planning

233 South Wacker Drive
Suite 800
Chicago, Illinois 60606

312 454 0400
www.cmap.illinois.gov

January 2, 2019

Kathleen Murphy, P.E.
Transportation Engineer
Sam Schwartz Engineering
223 West Jackson Boulevard
Suite 1101
Chicago, IL 60606

Subject: ***Avenue O / Torrence Avenue from 116th St to 130th Street***
IDOT

Dear Ms. Murphy:

In response to a request made on your behalf and dated January 2, 2019, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT	Year 2050 ADT
130th St/Brainard Ave W of Torrence	16,600	28,400
Brainard Ave/Saginaw Ave E of Torrence	6,200	10,600
Torrence Ave	10,900	18,600
126th Street	5,550	9,500
Avenue O, @ 126th St	12,800	21,900
Avenue O, @ 116th St	14,400	24,600

Traffic projections are developed using existing ADT data provided in the request letter and the results from the October 2018 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806.

Sincerely,

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

cc: Quigley (IDOT)
S:\AdminGroups\ResearchAnalysis\2019_ForecastsTraffic\Chicago\ck-01-19\ck-01-19.docx

Trip Generation Data

Study Name	Clifton Ave.@West Access\Kingsbury St.
Start Date	Monday, December 10, 2018 5:00 AM
End Date	Monday, December 10, 2018 8:00 PM
Site Code	

Road Volumes

TMV	Movement	Eastbound				Eastbound To	Westbound				Westbound To	Northbound				Northbound To	Southbound				Southbound To	Grand Total
Interval		U	L	T	R		U	L	T	R		U	L	T	R		U	L	T	R		
12/10/2018 5:00		0	1	0	2	3	0	1	0	0	1	1	0	13	16	30	0	0	0	0	0	34
Lights		0	1	0	0	1	0	1	0	0	1	1	0	8	15	24	0	0	0	0	0	26
Mediums		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks		0	0	0	2	2	0	0	0	0	0	0	0	5	1	6	0	0	0	0	0	8
12/10/2018 5:15		0	1	0	4	5	0	0	0	0	0	0	0	8	5	13	0	0	4	0	4	22
Lights		0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	4	0	4	8
Mediums		0	1	0	0	1	0	0	0	0	0	0	0	3	1	4	0	0	0	0	0	5
Articulated Trucks		0	0	0	4	4	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	9
12/10/2018 5:30		0	1	0	7	8	0	1	0	0	1	0	0	3	5	8	0	0	12	0	12	29
Lights		0	0	0	1	1	0	1	0	0	1	0	0	0	2	2	0	0	10	0	10	14
Mediums		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Articulated Trucks		0	1	0	6	7	0	0	0	0	0	0	0	3	3	6	0	0	1	0	1	14
12/10/2018 5:45		0	1	0	5	6	0	1	0	0	1	0	0	6	2	8	0	0	12	0	12	27
Lights		0	0	0	0	0	0	1	0	0	1	0	0	2	1	3	0	0	12	0	12	16
Mediums		0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Articulated Trucks		0	1	0	4	5	0	0	0	0	0	0	0	4	1	5	0	0	0	0	0	10
12/10/2018 6:00		0	0	0	2	2	0	2	0	0	2	0	0	2	4	6	0	0	11	0	11	21
Lights		0	0	0	0	0	0	2	0	0	2	0	0	0	3	3	0	0	7	0	7	12
Mediums		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
Articulated Trucks		0	0	0	2	2	0	0	0	0	0	0	0	2	1	3	0	0	1	0	1	6
12/10/2018 6:15		0	0	0	5	5	0	1	0	0	1	0	0	3	4	7	0	0	8	0	8	21
Lights		0	0	0	0	0	0	1	0	0	1	0	0	0	3	3	0	0	4	0	4	8
Mediums		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	3	0	3	4
Articulated Trucks		0	0	0	5	5	0	0	0	0	0	0	0	2	1	3	0	0	1	0	1	9
12/10/2018 6:30		0	1	0	4	5	0	1	0	0	1	0	0	2	2	4	0	0	7	0	7	17
Lights		0	0	0	0	0	0	1	0	0	1	0	0	0	2	2	0	0	6	0	6	9
Mediums		0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Articulated Trucks		0	1	0	3	4	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	6
12/10/2018 6:45		0	0	0	2	2	0	2	0	1	3	0	0	1	10	11	0	0	4	0	4	20
Lights		0	0	0	1	1	0	2	0	1	3	0	0	0	10	10	0	0	4	0	4	18
Mediums		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks		0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
12/10/2018 7:00		0	1	0	1	2	0	0	0	0	0	0	0	3	8	11	0	0	3	0	3	16
Lights		0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	2	0	2	7
Mediums		0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	1	0	1	3
Articulated Trucks		0	1	0	1	2	0	0	0	0	0	0	0	2	2	4	0	0	0	0	0	6
12/10/2018 7:15		0	3	0	5	8	0	3	0	0	3	0	0	7	4	11	0	0	7	0	7	29
Lights		0	0	0	0	0	0	3	0	0	3	0	0	2	2	4	0	0	4	0	4	11
Mediums		0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	4
Articulated Trucks		0	3	0	4	7	0	0	0	0	0	0	0	4	2	6	0	0	1	0	1	14
12/10/2018 7:30		0	1	0	2	3	0	2	0	0	2	0	0	2	5	7	0	0	6	0	6	18
Lights		0	0	0	0	0	0	2	0	0	2	0	0	0	3	3	0	0	4	0	4	9
Mediums		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Articulated Trucks		0	1	0	2	3	0	0	0	0	0	0	0	1	2	3	0	0	2	0	2	8
12/10/2018 7:45		0	0	0	2	2	0	8	0	0	8	0	0	3	3	6	0	1	9	1	11	27
Lights		0	0	0	0	0	0	8	0	0	8	0	0	2	0	2	0	1	6	0	7	17
Mediums		0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	2	3
Articulated Trucks		0	0	0	2	2	0	0	0	0	0	0	0	1	2	3	0	0	2	0	2	7
12/10/2018 8:00		0	1	0	4	5	0	8	0	0	8	0	0	5	4	9	0	0	5	0	5	27
Lights		0	0	0	0	0	0	8	0	0	8	0	0	1	3	4	0	0	5	0	5	17
Mediums		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Articulated Trucks		0	1	0	4	5	0	0	0	0	0	0	0	3	1	4	0	0	0	0	0	9
12/10/2018 8:15		0	3	0	1	4	2	9	0	2	13	0	0	4	6	10	0	0	6	0	6	33
Lights		0	0	0	0	0	2	9	0	1	12	0	0	0	4	4	0	0	4	0	4	20
Mediums		0	1	0	0	1	0	0	0	1	1	0	0	0	2	2	0	0	0	0	0	4
Articulated Trucks		0	2	0	1	3	0	0	0	0	0	0	0	4	0	4	0	0	2	0	2	9

12/10/2018 8:30	0	2	0	5	7	0	7	0	0	7	0	0	3	8	11	0	0	10	0	10	35
Lights	0	1	0	1	2	0	6	0	0	6	0	0	1	5	6	0	0	6	0	6	20
Mediums	0	0	0	1	1	0	1	0	0	1	0	0	0	1	1	0	0	2	0	2	5
Articulated Trucks	0	1	0	3	4	0	0	0	0	0	0	0	2	2	4	0	0	2	0	2	10
12/10/2018 8:45	0	1	0	5	6	0	9	0	0	9	0	0	4	4	8	0	0	6	0	6	29
Lights	0	0	0	0	0	0	9	0	0	9	0	0	1	2	3	0	0	6	0	6	18
Mediums	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	1	0	4	5	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	10
12/10/2018 9:00	0	1	0	6	7	0	0	0	0	0	0	1	6	4	11	0	0	6	0	6	24
Lights	0	0	0	1	1	0	0	0	0	0	0	1	1	2	4	0	0	5	0	5	10
Mediums	0	1	0	2	3	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	5
Articulated Trucks	0	0	0	3	3	0	0	0	0	0	0	0	3	2	5	0	0	1	0	1	9
12/10/2018 9:15	0	4	0	5	9	0	1	0	0	1	0	1	8	6	15	0	0	9	0	9	34
Lights	0	0	0	0	0	0	1	0	0	1	0	1	0	5	6	0	0	7	0	7	14
Mediums	0	2	0	0	2	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	5
Articulated Trucks	0	2	0	5	7	0	0	0	0	0	0	0	5	1	6	0	0	2	0	2	15
12/10/2018 9:30	0	2	0	8	10	0	2	0	0	2	0	1	7	7	15	0	0	12	0	12	39
Lights	0	0	0	2	2	0	2	0	0	2	0	0	3	7	10	0	0	11	0	11	25
Mediums	0	1	0	2	3	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	5
Articulated Trucks	0	1	0	4	5	0	0	0	0	0	0	0	3	0	3	0	0	1	0	1	9
12/10/2018 9:45	0	2	0	4	6	0	1	0	0	1	0	0	4	7	11	0	0	12	0	12	30
Lights	0	0	0	1	1	0	0	0	0	0	0	0	0	5	5	0	0	10	0	10	16
Mediums	0	1	0	1	2	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	5
Articulated Trucks	0	1	0	2	3	0	1	0	0	1	0	0	3	0	3	0	0	2	0	2	9
12/10/2018 10:00	0	0	1	6	7	0	1	0	0	1	0	0	8	6	14	0	0	9	0	9	31
Lights	0	0	1	0	1	0	1	0	0	1	0	0	1	3	4	0	0	7	0	7	13
Mediums	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
Articulated Trucks	0	0	0	4	4	0	0	0	0	0	0	0	7	3	10	0	0	0	0	0	14
12/10/2018 10:15	0	1	0	3	4	0	2	0	0	2	1	0	3	6	10	0	0	10	0	10	26
Lights	0	0	0	0	0	0	1	0	0	1	1	0	1	5	7	0	0	9	0	9	17
Mediums	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	1	0	1	3
Articulated Trucks	0	1	0	3	4	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	6
12/10/2018 10:30	0	2	1	6	9	0	5	0	1	6	2	0	9	8	19	0	1	5	0	6	40
Lights	0	0	0	0	0	0	5	0	1	6	2	0	2	6	10	0	1	4	0	5	21
Mediums	0	2	1	0	3	0	0	0	0	0	0	0	2	0	2	0	0	1	0	1	6
Articulated Trucks	0	0	0	6	6	0	0	0	0	0	0	0	5	2	7	0	0	0	0	0	13
12/10/2018 10:45	0	1	0	5	6	0	0	0	0	0	1	0	4	6	11	0	1	13	0	14	31
Lights	0	1	0	1	2	0	0	0	0	0	0	0	2	4	6	0	1	11	0	12	20
Mediums	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	1	0	1	3
Articulated Trucks	0	0	0	4	4	0	0	0	0	0	0	0	2	1	3	0	0	1	0	1	8
12/10/2018 11:00	0	0	0	6	6	0	2	1	0	3	0	0	4	3	7	0	0	5	0	5	21
Lights	0	0	0	0	0	0	1	1	0	2	0	0	0	2	2	0	0	4	0	4	8
Mediums	0	0	0	2	2	0	0	0	0	0	0	0	1	1	2	0	0	1	0	1	5
Articulated Trucks	0	0	0	4	4	0	1	0	0	1	0	0	3	0	3	0	0	0	0	0	8
12/10/2018 11:15	0	1	0	6	7	0	0	0	0	0	0	1	6	3	10	0	0	14	0	14	31
Lights	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	13	0	13	14
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Articulated Trucks	0	1	0	6	7	0	0	0	0	0	0	1	6	2	9	0	0	0	0	0	16
12/10/2018 11:30	0	1	0	5	6	0	3	0	1	4	0	2	3	11	16	0	0	6	0	6	32
Lights	0	0	0	1	1	0	2	0	0	2	0	2	0	10	12	0	0	6	0	6	21
Mediums	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Articulated Trucks	0	0	0	4	4	0	0	0	1	1	0	0	3	1	4	0	0	0	0	0	9
12/10/2018 11:45	0	2	0	7	9	0	2	0	0	2	0	0	3	6	9	0	0	10	0	10	30
Lights	0	0	0	0	0	0	1	0	0	1	0	0	0	5	5	0	0	9	0	9	15
Mediums	0	2	0	1	3	0	1	0	0	1	0	0	1	0	1	0	0	1	0	1	6
Articulated Trucks	0	0	0	6	6	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	9
12/10/2018 12:00	0	0	0	3	3	0	4	0	1	5	0	0	4	9	13	0	0	9	0	9	30
Lights	0	0	0	1	1	0	4	0	1	5	0	0	1	7	8	0	0	9	0	9	23
Mediums	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
Articulated Trucks	0	0	0	1	1	0	0	0	0	0	0	0	2	2	4	0	0	0	0	0	5
12/10/2018 12:15	0	2	0	6	8	0	3	0	0	3	0	0	10	5	15	0	1	13	0	14	40
Lights	0	0	0	0	0	0	1	0	0	1	0	0	2	4	6	0	1	10	0	11	18
Mediums	0	1	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	3	0	3	6
Articulated Trucks	0	1	0	6	7	0	1	0	0	1	0	0	7	1	8	0	0	0	0	0	16
12/10/2018 12:30	0	2	0	7	9	0	3	0	0	3	0	0	8	8	16	0	0	6	0	6	34
Lights	0	0	0	0	0	0	3	0	0	3	0	0	1	6	7	0	0	5	0	5	15
Mediums	0	2	0	0	2	0	0	0	0	0	0	0	3	1	4	0	0	1	0	1	7

Articulated Trucks	0	0	0	7	7	0	0	0	0	0	0	0	4	1	5	0	0	0	0	0	12
12/10/2018 12:45	0	1	0	4	5	0	1	0	0	1	0	0	5	7	12	0	0	2	0	2	20
Lights	0	0	0	0	0	0	1	0	0	1	0	0	2	4	6	0	0	1	0	1	8
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1	0	1	3
Articulated Trucks	0	1	0	4	5	0	0	0	0	0	0	0	3	1	4	0	0	0	0	0	9
12/10/2018 13:00	0	1	0	0	1	0	3	0	0	3	0	0	4	2	6	0	0	10	0	10	20
Lights	0	0	0	0	0	0	2	0	0	2	0	0	1	1	2	0	0	6	0	6	10
Mediums	0	1	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	3	0	3	6
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	1	0	1	4
12/10/2018 13:15	0	2	0	7	9	0	0	0	0	0	0	0	3	2	5	0	0	9	0	9	23
Lights	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1	0	0	9	0	9	12
Mediums	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Articulated Trucks	0	0	0	4	4	0	0	0	0	0	0	0	3	1	4	0	0	0	0	0	8
12/10/2018 13:30	0	3	0	3	6	0	1	0	1	2	0	0	3	6	9	0	0	9	0	9	26
Lights	0	0	0	0	0	0	1	0	1	2	0	0	0	4	4	0	0	7	0	7	13
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Articulated Trucks	0	3	0	3	6	0	0	0	0	0	0	0	3	2	5	0	0	1	0	1	12
12/10/2018 13:45	0	1	0	8	9	0	1	0	0	1	0	0	1	8	9	0	0	7	0	7	26
Lights	0	0	0	0	0	0	1	0	0	1	0	0	0	8	8	0	0	7	0	7	16
Mediums	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
Articulated Trucks	0	1	0	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
12/10/2018 14:00	0	2	0	6	8	0	3	0	1	4	0	0	5	6	11	0	0	12	0	12	35
Lights	0	0	0	0	0	0	2	0	0	2	0	0	0	4	4	0	0	8	0	8	14
Mediums	0	2	0	0	2	0	1	0	1	2	0	0	2	2	4	0	0	4	0	4	12
Articulated Trucks	0	0	0	6	6	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	9
12/10/2018 14:15	0	2	0	3	5	0	3	0	0	3	0	0	7	7	14	0	2	11	0	13	35
Lights	0	0	0	0	0	0	2	0	0	2	0	0	0	4	4	0	1	8	0	9	15
Mediums	0	2	0	1	3	0	1	0	0	1	0	0	1	1	2	0	1	3	0	4	10
Articulated Trucks	0	0	0	2	2	0	0	0	0	0	0	0	6	2	8	0	0	0	0	0	10
12/10/2018 14:30	0	4	0	10	14	0	1	0	0	1	0	0	9	5	14	0	0	12	0	12	41
Lights	0	0	0	0	0	0	1	0	0	1	0	0	2	4	6	0	0	8	0	8	15
Mediums	0	2	0	2	4	0	0	0	0	0	0	0	3	0	3	0	0	4	0	4	11
Articulated Trucks	0	2	0	8	10	0	0	0	0	0	0	0	4	1	5	0	0	0	0	0	15
12/10/2018 14:45	0	0	0	5	5	0	4	0	0	4	0	0	5	8	13	0	0	6	0	6	28
Lights	0	0	0	0	0	0	4	0	0	4	0	0	0	6	6	0	0	5	0	5	15
Mediums	0	0	0	2	2	0	0	0	0	0	0	0	2	1	3	0	0	1	0	1	6
Articulated Trucks	0	0	0	3	3	0	0	0	0	0	0	0	3	1	4	0	0	0	0	0	7
12/10/2018 15:00	0	1	0	4	5	0	1	0	1	2	0	0	4	3	7	0	0	14	0	14	28
Lights	0	1	0	2	3	0	1	0	1	2	0	0	0	2	2	0	0	9	0	9	16
Mediums	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	4
Articulated Trucks	0	0	0	1	1	0	0	0	0	0	0	0	3	1	4	0	0	3	0	3	8
12/10/2018 15:15	0	1	0	2	3	0	1	0	1	2	0	0	5	6	11	0	0	11	0	11	27
Lights	0	0	0	0	0	0	1	0	0	1	0	0	3	4	7	0	0	10	0	10	18
Mediums	0	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	3
Articulated Trucks	0	0	0	2	2	0	0	0	0	0	0	0	2	2	4	0	0	0	0	0	6
12/10/2018 15:30	0	0	0	7	7	0	1	0	1	2	0	0	4	5	9	0	0	5	0	5	23
Lights	0	0	0	1	1	0	1	0	1	2	0	0	1	5	6	0	0	5	0	5	14
Mediums	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	0	0	5	5	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	8
12/10/2018 15:45	0	1	0	1	2	1	1	0	0	2	0	0	7	9	16	0	0	10	0	10	30
Lights	0	0	0	1	1	1	1	0	0	2	0	0	1	9	10	0	0	8	0	8	21
Mediums	0	1	0	0	1	0	0	0	0	0	0	0	4	0	4	0	0	2	0	2	7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2
12/10/2018 16:00	0	2	0	6	8	0	4	0	0	4	0	0	2	18	20	0	0	14	0	14	46
Lights	0	0	0	0	0	0	4	0	0	4	0	0	0	15	15	0	0	14	0	14	33
Mediums	0	1	0	1	2	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	5
Articulated Trucks	0	1	0	5	6	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	8
12/10/2018 16:15	0	0	0	3	3	0	2	0	0	2	0	0	1	12	13	0	0	12	1	13	31
Lights	0	0	0	0	0	0	2	0	0	2	0	0	0	12	12	0	0	10	0	10	24
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	1	3	4
Articulated Trucks	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
12/10/2018 16:30	0	0	0	1	1	0	2	0	0	2	0	0	2	17	19	0	0	10	0	10	32
Lights	0	0	0	0	0	0	2	0	0	2	0	0	0	17	17	0	0	9	0	9	28
Mediums	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	1	0	1	3
12/10/2018 16:45	0	2	0	1	3	0	0	0	0	0	0	0	1	16	17	0	0	7	0	7	27
Lights	0	2	0	0	2	0	0	0	0	0	0	0	1	15	16	0	0	7	0	7	25

Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
Articulated Trucks	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12/10/2018 17:00	0	1	1	1	3	0	5	0	0	5	0	1	1	20	22	0	0	3	0	3	33
Lights	0	0	0	0	0	0	5	0	0	5	0	0	0	20	20	0	0	3	0	3	28
Mediums	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Articulated Trucks	0	1	1	1	3	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	4
12/10/2018 17:15	0	0	0	1	1	0	2	0	1	3	0	0	0	18	18	0	1	3	0	4	26
Lights	0	0	0	0	0	0	2	0	0	2	0	0	0	18	18	0	0	2	0	2	22
Mediums	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	2	3
Articulated Trucks	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12/10/2018 17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	0	0	0	0	0	9
Lights	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	0	0	0	0	0	9
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 17:45	0	0	0	0	0	0	3	0	0	3	0	0	0	7	7	0	0	0	0	0	10
Lights	0	0	0	0	0	0	3	0	0	3	0	0	0	7	7	0	0	0	0	0	10
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 18:00	0	0	0	0	0	0	1	0	0	1	0	0	0	12	12	0	0	0	0	0	13
Lights	0	0	0	0	0	0	1	0	0	1	0	0	0	12	12	0	0	0	0	0	13
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 18:15	0	0	0	0	0	0	4	0	0	4	0	0	0	4	4	0	0	0	0	0	8
Lights	0	0	0	0	0	0	4	0	0	4	0	0	0	4	4	0	0	0	0	0	8
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 18:30	0	0	0	0	0	0	5	0	0	5	1	0	0	3	4	0	0	0	0	0	9
Lights	0	0	0	0	0	0	5	0	0	5	1	0	0	3	4	0	0	0	0	0	9
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 18:45	0	0	0	0	0	0	2	0	0	2	0	0	0	1	1	0	0	0	0	0	3
Lights	0	0	0	0	0	0	2	0	0	2	0	0	0	1	1	0	0	0	0	0	3
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 19:00	0	1	0	0	1	0	2	0	0	2	0	0	0	4	4	0	0	0	0	0	7
Lights	0	1	0	0	1	0	2	0	0	2	0	0	0	4	4	0	0	0	0	0	7
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 19:15	0	0	0	0	0	0	1	0	0	1	1	0	0	2	3	0	1	0	0	1	5
Lights	0	0	0	0	0	0	1	0	0	1	1	0	0	2	3	0	1	0	0	1	5
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 19:30	0	0	0	0	0	0	1	0	0	1	0	0	0	5	5	0	0	0	0	0	6
Lights	0	0	0	0	0	0	1	0	0	1	0	0	0	5	5	0	0	0	0	0	6
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 19:45	0	0	0	0	0	0	4	0	0	4	0	0	0	1	1	0	0	0	0	0	5
Lights	0	0	0	0	0	0	4	0	0	4	0	0	0	1	1	0	0	0	0	0	5
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	63	3	212	278	3	143	1	12	159	7	7	225	408	647	0	8	416	2	426	1510

Study Name	Clifton Ave.@East Access
Start Date	Monday, December 10, 2018 5:00 AM
End Date	Monday, December 10, 2018 5:00 PM
Site Code	

Road Volumes

TMV	Movement												
	Eastbound			Eastbound Tot	Westbound			Westbound To	Southbound			Southbound Tc	Grand Total
Interval	U	L	T		U	T	R		U	L	R		
12/10/2018 5:00	0	10	3	13	0	3	0	3	0	1	0	1	17
Lights	0	10	3	13	0	2	0	2	0	1	0	1	16
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 5:15	0	9	1	10	0	1	1	2	0	0	0	0	12
Lights	0	8	1	9	0	1	1	2	0	0	0	0	11
Mediums	0	1	0	1	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 5:30	0	2	1	3	0	1	3	4	0	0	0	0	7
Lights	0	2	1	3	0	1	3	4	0	0	0	0	7
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 5:45	0	0	1	1	0	1	5	6	0	0	0	0	7
Lights	0	0	1	1	0	1	5	6	0	0	0	0	7
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 6:00	0	1	2	3	0	2	5	7	0	0	0	0	10
Lights	0	1	2	3	0	2	5	7	0	0	0	0	10
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 6:15	0	1	2	3	0	1	8	9	0	0	0	0	12
Lights	0	1	2	3	0	1	8	9	0	0	0	0	12
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 6:30	0	0	2	2	0	1	4	5	0	0	0	0	7
Lights	0	0	2	2	0	1	4	5	0	0	0	0	7
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 6:45	0	2	8	10	0	3	2	5	0	0	0	0	15
Lights	0	2	8	10	0	3	1	4	0	0	0	0	14
Mediums	0	0	0	0	0	0	1	1	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 7:00	0	1	5	6	0	0	1	1	0	0	0	0	7
Lights	0	0	5	5	0	0	1	1	0	0	0	0	6

Study Name	Clifton Ave.@East Access
Start Date	Monday, December 10, 2018 5:00 AM
End Date	Monday, December 10, 2018 5:00 PM
Site Code	

Road Volumes

TMV	Movement												
	Eastbound			Eastbound Tot	Westbound			Westbound To	Southbound			Southbound Tc	Grand Total
Interval	U	L	T		U	T	R		U	L	R		
Mediums	0	1	0	1	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 7:15	0	1	1	2	0	3	4	7	0	0	0	0	9
Lights	0	1	1	2	0	3	4	7	0	0	0	0	9
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 7:30	0	1	2	3	0	2	4	6	0	0	0	0	9
Lights	0	1	2	3	0	2	4	6	0	0	0	0	9
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 7:45	0	0	2	2	0	8	5	13	0	0	0	0	15
Lights	0	0	1	1	0	8	5	13	0	0	0	0	14
Mediums	0	0	1	1	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 8:00	0	2	1	3	0	8	7	15	0	0	0	0	18
Lights	0	2	1	3	0	8	7	15	0	0	0	0	18
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 8:15	0	2	4	6	0	13	5	18	0	0	0	0	24
Lights	0	1	3	4	0	12	5	17	0	0	0	0	21
Mediums	0	1	1	2	0	1	0	1	0	0	0	0	3
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 8:30	0	2	4	6	0	5	7	12	0	0	1	1	19
Lights	0	2	3	5	0	4	6	10	0	0	1	1	16
Mediums	0	0	1	1	0	1	1	2	0	0	0	0	3
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 8:45	0	0	2	2	0	8	7	15	0	0	1	1	18
Lights	0	0	2	2	0	8	7	15	0	0	1	1	18
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 9:00	0	0	0	0	0	0	4	4	0	0	0	0	4
Lights	0	0	0	0	0	0	2	2	0	0	0	0	2
Mediums	0	0	0	0	0	0	2	2	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name	Clifton Ave.@East Access
Start Date	Monday, December 10, 2018 5:00 AM
End Date	Monday, December 10, 2018 5:00 PM
Site Code	

Road Volumes

TMV	Movement												
	Eastbound			Eastbound Tot	Westbound			Westbound To	Southbound			Southbound Tc	Grand Total
Interval	U	L	T		U	T	R		U	L	R		
12/10/2018 9:15	0	2	5	7	0	1	3	4	0	1	0	1	12
Lights	0	2	5	7	0	1	3	4	0	0	0	0	11
Mediums	0	0	0	0	0	0	0	0	0	1	0	1	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 9:30	0	2	5	7	0	2	11	13	0	0	0	0	20
Lights	0	2	5	7	0	2	11	13	0	0	0	0	20
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 9:45	0	3	3	6	0	1	9	10	0	0	0	0	16
Lights	0	2	3	5	0	0	9	9	0	0	0	0	14
Mediums	0	1	0	1	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
12/10/2018 10:00	0	2	4	6	0	0	7	7	0	0	1	1	14
Lights	0	2	2	4	0	0	6	6	0	0	1	1	11
Mediums	0	0	2	2	0	0	1	1	0	0	0	0	3
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 10:15	0	2	3	5	0	1	8	9	0	0	1	1	15
Lights	0	2	3	5	0	1	7	8	0	0	1	1	14
Mediums	0	0	0	0	0	0	1	1	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 10:30	0	2	6	8	0	3	10	13	0	0	2	2	23
Lights	0	1	5	6	0	3	9	12	0	0	2	2	20
Mediums	0	1	1	2	0	0	1	1	0	0	0	0	3
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 10:45	0	2	4	6	0	0	7	7	0	0	0	0	13
Lights	0	1	4	5	0	0	5	5	0	0	0	0	10
Mediums	0	1	0	1	0	0	2	2	0	0	0	0	3
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 11:00	1	1	1	3	0	3	13	16	0	0	0	0	19
Lights	1	1	0	2	0	1	10	11	0	0	0	0	13
Mediums	0	0	1	1	0	1	3	4	0	0	0	0	5
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
12/10/2018 11:15	0	2	0	2	0	0	7	7	0	0	0	0	9
Lights	0	2	0	2	0	0	7	7	0	0	0	0	9

Study Name	Clifton Ave.@East Access
Start Date	Monday, December 10, 2018 5:00 AM
End Date	Monday, December 10, 2018 5:00 PM
Site Code	

Road Volumes

TMV	Movement												
	Eastbound			Eastbound Tot	Westbound			Westbound To	Southbound			Southbound Tc	Grand Total
Interval	U	L	T		U	T	R		U	L	R		
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 11:30	0	4	5	9	0	5	3	8	0	0	0	0	17
Lights	0	4	5	9	0	2	3	5	0	0	0	0	14
Mediums	0	0	0	0	0	2	0	2	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
12/10/2018 11:45	0	2	4	6	0	2	9	11	0	0	0	0	17
Lights	0	2	4	6	0	1	8	9	0	0	0	0	15
Mediums	0	0	0	0	0	1	1	2	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 12:00	0	3	5	8	0	5	8	13	0	4	1	5	26
Lights	0	3	5	8	0	5	7	12	0	4	1	5	25
Mediums	0	0	0	0	0	0	1	1	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 12:15	0	1	4	5	0	3	4	7	0	0	0	0	12
Lights	0	1	4	5	0	1	4	5	0	0	0	0	10
Mediums	0	0	0	0	0	2	0	2	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 12:30	0	2	6	8	0	3	5	8	0	0	0	0	16
Lights	0	2	5	7	0	3	5	8	0	0	0	0	15
Mediums	0	0	1	1	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 12:45	0	1	6	7	1	1	7	9	0	0	0	0	16
Lights	0	0	5	5	1	1	7	9	0	0	0	0	14
Mediums	0	1	1	2	0	0	0	0	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 13:00	0	1	0	1	0	4	5	9	0	0	0	0	10
Lights	0	1	0	1	0	3	4	7	0	0	0	0	8
Mediums	0	0	0	0	0	1	1	2	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 13:15	0	0	1	1	1	2	9	12	0	1	0	1	14
Lights	0	0	1	1	1	2	9	12	0	1	0	1	14
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name	Clifton Ave.@East Access
Start Date	Monday, December 10, 2018 5:00 AM
End Date	Monday, December 10, 2018 5:00 PM
Site Code	

Road Volumes

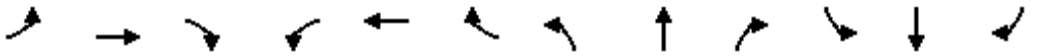
TMV	Movement												
	Eastbound			Eastbound Tot	Westbound			Westbound To	Southbound			Southbound Tc	Grand Total
Interval	U	L	T		U	T	R		U	L	R		
12/10/2018 13:30	0	2	3	5	0	2	4	6	0	0	0	0	11
Lights	0	2	3	5	0	2	3	5	0	0	0	0	10
Mediums	0	0	0	0	0	0	1	1	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 13:45	0	4	4	8	0	2	6	8	0	0	0	0	16
Lights	0	3	4	7	0	1	5	6	0	0	0	0	13
Mediums	0	1	0	1	0	1	1	2	0	0	0	0	3
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 14:00	0	6	1	7	0	5	2	7	0	0	0	0	14
Lights	0	4	0	4	0	3	1	4	0	0	0	0	8
Mediums	0	2	1	3	0	2	1	3	0	0	0	0	6
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 14:15	0	2	5	7	0	2	3	5	0	0	1	1	13
Lights	0	2	4	6	0	1	2	3	0	0	0	0	9
Mediums	0	0	1	1	0	1	1	2	0	0	1	1	4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 14:30	0	2	6	8	0	1	7	8	0	0	0	0	16
Lights	0	2	6	8	0	1	6	7	0	0	0	0	15
Mediums	0	0	0	0	0	0	1	1	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 14:45	0	3	4	7	0	4	8	12	0	0	0	0	19
Lights	0	3	3	6	0	4	7	11	0	0	0	0	17
Mediums	0	0	1	1	0	0	1	1	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 15:00	0	1	4	5	0	2	3	5	0	0	0	0	10
Lights	0	1	4	5	0	2	1	3	0	0	0	0	8
Mediums	0	0	0	0	0	0	2	2	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 15:15	0	1	3	4	0	1	5	6	0	0	0	0	10
Lights	0	1	3	4	0	0	5	5	0	0	0	0	9
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 15:30	0	1	4	5	0	2	7	9	0	0	0	0	14
Lights	0	1	3	4	0	2	6	8	0	0	0	0	12

Study Name	Clifton Ave.@East Access
Start Date	Monday, December 10, 2018 5:00 AM
End Date	Monday, December 10, 2018 5:00 PM
Site Code	

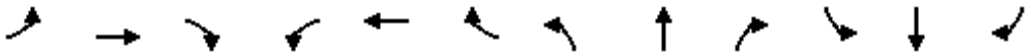
Road Volumes

TMV	Movement												
	Eastbound			Eastbound Tot	Westbound			Westbound To	Southbound			Southbound To	Grand Total
Interval	U	L	T		U	T	R		U	L	R		
Mediums	0	0	1	1	0	0	1	1	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 15:45	0	2	6	8	0	2	15	17	0	0	0	0	25
Lights	0	2	6	8	0	2	14	16	0	0	0	0	24
Mediums	0	0	0	0	0	0	1	1	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 16:00	0	0	14	14	0	5	6	11	0	0	0	0	25
Lights	0	0	12	12	0	5	6	11	0	0	0	0	23
Mediums	0	0	2	2	0	0	0	0	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 16:15	0	1	12	13	0	4	3	7	0	0	0	0	20
Lights	0	1	12	13	0	4	3	7	0	0	0	0	20
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 16:30	0	1	17	18	0	4	6	10	0	0	0	0	28
Lights	0	1	16	17	0	4	6	10	0	0	0	0	27
Mediums	0	0	1	1	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2018 16:45	0	2	15	17	0	2	1	3	0	0	0	0	20
Lights	0	2	14	16	0	2	1	3	0	0	0	0	19
Mediums	0	0	1	1	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	94	201	296	2	134	273	409	0	7	8	15	720

Capacity Analysis Results



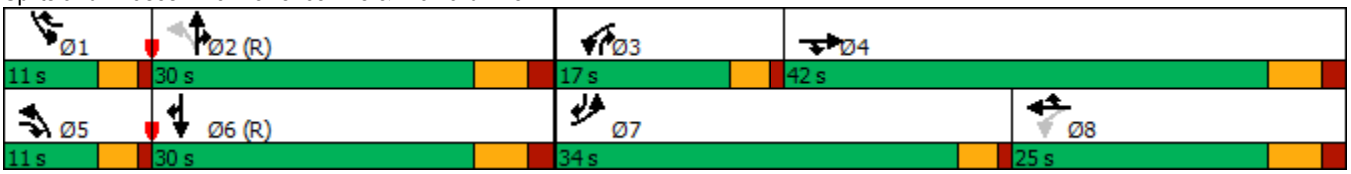
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	475	345	30	70	450	180	90	340	90	55	165	310
Future Volume (vph)	475	345	30	70	450	180	90	340	90	55	165	310
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	14	13	12	14	13	12	15	13	12	14
Storage Length (ft)	455		290	375		240	495		455	275		570
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	300			155			155			300		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2894	3455	1460	1865	3486	1610	1793	3689	1725	3260	3689	1389
Flt Permitted	0.950			0.539			0.644			0.950		
Satd. Flow (perm)	2894	3455	1460	1058	3486	1610	1216	3689	1725	3260	3689	1389
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												211
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		898			696			1546			2837	
Travel Time (s)		17.5			13.6			26.4			48.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	21%	10%	18%	0%	9%	7%	4%	3%	3%	11%	3%	24%
Adj. Flow (vph)	490	356	31	72	464	186	93	351	93	57	170	320
Shared Lane Traffic (%)												
Lane Group Flow (vph)	490	356	31	72	464	186	93	351	93	57	170	320
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		35			32			26			26	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.94	0.92	0.96	0.94	0.92	0.96	0.94	0.88	0.96	0.94	0.92
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pt+ov	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov	Prot	NA	pt+ov



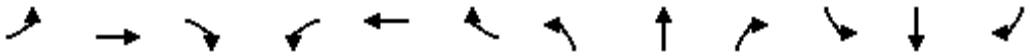
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4	4 5	3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases				8			2					
Detector Phase	7	4	4 5	3	8	8 1	5	2	2 3	1	6	6 7
Switch Phase												
Minimum Initial (s)	9.0	20.0		7.0	15.0		7.0	15.0		7.0	20.0	
Minimum Split (s)	13.0	26.0		11.0	21.0		11.0	21.0		11.0	26.0	
Total Split (s)	34.0	42.0		17.0	25.0		11.0	30.0		11.0	30.0	
Total Split (%)	34.0%	42.0%		17.0%	25.0%		11.0%	30.0%		11.0%	30.0%	
Maximum Green (s)	30.0	36.0		13.0	19.0		7.0	24.0		7.0	24.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	0.2		3.0	0.2		0.2	0.2		0.2	0.2	
Recall Mode	None	Max		None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	22.7	43.5	54.5	35.9	26.3	37.3	33.0	24.0	35.7	7.0	26.2	52.9
Actuated g/C Ratio	0.23	0.44	0.54	0.36	0.26	0.37	0.33	0.24	0.36	0.07	0.26	0.53
v/c Ratio	0.74	0.24	0.04	0.16	0.51	0.31	0.21	0.40	0.15	0.25	0.18	0.38
Control Delay	42.9	19.1	12.2	14.1	34.9	25.6	22.4	33.5	22.5	40.5	38.6	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	19.1	12.2	14.1	34.9	25.6	22.4	33.5	22.5	40.5	38.6	6.8
LOS	D	B	B	B	C	C	C	C	C	D	D	A
Approach Delay		32.1			30.4			29.7			20.2	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	150	75	9	20	133	83	39	99	40	19	55	7
Queue Length 95th (ft)	189	112	24	41	200	155	74	142	74	30	88	110
Internal Link Dist (ft)		818			616			1466			2757	
Turn Bay Length (ft)	455		290	375		240	495		455	275		570
Base Capacity (vph)	868	1504	796	541	915	599	441	885	707	228	966	920
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.24	0.04	0.13	0.51	0.31	0.21	0.40	0.13	0.25	0.18	0.35

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 65.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Torrence Ave & Brainard Ave



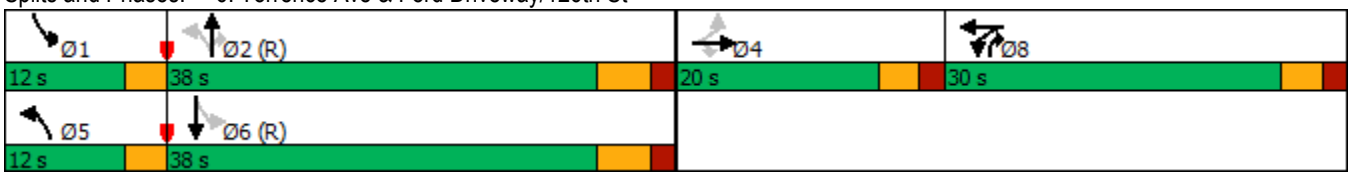
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	5	15	280	5	165	30	600	365	115	235	1
Future Volume (vph)	5	5	15	280	5	165	30	600	365	115	235	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Lane Width (ft)	12	16	16	12	12	12	12	12	14	12	12	12
Storage Length (ft)	0		0	330		0	215		145	290		0
Storage Lanes	0		1	2		0	1		1	1		0
Taper Length (ft)	25			300			125			120		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt			0.850		0.854				0.850		0.999	
Flt Protected		0.976		0.950			0.950			0.950		
Satd. Flow (prot)	0	1251	1173	2968	1479	0	1805	3486	1472	1543	3007	0
Flt Permitted		0.625		0.950			0.596			0.330		
Satd. Flow (perm)	0	801	1173	2968	1479	0	1132	3486	1472	536	3007	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120		176				388			
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		317			2002			2837			903	
Travel Time (s)		7.2			45.5			48.4			15.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	50%	86%	56%	18%	0%	10%	0%	9%	17%	17%	20%	0%
Adj. Flow (vph)	5	5	16	298	5	176	32	638	388	122	250	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	16	298	181	0	32	638	388	122	251	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.85	0.85	1.00	1.00	1.00	1.00	0.94	0.92	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA	pm+ov	pm+pt	NA	

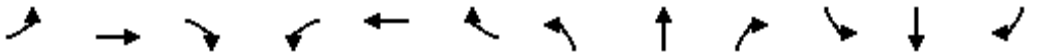


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8	8		5	2	8	1	6	
Permitted Phases	4		4				2		2	6		
Detector Phase	4	4	4	8	8		5	2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		6.0	32.0	10.0	6.0	32.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		9.0	38.0	15.0	9.0	38.0	
Total Split (s)	20.0	20.0	20.0	30.0	30.0		12.0	38.0	30.0	12.0	38.0	
Total Split (%)	20.0%	20.0%	20.0%	30.0%	30.0%		12.0%	38.0%	30.0%	12.0%	38.0%	
Maximum Green (s)	15.0	15.0	15.0	25.0	25.0		9.0	32.0	25.0	9.0	32.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0	3.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		3.0	6.0	5.0	3.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		3.0	0.2	5.0	3.0	0.2	
Recall Mode	None	None	None	None	None		None	C-Max	None	None	C-Max	
Act Effct Green (s)		10.8	10.8	22.5	22.5		58.3	48.8	75.2	62.2	53.8	
Actuated g/C Ratio		0.11	0.11	0.22	0.22		0.58	0.49	0.75	0.62	0.54	
v/c Ratio		0.12	0.07	0.45	0.39		0.05	0.38	0.32	0.30	0.16	
Control Delay		42.8	0.6	34.7	7.4		18.3	26.3	2.8	13.0	16.6	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		42.8	0.6	34.7	7.4		18.3	26.3	2.8	13.0	16.6	
LOS		D	A	C	A		B	C	A	B	B	
Approach Delay		16.8			24.4			17.4			15.4	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		6	0	84	2		10	145	4	23	37	
Queue Length 95th (ft)		22	0	118	54		m29	223	111	79	92	
Internal Link Dist (ft)		237			1922			2757			823	
Turn Bay Length (ft)				330			215		145	290		
Base Capacity (vph)		120	277	773	515		748	1699	1242	426	1618	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.08	0.06	0.39	0.35		0.04	0.38	0.31	0.29	0.16	

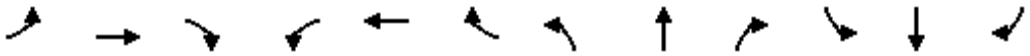
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 41 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: Torrence Ave & Ford Driveway/126th St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	1	30	1	1	1	85	440	2	1	325	310
Future Volume (vph)	315	1	30	1	1	1	85	440	2	1	325	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	65		0	225		0	195		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	115			45			110			120		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.854			0.925			0.999			0.927	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1612	1577	0	1805	1758	0	1787	3536	0	1805	3234	0
Flt Permitted	0.757			0.732			0.259			0.442		
Satd. Flow (perm)	1284	1577	0	1391	1758	0	487	3536	0	840	3234	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			1			1			359	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1831			275			1008			834	
Travel Time (s)		41.6			6.3			22.9			19.0	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	12%	0%	3%	0%	0%	0%	1%	2%	0%	0%	2%	5%
Adj. Flow (vph)	399	1	38	1	1	1	108	557	3	1	411	392
Shared Lane Traffic (%)												
Lane Group Flow (vph)	399	39	0	1	2	0	108	560	0	1	803	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	



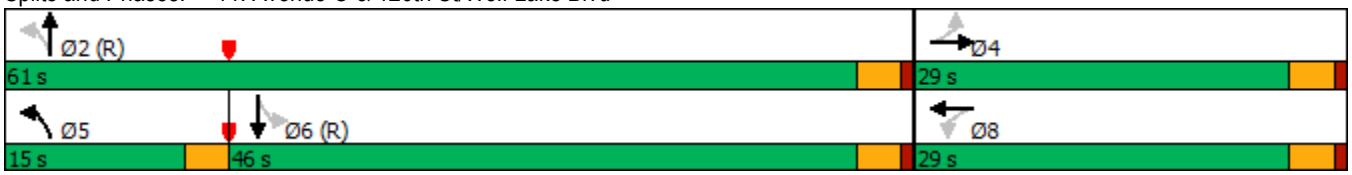
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	57.0		42.0	42.0	
Minimum Split (s)	29.0	29.0		29.0	29.0		10.0	61.0		46.0	46.0	
Total Split (s)	29.0	29.0		29.0	29.0		15.0	61.0		46.0	46.0	
Total Split (%)	32.2%	32.2%		32.2%	32.2%		16.7%	67.8%		51.1%	51.1%	
Maximum Green (s)	25.0	25.0		25.0	25.0		12.0	57.0		42.0	42.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		4.0	4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0							
Flash Dont Walk (s)	17.0	17.0		17.0	17.0							
Pedestrian Calls (#/hr)	0	0		0	0							
Act Effct Green (s)	25.0	25.0		25.0	25.0		58.0	57.0		46.6	46.6	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.64	0.63		0.52	0.52	
v/c Ratio	1.12	0.08		0.00	0.00		0.24	0.25		0.00	0.43	
Control Delay	117.4	9.1		24.0	20.5		7.4	7.5		12.0	8.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	117.4	9.1		24.0	20.5		7.4	7.5		12.0	8.4	
LOS	F	A		C	C		A	A		B	A	
Approach Delay		107.7			21.7			7.5			8.4	
Approach LOS		F			C			A			A	
Queue Length 50th (ft)	~264	0		0	0		21	65		0	74	
Queue Length 95th (ft)	#361	19		4	5		34	76		3	94	
Internal Link Dist (ft)		1751			195			928			754	
Turn Bay Length (ft)	200			65			225			195		
Base Capacity (vph)	356	465		386	489		487	2239		435	1848	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.12	0.08		0.00	0.00		0.22	0.25		0.00	0.43	

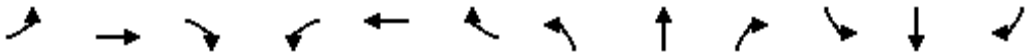
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 30.8		Intersection LOS: C	
Intersection Capacity Utilization 101.4%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Avenue O & 126th St/Wolf Lake Blvd





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1	5	15	1	40	25	560	35	10	555	30
Future Volume (vph)	5	1	5	15	1	40	25	560	35	10	555	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	10	13	13	12	13	12
Storage Length (ft)	0		0	0		0	25		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			150			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Frt		0.937			0.903			0.991			0.992	
Flt Protected		0.977			0.987		0.950				0.999	
Satd. Flow (prot)	0	1470	0	0	1879	0	1195	3499	0	0	3561	0
Flt Permitted		0.865			0.831		0.249				0.930	
Satd. Flow (perm)	0	1302	0	0	1582	0	313	3499	0	0	3315	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			56			8			6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1483			1164			4452			1147	
Travel Time (s)		33.7			26.5			101.2			26.1	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	33%	0%	40%	0%	0%	3%	41%	6%	0%	0%	3%	20%
Adj. Flow (vph)	7	1	7	21	1	56	35	789	49	14	782	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	78	0	35	838	0	0	838	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			10			10	
Link Offset(ft)		0			-90			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.85	1.00	1.00	0.85	1.00	1.09	0.96	0.96	1.00	0.96	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2			6	
Permitted Phases	8			4			2			6		
Minimum Split (s)	17.0	17.0		29.0	29.0		12.0	84.0		72.0	72.0	
Total Split (s)	17.0	17.0		29.0	29.0		12.0	84.0		72.0	72.0	
Total Split (%)	13.1%	13.1%		22.3%	22.3%		9.2%	64.6%		55.4%	55.4%	
Maximum Green (s)	12.0	12.0		24.0	24.0		7.0	75.0		63.0	63.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		5.0	9.0			9.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Walk Time (s)				4.0	4.0			51.0		39.0	39.0	
Flash Dont Walk (s)				20.0	20.0			12.0		24.0	24.0	
Pedestrian Calls (#/hr)				0	0			0		0	0	
Act Effct Green (s)		12.0			24.0		79.0	75.0			63.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.09			0.18		0.61	0.58			0.48	
v/c Ratio		0.12			0.23		0.15	0.41			0.52	
Control Delay		40.6			18.9		11.8	15.9			24.4	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		40.6			18.9		11.8	15.9			24.4	
LOS		D			B		B	B			C	
Approach Delay		40.6			18.9			15.7			24.4	
Approach LOS		D			B			B			C	
Queue Length 50th (ft)		6			16		11	195			248	
Queue Length 95th (ft)		22			38		20	175			223	
Internal Link Dist (ft)		1403			1084			4372			1067	
Turn Bay Length (ft)							25					
Base Capacity (vph)		126			337		237	2022			1609	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.12			0.23		0.15	0.41			0.52	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 130			
Control Type: Pretimed			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 20.1		Intersection LOS: C	
Intersection Capacity Utilization 94.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 16: Avenue O & 116th St

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	10	5	5	1	1
Future Volume (vph)	35	10	5	5	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.970		0.932			
Flt Protected	0.962					0.976
Satd. Flow (prot)	1316	0	1170	0	0	1401
Flt Permitted	0.962					0.976
Satd. Flow (perm)	1316	0	1170	0	0	1401
Link Speed (mph)	25		25			25
Link Distance (ft)	1483		654			600
Travel Time (s)	40.4		17.8			16.4
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles (%)	62%	20%	100%	43%	100%	0%
Adj. Flow (vph)	53	15	8	8	2	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	16	0	0	4
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	16		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.85	0.85	0.85	0.85	0.85	0.85
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Stop			Stop

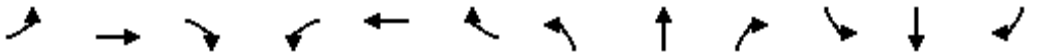
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	10	5	5	1	1
Future Vol, veh/h	35	10	5	5	1	1
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles, %	62	20	100	43	100	0
Mvmt Flow	53	15	8	8	2	2
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.6	8.6	8.9
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	78%	50%
Vol Thru, %	50%	0%	50%
Vol Right, %	50%	22%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	10	45	2
LT Vol	0	35	1
Through Vol	5	0	1
RT Vol	5	10	0
Lane Flow Rate	15	68	3
Geometry Grp	1	1	1
Degree of Util (X)	0.023	0.095	0.005
Departure Headway (Hd)	5.425	5.008	5.834
Convergence, Y/N	Yes	Yes	Yes
Cap	655	717	609
Service Time	3.494	3.031	3.911
HCM Lane V/C Ratio	0.023	0.095	0.005
HCM Control Delay	8.6	8.6	8.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.3	0

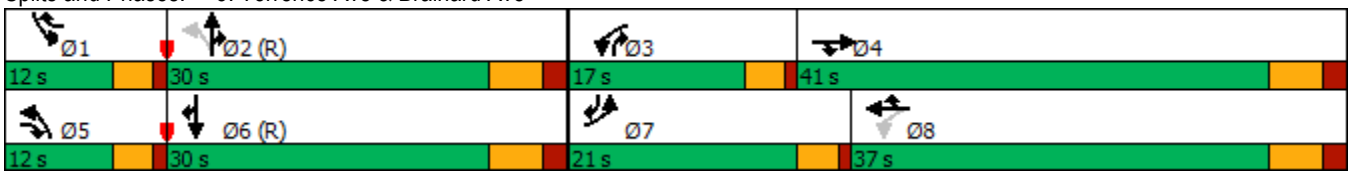


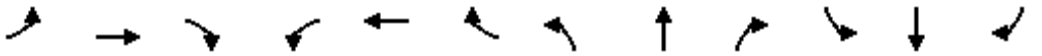
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	445	480	190	150	420	95	140	415	150	160	625	540
Future Volume (vph)	445	480	190	150	420	95	140	415	150	160	625	540
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	14	13	12	14	13	12	15	13	12	14
Storage Length (ft)	455		290	375		240	495		455	275		570
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	300			155			155			300		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	3689	1672	1847	3725	1689	1811	3689	1708	3479	3689	1610
Flt Permitted	0.950			0.466			0.200			0.950		
Satd. Flow (perm)	3213	3689	1672	906	3725	1689	381	3689	1708	3479	3689	1610
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												187
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		898			696			1546			2837	
Travel Time (s)		17.5			13.6			26.4			48.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	9%	3%	3%	1%	2%	2%	3%	3%	4%	4%	3%	7%
Adj. Flow (vph)	468	505	200	158	442	100	147	437	158	168	658	568
Shared Lane Traffic (%)												
Lane Group Flow (vph)	468	505	200	158	442	100	147	437	158	168	658	568
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		35			32			26			26	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.94	0.92	0.96	0.94	0.92	0.96	0.94	0.88	0.96	0.94	0.92
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pt+ov	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov	Prot	NA	pt+ov

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4	4 5	3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases				8			2					
Detector Phase	7	4	4 5	3	8	8 1	5	2	2 3	1	6	6 7
Switch Phase												
Minimum Initial (s)	7.0	15.0		7.0	15.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	13.0	26.0		11.0	21.0		11.0	21.0		11.0	26.0	
Total Split (s)	21.0	41.0		17.0	37.0		12.0	30.0		12.0	30.0	
Total Split (%)	21.0%	41.0%		17.0%	37.0%		12.0%	30.0%		12.0%	30.0%	
Maximum Green (s)	17.0	35.0		13.0	31.0		8.0	24.0		8.0	24.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	0.2		3.0	0.2		3.0	0.2		3.0	0.2	
Recall Mode	None	Max		None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	17.0	38.2	50.0	42.8	31.0	42.9	34.0	24.1	38.0	7.9	24.1	45.1
Actuated g/C Ratio	0.17	0.38	0.50	0.43	0.31	0.43	0.34	0.24	0.38	0.08	0.24	0.45
v/c Ratio	0.86	0.36	0.24	0.33	0.38	0.14	0.61	0.49	0.24	0.62	0.74	0.69
Control Delay	57.0	23.5	15.6	14.3	28.2	18.0	33.0	34.9	21.9	53.4	37.0	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	23.5	15.6	14.3	28.2	18.0	33.0	34.9	21.9	53.4	37.0	24.5
LOS	E	C	B	B	C	B	C	C	C	D	D	C
Approach Delay		35.5			23.6			31.8			33.9	
Approach LOS		D			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 32.2		Intersection LOS: C	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Torrence Ave & Brainard Ave



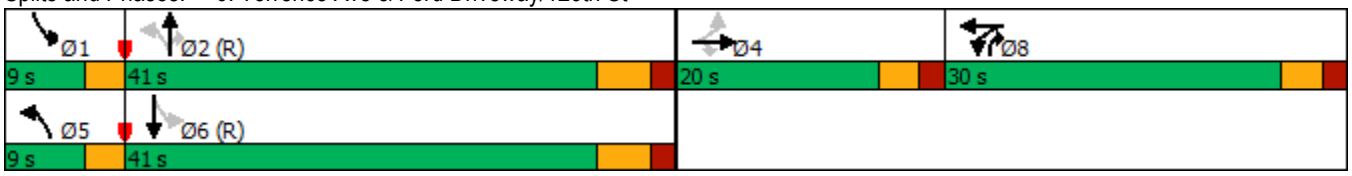


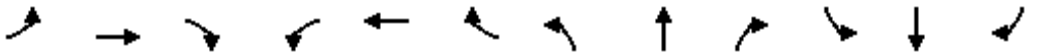
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	15	50	495	10	130	80	235	640	200	780	5
Future Volume (vph)	5	15	50	495	10	130	80	235	640	200	780	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Lane Width (ft)	12	16	16	12	12	12	12	12	14	12	12	12
Storage Length (ft)	0		0	330		0	215		145	290		0
Storage Lanes	0		1	2		0	1		1	1		0
Taper Length (ft)	25			300			125			120		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt			0.850		0.861				0.850		0.999	
Flt Protected		0.988		0.950			0.950			0.950		
Satd. Flow (prot)	0	2020	1664	3303	1606	0	1805	3551	1656	1787	3468	0
Flt Permitted		0.278		0.950			0.227			0.579		
Satd. Flow (perm)	0	568	1664	3303	1606	0	431	3551	1656	1089	3468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120		138				681		1	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		317			2002			2837			903	
Travel Time (s)		7.2			45.5			48.4			15.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	7%	10%	6%	0%	2%	0%	7%	4%	1%	4%	0%
Adj. Flow (vph)	5	16	53	527	11	138	85	250	681	213	830	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	21	53	527	149	0	85	250	681	213	835	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.85	0.85	1.00	1.00	1.00	1.00	0.94	0.92	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA	pm+ov	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8	8		5	2	8	1	6	
Permitted Phases	4		4				2		2	6		
Detector Phase	4	4	4	8	8		5	2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		6.0	35.0	10.0	6.0	35.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		9.0	41.0	15.0	9.0	41.0	
Total Split (s)	20.0	20.0	20.0	30.0	30.0		9.0	41.0	30.0	9.0	41.0	
Total Split (%)	20.0%	20.0%	20.0%	30.0%	30.0%		9.0%	41.0%	30.0%	9.0%	41.0%	
Maximum Green (s)	15.0	15.0	15.0	25.0	25.0		6.0	35.0	25.0	6.0	35.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0	3.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		3.0	6.0	5.0	3.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		0.2	0.2	5.0	0.2	0.2	
Recall Mode	None	None	None	None	None		None	C-Max	None	None	C-Max	
Act Effct Green (s)		10.9	10.9	28.1	28.1		48.1	39.1	69.1	48.7	40.9	
Actuated g/C Ratio		0.11	0.11	0.28	0.28		0.48	0.39	0.69	0.49	0.41	
v/c Ratio		0.34	0.18	0.57	0.27		0.29	0.18	0.50	0.37	0.59	
Control Delay		56.5	1.4	33.6	7.4		23.4	26.6	6.7	18.1	27.3	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		56.5	1.4	33.6	7.4		23.4	26.6	6.7	18.1	27.3	
LOS		E	A	C	A		C	C	A	B	C	
Approach Delay		17.0			27.8			13.0			25.5	
Approach LOS		B			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 36 (36%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Torrence Ave & Ford Driveway/126th St



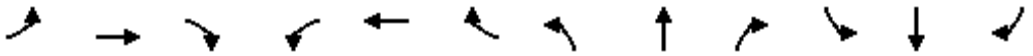


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	300	1	190	1	1	1	165	360	1	1	435	245
Future Volume (vph)	300	1	190	1	1	1	165	360	1	1	435	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	65		0	225		0	195		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	115			45			110			120		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.98		1.00				1.00		1.00		
Frt		0.851			0.925						0.946	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1592	0	1805	1758	0	1787	3574	0	1805	3334	0
Flt Permitted	0.757			0.508			0.280			0.520		
Satd. Flow (perm)	1396	1592	0	963	1758	0	527	3574	0	987	3334	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		207			1			1			162	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1831			275			1008			834	
Travel Time (s)		41.6			6.3			22.9			19.0	
Confl. Peds. (#/hr)			3	3					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	5%
Adj. Flow (vph)	326	1	207	1	1	1	179	391	1	1	473	266
Shared Lane Traffic (%)												
Lane Group Flow (vph)	326	208	0	1	2	0	179	392	0	1	739	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	57.0		42.0	42.0	
Minimum Split (s)	29.0	29.0		29.0	29.0		10.0	61.0		46.0	46.0	
Total Split (s)	29.0	29.0		29.0	29.0		15.0	61.0		46.0	46.0	
Total Split (%)	32.2%	32.2%		32.2%	32.2%		16.7%	67.8%		51.1%	51.1%	
Maximum Green (s)	25.0	25.0		25.0	25.0		12.0	57.0		42.0	42.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		4.0	4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0							
Flash Dont Walk (s)	17.0	17.0		17.0	17.0							
Pedestrian Calls (#/hr)	0	0		0	0							
Act Effct Green (s)	24.1	24.1		24.1	24.1		58.9	57.9		44.2	44.2	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.65	0.64		0.49	0.49	
v/c Ratio	0.88	0.36		0.00	0.00		0.36	0.17		0.00	0.43	
Control Delay	56.6	5.8		24.0	20.5		8.4	6.8		13.0	12.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	56.6	5.8		24.0	20.5		8.4	6.8		13.0	12.5	
LOS	E	A		C	C		A	A		B	B	
Approach Delay		36.8			21.7			7.3			12.5	
Approach LOS		D			C			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 115.8%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 11: Avenue O & 126th St/Wolf Lake Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1	15	10	1	20	1	560	30	15	500	2
Future Volume (vph)	5	1	15	10	1	20	1	560	30	15	500	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	10	13	13	12	13	12
Storage Length (ft)	0		0	0		0	25		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			150			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Frt		0.902			0.913			0.992			0.999	
Flt Protected		0.989			0.984		0.950				0.999	
Satd. Flow (prot)	0	1815	0	0	1874	0	1685	3666	0	0	3652	0
Flt Permitted		0.941			0.725		0.379				0.923	
Satd. Flow (perm)	0	1727	0	0	1381	0	672	3666	0	0	3374	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			22			7				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1483			1164			4452			1147	
Travel Time (s)		33.7			26.5			101.2			26.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	8%	0%	0%	5%	0%	1%	0%	0%	2%	0%
Adj. Flow (vph)	5	1	16	11	1	22	1	615	33	16	549	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	22	0	0	34	0	1	648	0	0	567	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			10			10	
Link Offset(ft)		0			-90			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.85	1.00	1.00	0.85	1.00	1.09	0.96	0.96	1.00	0.96	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2			6	
Permitted Phases	8			4			2			6		
Minimum Split (s)	17.0	17.0		29.0	29.0		12.0	84.0		72.0	72.0	
Total Split (s)	17.0	17.0		29.0	29.0		12.0	84.0		72.0	72.0	
Total Split (%)	13.1%	13.1%		22.3%	22.3%		9.2%	64.6%		55.4%	55.4%	
Maximum Green (s)	12.0	12.0		24.0	24.0		7.0	75.0		63.0	63.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		5.0	9.0			9.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Walk Time (s)				4.0	4.0			51.0		39.0	39.0	
Flash Dont Walk (s)				20.0	20.0			12.0		24.0	24.0	
Pedestrian Calls (#/hr)				0	0			0		0	0	
Act Effct Green (s)		12.0			24.0		79.0	75.0			63.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.09			0.18		0.61	0.58			0.48	
v/c Ratio		0.13			0.12		0.00	0.31			0.35	
Control Delay		30.1			24.1		10.0	14.4			21.5	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		30.1			24.1		10.0	14.4			21.5	
LOS		C			C		A	B			C	
Approach Delay		30.1			24.1			14.4			21.5	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 130			
Control Type: Pretimed			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 94.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 16: Avenue O & 116th St

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	5	1	30	2	1
Future Volume (vph)	1	5	1	30	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.884		0.869			
Flt Protected	0.993					0.966
Satd. Flow (prot)	1654	0	1771	0	0	1533
Flt Permitted	0.993					0.966
Satd. Flow (perm)	1654	0	1771	0	0	1533
Link Speed (mph)	25		25			25
Link Distance (ft)	1483		654			600
Travel Time (s)	40.4		17.8			16.4
Peak Hour Factor	0.42	0.42	0.42	0.42	0.42	0.42
Heavy Vehicles (%)	100%	0%	100%	3%	50%	0%
Adj. Flow (vph)	2	12	2	71	5	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	0	73	0	0	7
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	16		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	0.85	0.85	0.85	0.85	0.85	0.85
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Stop			Stop

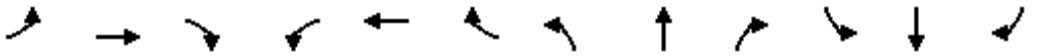
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	5	1	30	2	1
Future Vol, veh/h	1	5	1	30	2	1
Peak Hour Factor	0.42	0.42	0.42	0.42	0.42	0.42
Heavy Vehicles, %	100	0	100	3	50	0
Mvmt Flow	2	12	2	71	5	2
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.5	8.7	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	17%	67%
Vol Thru, %	3%	0%	33%
Vol Right, %	97%	83%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	31	6	3
LT Vol	0	1	2
Through Vol	1	0	1
RT Vol	30	5	0
Lane Flow Rate	74	14	7
Geometry Grp	1	1	1
Degree of Util (X)	0.104	0.021	0.01
Departure Headway (Hd)	5.05	5.275	4.965
Convergence, Y/N	Yes	Yes	Yes
Cap	712	672	718
Service Time	3.07	3.357	3.014
HCM Lane V/C Ratio	0.104	0.021	0.01
HCM Control Delay	8.7	8.5	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.3	0.1	0

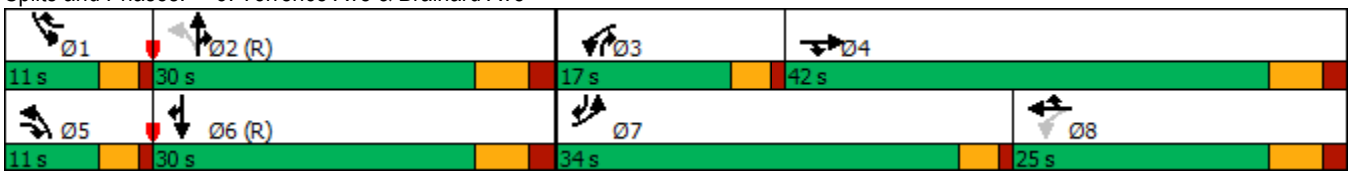


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	540	375	35	75	490	195	100	375	100	60	180	365
Future Volume (vph)	540	375	35	75	490	195	100	375	100	60	180	365
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	14	13	12	14	13	12	15	13	12	14
Storage Length (ft)	455		290	375		240	495		455	275		570
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	300			155			155			300		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2847	3455	1460	1865	3486	1610	1793	3689	1725	3260	3689	1346
Flt Permitted	0.950			0.523			0.635			0.950		
Satd. Flow (perm)	2847	3455	1460	1027	3486	1610	1199	3689	1725	3260	3689	1346
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												193
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		898			696			1546			2837	
Travel Time (s)		17.5			13.6			26.4			48.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	23%	10%	18%	0%	9%	7%	4%	3%	3%	11%	3%	28%
Adj. Flow (vph)	557	387	36	77	505	201	103	387	103	62	186	376
Shared Lane Traffic (%)												
Lane Group Flow (vph)	557	387	36	77	505	201	103	387	103	62	186	376
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		35			32			26			26	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.94	0.92	0.96	0.94	0.92	0.96	0.94	0.88	0.96	0.94	0.92
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pt+ov	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov	Prot	NA	pt+ov

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4	4 5	3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases				8			2					
Detector Phase	7	4	4 5	3	8	8 1	5	2	2 3	1	6	6 7
Switch Phase												
Minimum Initial (s)	9.0	20.0		7.0	15.0		7.0	15.0		7.0	20.0	
Minimum Split (s)	13.0	26.0		11.0	21.0		11.0	21.0		11.0	26.0	
Total Split (s)	34.0	42.0		17.0	25.0		11.0	30.0		11.0	30.0	
Total Split (%)	34.0%	42.0%		17.0%	25.0%		11.0%	30.0%		11.0%	30.0%	
Maximum Green (s)	30.0	36.0		13.0	19.0		7.0	24.0		7.0	24.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	0.2		3.0	0.2		0.2	0.2		0.2	0.2	
Recall Mode	None	Max		None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	25.1	41.3	52.3	33.6	23.9	34.9	33.0	24.0	35.7	7.0	26.2	55.3
Actuated g/C Ratio	0.25	0.41	0.52	0.34	0.24	0.35	0.33	0.24	0.36	0.07	0.26	0.55
v/c Ratio	0.78	0.27	0.05	0.19	0.61	0.36	0.24	0.44	0.17	0.27	0.19	0.45
Control Delay	42.6	20.2	12.3	14.8	38.6	27.9	22.8	34.1	22.6	41.0	38.8	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	20.2	12.3	14.8	38.6	27.9	22.8	34.1	22.6	41.0	38.8	9.4
LOS	D	C	B	B	D	C	C	C	C	D	D	A
Approach Delay		32.7			33.5			30.2			21.3	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 30.0		Intersection LOS: C	
Intersection Capacity Utilization 67.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Torrence Ave & Brainard Ave

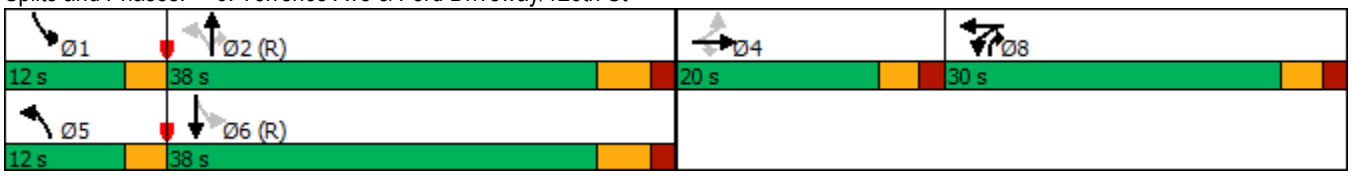


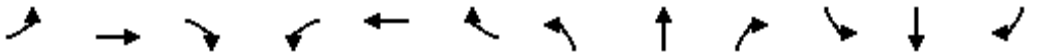
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	5	15	335	5	185	30	655	425	125	255	1
Future Volume (vph)	5	5	15	335	5	185	30	655	425	125	255	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Lane Width (ft)	12	16	16	12	12	12	12	12	14	12	12	12
Storage Length (ft)	0		0	330		0	215		145	290		0
Storage Lanes	0		1	2		0	1		1	1		0
Taper Length (ft)	25			300			125			120		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt			0.850		0.854				0.850		0.999	
Flt Protected		0.976		0.950			0.950			0.950		
Satd. Flow (prot)	0	1251	1173	2847	1440	0	1805	3486	1448	1543	3007	0
Flt Permitted		0.625		0.950			0.584			0.290		
Satd. Flow (perm)	0	801	1173	2847	1440	0	1110	3486	1448	471	3007	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120		197				452			
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		317			2002			2837			903	
Travel Time (s)		7.2			45.5			48.4			15.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	50%	86%	56%	23%	0%	13%	0%	9%	19%	17%	20%	0%
Adj. Flow (vph)	5	5	16	356	5	197	32	697	452	133	271	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	16	356	202	0	32	697	452	133	272	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.85	0.85	1.00	1.00	1.00	1.00	0.94	0.92	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA	pm+ov	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8	8		5	2	8	1	6	
Permitted Phases	4		4				2		2	6		
Detector Phase	4	4	4	8	8		5	2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		6.0	32.0	10.0	6.0	32.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		9.0	38.0	15.0	9.0	38.0	
Total Split (s)	20.0	20.0	20.0	30.0	30.0		12.0	38.0	30.0	12.0	38.0	
Total Split (%)	20.0%	20.0%	20.0%	30.0%	30.0%		12.0%	38.0%	30.0%	12.0%	38.0%	
Maximum Green (s)	15.0	15.0	15.0	25.0	25.0		9.0	32.0	25.0	9.0	32.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0	3.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		3.0	6.0	5.0	3.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		3.0	0.2	5.0	3.0	0.2	
Recall Mode	None	None	None	None	None		None	C-Max	None	None	C-Max	
Act Effct Green (s)		10.8	10.8	25.0	25.0		55.7	46.1	75.1	59.6	51.2	
Actuated g/C Ratio		0.11	0.11	0.25	0.25		0.56	0.46	0.75	0.60	0.51	
v/c Ratio		0.12	0.07	0.50	0.40		0.05	0.43	0.38	0.36	0.18	
Control Delay		42.8	0.6	34.2	7.1		18.5	27.8	2.7	14.7	17.6	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		42.8	0.6	34.2	7.1		18.5	27.8	2.7	14.7	17.6	
LOS		D	A	C	A		B	C	A	B	B	
Approach Delay		16.8			24.4			18.0			16.7	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 41 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 19.4		Intersection LOS: B	
Intersection Capacity Utilization 62.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Torrence Ave & Ford Driveway/126th St



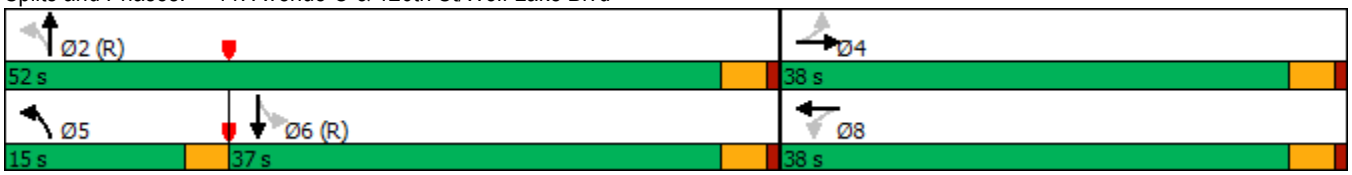


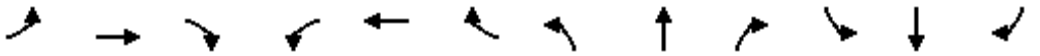
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	370	1	35	1	1	1	95	480	2	1	355	370
Future Volume (vph)	370	1	35	1	1	1	95	480	2	1	355	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	65		0	225		0	195		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	115			45			110			120		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.853			0.925			0.999			0.923	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1570	1575	0	1805	1758	0	1787	3536	0	1805	3111	0
Flt Permitted	0.757			0.728			0.152			0.421		
Satd. Flow (perm)	1251	1575	0	1383	1758	0	286	3536	0	800	3111	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44			1			1			332	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1831			275			1008			834	
Travel Time (s)		41.6			6.3			22.9			19.0	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	15%	0%	3%	0%	0%	0%	1%	2%	0%	0%	2%	12%
Adj. Flow (vph)	468	1	44	1	1	1	120	608	3	1	449	468
Shared Lane Traffic (%)												
Lane Group Flow (vph)	468	45	0	1	2	0	120	611	0	1	917	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	48.0		33.0	33.0	
Minimum Split (s)	29.0	29.0		29.0	29.0		10.0	52.0		37.0	37.0	
Total Split (s)	38.0	38.0		38.0	38.0		15.0	52.0		37.0	37.0	
Total Split (%)	42.2%	42.2%		42.2%	42.2%		16.7%	57.8%		41.1%	41.1%	
Maximum Green (s)	34.0	34.0		34.0	34.0		12.0	48.0		33.0	33.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		4.0	4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0							
Flash Dont Walk (s)	17.0	17.0		17.0	17.0							
Pedestrian Calls (#/hr)	0	0		0	0							
Act Effct Green (s)	34.0	34.0		34.0	34.0		49.0	48.0		34.7	34.7	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.54	0.53		0.39	0.39	
v/c Ratio	0.99	0.07		0.00	0.00		0.37	0.32		0.00	0.65	
Control Delay	69.5	6.3		18.0	15.0		13.4	12.4		18.0	16.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	69.5	6.3		18.0	15.0		13.4	12.4		18.0	16.7	
LOS	E	A		B	B		B	B		B	B	
Approach Delay		64.0			16.0			12.6			16.7	
Approach LOS		E			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 26.5		Intersection LOS: C	
Intersection Capacity Utilization 104.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 11: Avenue O & 126th St/Wolf Lake Blvd



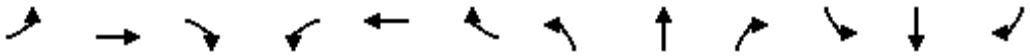


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1	35	15	1	45	50	610	40	10	605	40
Future Volume (vph)	10	1	35	15	1	45	50	610	40	10	605	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	10	13	13	12	13	12
Storage Length (ft)	0		0	0		0	25		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			150			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Frt		0.897			0.900			0.991			0.991	
Flt Protected		0.989			0.988		0.950				0.999	
Satd. Flow (prot)	0	1100	0	0	1873	0	1123	3500	0	0	3535	0
Flt Permitted		0.916			0.690		0.215				0.930	
Satd. Flow (perm)	0	1019	0	0	1308	0	254	3500	0	0	3291	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			63			9			7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1483			1164			4452			1147	
Travel Time (s)		33.7			26.5			101.2			26.1	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	67%	0%	77%	0%	0%	3%	50%	6%	0%	0%	3%	28%
Adj. Flow (vph)	14	1	49	21	1	63	70	859	56	14	852	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	0	85	0	70	915	0	0	922	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			10			10	
Link Offset(ft)		0			-90			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.85	1.00	1.00	0.85	1.00	1.09	0.96	0.96	1.00	0.96	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2			6	
Permitted Phases	8			4			2			6		
Minimum Split (s)	17.0	17.0		29.0	29.0		12.0	84.0		72.0	72.0	
Total Split (s)	17.0	17.0		29.0	29.0		12.0	84.0		72.0	72.0	
Total Split (%)	13.1%	13.1%		22.3%	22.3%		9.2%	64.6%		55.4%	55.4%	
Maximum Green (s)	12.0	12.0		24.0	24.0		7.0	75.0		63.0	63.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		5.0	9.0			9.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Walk Time (s)				4.0	4.0			51.0		39.0	39.0	
Flash Dont Walk (s)				20.0	20.0			12.0		24.0	24.0	
Pedestrian Calls (#/hr)				0	0			0		0	0	
Act Effct Green (s)		12.0			24.0		79.0	75.0			63.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.09			0.18		0.61	0.58			0.48	
v/c Ratio		0.46			0.29		0.35	0.45			0.58	
Control Delay		32.2			18.9		15.6	16.5			25.6	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		32.2			18.9		15.6	16.5			25.6	
LOS		C			B		B	B			C	
Approach Delay		32.2			18.9			16.4			25.6	
Approach LOS		C			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 130			
Control Type: Pretimed			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 94.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 16: Avenue O & 116th St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	35	1	35	35	10	1	5	5	1	1	1
Future Volume (vph)	1	35	1	35	35	10	1	5	5	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.981			0.936			0.973	
Flt Protected		0.999			0.976			0.997			0.980	
Satd. Flow (prot)	0	1180	0	0	1336	0	0	1201	0	0	1467	0
Flt Permitted		0.999			0.976			0.997			0.980	
Satd. Flow (perm)	0	1180	0	0	1336	0	0	1201	0	0	1467	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		496			1483			654			600	
Travel Time (s)		13.5			40.4			17.8			16.4	
Peak Hour Factor	0.92	0.92	0.92	0.66	0.92	0.66	0.92	0.66	0.66	0.66	0.66	0.92
Heavy Vehicles (%)	0%	86%	0%	62%	57%	20%	0%	100%	43%	100%	0%	0%
Adj. Flow (vph)	1	38	1	53	38	15	1	8	8	2	2	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	0	106	0	0	17	0	0	5	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	35	1	35	35	10	1	5	5	1	1	1
Future Vol, veh/h	1	35	1	35	35	10	1	5	5	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.66	0.92	0.66	0.92	0.66	0.66	0.66	0.66	0.92
Heavy Vehicles, %	0	86	0	62	57	20	0	100	43	100	0	0
Mvmt Flow	1	38	1	53	38	15	1	8	8	2	2	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	8.9	7.1	8.9
HCM LOS	A	A	A	A

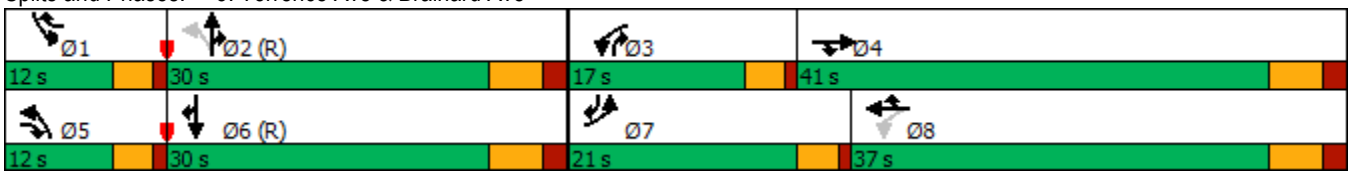
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	9%	3%	44%	33%
Vol Thru, %	45%	95%	44%	33%
Vol Right, %	45%	3%	12%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	11	37	80	3
LT Vol	1	1	35	1
Through Vol	5	35	35	1
RT Vol	5	1	10	1
Lane Flow Rate	16	40	106	4
Geometry Grp	1	1	1	1
Degree of Util (X)	0.018	0.045	0.149	0.007
Departure Headway (Hd)	4.027	4.003	5.033	5.864
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	894	886	714	614
Service Time	2.027	2.064	3.054	3.864
HCM Lane V/C Ratio	0.018	0.045	0.148	0.007
HCM Control Delay	7.1	7.3	8.9	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.5	0

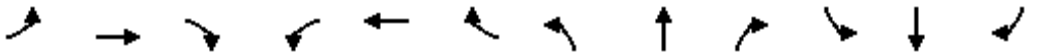
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	490	525	210	165	460	105	155	455	165	175	685	605
Future Volume (vph)	490	525	210	165	460	105	155	455	165	175	685	605
Ideal Flow (vphpl)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	14	13	12	14	13	12	15	13	12	14
Storage Length (ft)	455		290	375		240	495		455	275		570
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	300			155			155			300		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3183	3689	1672	1847	3725	1689	1811	3689	1708	3479	3689	1595
Flt Permitted	0.950			0.445			0.167			0.950		
Satd. Flow (perm)	3183	3689	1672	865	3725	1689	318	3689	1708	3479	3689	1595
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												152
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		898			696			1546			2837	
Travel Time (s)		17.5			13.6			26.4			48.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	3%	3%	1%	2%	2%	3%	3%	4%	4%	3%	8%
Adj. Flow (vph)	516	553	221	174	484	111	163	479	174	184	721	637
Shared Lane Traffic (%)												
Lane Group Flow (vph)	516	553	221	174	484	111	163	479	174	184	721	637
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		35			32			26			26	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.94	0.92	0.96	0.94	0.92	0.96	0.94	0.88	0.96	0.94	0.92
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pt+ov	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov	Prot	NA	pt+ov

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4	4 5	3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases				8			2					
Detector Phase	7	4	4 5	3	8	8 1	5	2	2 3	1	6	6 7
Switch Phase												
Minimum Initial (s)	7.0	15.0		7.0	15.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	13.0	26.0		11.0	21.0		11.0	21.0		11.0	26.0	
Total Split (s)	21.0	41.0		17.0	37.0		12.0	30.0		12.0	30.0	
Total Split (%)	21.0%	41.0%		17.0%	37.0%		12.0%	30.0%		12.0%	30.0%	
Maximum Green (s)	17.0	35.0		13.0	31.0		8.0	24.0		8.0	24.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	0.2		3.0	0.2		3.0	0.2		3.0	0.2	
Recall Mode	None	Max		None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	17.0	37.8	49.8	43.2	31.0	43.0	34.0	24.0	38.2	8.0	24.0	45.0
Actuated g/C Ratio	0.17	0.38	0.50	0.43	0.31	0.43	0.34	0.24	0.38	0.08	0.24	0.45
v/c Ratio	0.95	0.40	0.27	0.37	0.42	0.15	0.72	0.54	0.27	0.66	0.81	0.80
Control Delay	71.0	24.2	16.1	14.7	28.7	18.2	41.2	35.8	22.1	55.6	39.2	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	24.2	16.1	14.7	28.7	18.2	41.2	35.8	22.1	55.6	39.2	30.9
LOS	E	C	B	B	C	B	D	D	C	E	D	C
Approach Delay		41.5			24.0			34.0			37.8	
Approach LOS		D			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 35.8		Intersection LOS: D	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Torrence Ave & Brainard Ave



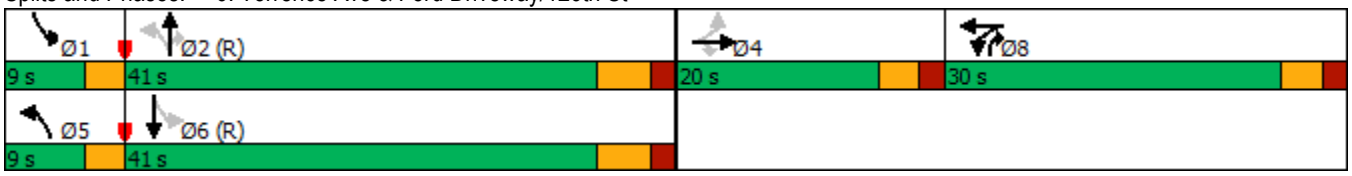


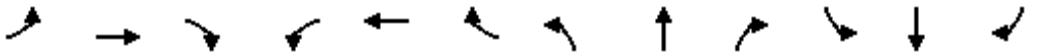
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	15	50	560	10	140	80	260	710	220	855	5
Future Volume (vph)	5	15	50	560	10	140	80	260	710	220	855	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Lane Width (ft)	12	16	16	12	12	12	12	12	14	12	12	12
Storage Length (ft)	0		0	330		0	215		145	290		0
Storage Lanes	0		1	2		0	1		1	1		0
Taper Length (ft)	25			300			125			120		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt			0.850		0.860				0.850		0.999	
Flt Protected		0.988		0.950			0.950			0.950		
Satd. Flow (prot)	0	2020	1664	3273	1604	0	1805	3551	1641	1787	3468	0
Flt Permitted		0.278		0.950			0.184			0.563		
Satd. Flow (perm)	0	568	1664	3273	1604	0	350	3551	1641	1059	3468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120		149				755		1	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		317			2002			2837			903	
Travel Time (s)		7.2			45.5			48.4			15.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	7%	10%	7%	0%	2%	0%	7%	5%	1%	4%	0%
Adj. Flow (vph)	5	16	53	596	11	149	85	277	755	234	910	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	21	53	596	160	0	85	277	755	234	915	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.85	0.85	1.00	1.00	1.00	1.00	0.94	0.92	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA	pm+ov	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8	8		5	2	8	1	6	
Permitted Phases	4		4				2		2	6		
Detector Phase	4	4	4	8	8		5	2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		6.0	35.0	10.0	6.0	35.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		9.0	41.0	15.0	9.0	41.0	
Total Split (s)	20.0	20.0	20.0	30.0	30.0		9.0	41.0	30.0	9.0	41.0	
Total Split (%)	20.0%	20.0%	20.0%	30.0%	30.0%		9.0%	41.0%	30.0%	9.0%	41.0%	
Maximum Green (s)	15.0	15.0	15.0	25.0	25.0		6.0	35.0	25.0	6.0	35.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0	3.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		3.0	6.0	5.0	3.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		0.2	0.2	5.0	0.2	0.2	
Recall Mode	None	None	None	None	None		None	C-Max	None	None	C-Max	
Act Effct Green (s)		10.9	10.9	28.9	28.9		47.2	38.2	69.1	47.8	40.0	
Actuated g/C Ratio		0.11	0.11	0.29	0.29		0.47	0.38	0.69	0.48	0.40	
v/c Ratio		0.34	0.18	0.63	0.28		0.34	0.20	0.55	0.43	0.66	
Control Delay		56.5	1.4	34.7	7.2		24.2	26.9	7.3	19.3	29.1	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		56.5	1.4	34.7	7.2		24.2	26.9	7.3	19.3	29.1	
LOS		E	A	C	A		C	C	A	B	C	
Approach Delay		17.0			28.9			13.4			27.1	
Approach LOS		B			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 36 (36%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Torrence Ave & Ford Driveway/126th St



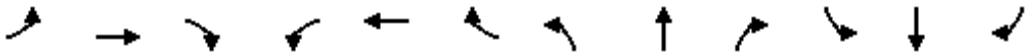


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	335	1	210	1	1	1	180	395	1	1	475	285
Future Volume (vph)	335	1	210	1	1	1	180	395	1	1	475	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	65		0	225		0	195		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	115			45			110			120		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.98		1.00				1.00		1.00		
Frt		0.851			0.925						0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1592	0	1805	1758	0	1787	3574	0	1805	3313	0
Flt Permitted	0.757			0.481			0.237			0.502		
Satd. Flow (perm)	1383	1592	0	912	1758	0	446	3574	0	953	3313	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		228			1						186	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1831			275			1008			834	
Travel Time (s)		41.6			6.3			22.9			19.0	
Confl. Peds. (#/hr)			3	3					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	6%
Adj. Flow (vph)	364	1	228	1	1	1	196	429	1	1	516	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	364	229	0	1	2	0	196	430	0	1	826	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		7.0	57.0		42.0	42.0	
Minimum Split (s)	29.0	29.0		29.0	29.0		10.0	61.0		46.0	46.0	
Total Split (s)	29.0	29.0		29.0	29.0		15.0	61.0		46.0	46.0	
Total Split (%)	32.2%	32.2%		32.2%	32.2%		16.7%	67.8%		51.1%	51.1%	
Maximum Green (s)	25.0	25.0		25.0	25.0		12.0	57.0		42.0	42.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		4.0	4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0							
Flash Dont Walk (s)	17.0	17.0		17.0	17.0							
Pedestrian Calls (#/hr)	0	0		0	0							
Act Effct Green (s)	25.0	25.0		25.0	25.0		58.0	57.0		43.0	43.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.64	0.63		0.48	0.48	
v/c Ratio	0.95	0.38		0.00	0.00		0.44	0.19		0.00	0.49	
Control Delay	68.6	5.7		24.0	20.5		9.6	7.1		13.0	13.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	68.6	5.7		24.0	20.5		9.6	7.1		13.0	13.4	
LOS	E	A		C	C		A	A		B	B	
Approach Delay		44.3			21.7			7.9			13.4	
Approach LOS		D			C			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 20.7		Intersection LOS: C	
Intersection Capacity Utilization 117.7%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 11: Avenue O & 126th St/Wolf Lake Blvd

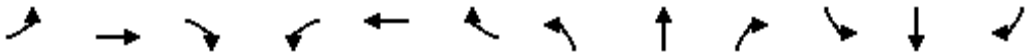


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1	30	10	1	20	5	610	35	15	545	2
Future Volume (vph)	15	1	30	10	1	20	5	610	35	15	545	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	10	13	13	12	13	12
Storage Length (ft)	0		0	0		0	25		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			150			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Frt		0.911			0.913			0.992				
Flt Protected		0.984			0.984		0.950				0.999	
Satd. Flow (prot)	0	1695	0	0	1874	0	842	3666	0	0	3656	0
Flt Permitted		0.895			0.774		0.352				0.923	
Satd. Flow (perm)	0	1542	0	0	1474	0	312	3666	0	0	3378	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			22			7				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1483			1164			4452			1147	
Travel Time (s)		33.7			26.5			101.2			26.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	21%	0%	0%	5%	100%	1%	0%	0%	2%	0%
Adj. Flow (vph)	16	1	33	11	1	22	5	670	38	16	599	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	0	0	34	0	5	708	0	0	617	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			10			10	
Link Offset(ft)		0			-90			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.85	1.00	1.00	0.85	1.00	1.09	0.96	0.96	1.00	0.96	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2			6	
Permitted Phases	8			4			2			6		
Minimum Split (s)	17.0	17.0		29.0	29.0		12.0	84.0		72.0	72.0	
Total Split (s)	17.0	17.0		29.0	29.0		12.0	84.0		72.0	72.0	
Total Split (%)	13.1%	13.1%		22.3%	22.3%		9.2%	64.6%		55.4%	55.4%	
Maximum Green (s)	12.0	12.0		24.0	24.0		7.0	75.0		63.0	63.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	6.0		6.0	6.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		5.0			5.0		5.0	9.0			9.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Walk Time (s)				4.0	4.0			51.0		39.0	39.0	
Flash Dont Walk (s)				20.0	20.0			12.0		24.0	24.0	
Pedestrian Calls (#/hr)				0	0			0		0	0	
Act Effct Green (s)		12.0			24.0		79.0	75.0			63.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.09			0.18		0.61	0.58			0.48	
v/c Ratio		0.29			0.12		0.02	0.33			0.38	
Control Delay		30.6			23.9		10.4	14.8			22.0	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		30.6			23.9		10.4	14.8			22.0	
LOS		C			C		B	B			C	
Approach Delay		30.6			23.9			14.8			22.0	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 130			
Control Type: Pretimed			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 94.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 16: Avenue O & 116th St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	25	1	1	5	5	1	1	30	2	1	1
Future Volume (vph)	1	25	1	1	5	5	1	1	30	2	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.915			0.870			0.983	
Flt Protected		0.998			0.995			0.999			0.970	
Satd. Flow (prot)	0	1803	0	0	1433	0	0	1773	0	0	1564	0
Flt Permitted		0.998			0.995			0.999			0.970	
Satd. Flow (perm)	0	1803	0	0	1433	0	0	1773	0	0	1564	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		510			1483			654			600	
Travel Time (s)		13.9			40.4			17.8			16.4	
Peak Hour Factor	0.92	0.92	0.92	0.42	0.92	0.42	0.92	0.42	0.42	0.42	0.42	0.92
Heavy Vehicles (%)	0%	20%	0%	100%	100%	0%	0%	100%	3%	50%	0%	0%
Adj. Flow (vph)	1	27	1	2	5	12	1	2	71	5	2	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	0	19	0	0	74	0	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	25	1	1	5	5	1	1	30	2	1	1
Future Vol, veh/h	1	25	1	1	5	5	1	1	30	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.42	0.92	0.42	0.92	0.42	0.42	0.42	0.42	0.92
Heavy Vehicles, %	0	20	0	100	100	0	0	100	3	50	0	0
Mvmt Flow	1	27	1	2	5	12	1	2	71	5	2	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	8.7	6.7	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	4%	9%	50%
Vol Thru, %	3%	93%	45%	25%
Vol Right, %	94%	4%	45%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	27	11	4
LT Vol	1	1	1	2
Through Vol	1	25	5	1
RT Vol	30	1	5	1
Lane Flow Rate	75	29	20	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.071	0.033	0.03	0.011
Departure Headway (Hd)	3.435	4.045	5.515	4.844
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	1037	885	650	737
Service Time	1.475	2.071	3.537	2.885
HCM Lane V/C Ratio	0.072	0.033	0.031	0.011
HCM Control Delay	6.7	7.2	8.7	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1	0

Raw Traffic Data

Study Name	Torrence Ave.@Brainard Ave.
Start Date	Wednesday, December 19, 2018 6:00 AM
End Date	Wednesday, December 19, 2018 6:00 PM
Site Code	

Road Volumes

TMV	Movement	Eastbound				Eastbound Tot	Westbound				Westbound To	Northbound				Northbound Tc	Southbound				Southbound To	Grand Total
Interval		U	L	T	R		U	L	T	R		U	L	T	R		U	L	T	R		
12/19/2018 6:00		0	90	51	7	148	0	3	78	23	104	0	27	70	8	105	0	5	22	62	89	446
Lights		0	74	43	7	124	0	3	71	21	95	0	27	66	8	101	0	5	20	49	74	394
Mediums		0	4	1	0	5	0	0	3	0	3	0	0	1	0	1	0	0	0	2	2	11
Articulated Trucks		0	12	7	0	19	0	0	4	2	6	0	0	3	0	3	0	0	2	11	13	41
12/19/2018 6:15		0	77	87	5	169	1	7	119	38	165	0	20	72	25	117	0	4	17	58	79	530
Lights		0	59	77	3	139	1	7	115	37	160	0	20	68	24	112	0	4	17	44	65	476
Mediums		0	4	3	0	7	0	0	3	0	3	0	0	3	1	4	0	0	0	0	0	14
Articulated Trucks		0	14	7	2	23	0	0	1	1	2	0	0	1	0	1	0	0	0	14	14	40
12/19/2018 6:30		0	124	61	6	191	0	20	105	39	164	0	34	84	21	139	1	9	48	57	115	609
Lights		0	97	55	6	158	0	19	98	39	156	0	32	81	18	131	1	4	46	44	95	540
Mediums		0	11	4	0	15	0	1	4	0	5	0	0	2	3	5	0	3	1	4	8	33
Articulated Trucks		0	16	2	0	18	0	0	3	0	3	0	2	1	0	3	0	2	1	9	12	36
12/19/2018 6:45		0	142	77	11	230	0	17	92	34	143	0	22	95	20	137	0	8	27	68	103	613
Lights		0	117	73	10	200	0	16	86	30	132	0	21	93	19	133	0	7	26	50	83	548
Mediums		0	9	4	0	13	0	1	1	2	4	0	1	0	1	2	0	0	0	4	4	23
Articulated Trucks		0	16	0	1	17	0	0	5	2	7	0	0	2	0	2	0	1	1	14	16	42
12/19/2018 7:00		0	99	68	10	177	0	13	88	44	145	1	19	94	24	138	0	13	37	60	110	570
Lights		0	76	61	9	146	0	12	85	42	139	1	19	88	21	129	0	12	36	39	87	501
Mediums		0	4	1	0	5	0	1	2	1	4	0	0	0	2	2	0	1	1	5	7	18
Articulated Trucks		0	19	6	1	26	0	0	1	1	2	0	0	6	1	7	0	0	0	16	16	51
12/19/2018 7:15		0	104	80	5	189	0	14	104	55	173	0	24	98	19	141	0	11	28	70	109	612
Lights		0	86	70	5	161	0	14	97	51	162	0	23	93	19	135	0	9	28	53	90	548
Mediums		0	3	7	0	10	0	0	3	2	5	0	0	3	0	3	0	2	0	3	5	23
Articulated Trucks		0	15	3	0	18	0	0	4	2	6	0	1	2	0	3	0	0	0	14	14	41
12/19/2018 7:30		0	134	70	6	210	0	20	107	62	189	0	30	92	25	147	0	11	38	79	128	674
Lights		0	112	64	4	180	0	20	99	59	178	0	30	87	25	142	0	10	37	57	104	604
Mediums		0	0	3	0	3	0	0	3	1	4	0	0	2	0	2	0	0	0	5	5	14
Articulated Trucks		0	22	3	2	27	0	0	5	2	7	0	0	3	0	3	0	1	1	17	19	56
12/19/2018 7:45		0	140	85	8	233	0	13	125	34	172	0	21	80	18	119	0	13	46	83	142	666
Lights		0	103	78	8	189	0	13	114	32	159	0	19	79	15	113	0	13	44	57	114	575
Mediums		0	8	2	0	10	0	0	4	0	4	0	0	1	2	3	0	0	1	7	8	25
Articulated Trucks		0	29	5	0	34	0	0	7	2	9	0	2	0	1	3	0	0	1	19	20	66
12/19/2018 8:00		0	103	111	9	223	0	22	113	35	170	0	16	73	26	115	0	21	50	75	146	654
Lights		0	79	100	6	185	0	22	100	31	153	0	15	72	26	113	0	18	48	66	132	583
Mediums		0	8	2	0	10	0	0	9	0	9	0	0	0	0	0	0	0	2	1	3	22
Articulated Trucks		0	16	9	3	28	0	0	4	4	8	0	1	1	0	2	0	3	0	8	11	49
12/19/2018 8:15		0	84	65	13	162	0	22	94	30	146	0	23	63	10	96	0	12	44	86	142	546
Lights		0	58	59	12	129	0	22	89	29	140	0	23	61	10	94	0	10	44	62	116	479
Mediums		0	3	2	1	6	0	0	4	1	5	0	0	2	0	2	0	1	0	8	9	22
Articulated Trucks		0	23	4	0	27	0	0	1	0	1	0	0	0	0	0	0	1	0	16	17	45
12/19/2018 8:30		0	65	75	11	151	0	19	83	24	126	0	6	53	12	71	0	12	32	49	93	441
Lights		0	47	68	7	122	0	18	70	23	111	0	6	47	10	63	0	9	29	29	67	363
Mediums		0	3	2	0	5	0	1	4	1	6	0	0	4	1	5	0	1	1	3	5	21
Articulated Trucks		0	15	5	4	24	0	0	9	0	9	0	0	2	1	3	0	2	2	17	21	57
12/19/2018 8:45		0	65	66	3	134	0	21	91	23	135	0	15	35	15	65	0	10	38	69	117	451
Lights		0	41	58	2	101	0	19	88	22	129	0	15	34	14	63	0	8	37	31	76	369
Mediums		0	4	4	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	13
Articulated Trucks		0	20	4	1	25	0	2	3	1	6	0	0	1	1	2	0	2	1	33	36	69
12/19/2018 15:00		0	60	100	20	180	0	63	120	21	204	0	27	68	39	134	0	34	85	138	257	775
Lights		0	44	93	19	156	0	62	113	19	194	0	27	66	36	129	0	30	82	113	225	704
Mediums		0	2	5	0	7	0	1	1	1	3	0	0	1	3	4	0	1	0	6	7	21
Articulated Trucks		0	14	2	1	17	0	0	6	1	7	0	0	1	0	1	0	3	3	19	25	50
12/19/2018 15:15		0	53	114	17	184	0	46	116	10	172	0	13	73	32	118	0	22	52	95	169	643
Lights		0	41	110	15	166	0	45	106	8	159	0	13	71	31	115	0	20	51	78	149	589
Mediums		0	5	1	0	6	0	1	6	0	7	0	0	2	1	3	0	1	0	2	3	19
Articulated Trucks		0	7	3	2	12	0	0	4	2	6	0	0	0	0	0	0	1	1	15	17	35

Study Name	Torrence Ave.@Brainard Ave.
Start Date	Wednesday, December 19, 2018 6:00 AM
End Date	Wednesday, December 19, 2018 6:00 PM
Site Code	

Road Volumes

TMV	Movement																				
	Eastbound				Eastbound Tot	Westbound				Westbound To	Northbound				Northbound Tc	Southbound				Southbound To	Grand Total
Interval	U	L	T	R		U	L	T	R		U	L	T	R		U	L	T	R		
12/19/2018 15:30	0	58	116	25	199	0	45	120	14	179	0	10	59	24	93	1	26	119	115	261	732
Lights	0	51	114	23	188	0	43	119	13	175	0	9	57	24	90	1	26	116	98	241	694
Mediums	0	3	2	0	5	0	1	1	1	3	0	0	0	0	0	0	0	3	3	6	14
Articulated Trucks	0	4	0	2	6	0	1	0	0	1	0	1	2	0	3	0	0	0	14	14	24
12/19/2018 15:45	0	57	121	32	210	0	25	109	25	159	0	11	74	43	128	1	36	75	108	220	717
Lights	0	48	116	27	191	0	25	100	22	147	0	10	74	43	127	1	32	74	90	197	662
Mediums	0	3	2	2	7	0	0	3	1	4	0	0	0	0	0	0	1	0	7	8	19
Articulated Trucks	0	6	3	3	12	0	0	6	2	8	0	1	0	0	1	0	3	1	11	15	36
12/19/2018 16:00	0	52	123	23	198	0	12	104	21	137	0	22	39	29	90	0	31	102	152	285	710
Lights	0	41	118	22	181	0	11	100	19	130	0	22	37	29	88	0	28	100	135	263	662
Mediums	0	2	4	0	6	0	1	4	0	5	0	0	0	0	0	0	1	2	7	10	21
Articulated Trucks	0	9	1	1	11	0	0	0	2	2	0	0	2	0	2	0	2	0	10	12	27
12/19/2018 16:15	0	67	127	27	221	0	14	107	19	140	0	13	67	31	111	0	34	112	92	238	710
Lights	0	60	124	24	208	0	14	100	17	131	0	12	65	29	106	0	32	110	84	226	671
Mediums	0	2	1	0	3	0	0	3	1	4	0	0	0	2	2	0	1	2	2	5	14
Articulated Trucks	0	5	2	3	10	0	0	4	1	5	0	1	2	0	3	0	1	0	6	7	25
12/19/2018 16:30	0	48	134	35	217	0	41	98	13	152	0	12	49	35	96	0	31	157	130	318	783
Lights	0	39	130	33	202	0	41	92	13	146	0	12	49	34	95	0	31	155	124	310	753
Mediums	0	2	1	0	3	0	0	1	0	1	0	0	0	1	1	0	0	1	4	5	10
Articulated Trucks	0	7	3	2	12	0	0	5	0	5	0	0	0	0	0	0	0	1	2	3	20
12/19/2018 16:45	0	75	129	36	240	0	15	104	16	135	0	28	58	24	110	0	49	114	111	274	759
Lights	0	66	123	33	222	0	15	99	16	130	0	26	55	24	105	0	48	106	94	248	705
Mediums	0	2	2	0	4	0	0	1	0	1	0	1	1	0	2	0	0	6	8	14	21
Articulated Trucks	0	7	4	3	14	0	0	4	0	4	0	1	2	0	3	0	1	2	9	12	33
12/19/2018 17:00	0	98	125	38	261	0	20	114	24	158	0	42	75	43	160	0	38	142	156	336	915
Lights	0	91	122	38	251	0	20	112	23	155	0	41	75	41	157	0	38	137	143	318	881
Mediums	0	1	1	0	2	0	0	2	1	3	0	0	0	1	1	0	0	3	4	7	13
Articulated Trucks	0	6	2	0	8	0	0	0	0	0	0	1	0	1	2	0	0	2	9	11	21
12/19/2018 17:15	1	115	109	63	288	0	29	97	22	148	0	37	98	40	175	0	38	176	168	382	993
Lights	1	103	106	63	273	0	29	93	21	143	0	37	98	38	173	0	38	173	157	368	957
Mediums	0	1	0	0	1	0	0	1	0	1	0	0	0	2	2	0	0	3	3	6	10
Articulated Trucks	0	11	3	0	14	0	0	3	1	4	0	0	0	0	0	0	0	0	8	8	26
12/19/2018 17:30	0	115	121	47	283	0	39	91	23	153	0	40	134	31	205	0	41	188	139	368	1009
Lights	0	108	115	43	266	0	39	89	23	151	0	38	129	30	197	0	37	182	131	350	964
Mediums	0	0	1	2	3	0	0	1	0	1	0	1	5	1	7	0	0	4	3	7	18
Articulated Trucks	0	7	5	2	14	0	0	1	0	1	0	1	0	0	1	0	4	2	5	11	27
12/19/2018 17:45	0	122	127	40	289	0	64	116	26	206	0	23	114	38	175	0	44	130	87	261	931
Lights	0	107	124	39	270	0	63	114	26	203	0	22	107	37	166	0	41	127	81	249	888
Mediums	0	8	0	0	8	0	1	0	0	1	0	0	7	1	8	0	1	1	1	3	20
Articulated Trucks	0	7	3	1	11	0	0	2	0	2	0	1	0	0	1	0	2	2	5	9	23
Grand Total	1	2147	2342	497	4987	1	604	2495	675	3775	1	535	1817	632	2985	3	553	1879	2307	4742	16489

Study Name	Torrence Ave.@Brainard Ave.
Start Date	Wednesday, December 19, 2018 6:00 AM
End Date	Wednesday, December 19, 2018 6:00 PM
Site Code	

Crosswalk Volumes

	Movement												
	Eastbound		Eastbound Tot	**Westbound**		Westbound To	**Northbound**		Northbound Tc	**Southbound**		Southbound Tc	**Grand Total**
Interval	**PCCW**	**PCW**		**PCCW**	**PCW**		**PCCW**	**PCW**		**PCCW**	**PCW**		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	1	1	0	0	0	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	1	1	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	1	1	0	0	0	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	1	1	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name	Torrence Ave.@Brainard Ave.
Start Date	Wednesday, December 19, 2018 6:00 AM
End Date	Wednesday, December 19, 2018 6:00 PM
Site Code	

Crosswalk Volumes

	Movement												
	Eastbound		Eastbound Tot	Westbound		Westbound To	Northbound		Northbound Tc	Southbound		Southbound Tc	Grand Total
Interval	PCCW	PCW		PCCW	PCW		PCCW	PCW		PCCW	PCW		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	2	2	0	0	0	2

Study Name	126th St.@Torrence Ave.
Start Date	Wednesday, December 19, 2018 6:00 AM
End Date	Wednesday, December 19, 2018 6:15 PM
Site Code	

Road Volumes

TMV	Movement																				
	Eastbound				Eastbound Tot	Westbound				Westbound To	Northbound				Northbound Tc	Southbound				Southbound To	Grand Total
Interval	U	L	T	R		U	L	T	R		U	L	T	R		U	L	T	R		
12/19/2018 6:00	0	0	0	1	1	0	56	1	33	90	0	13	101	75	189	0	7	26	1	34	314
Lights	0	0	0	0	0	0	45	1	32	78	0	13	91	61	165	0	7	20	0	27	270
Mediums	0	0	0	1	1	0	8	0	0	8	0	0	6	5	11	0	0	1	1	2	22
Articulated Trucks	0	0	0	0	0	0	3	0	1	4	0	0	4	9	13	0	0	5	0	5	22
12/19/2018 6:15	0	1	3	1	5	0	59	0	32	91	1	3	113	53	170	0	39	25	0	64	330
Lights	0	0	1	1	2	0	48	0	31	79	1	3	107	39	150	0	34	15	0	49	280
Mediums	0	0	1	0	1	0	3	0	0	3	0	0	2	8	10	0	2	2	0	4	18
Articulated Trucks	0	1	1	0	2	0	8	0	1	9	0	0	4	6	10	0	3	8	0	11	32
12/19/2018 6:30	0	2	2	3	7	0	65	1	37	103	0	6	136	87	229	0	14	41	0	55	394
Lights	0	0	0	2	2	0	58	1	34	93	0	6	116	76	198	0	12	30	0	42	335
Mediums	0	1	1	1	3	0	4	0	1	5	0	0	9	3	12	0	2	4	0	6	26
Articulated Trucks	0	1	1	0	2	0	3	0	2	5	0	0	11	8	19	0	0	7	0	7	33
12/19/2018 6:45	0	1	1	4	6	0	54	2	24	80	1	10	158	99	268	0	15	29	0	44	398
Lights	0	0	0	4	4	0	41	2	21	64	1	10	146	88	245	0	14	23	0	37	350
Mediums	0	0	0	0	0	0	3	0	1	4	0	0	6	5	11	0	0	1	0	1	16
Articulated Trucks	0	1	1	0	2	0	10	0	2	12	0	0	6	6	12	0	1	5	0	6	32
12/19/2018 7:00	0	1	2	0	3	0	58	2	39	99	0	4	139	75	218	0	22	49	0	71	391
Lights	0	0	1	0	1	0	48	2	34	84	0	4	121	59	184	0	16	33	0	49	318
Mediums	0	0	1	0	1	0	2	0	1	3	0	0	6	2	8	0	2	7	0	9	21
Articulated Trucks	0	1	0	0	1	0	8	0	4	12	0	0	12	14	26	0	4	9	0	13	52
12/19/2018 7:15	0	1	3	3	7	0	69	0	50	119	0	10	173	75	258	0	27	42	0	69	453
Lights	0	1	0	3	4	0	57	0	44	101	0	10	160	64	234	0	22	30	0	52	391
Mediums	0	0	1	0	1	0	3	0	6	9	0	0	2	3	5	0	2	3	0	5	20
Articulated Trucks	0	0	2	0	2	0	9	0	0	9	0	0	11	8	19	0	3	9	0	12	42
12/19/2018 7:30	0	1	2	4	7	0	70	2	48	120	0	6	158	100	264	0	33	49	0	82	473
Lights	0	0	1	3	4	0	55	2	43	100	0	6	148	83	237	0	28	35	0	63	404
Mediums	0	0	1	1	2	0	2	0	0	2	0	0	3	4	7	0	2	4	0	6	17
Articulated Trucks	0	1	0	0	1	0	13	0	5	18	0	0	7	13	20	0	3	10	0	13	52
12/19/2018 7:45	0	1	2	5	8	0	79	3	35	117	1	4	148	106	259	0	25	72	0	97	481
Lights	0	1	0	1	2	0	64	3	34	101	1	4	133	83	221	0	18	61	0	79	403
Mediums	0	0	0	3	3	0	4	0	1	5	0	0	4	5	9	0	2	1	0	3	20
Articulated Trucks	0	0	2	1	3	0	11	0	0	11	0	0	11	18	29	0	5	10	0	15	58
12/19/2018 8:00	0	1	0	4	5	0	69	0	31	100	0	7	112	72	191	0	28	74	0	102	398
Lights	0	0	0	0	0	0	59	0	26	85	0	7	94	64	165	0	26	64	0	90	340
Mediums	0	0	0	3	3	0	1	0	2	3	0	0	4	2	6	0	1	2	0	3	15
Articulated Trucks	0	1	0	1	2	0	9	0	3	12	0	0	14	6	20	0	1	8	0	9	43
12/19/2018 8:15	0	2	2	2	6	0	67	1	16	84	0	5	123	66	194	0	18	65	1	84	368
Lights	0	0	0	1	1	0	50	1	16	67	0	5	111	50	166	0	15	52	1	68	302
Mediums	0	0	0	0	0	0	6	0	0	6	0	0	3	2	5	0	1	5	0	6	17
Articulated Trucks	0	2	2	1	5	0	11	0	0	11	0	0	9	14	23	0	2	8	0	10	49
12/19/2018 8:30	0	1	2	2	5	0	41	2	17	60	1	6	92	36	135	0	17	56	2	75	275
Lights	0	0	2	2	4	0	32	2	14	48	0	6	79	25	110	0	16	35	2	53	215
Mediums	0	1	0	0	1	0	3	0	0	3	0	0	4	1	5	0	1	3	0	4	13
Articulated Trucks	0	0	0	0	0	0	6	0	3	9	1	0	9	10	20	0	0	18	0	18	47
12/19/2018 8:45	0	3	2	7	12	0	51	1	16	68	0	6	71	44	121	1	15	59	1	76	277
Lights	0	2	0	5	7	0	32	1	11	44	0	6	58	30	94	1	9	38	1	49	194
Mediums	0	1	1	2	4	0	1	0	1	2	0	0	4	4	8	0	0	3	0	3	17
Articulated Trucks	0	0	1	0	1	0	18	0	4	22	0	0	9	10	19	0	6	18	0	24	66
12/19/2018 15:00	0	1	4	6	11	0	80	1	25	106	0	2	73	68	143	0	50	144	0	194	454
Lights	0	0	3	5	8	0	66	1	21	88	0	1	64	58	123	0	47	129	0	176	395
Mediums	0	0	0	1	1	0	4	0	2	6	0	1	3	1	5	0	3	4	0	7	19
Articulated Trucks	0	1	1	0	2	0	10	0	2	12	0	0	6	9	15	0	0	11	0	11	40
12/19/2018 15:15	0	1	4	2	7	0	77	4	37	118	0	1	44	87	132	0	27	67	0	94	351
Lights	0	0	3	2	5	0	67	2	33	102	0	1	39	81	121	0	25	63	0	88	316
Mediums	0	1	0	0	1	0	3	2	3	8	0	0	3	3	6	0	1	0	0	1	16
Articulated Trucks	0	0	1	0	1	0	7	0	1	8	0	0	2	3	5	0	1	4	0	5	19

Study Name	126th St.@Torrence Ave.
Start Date	Wednesday, December 19, 2018 6:00 AM
End Date	Wednesday, December 19, 2018 6:15 PM
Site Code	

Road Volumes

TMV	Movement																				
	Eastbound				Eastbound Tot	Westbound				Westbound To	Northbound				Northbound Tc	Southbound				Southbound To	Grand Total
Interval	U	L	T	R		U	L	T	R		U	L	T	R		U	L	T	R		
12/19/2018 15:30	0	1	3	6	10	0	96	2	21	119	1	1	54	84	140	0	65	154	0	219	488
Lights	0	1	1	4	6	0	88	2	18	108	1	1	45	75	122	0	59	139	0	198	434
Mediums	0	0	1	1	2	0	0	0	3	3	0	0	5	3	8	0	4	7	0	11	24
Articulated Trucks	0	0	1	1	2	0	8	0	0	8	0	0	4	6	10	0	2	8	0	10	30
12/19/2018 15:45	0	2	1	4	7	0	88	1	43	132	0	3	67	78	148	0	33	136	0	169	456
Lights	0	1	0	3	4	0	77	1	40	118	0	3	63	73	139	0	33	120	0	153	414
Mediums	0	1	0	0	1	0	3	0	1	4	0	0	1	2	3	0	0	5	0	5	13
Articulated Trucks	0	0	1	1	2	0	8	0	2	10	0	0	3	3	6	0	0	11	0	11	29
12/19/2018 16:00	0	2	2	5	9	0	113	1	36	150	0	3	49	66	118	0	48	157	0	205	482
Lights	0	0	1	3	4	0	105	1	33	139	0	3	43	56	102	0	46	145	0	191	436
Mediums	0	0	1	1	2	0	3	0	1	4	0	0	0	1	1	0	0	3	0	3	10
Articulated Trucks	0	2	0	1	3	0	5	0	2	7	0	0	6	9	15	0	2	9	0	11	36
12/19/2018 16:15	0	0	2	5	7	0	78	6	22	106	0	5	62	81	148	0	33	156	0	189	450
Lights	0	0	1	3	4	0	71	6	18	95	0	5	55	75	135	0	33	154	0	187	421
Mediums	0	0	0	1	1	0	3	0	2	5	0	0	1	2	3	0	0	2	0	2	11
Articulated Trucks	0	0	1	1	2	0	4	0	2	6	0	0	6	4	10	0	0	0	0	0	18
12/19/2018 16:30	0	1	3	4	8	0	126	1	32	159	0	5	49	53	107	0	28	178	1	207	481
Lights	0	1	1	4	6	0	120	1	28	149	0	5	46	47	98	0	26	175	1	202	455
Mediums	0	0	1	0	1	0	3	0	3	6	0	0	2	2	4	0	1	1	0	2	13
Articulated Trucks	0	0	1	0	1	0	3	0	1	4	0	0	1	4	5	0	1	2	0	3	13
12/19/2018 16:45	0	0	5	8	13	0	80	6	26	112	0	8	49	94	151	0	45	172	0	217	493
Lights	0	0	2	7	9	0	73	6	26	105	0	8	44	83	135	0	42	156	0	198	447
Mediums	0	0	3	1	4	0	2	0	0	2	0	0	2	6	8	0	3	6	0	9	23
Articulated Trucks	0	0	0	0	0	0	5	0	0	5	0	0	3	5	8	0	0	10	0	10	23
12/19/2018 17:00	0	1	5	14	20	0	148	4	33	185	0	16	58	123	197	0	46	196	1	243	645
Lights	0	1	5	12	18	0	142	4	32	178	0	16	52	118	186	0	46	190	1	237	619
Mediums	0	0	0	1	1	0	2	0	1	3	0	0	3	3	6	0	0	0	0	0	10
Articulated Trucks	0	0	0	1	1	0	4	0	0	4	0	0	3	2	5	0	0	6	0	6	16
12/19/2018 17:15	0	2	1	14	17	0	135	3	42	180	0	15	63	161	239	0	52	207	2	261	697
Lights	0	2	1	12	15	0	129	3	41	173	0	15	57	155	227	0	51	203	2	256	671
Mediums	0	0	0	1	1	0	3	0	1	4	0	0	1	2	3	0	0	2	0	2	10
Articulated Trucks	0	0	0	1	1	0	3	0	0	3	0	0	5	4	9	0	1	2	0	3	16
12/19/2018 17:30	0	1	2	7	10	0	130	1	32	163	0	24	50	187	261	0	63	199	0	262	696
Lights	0	1	2	7	10	0	125	1	32	158	0	24	48	181	253	0	63	186	0	249	670
Mediums	0	0	0	0	0	0	3	0	0	3	0	0	1	3	4	0	0	3	0	3	10
Articulated Trucks	0	0	0	0	0	0	2	0	0	2	0	0	1	3	4	0	0	10	0	10	16
12/19/2018 17:45	0	1	7	16	24	0	72	3	25	100	0	25	61	165	251	0	39	165	2	206	581
Lights	0	1	6	15	22	0	59	3	24	86	0	25	59	155	239	0	39	156	2	197	544
Mediums	0	0	0	0	0	0	10	0	1	11	0	0	0	6	6	0	0	6	0	6	23
Articulated Trucks	0	0	1	1	2	0	3	0	0	3	0	0	2	4	6	0	0	3	0	3	14
Grand Total	0	28	60	127	215	0	1961	48	752	2761	5	188	2203	2135	4531	1	789	2518	11	3319	10826

Study Name	126th St.@Torrence Ave.
Start Date	Wednesday, December 19, 2018 6:00 AM
End Date	Wednesday, December 19, 2018 6:15 PM
Site Code	

Crosswalk Volumes

	Movement												
	Eastbound		Eastbound Tot	Westbound		Westbound To	Northbound		Northbound Tc	Southbound		Southbound Tc	Grand Total
Interval	PCCW	PCW		PCCW	PCW		PCCW	PCW		PCCW	PCW		
6:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	1	0	1	1
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	1	1	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name	126th St.@Torrence Ave.
Start Date	Wednesday, December 19, 2018 6:00 AM
End Date	Wednesday, December 19, 2018 6:15 PM
Site Code	

Crosswalk Volumes

	Movement												
	Eastbound		Eastbound Tot	**Westbound**		Westbound To	**Northbound**		Northbound Tc	**Southbound**		Southbound Tc	**Grand Total**
Interval	**PCCW**	**PCW**		**PCCW**	**PCW**		**PCCW**	**PCW**		**PCCW**	**PCW**		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	1	2	2

Study Name	126th St.@Avenue O
Start Date	Tuesday, December 18, 2018 6:00 AM
End Date	Tuesday, December 18, 2018 6:15 PM
Site Code	

Road Volumes

TMV	Movement	Eastbound				Eastbound To	Westbound				Westbound To	Northbound				Northbound To	Southbound				Southbound To	Grand Total
Interval		U	L	T	R		U	L	T	R		U	L	T	R		U	L	T	R		
12/18/2018 6:00		0	40	0	18	58	0	0	0	0	0	0	25	31	0	56	0	0	40	37	77	191
Lights		0	37	0	18	55	0	0	0	0	0	0	25	31	0	56	0	0	38	36	74	185
Mediums		0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
Articulated Trucks		0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
12/18/2018 6:15		1	26	0	4	31	0	0	0	0	0	0	33	49	0	82	0	0	23	53	76	189
Lights		1	22	0	4	27	0	0	0	0	0	0	33	48	0	81	0	0	22	51	73	181
Mediums		0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	1	2	4
Articulated Trucks		0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4
12/18/2018 6:30		0	42	0	6	48	0	0	0	0	0	0	22	64	0	86	0	0	40	54	94	228
Lights		0	36	0	5	41	0	0	0	0	0	0	22	61	0	83	0	0	39	52	91	215
Mediums		0	4	0	0	4	0	0	0	0	0	0	0	3	0	3	0	0	1	0	1	8
Articulated Trucks		0	2	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	5
12/18/2018 6:45		0	42	0	8	50	0	0	0	0	0	0	33	70	0	103	0	0	29	42	71	224
Lights		0	35	0	8	43	0	0	0	0	0	0	31	66	0	97	0	0	29	39	68	208
Mediums		0	1	0	0	1	0	0	0	0	0	0	1	4	0	5	0	0	0	2	2	8
Articulated Trucks		0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	8
12/18/2018 7:00		0	62	0	6	68	0	0	0	0	0	0	15	55	0	70	0	0	45	46	91	229
Lights		0	52	0	6	58	0	0	0	0	0	0	15	53	0	68	0	0	42	40	82	208
Mediums		0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	0	0	1	1	2	6
Articulated Trucks		0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	2	5	7	15
12/18/2018 7:15		0	47	0	5	52	0	0	0	0	0	0	21	80	0	101	0	0	48	68	116	269
Lights		0	43	0	5	48	0	0	0	0	0	0	21	78	0	99	0	0	46	63	109	256
Mediums		0	3	0	0	3	0	0	0	0	0	0	0	2	0	2	0	0	2	4	6	11
Articulated Trucks		0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
12/18/2018 7:30		0	92	1	7	100	0	0	0	0	0	0	29	117	2	148	0	0	60	72	132	380
Lights		0	77	1	6	84	0	0	0	0	0	0	28	113	2	143	0	0	58	71	129	356
Mediums		0	7	0	1	8	0	0	0	0	0	0	1	3	0	4	0	0	2	0	2	14
Articulated Trucks		0	8	0	0	8	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	10
12/18/2018 7:45		0	117	0	8	125	0	1	0	1	2	0	18	156	0	174	0	0	97	82	179	480
Lights		0	107	0	8	115	0	1	0	1	2	0	18	153	0	171	0	0	95	79	174	462
Mediums		0	3	0	0	3	0	0	0	0	0	0	0	3	0	3	0	0	2	1	3	9
Articulated Trucks		0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	9
12/18/2018 8:00		0	58	0	10	68	0	0	0	0	0	0	16	89	0	105	0	0	122	90	212	385
Lights		0	50	0	10	60	0	0	0	0	0	0	16	89	0	105	0	0	120	82	202	367
Mediums		0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	8
Articulated Trucks		0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	10
12/18/2018 8:15		0	53	1	11	65	0	1	0	2	3	0	9	75	1	85	0	0	83	55	138	291
Lights		0	46	1	11	58	0	1	0	1	2	0	8	73	1	82	0	0	80	51	131	273
Mediums		0	1	0	0	1	0	0	0	1	1	0	1	1	0	2	0	0	3	1	4	8
Articulated Trucks		0	6	0	0	6	0	0	0	0	0	0	0	1	0	1	0	0	0	3	3	10
12/18/2018 8:30		0	33	0	4	37	0	0	0	1	1	0	11	56	1	68	0	0	46	44	90	196
Lights		0	25	0	4	29	0	0	0	1	1	0	10	55	1	66	0	0	45	35	80	176
Mediums		0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	1	2	3	7
Articulated Trucks		0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	13
12/18/2018 8:45		0	40	0	14	54	0	0	0	0	0	0	9	59	1	69	0	0	47	43	90	213
Lights		0	34	0	14	48	0	0	0	0	0	0	9	55	1	65	0	0	44	36	80	193
Mediums		0	5	0	0	5	0	0	0	0	0	0	0	4	0	4	0	0	2	4	6	15
Articulated Trucks		0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	5
12/18/2018 15:00		0	75	1	45	121	0	0	0	2	2	0	8	94	3	105	0	1	108	62	171	399
Lights		0	68	1	43	112	0	0	0	2	2	0	8	92	3	103	0	1	106	59	166	383
Mediums		0	3	0	0	3	0	0	0	0	0	0	0	2	0	2	0	0	2	2	4	9
Articulated Trucks		0	4	0	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	7
12/18/2018 15:15		0	72	2	39	113	0	0	0	0	0	0	8	110	0	118	0	0	111	62	173	404
Lights		0	66	2	39	107	0	0	0	0	0	0	6	107	0	113	0	0	106	55	161	381
Mediums		0	4	0	0	4	0	0	0	0	0	0	1	2	0	3	0	0	4	5	9	16
Articulated Trucks		0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	1	2	3	7

Study Name	126th St.@Avenue O
Start Date	Tuesday, December 18, 2018 6:00 AM
End Date	Tuesday, December 18, 2018 6:15 PM
Site Code	

Road Volumes

TMV	Movement	Eastbound				Eastbound Tot	Westbound				Westbound To	Northbound				Northbound To	Southbound				Southbound To	Grand Total
Interval		U	L	T	R		U	L	T	R		U	L	T	R		U	L	T	R		
12/18/2018 15:30		0	65	0	41	106	0	0	0	1	1	0	15	104	1	120	0	1	163	94	258	485
Lights		0	63	0	40	103	0	0	0	1	1	0	15	102	1	118	0	1	160	92	253	475
Mediums		0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	0	0	3	0	3	6
Articulated Trucks		0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4
12/18/2018 15:45		0	80	0	41	121	0	1	2	1	4	0	13	79	0	92	1	1	166	95	263	480
Lights		0	76	0	41	117	0	1	2	1	4	0	13	78	0	91	1	1	162	88	252	464
Mediums		0	3	0	0	3	0	0	0	0	0	0	0	1	0	1	0	0	4	5	9	13
Articulated Trucks		0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	3
12/18/2018 16:00		0	76	0	57	133	0	2	0	0	2	0	9	91	2	102	0	1	133	60	194	431
Lights		0	73	0	57	130	0	2	0	0	2	0	9	89	2	100	0	1	131	55	187	419
Mediums		0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	0	0	2	4	6	9
Articulated Trucks		0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
12/18/2018 16:15		0	88	0	45	133	0	0	1	0	1	0	9	85	1	95	0	1	127	70	198	427
Lights		0	81	0	44	125	0	0	1	0	1	0	8	84	1	93	0	1	124	67	192	411
Mediums		0	6	0	0	6	0	0	0	0	0	0	0	1	0	1	0	0	2	3	5	12
Articulated Trucks		0	1	0	1	2	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	4
12/18/2018 16:30		0	88	0	67	155	0	0	0	0	0	0	15	86	1	102	0	0	165	77	242	499
Lights		0	85	0	65	150	0	0	0	0	0	0	15	85	1	101	0	0	163	74	237	488
Mediums		0	1	0	2	3	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	6
Articulated Trucks		0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	5
12/18/2018 16:45		0	76	0	71	147	0	0	0	0	0	0	29	92	0	121	0	0	149	66	215	483
Lights		0	72	0	71	143	0	0	0	0	0	0	29	91	0	120	0	0	147	65	212	475
Mediums		0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	2	1	3	6
Articulated Trucks		0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12/18/2018 17:00		0	77	0	84	161	0	0	0	0	0	0	26	66	0	92	0	0	118	68	186	439
Lights		0	74	0	84	158	0	0	0	0	0	0	26	64	0	90	0	0	117	64	181	429
Mediums		0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	0	0	1	4	5	8
Articulated Trucks		0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12/18/2018 17:15		0	71	1	51	123	0	1	0	0	1	0	32	98	0	130	0	0	108	52	160	414
Lights		0	66	1	51	118	0	1	0	0	1	0	32	97	0	129	0	0	107	47	154	402
Mediums		0	3	0	0	3	0	0	0	0	0	0	0	1	0	1	0	0	1	4	5	9
Articulated Trucks		0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
12/18/2018 17:30		0	83	0	30	113	0	0	0	0	0	0	56	116	1	173	0	0	112	63	175	461
Lights		0	83	0	30	113	0	0	0	0	0	0	56	115	1	172	0	0	112	62	174	459
Mediums		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	2
Articulated Trucks		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/18/2018 17:45		0	71	0	26	97	0	0	0	0	0	0	50	78	0	128	0	0	96	60	156	381
Lights		0	70	0	26	96	0	0	0	0	0	0	48	77	0	125	0	0	92	58	150	371
Mediums		0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	0	0	3	2	5	8
Articulated Trucks		0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
Grand Total		1	1574	6	698	2279	0	6	3	8	17	0	511	2000	14	2525	1	5	2236	1515	3757	8578

Study Name	126th St.@Avenue O
Start Date	Tuesday, December 18, 2018 6:00 AM
End Date	Tuesday, December 18, 2018 6:15 PM
Site Code	

Crosswalk Volumes

	Movement												
	Eastbound		Eastbound Tot	Westbound		Westbound To	Northbound		Northbound Tc	Southbound		Southbound Tc	Grand Total
Interval	PCCW	PCW		PCCW	PCW		PCCW	PCW		PCCW	PCW		
6:00 AM	0	0	0	0	0	0	1	0	1	0	0	0	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	1	0	1	0	0	0	1
6:15 AM	0	0	0	0	0	0	0	1	1	0	0	0	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	1	1	0	0	0	1
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	2	0	2	0	0	0	2
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	2	0	2	0	0	0	2
3:15 PM	0	0	0	0	0	0	1	0	1	0	0	0	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	1	0	1	0	0	0	1
3:30 PM	0	0	0	0	0	0	4	0	4	0	0	0	4
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	4	0	4	0	0	0	4
3:45 PM	0	0	0	0	0	0	1	0	1	0	0	0	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	1	0	1	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name	126th St.@Avenue O
Start Date	Tuesday, December 18, 2018 6:00 AM
End Date	Tuesday, December 18, 2018 6:15 PM
Site Code	

Crosswalk Volumes

Movement	Eastbound		Eastbound Tot	Westbound		Westbound To	Northbound		Northbound Tc	Southbound		Southbound Tc	Grand Total
Interval	PCCW	PCW		PCCW	PCW		PCCW	PCW		PCCW	PCW		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	1	0	1	0	0	0	1
Bicycles on Crossw	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	1	0	1	0	0	0	1
5:00 PM	0	0	0	1	0	1	1	0	1	0	0	0	2
Bicycles on Crossw	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	1	0	1	1	0	1	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crossw	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	1	0	0	0	1
Bicycles on Crossw	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	1	1	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	1	1	0	0	0	1
Bicycles on Crossw	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	1	1	0	0	0	1
Grand Total	0	0	0	1	0	1	11	3	14	0	0	0	15

Study Name	116th St.@Avenue O
Start Date	Tuesday, December 18, 2018 6:00 AM
End Date	Tuesday, December 18, 2018 6:00 PM
Site Code	

Road Volumes

TMV	Movement																				
	Eastbound				Eastbound Tot	Westbound				Westbound To	Northbound				Northbound Tc	Southbound				Southbound To	Grand Total
Interval	U	L	T	R		U	L	T	R		U	L	T	R		U	L	T	R		
12/18/2018 6:00	0	0	0	1	1	0	0	0	1	1	0	11	67	2	80	0	0	55	5	60	142
Lights	0	0	0	1	1	0	0	0	1	1	0	10	63	2	75	0	0	53	5	58	135
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	1	0	1	5
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
12/18/2018 6:15	0	1	0	0	1	0	2	3	3	8	0	8	50	1	59	0	1	57	9	67	135
Lights	0	1	0	0	1	0	2	3	3	8	0	8	46	1	55	0	1	54	8	63	127
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	2	0	2	4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	1	1	2	4
12/18/2018 6:30	0	0	0	0	0	0	0	0	4	4	0	17	66	1	84	0	0	71	4	75	163
Lights	0	0	0	0	0	0	0	0	4	4	0	16	63	1	80	0	0	68	4	72	156
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	1	0	1	4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	0	2	3
12/18/2018 6:45	0	1	0	3	4	0	0	0	8	8	0	14	77	1	92	0	2	61	1	64	168
Lights	0	0	0	2	2	0	0	0	8	8	0	11	71	1	83	0	2	58	0	60	153
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	2	0	2	5
Articulated Trucks	0	1	0	1	2	0	0	0	0	0	0	3	3	0	6	0	0	1	1	2	10
12/18/2018 7:00	0	0	0	2	2	0	1	0	4	5	0	8	82	3	93	0	2	67	3	72	172
Lights	0	0	0	2	2	0	1	0	4	5	0	5	77	3	85	0	2	64	3	69	161
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	3	4	0	7	0	0	2	0	2	9
12/18/2018 7:15	0	1	0	1	2	0	2	0	3	5	0	9	85	9	103	0	1	101	3	105	215
Lights	0	0	0	1	1	0	2	0	3	5	0	9	81	9	99	0	1	96	3	100	205
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	5	0	5	7
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	3
12/18/2018 7:30	0	0	0	2	2	0	5	0	6	11	0	9	140	9	158	0	2	100	7	109	280
Lights	0	0	0	2	2	0	5	0	6	11	0	4	134	9	147	0	2	99	6	107	267
Mediums	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	0	0	1	0	1	5
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	4	3	0	7	0	0	0	1	1	8
12/18/2018 7:45	0	1	0	0	1	0	5	0	18	23	0	6	206	15	227	0	4	181	18	203	454
Lights	0	1	0	0	1	0	5	0	17	22	0	2	191	15	208	0	4	176	14	194	425
Mediums	0	0	0	0	0	0	0	0	1	1	0	0	9	0	9	0	0	2	0	2	12
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	4	6	0	10	0	0	3	4	7	17
12/18/2018 8:00	0	1	0	2	3	0	4	0	12	16	0	3	127	4	134	0	5	172	2	179	332
Lights	0	1	0	0	1	0	4	0	12	16	0	1	121	4	126	0	5	167	1	173	316
Mediums	0	0	0	1	1	0	0	0	0	0	0	0	5	0	5	0	0	4	0	4	10
Articulated Trucks	0	0	0	1	1	0	0	0	0	0	0	2	1	0	3	0	0	1	1	2	6
12/18/2018 8:15	0	0	0	4	4	0	3	0	2	5	0	6	92	5	103	0	3	106	4	113	225
Lights	0	0	0	1	1	0	3	0	2	5	0	4	89	5	98	0	3	103	3	109	213
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	3	0	3	6
Articulated Trucks	0	0	0	3	3	0	0	0	0	0	0	2	0	0	2	0	0	0	1	1	6
12/18/2018 8:30	0	5	1	7	13	0	2	0	6	8	0	10	66	4	80	0	1	66	2	69	170
Lights	0	2	1	4	7	0	2	0	6	8	0	3	63	4	70	0	1	60	0	61	146
Mediums	0	0	0	1	1	0	0	0	0	0	0	1	3	0	4	0	0	3	1	4	9
Articulated Trucks	0	3	0	2	5	0	0	0	0	0	0	6	0	0	6	0	0	3	1	4	15
12/18/2018 8:45	0	4	0	4	8	0	4	0	4	8	0	2	79	5	86	0	1	69	1	71	173
Lights	0	1	0	2	3	0	4	0	4	8	0	1	72	5	78	0	1	64	1	66	155
Mediums	0	0	0	0	0	0	0	0	0	0	0	1	7	0	8	0	0	4	0	4	12
Articulated Trucks	0	3	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
12/18/2018 15:00	0	3	0	6	9	0	16	0	17	33	0	6	112	7	125	0	4	124	1	129	296
Lights	0	3	0	3	6	0	16	0	17	33	0	5	108	7	120	0	4	119	1	124	283
Mediums	0	0	0	2	2	0	0	0	0	0	0	0	4	0	4	0	0	5	0	5	11
Articulated Trucks	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
12/18/2018 15:15	0	5	0	16	21	0	8	0	2	10	0	6	176	7	189	0	3	153	4	160	380
Lights	0	4	0	14	18	0	7	0	2	9	0	5	167	7	179	0	2	147	4	153	359
Mediums	0	1	0	0	1	0	1	0	0	1	0	0	6	0	6	0	1	5	0	6	14
Articulated Trucks	0	0	0	2	2	0	0	0	0	0	0	1	3	0	4	0	0	1	0	1	7

Study Name	116th St.@Avenue O
Start Date	Tuesday, December 18, 2018 6:00 AM
End Date	Tuesday, December 18, 2018 6:00 PM
Site Code	

Road Volumes

TMV	Movement																				
	Eastbound				Eastbound Tot	Westbound				Westbound To	Northbound				Northbound Tc	Southbound				Southbound To	Grand Total
Interval	U	L	T	R		U	L	T	R		U	L	T	R		U	L	T	R		
12/18/2018 15:30	0	4	1	18	23	0	17	0	4	21	0	3	151	12	166	1	5	199	2	207	417
Lights	0	3	1	16	20	0	17	0	4	21	0	3	145	12	160	1	4	196	0	201	402
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	0	1	3	0	4	10
Articulated Trucks	0	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	5
12/18/2018 15:45	0	5	0	24	29	0	3	0	2	5	0	2	128	2	132	1	3	215	1	220	386
Lights	0	4	0	23	27	0	3	0	2	5	0	2	123	2	127	1	3	206	1	211	370
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	9	0	9	13
Articulated Trucks	0	1	0	1	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
12/18/2018 16:00	0	6	1	11	18	0	3	0	3	6	0	4	154	3	161	0	2	132	0	134	319
Lights	0	6	1	11	18	0	3	0	3	6	0	4	150	3	157	0	2	124	0	126	307
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	8	0	8	12
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/18/2018 16:15	0	14	0	15	29	0	2	0	0	2	0	4	132	3	139	0	4	152	0	156	326
Lights	0	14	0	15	29	0	2	0	0	2	0	3	129	3	135	0	4	150	0	154	320
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	2	0	2	4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
12/18/2018 16:30	0	21	0	43	64	0	2	0	5	7	0	1	176	3	180	0	4	135	0	139	390
Lights	0	21	0	43	64	0	2	0	5	7	0	1	173	3	177	0	4	130	0	134	382
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	4	0	4	6
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	2
12/18/2018 16:45	0	8	0	12	20	0	5	0	6	11	0	1	133	1	135	0	4	130	1	135	301
Lights	0	8	0	12	20	0	5	0	6	11	0	1	131	1	133	0	4	128	1	133	297
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	2	0	2	4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/18/2018 17:00	0	2	0	9	11	0	2	0	4	6	0	0	143	9	152	0	4	142	0	146	315
Lights	0	2	0	9	11	0	2	0	4	6	0	0	141	9	150	0	4	138	0	142	309
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	4	0	4	6
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/18/2018 17:15	0	0	0	1	1	0	2	0	4	6	0	0	130	5	135	0	0	124	0	124	266
Lights	0	0	0	0	0	0	2	0	3	5	0	0	128	5	133	0	0	122	0	122	260
Mediums	0	0	0	0	0	0	0	0	1	1	0	0	2	0	2	0	0	2	0	2	5
Articulated Trucks	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12/18/2018 17:30	0	0	0	3	3	0	1	0	4	5	0	0	148	7	155	0	6	112	0	118	281
Lights	0	0	0	3	3	0	1	0	4	5	0	0	146	7	153	0	6	111	0	117	278
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
12/18/2018 17:45	0	1	0	0	1	0	4	0	7	11	0	0	137	8	145	0	3	124	2	129	286
Lights	0	1	0	0	1	0	4	0	7	11	0	0	136	8	144	0	3	120	2	125	281
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	4	0	4	5
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	83	3	184	270	0	93	3	129	225	0	130	2857	126	3113	2	64	2848	70	2984	6592

Study Name	116th St.@Avenue O
Start Date	Tuesday, December 18, 2018 6:00 AM
End Date	Tuesday, December 18, 2018 6:00 PM
Site Code	

Crosswalk Volumes

Movement	Eastbound		Eastbound Tot	Westbound		Westbound To	Northbound		Northbound Tc	Southbound		Southbound Tc	Grand Total
Interval	PCCW	PCW		PCCW	PCW		PCCW	PCW		PCCW	PCW		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	1	1	0	0	0	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	1	1	0	0	0	1
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	1	1	0	0	0	0	1	1	2
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	1	1	0	0	0	0	1	1	2
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	1	1	1
4:30 PM	0	0	0	5	0	5	0	0	0	0	0	0	5
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name	116th St.@Avenue O
Start Date	Tuesday, December 18, 2018 6:00 AM
End Date	Tuesday, December 18, 2018 6:00 PM
Site Code	

Crosswalk Volumes

Movement	Eastbound		Eastbound Tot	Westbound		Westbound To	Northbound		Northbound Tc	Southbound		Southbound Tc	Grand Total
Interval	PCCW	PCW		PCCW	PCW		PCCW	PCW		PCCW	PCW		
Pedestrians	0	0	0	5	0	5	0	0	0	0	0	0	5
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crossw	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crossw	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crossw	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crossw	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Crossw	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	5	1	6	0	1	1	0	2	2	9

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Road Volumes

TMV	Movement												
	Westbound			Westbound To	Northbound			Northbound To	Southbound			Southbound To	Grand Total
Interval	U	L	R		U	R	T		U	L	T		
1/8/2019 6:00	0	20	1	21	0	0	0	0	0	1	1	2	23
Lights	0	19	1	20	0	0	0	0	0	1	1	2	22
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	1	0	1	0	0	0	0	0	0	0	0	1
1/8/2019 6:15	0	24	2	26	0	2	0	2	0	1	0	1	29
Lights	0	22	1	23	0	1	0	1	0	1	0	1	25
Mediums	0	1	1	2	0	1	0	1	0	0	0	0	3
Articulated Trucks	0	1	0	1	0	0	0	0	0	0	0	0	1
1/8/2019 6:30	0	21	1	22	2	3	0	5	0	0	0	0	27
Lights	0	17	1	18	2	2	0	4	0	0	0	0	22
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	4	0	4	0	0	0	0	0	0	0	0	4
1/8/2019 6:45	0	9	0	9	0	3	0	3	0	0	0	0	12
Lights	0	7	0	7	0	1	0	1	0	0	0	0	8
Mediums	0	2	0	2	0	1	0	1	0	0	0	0	3
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
1/8/2019 7:00	0	11	0	11	0	3	0	3	0	0	0	0	14
Lights	0	7	0	7	0	1	0	1	0	0	0	0	8
Mediums	0	0	0	0	0	2	0	2	0	0	0	0	2
Articulated Trucks	0	4	0	4	0	0	0	0	0	0	0	0	4
1/8/2019 7:15	0	12	5	17	2	5	0	7	0	0	0	0	24
Lights	0	5	5	10	0	3	0	3	0	0	0	0	13
Mediums	0	2	0	2	2	2	0	4	0	0	0	0	6
Articulated Trucks	0	5	0	5	0	0	0	0	0	0	0	0	5
1/8/2019 7:30	0	8	2	10	0	3	0	3	0	0	0	0	13
Lights	0	4	2	6	0	0	0	0	0	0	0	0	6
Mediums	0	3	0	3	0	0	0	0	0	0	0	0	3
Articulated Trucks	0	1	0	1	0	3	0	3	0	0	0	0	4
1/8/2019 7:45	0	6	2	8	0	3	0	3	0	0	0	0	11
Lights	0	0	1	1	0	1	0	1	0	0	0	0	2
Mediums	0	1	1	2	0	0	0	0	0	0	0	0	2
Articulated Trucks	0	5	0	5	0	2	0	2	0	0	0	0	7
1/8/2019 8:00	0	8	1	9	2	2	1	5	0	1	0	1	15
Lights	0	4	0	4	2	0	0	2	0	0	0	0	6

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Road Volumes

TMV	Movement												
	Westbound			Westbound To	Northbound			Northbound To	Southbound			Southbound To	Grand Total
Interval	U	L	R		U	R	T		U	L	T		
Mediums	0	0	0	0	0	0	0	0	0	1	0	1	1
Articulated Trucks	0	4	1	5	0	2	1	3	0	0	0	0	8
1/8/2019 8:15	0	7	0	7	0	6	0	6	0	2	0	2	15
Lights	0	3	0	3	0	2	0	2	0	1	0	1	6
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	4	0	4	0	3	0	3	0	1	0	1	8
1/8/2019 8:30	0	12	1	13	0	5	0	5	0	0	0	0	18
Lights	0	5	1	6	0	0	0	0	0	0	0	0	6
Mediums	0	1	0	1	0	2	0	2	0	0	0	0	3
Articulated Trucks	0	6	0	6	0	3	0	3	0	0	0	0	9
1/8/2019 8:45	0	5	2	7	2	5	0	7	0	4	0	4	18
Lights	0	1	2	3	2	1	0	3	0	1	0	1	7
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	4	0	4	0	3	0	3	0	3	0	3	10
1/8/2019 9:00	0	8	3	11	0	3	0	3	0	2	0	2	16
Lights	0	4	0	4	0	0	0	0	0	1	0	1	5
Mediums	0	1	0	1	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	3	3	6	0	3	0	3	0	1	0	1	10
1/8/2019 9:15	0	8	1	9	0	11	0	11	0	0	0	0	20
Lights	0	3	0	3	0	3	0	3	0	0	0	0	6
Mediums	0	1	0	1	0	1	0	1	0	0	0	0	2
Articulated Trucks	0	4	1	5	0	7	0	7	0	0	0	0	12
1/8/2019 9:30	0	9	1	10	1	1	1	3	0	2	0	2	15
Lights	0	4	0	4	1	0	1	2	0	1	0	1	7
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	5	1	6	0	1	0	1	0	1	0	1	8
1/8/2019 9:45	0	8	1	9	0	11	0	11	0	0	1	1	21
Lights	0	2	0	2	0	6	0	6	0	0	1	1	9
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	6	1	7	0	4	0	4	0	0	0	0	11
1/8/2019 10:00	0	7	1	8	0	13	0	13	0	0	0	0	21
Lights	0	2	1	3	0	4	0	4	0	0	0	0	7
Mediums	0	1	0	1	0	1	0	1	0	0	0	0	2
Articulated Trucks	0	4	0	4	0	8	0	8	0	0	0	0	12

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Road Volumes

TMV	Movement												
	Westbound			Westbound To	Northbound			Northbound To	Southbound			Southbound To	Grand Total
Interval	U	L	R		U	R	T		U	L	T		
1/8/2019 10:15	0	4	0	4	0	4	0	4	0	0	0	0	8
Lights	0	1	0	1	0	2	0	2	0	0	0	0	3
Mediums	0	1	0	1	0	1	0	1	0	0	0	0	2
Articulated Trucks	0	2	0	2	0	1	0	1	0	0	0	0	3
1/8/2019 10:30	0	8	2	10	0	9	1	10	0	3	0	3	23
Lights	0	1	2	3	0	4	1	5	0	2	0	2	10
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	7	0	7	0	4	0	4	0	1	0	1	12
1/8/2019 10:45	0	10	1	11	0	14	0	14	0	2	1	3	28
Lights	0	5	1	6	0	5	0	5	0	1	1	2	13
Mediums	0	1	0	1	0	0	0	0	0	0	0	0	1
Articulated Trucks	0	4	0	4	0	9	0	9	0	1	0	1	14
1/8/2019 11:00	0	10	1	11	1	24	0	25	0	0	0	0	36
Lights	0	4	1	5	0	18	0	18	0	0	0	0	23
Mediums	0	1	0	1	1	2	0	3	0	0	0	0	4
Articulated Trucks	0	5	0	5	0	4	0	4	0	0	0	0	9
1/8/2019 11:15	0	13	0	13	1	6	0	7	0	1	0	1	21
Lights	0	9	0	9	0	2	0	2	0	1	0	1	12
Mediums	0	1	0	1	1	0	0	1	0	0	0	0	2
Articulated Trucks	0	3	0	3	0	4	0	4	0	0	0	0	7
1/8/2019 11:30	0	12	0	12	0	11	0	11	0	1	0	1	24
Lights	0	9	0	9	0	5	0	5	0	1	0	1	15
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	3	0	3	0	5	0	5	0	0	0	0	8
1/8/2019 11:45	0	8	1	9	1	7	0	8	0	2	0	2	19
Lights	0	3	0	3	0	6	0	6	0	2	0	2	11
Mediums	0	1	0	1	1	0	0	1	0	0	0	0	2
Articulated Trucks	0	4	1	5	0	1	0	1	0	0	0	0	6
1/8/2019 12:00	0	9	2	11	1	11	1	13	0	0	0	0	24
Lights	0	5	1	6	1	6	1	8	0	0	0	0	14
Mediums	0	2	1	3	0	1	0	1	0	0	0	0	4
Articulated Trucks	0	2	0	2	0	4	0	4	0	0	0	0	6
1/8/2019 12:15	0	13	1	14	0	8	0	8	0	0	0	0	22
Lights	0	4	0	4	0	5	0	5	0	0	0	0	9

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Road Volumes

TMV	Movement												
	Westbound			Westbound To	Northbound			Northbound To	Southbound			Southbound To	Grand Total
Interval	U	L	R		U	R	T		U	L	T		
Mediums	0	2	0	2	0	1	0	1	0	0	0	0	3
Articulated Trucks	0	7	1	8	0	2	0	2	0	0	0	0	10
1/8/2019 12:30	0	12	2	14	1	14	0	15	0	2	0	2	31
Lights	0	8	2	10	1	6	0	7	0	1	0	1	18
Mediums	0	0	0	0	0	2	0	2	0	0	0	0	2
Articulated Trucks	0	4	0	4	0	6	0	6	0	1	0	1	11
1/8/2019 12:45	0	12	0	12	0	9	0	9	0	0	0	0	21
Lights	0	7	0	7	0	1	0	1	0	0	0	0	8
Mediums	0	2	0	2	0	3	0	3	0	0	0	0	5
Articulated Trucks	0	3	0	3	0	5	0	5	0	0	0	0	8
1/8/2019 13:00	0	11	1	12	0	10	0	10	0	1	0	1	23
Lights	0	4	1	5	0	5	0	5	0	1	0	1	11
Mediums	0	3	0	3	0	0	0	0	0	0	0	0	3
Articulated Trucks	0	4	0	4	0	5	0	5	0	0	0	0	9
1/8/2019 13:15	0	13	4	17	2	5	0	7	0	0	0	0	24
Lights	0	3	4	7	2	3	0	5	0	0	0	0	12
Mediums	0	2	0	2	0	0	0	0	0	0	0	0	2
Articulated Trucks	0	8	0	8	0	2	0	2	0	0	0	0	10
1/8/2019 13:30	1	10	0	11	0	10	0	10	0	1	0	1	22
Lights	1	7	0	8	0	6	0	6	0	1	0	1	15
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	3	0	3	0	3	0	3	0	0	0	0	6
1/8/2019 13:45	0	11	0	11	0	8	1	9	0	0	1	1	21
Lights	0	4	0	4	0	5	1	6	0	0	1	1	11
Mediums	0	1	0	1	0	2	0	2	0	0	0	0	3
Articulated Trucks	0	6	0	6	0	1	0	1	0	0	0	0	7
1/8/2019 14:00	0	9	0	9	0	14	0	14	0	2	0	2	25
Lights	0	3	0	3	0	6	0	6	0	0	0	0	9
Mediums	0	2	0	2	0	3	0	3	0	0	0	0	5
Articulated Trucks	0	4	0	4	0	5	0	5	0	2	0	2	11
1/8/2019 14:15	0	7	0	7	0	12	0	12	0	1	0	1	20
Lights	0	3	0	3	0	5	0	5	0	1	0	1	9
Mediums	0	3	0	3	0	2	0	2	0	0	0	0	5
Articulated Trucks	0	1	0	1	0	5	0	5	0	0	0	0	6

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Road Volumes

TMV	Movement												
	Westbound			Westbound To	Northbound			Northbound To	Southbound			Southbound To	Grand Total
Interval	U	L	R		U	R	T		U	L	T		
1/8/2019 14:30	0	8	0	8	1	16	0	17	0	1	0	1	26
Lights	0	6	0	6	0	4	0	4	0	1	0	1	11
Mediums	0	2	0	2	0	2	0	2	0	0	0	0	4
Articulated Trucks	0	0	0	0	1	10	0	11	0	0	0	0	11
1/8/2019 14:45	0	6	0	6	0	17	0	17	0	0	0	0	23
Lights	0	2	0	2	0	12	0	12	0	0	0	0	14
Mediums	0	1	0	1	0	1	0	1	0	0	0	0	2
Articulated Trucks	0	3	0	3	0	4	0	4	0	0	0	0	7
1/8/2019 15:00	0	7	0	7	0	14	0	14	0	0	0	0	21
Lights	0	6	0	6	0	12	0	12	0	0	0	0	18
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	1	0	1	0	1	0	1	0	0	0	0	2
1/8/2019 15:15	0	4	2	6	0	12	1	13	0	1	0	1	20
Lights	0	3	2	5	0	8	1	9	0	1	0	1	15
Mediums	0	1	0	1	0	1	0	1	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	3	0	3	0	0	0	0	3
1/8/2019 15:30	0	6	0	6	0	13	0	13	0	0	0	0	19
Lights	0	5	0	5	0	8	0	8	0	0	0	0	13
Mediums	0	1	0	1	0	1	0	1	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	4	0	4	0	0	0	0	4
1/8/2019 15:45	0	5	0	5	1	14	0	15	0	1	0	1	21
Lights	0	4	0	4	1	12	0	13	0	1	0	1	18
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	1	0	1	0	2	0	2	0	0	0	0	3
1/8/2019 16:00	0	2	0	2	1	13	1	15	0	1	1	2	19
Lights	0	1	0	1	0	11	1	12	0	1	1	2	15
Mediums	0	1	0	1	0	2	0	2	0	0	0	0	3
Articulated Trucks	0	0	0	0	1	0	0	1	0	0	0	0	1
1/8/2019 16:15	0	0	0	0	0	30	0	30	0	2	0	2	32
Lights	0	0	0	0	0	28	0	28	0	2	0	2	30
Mediums	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
1/8/2019 16:30	0	2	1	3	0	23	0	23	0	5	0	5	31
Lights	0	0	0	0	0	22	0	22	0	5	0	5	27

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Road Volumes

TMV	Movement												
	Westbound			Westbound To	Northbound			Northbound To	Southbound			Southbound To	Grand Total
Interval	U	L	R		U	R	T		U	L	T		
Mediums	0	2	0	2	0	1	0	1	0	0	0	0	3
Articulated Trucks	0	0	1	1	0	0	0	0	0	0	0	0	1
1/8/2019 16:45	0	2	0	2	0	8	0	8	0	1	0	1	11
Lights	0	2	0	2	0	8	0	8	0	1	0	1	11
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
1/8/2019 17:00	0	1	0	1	0	21	0	21	0	0	0	0	22
Lights	0	0	0	0	0	20	0	20	0	0	0	0	20
Mediums	0	1	0	1	0	1	0	1	0	0	0	0	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
1/8/2019 17:15	0	0	0	0	0	5	0	5	0	0	0	0	5
Lights	0	0	0	0	0	4	0	4	0	0	0	0	4
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
1/8/2019 17:30	0	0	1	1	0	3	0	3	0	1	0	1	5
Lights	0	0	1	1	0	3	0	3	0	0	0	0	4
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	1	1
1/8/2019 17:45	0	0	2	2	0	2	0	2	0	1	0	1	5
Lights	0	0	2	2	0	2	0	2	0	1	0	1	5
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	398	45	444	19	446	7	472	0	43	5	48	964

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Crosswalk Volumes

	Movement									
	Westbound		Westbound To	Northbound		Northbound To	Southbound		Southbound To	Grand Total
Interval	PCCW	PCW		PCCW	PCW		PCCW	PCW		
6:00 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
8:45 AM	1	0	1	0	0	0	0	0	0	1

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Crosswalk Volumes

	Movement									
	Westbound		Westbound To	Northbound		Northbound To	Southbound		Southbound To	Grand Total
Interval	PCCW	PCW		PCCW	PCW		PCCW	PCW		
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	1	0	1	0	0	0	0	0	0	1
9:00 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Crosswalk Volumes

	Movement									
	Westbound		Westbound To	Northbound		Northbound To	Southbound		Southbound To	Grand Total
Interval	PCCW	PCW		PCCW	PCW		PCCW	PCW		
Pedestrians	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Crosswalk Volumes

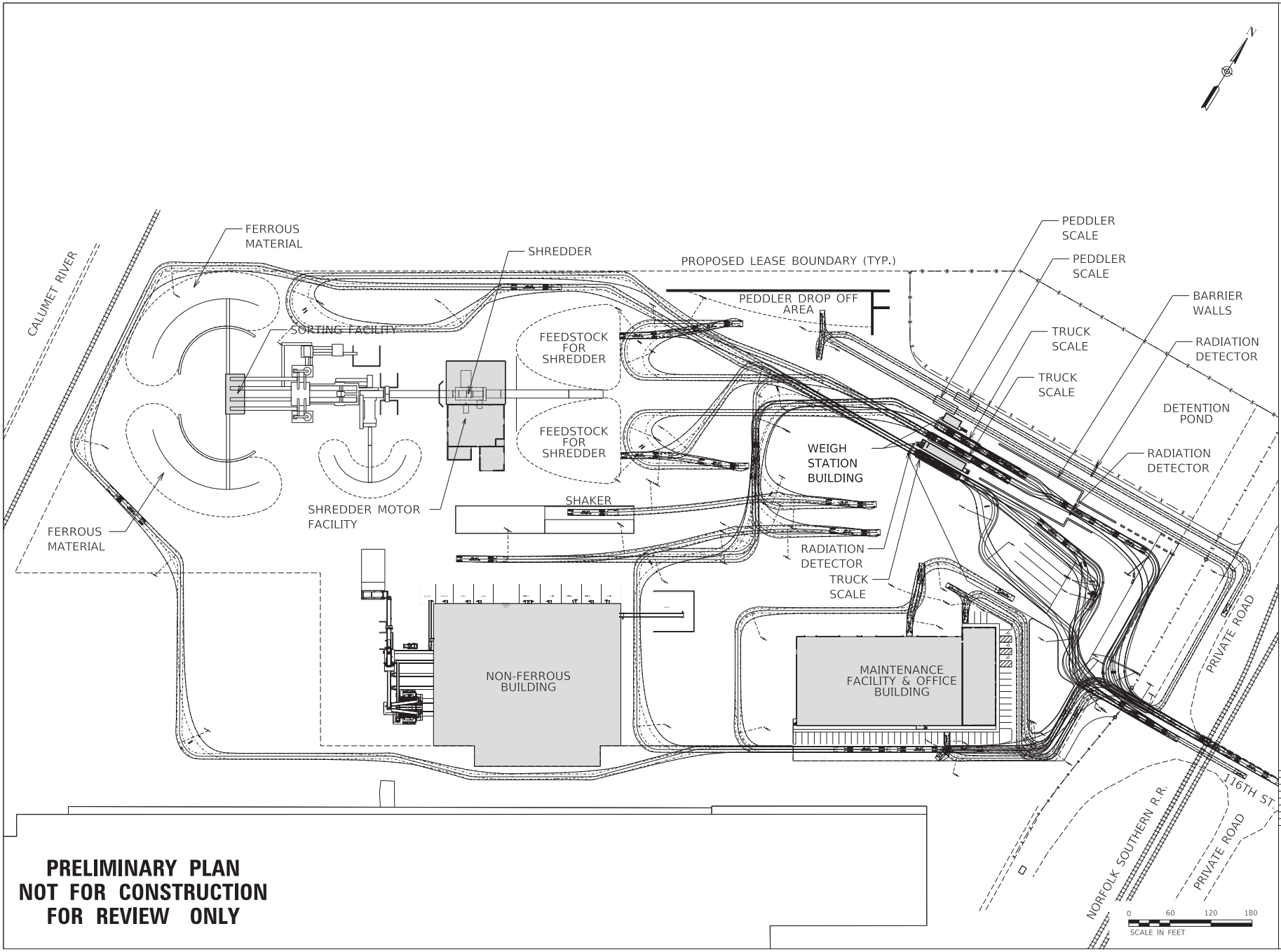
	Movement									
	Westbound		Westbound To	Northbound		Northbound To	Southbound		Southbound To	Grand Total
Interval	PCCW	PCW		PCCW	PCW		PCCW	PCW		
2:30 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
2:45 PM	1	0	1	0	0	0	0	0	0	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	1	0	1	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
3:30 PM	1	1	2	0	0	0	0	0	0	2
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	1	1	2	0	0	0	0	0	0	2
3:45 PM	0	1	1	0	0	0	0	0	0	1
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	1	1	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0

Study Name	116th St.@Industial Access Dr.
Start Date	Tuesday, January 08, 2019 6:00 AM
End Date	Tuesday, January 08, 2019 6:00 PM
Site Code	

Crosswalk Volumes

	Movement									
	Westbound		Westbound To	**Northbound**		Northbound To	**Southbound**		Southbound To	**Grand Total**
Interval	**PCCW**	**PCW**		**PCCW**	**PCW**		**PCCW**	**PCW**		
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0
Bicycles on Crosswa	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0
Grand Total	3	2	5	0	0	0	0	0	0	5

AutoTURN Exhibits



PRELIMINARY PLAN
NOT FOR CONSTRUCTION
FOR REVIEW ONLY

KNIGHT Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

ON-SITE VEHICLE MOVEMENTS

PROJECT:
GENERAL III
11600 S BURLEY AVE
CHICAGO, IL 60617

XX-XX-XX	ISSUE FOR REVIEW

GENERAL III
PROPOSED SITE PLAN
ON-SITE VEHICLE MOVEMENTS

PROJECT #:	DATE:
7563	01-21-2018

TM-01.1

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment O

Refrigerant Recovery Calculations and Recovery Device Specifications

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Estimated Monthly Amount of Recovered Refrigerant

Assumptions

- The amount of appliances processed and the amount of refrigerant recovered per appliance can vary widely on a monthly basis.

- The estimated amount of appliances delivered to the new facility will be approximately 20% of the amount historically delivered to the Existing facility due to a reduction in the anticipated amount of peddler scrap.

- It is estimated that the Existing Facility recovers approximately 300 pounds of refrigerant per month.

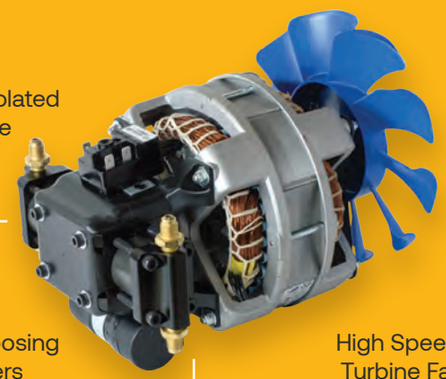
Refrigerant Recovery Estimate

300 pounds/month (Existing Facility estimate) X 0.20 (amount of peddler scrap at new facility vs. Existing Facility) =

60 pounds/month

G5Twin™
CYLINDER / CONDENSER

The Reliability Advantage



The Core of the G5Twin

The G5Twin is the **ONLY** refrigerant recovery machine in the industry with a **Refrigerant-isolated Crankcase.** This means the bearings aren't washed in the corrosive acids, sludge and debris brought in by the recovered refrigerant like in other machines.

The G5Twin is also equipped with a 7-inch, 10-blade turbine fan, which blasts over **700 CFM** of high static pressure cooling air over the twin cylinders and condensers, ensuring **40° - 50° cooler** compressor heads.

The result of all this? A low-maintenance, high-performance, ultra-reliable recovery machine **you can depend on.**

Learn More About the G5Twin At
www.AppionTools.com/G5-Twin

About Appion

Our Philosophy . . .

Appion is based in the shadows of the Rocky Mountains in Colorful Colorado. Our goals aren't just to create great products for technicians, we strive to improve the AC/R industry through innovation, education, and by sharing our knowledge. We challenge ourselves to go beyond expectations and build on the dynamic nature of the AC/R market, always with the needs of the technician in mind.

Never Stop Learning . . .

Education is at the forefront of our business. Whether it's leading educational seminars, on-site trainings for HVAC/R contractors and businesses, learning from our customers, or our open-door policy for anyone with a thirst for knowledge, we are committed to helping the industry move forward in a positive way.

Appion is Applied Innovation

The AC/R systems of today demand accurate, rugged, reliable tools to ensure they are efficiently running at their designed potential. Appion is in the field alongside service technicians to gain a better understanding of their needs so we can drive innovation in our products.

Only through this understanding can superior products be designed and innovated. This is our purpose.

Appion Inc.

2800 South Tejon Street
Englewood, CO 80110 USA
Phone: 303-937-1580

www.AppionTools.com

Appion™

G5Twin™
CYLINDER / CONDENSER

Industrial/Commercial Refrigerant Recovery

- **Only 24 lbs**
- **Extremely Fast**
- **Pumps R410a**
- **No Size Limit**

G5Twin™
CYLINDER / CONDENSER

The Weight Advantage

At **only 24lbs**, the G5Twin is the smallest and lightest recovery machine capable of handling the tough demands of industrial/commercial refrigerant recovery.

A New Generation of Refrigerant Recovery

Small but Fast: Certified recovery rates comparable to even the largest commercial units

Automatic Liquid and Vapor Recovery: Fast Liquid and vapor recovery with no throttling required

Cooler Operation: Maximum throughput even in the highest ambient conditions

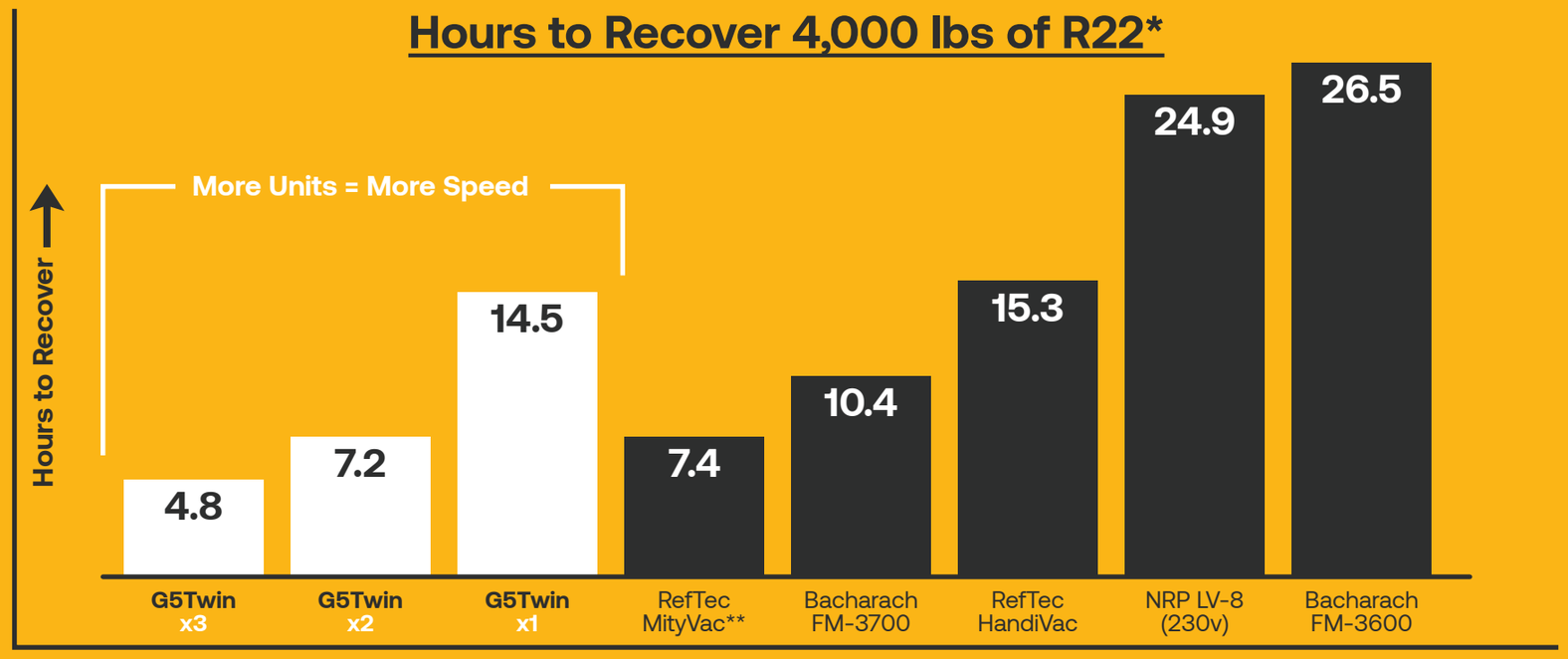
No Purge Required: Unique design eliminates the need for the time-consuming purge cycle

G5Twin™
CYLINDER / CONDENSER

The Speed Advantage

The G5Twin is designed to handle systems of any size, from ounces to tens of thousands of pounds. For larger systems, using two or more G5Twins can turn even the largest recovery operations into a single day's work.

Hours to Recover 4,000 lbs of R22*



*Job time is based on 4,000 lbs of R22 (per published ARI 740 test results), 85% Push/Pull, 10% Vapor, 5% Direct Liquid. Actual job time will vary from system to system.
**Not capable of direct liquid; direct vapor rate used instead.

Sure it's fast . . . but will it last?

The G5Twin has been proven in the field in all types of applications on systems of every size. From production environments, aircraft carriers to massive chillers in the desert, the G5Twin boasts impressive speeds even in the highest ambient conditions. Not only is it fast, but it's durable and reliable enough to hold up to the rigors of any commercial/industrial application.

Learn More About the G5Twin At | **www.AppionTools.com/g5-twin**

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment P

Noise Monitoring Plan and Sound Meter Specifications

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Noise Monitoring Plan

A noise monitor will be installed in the Northeast portion of the campus property in order to continuously record sound pressure levels from the Facility. The proposed device is a BSWA outdoor microphone developed for measuring outdoor noise.

The noise monitor will be connected to a data logger that will record sound pressure levels in one-band octaves and dB(a) using impulse time weighting mode.

Raw data collected by the data logger and the results of scheduled noise instrument calibration tests will be submitted to CDPH on a monthly basis. All reports will be sent to CDPH via email (envwastepermits@cityofchicago.org) within two weeks from the end of the reporting period.

New BSWA 308/BSWA 309 Octave Sound Level Meter

Features:

- Class 1 (**BSWA 308**) and Class 2 (**BSWA 309**) sound level meter
- Comply with IEC 61672-1:2013, ANSI S1.4-1983 and ANSI S1.43-1997
- Real-time 1/1 and 1/3 Octave in accordance with IEC 61260-1:2014 and ANSI S1.11-2004
- Linearity range: 22dBA~136dBA (**BSWA 308**), 25dBA~136dBA (**BSWA 309**)
- Single range to cover 123dB (**BSWA 308**) / 122dB (**BSWA 309**) dynamic range
- Frequency weighting: A/B/C/Z. Time weighting: Fast/Slow/Impulse
- 3 profile and 14 custom define measurement are calculate in parallel with different frequency/time weighting
- Calculate SPL, LEQ, Max, Min, Peak, SD, SEL, E, Lday, Levening, Lnight, Ldn, Lden
- LN statistical and time history curve display
- User define integral period measurement, integral period up to 24h
- High speed ARM core with FPU (Float Point Unit) to achieve wide frequency response, large dynamic range and low noise floor
- 8G MicroSD card (TF card) mass storage
- RS-232 remote control port
- Mini thermal printer for measurement data print
- Internal GPS module (option), support GPS timing

Application:

- Basic noise measurement
- Environmental noise assessment
- Product quality check
- Evaluation of noise reduction engineering

产品介绍

New **BSWA 308/BSWA 309** are new generation octave sound level meter upgrade from base BSWA 308/309. The new types update the dual-core (DSP+ARM) architecture to single chip ARM with float

point unit, and update all fix-point calculation to float-point which significantly improves the accuracy and stability. Re-design analog front end circuit also lower the noise floor and linear range of product. **BSWA 308** is Class 1 and **BSWA 309** is Class 2. Both instruments have certificated by the China CPA (Certification of Pattern Approval) and CMC (China Metrology Certification).

The improvement of new **BSWA 308/BSWA 309**:

➢ Single chip high speed ARM with FPU	➢ USB port function implemented
➢ White backlight LCD	➢ Update firmware via USB (also power supply)
➢ Integral period from 1s~24h	➢ Timer feature support auto measurement
➢ 0.1s, 0.2s, 0.5s logger step added	➢ Internal GPS (option) with GPS timing
➢ 5 templates to save user setting	➢ Single range to cover 123dB dynamic range
➢ B-weighting added to meet ANSI standard	➢ Reduce the noise floor (only for Class 1)
➢ Automatic power on with external supply, ease of integration	➢ Upper limit of measurement: 136dBrms/139dBpeak (40mV/Pa)

Specifications

Type	BSWA 308	BSWA 309
Accuracy	Class 1 (Group X)	Class 2 (Group X)
Standard	GB/T 3785.1-2010, IEC 60651:1979, IEC 60804:2000, IEC 61672-1:2013, ANSI S1.4-1983, ANSI S1.43-1997	
Octave[1]	Real-time 1/1 Octave (Option): 8Hz~16kHz Real-time 1/3 Octave (Option): 6.3Hz~20kHz GB/T 3241-2010, IEC 61260-1:2014 ANSI S1.11-2004. Base 10 system.	Real-time 1/1 Octave (Option): 20Hz~8kHz Real-time 1/3 Octave (Option): 20Hz~12.5kHz GB/T 3241-2010, IEC 61260-1:2014 ANSI S1.11-2004. Base 10 system.
Supplied Microphone	MPA231T: 1/2” prepolarized measurement microphone, Class 1. Sensitivity: 40mV/Pa. Frequency Range: 3Hz~20kHz.	MPA309T: 1/2” prepolarized measurement microphone, Class 2. Sensitivity: 40mV/Pa. Frequency Range: 20Hz~12.5kHz.
Mic Interface	TNC connecter with ICCP power supply (4mA)	
Detector / Filter	Fully float-point digital signal processing (digital detector and filter）	
Integral Period	Infinite or 1s~24h user define integral period. Repeat time: Infinite or 1~9999	
Logger Step	0.1s, 0.2s, 0.5s, 1s~24h (Optional function)	
Measurement Functions	$L_{XY(SPL)}$, L_{Xeq}, L_{Xeq1s}, L_{Xleq}, L_{XYSD}, L_{XSEL}, L_{XE}, L_{XYmax}, L_{XYmin}, L_{XPeak}, L_{Day}, $L_{Evening}$, L_{Night}, L_{dn}, L_{den}, L_{XYN}. Where X is the frequency weighting: A, B, C, Z; Y is time weighting: F, S, I; N is the statistical percentage: 1~99. 3 profile and 14 custom define measurement are calculate in parallel with different frequency/time weighting. (All above are optional functions, except for $L_{XY(SPL)}$, L_{Xeq}, L_{XYmax}, L_{XYmin}, L_{XPeak})	
24h Measurement	Automatic measurement based on user define date/time and save the history data	
Frequency Weighting	Parallel A, B, C, Z (It can also be applied to 1/1 and 1/3 Octave)	
Time Weighting	Parallel F, S, I and Peak detection	
Self-Noise[2]	Sound: 19dB(A), 25dB(C), 31dB(Z) Electrical: 13dB(A), 17dB(C), 24dB(Z)	Sound: 20dB(A), 26dB(C), 31dB(Z) Electrical: 14dB(A), 19dB(C), 24dB(Z)
Upper Limit[2]	136dB(A) Increase to 154dB(A) with 5mV/Pa Microphone	136dB(A) Increase to 154dB(A) with 5mV/Pa Microphone
Frequency	10Hz~20kHz	20Hz~12.5kHz

Response[1]		
Level Linearity Range[2, 3, 4]	22dB(A)~136dB(A) Octave: 30dB~136dB	25dB(A)~136dB(A) Octave: 33dB~136dB
Dynamic Range[2]	123dB (13dB(A)~136dB(A))	122dB (14dB(A)~136dB(A))
Peak C Range[2, 3]	47dB~139dB	50dB~139dB
Electrical Input	Maximum input voltage: 5Vrms (7.07Vpeak). Input impedance of preamplifier: >6GΩ	
Range Setting	Single range to cover whole dynamic range	
Resolution	24Bits	
Sampling Rate	48kHz (Sampling interval for LN: 20ms)	
Time History	Time domain noise curve display. Duration time: 1min, 2min, 10min	
LCD Display	160x160 LCD with white backlight, 14 step contrast level, 1s display update rate	
Mass Storage	8G MicroSD card (TF card)	
Post-Processing	Post-processing software VA-SLM can read, analyze and generate reports of store data.	
Export Data	Directly connect to the computer to read the memory card (USB disk)	
Output	AC Output (max $5V_{RMS}$, ±15mA), DC Output (10mV/dB, max 15mA), RS-232 serial interface and USB (USB disk mode or modem mode)	
Alarm	User define alarm threshold. LED indicate the alarm status	
Setup Template	5 templates to save user setup for different application, template can be save in MicroSD card	
Auto Power On	Automatic power on and start measurement when power supply available, ease of integration (Optional function)	
Power Supply	4x1.5V alkaline batteries (LR6/AA/AM3), sustainable use of approx.10 hours (depends on battery). It also can be supply by external DC power (7V~14V 500mA) and USB power (5V 1A)	
RTC	Built-in backup battery has been calibrated at factory to the error <26s in 30days (<10ppm, (25±16) ºC). It can keep RTC running when replacing the main batteries. GPS timing function available (option with GPS module)	
Language	English, Chinese, Portuguese, Spanish, German, French	
Firmware Update	Update firmware via USB port	
Conditions	Temperature: -10ºC~50ºC. Humidity: 20%~90%RH	
RT Temperature	Real-time temperature display on the main screen	
Size (mm)	W70 x H300 x D36	
Weight	Approx. 620g, including 4 alkaline batteries	
Option		
GPS	Receiver Type: 50 Channels; Time-To-First-Fix: Cold Start 27s, Warm Start 27s, Hot Start 1s; Sensitivity: Tracking -161dBm, Reacquisition -160dBm, Cold Start -147dBm, Hot Start -156dBm; Horizontal position accuracy: 2.5m, Timing accuracy: 30ns, Velocity accuracy: 0.1m/s; Update Rate: 1Hz, Operation Limits: Dynamic≤4g, Altitude<50000m, Velocity<500m/s	
Calibrator	CA111, Class 1, 94dB/114dB, 1kHz	
Printer	Mini thermal or dot-matrix printer, RS-232 port	
Extension	Extension cable (user defined length) and BM200A/B microphone boom (2m)	

Note 1: Ignore the result outside 20Hz~12.5kHz for type BSWA 309 alone due to microphone frequency response of Class 2.

Note 2: The data was measured with 40mV/Pa microphone for BSWA 308 and BSWA 309.

Note 3: Measurement according to GB/T 3785 and IEC 61672.

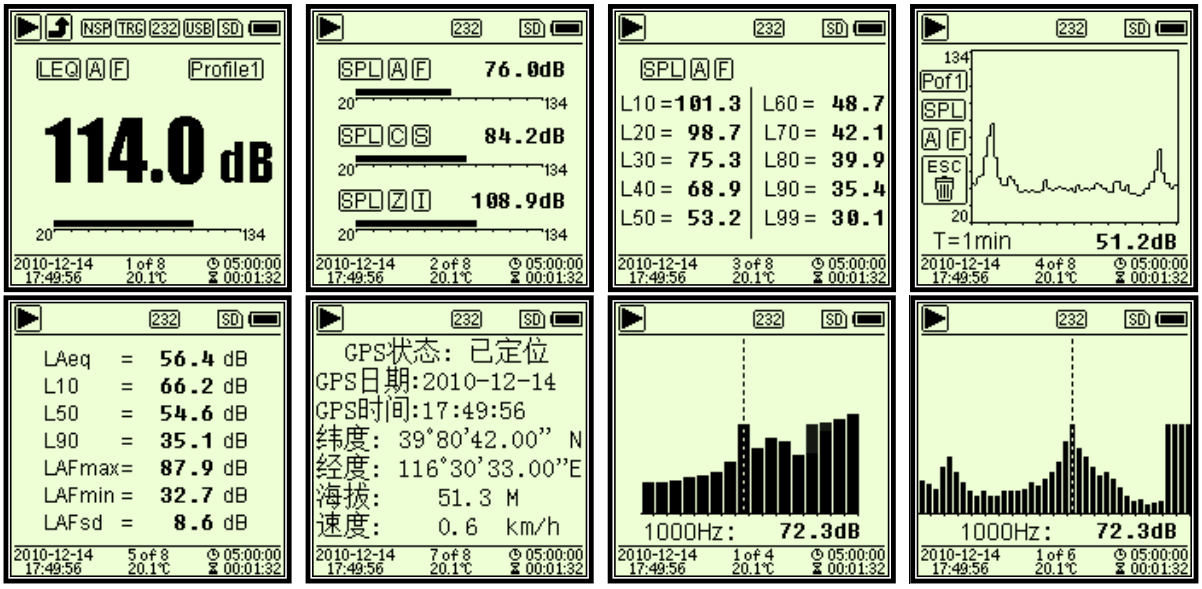
Note 4: Measurement according to GB/T 3241 and IEC 61260.

Optional Function

Basic (must option)	$L_{XY(SPL)}$, L_{Xeq}, L_{XYmax}, L_{XYmin}, L_{XPeak}. Where X is the frequency weighting: A, B, C, Z; Y is time weighting: F, S, I.
Statistical	L_{Xeq1s}, L_{XIeq}, L_{XYSD}, L_{XSEL}, L_{XE}, L_{Day}, $L_{Evening}$, L_{Night}, L_{dn}, L_{den}, L_{XYN}. Where X is the frequency weighting: A, B, C, Z; Y is time weighting: F, S, I; N is the statistical percentage: 1~99. 3 profile and 14 custom define measurement are calculate in parallel with different frequency/time weighting.
1/1 Octave	Real-time 1/1 Octave, Class 1: 8Hz~16kHz, Class 2: 16Hz~8kHz
1/3 Octave	Real-time 1/3 Octave, Class 1: 6.3Hz~20kHz, Class 2: 16Hz~12.5kHz
Storage	Save SWN, CSD, OCT files into MicroSD card (TF card)
Auto Power On	Automatic power on and start measurement when power supply available, ease of integration

BSWA 308 CPA	BSWA 308 CMC
PA	MC
2014S226-11	京制 01020122 号
BSWA 309 CPA	**BSWA 309 CMC**
PA	MC
2012S233-11	京制 01020122 号

Measurement Screen



BSWA Technology Co., Ltd. Room 1003, North Ring Center, No.18 Yumin Road, Xicheng District, Beijing 100029, China • Tel: 86-10-5128 5118 • Fax: 86-10-8225 1626 • E-mail: info@bswa.com.cn • URL: www.bswa-tech.com

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment Q

Location of ASTs

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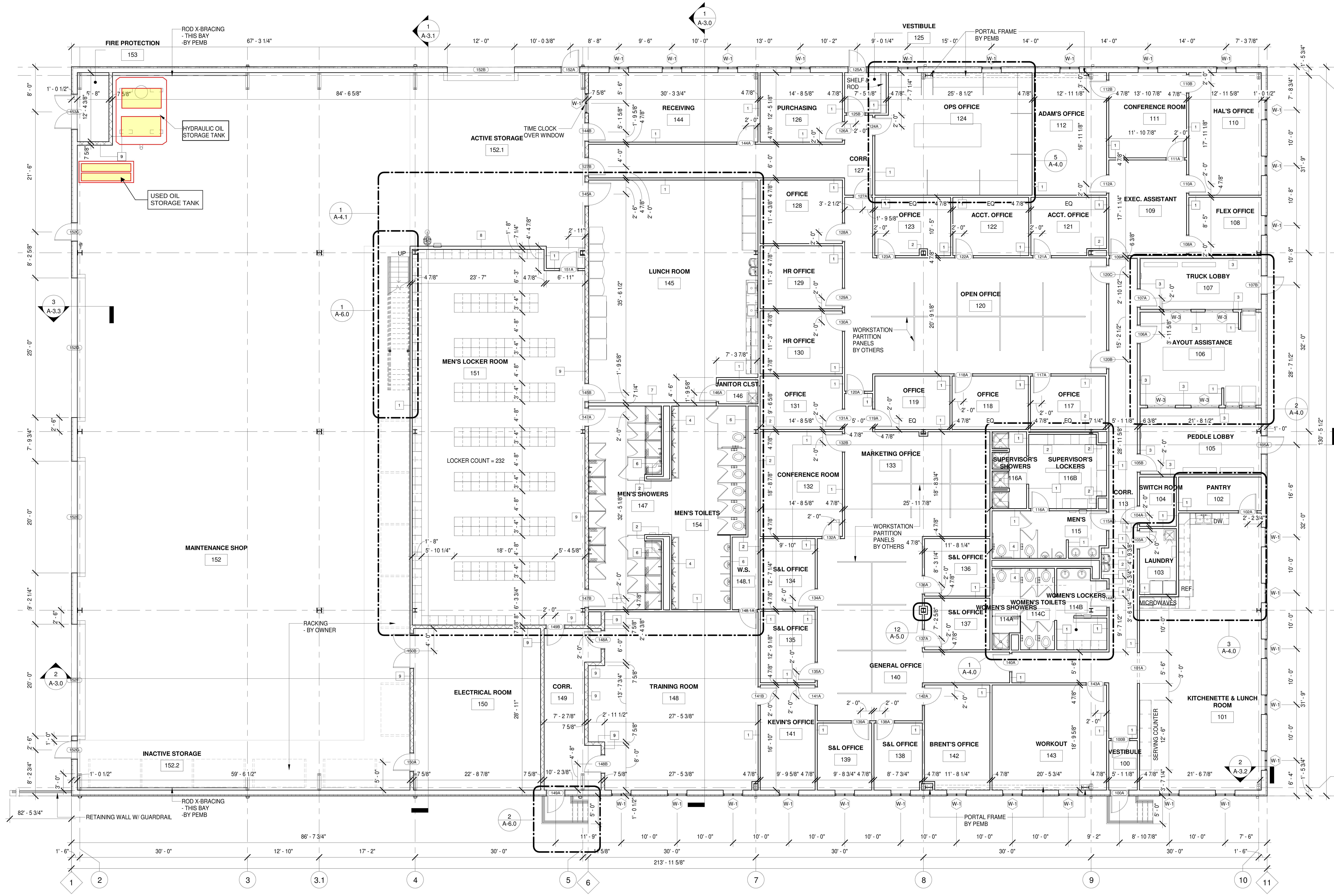
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ROD X-BRACING - THIS BAY -BY PEMB
HYDRAULIC OIL STORAGE TANK
USED OIL STORAGE TANK
ACTIVE STORAGE 152.1
TIME CLOCK OVER WINDOW
RECEIVING 144
PURCHASING 126
VESTIBULE 125
PORTAL FRAME BY PEMB
SHELF ROD
CORR 127
OPS OFFICE 124
ADAM'S OFFICE 112
CONFERENCE ROOM 111
HAL'S OFFICE 110
OFFICE 128
OFFICE 123
ACCT. OFFICE 122
ACCT. OFFICE 121
EXEC. ASSISTANT 109
FLEX OFFICE 108
LUNCH ROOM 145
HR OFFICE 129
HR OFFICE 130
OPEN OFFICE 120
WORKSTATION PARTITION PANELS BY OTHERS
TRUCK LOBBY 107
LAYOUT ASSISTANCE 106
MEN'S LOCKER ROOM 151
LOCKER COUNT = 232
JANITOR CLST. 146
OFFICE 131
OFFICE 119
OFFICE 118
OFFICE 117
PEDDLE LOBBY 105
MARKETING OFFICE 133
CONFERENCE ROOM 132
SUPERVISOR'S SHOWERS 116A
SUPERVISOR'S LOCKERS 116B
CORR. 113
SWITCH ROOM 104
PANTRY 102
MEN'S SHOWERS 147
MEN'S TOILETS 154
MEN'S 115
LAUNDRY 103
MAINTENANCE SHOP 152
W.S. 148.1
S&L OFFICE 134
S&L OFFICE 136
S&L OFFICE 137
WOMEN'S SHOWERS 114A
WOMEN'S TOILETS 114C
WOMEN'S LOCKERS 114B
MICROWAVES
REF
RACKING - BY OWNER
S&L OFFICE 135
GENERAL OFFICE 140
ELECTRICAL ROOM 150
CORR. 149
TRAINING ROOM 148
KITCHENETTE & LUNCH ROOM 101
KEVIN'S OFFICE 141
S&L OFFICE 139
S&L OFFICE 138
BRENT'S OFFICE 142
WORKOUT 143
VESTIBULE 100
SERVING COUNTER
INACTIVE STORAGE 152.2
RETAINING WALL W/ GUARDRAIL
213' - 11 5/8"

1 OFFICE & MAINTENANCE - FLOOR PLAN
1/8" = 1'-0"

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 N. LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

PROJECT:
GENERAL III, LLC
STRUCTURE A - OFFICE / MAINTENANCE
11551 S. AVE. O
CHICAGO, IL., 60617

#	DATE	ISSUE
3	04/01/2020	REVISON TO PERMIT
2	9/13/2019	PERMIT REVISION
1	07/16/2019	ISSUE FOR PERMIT REVIEW

FLOOR PLAN

PROJECT #:	DATE:
7563	7/16/19

A-1.0

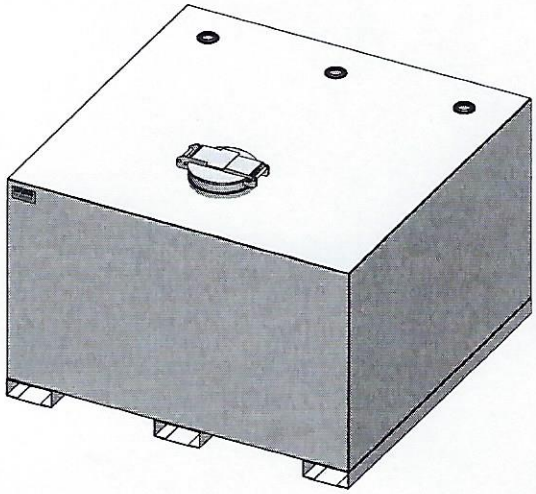
550 GAL OIL TANK

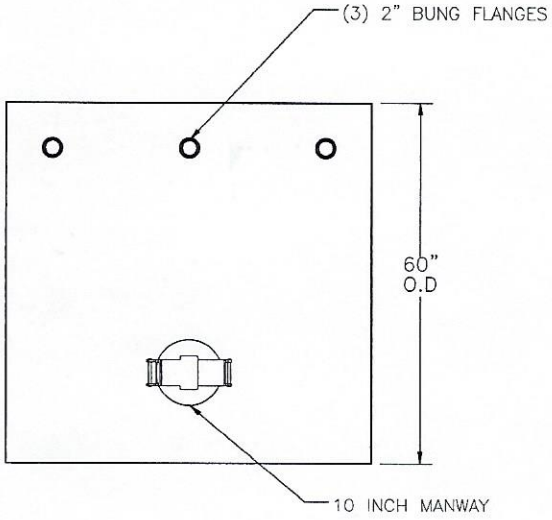
DWG: 201229-10-01 v 1.00

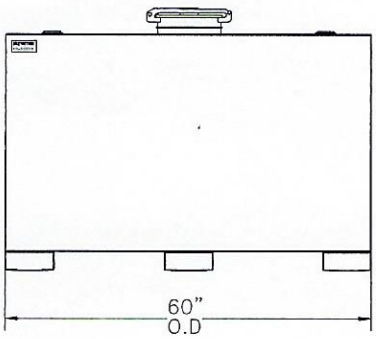
PREPARED FOR: GENERAL IRON
QUOTE: NA REF: #

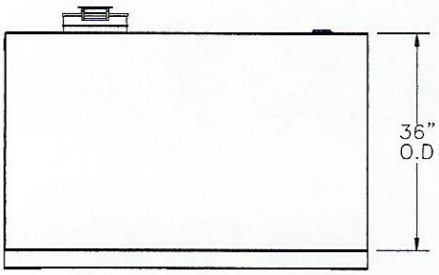
CAPACITY: 550 GAL
MATERIAL: 10 GA PLAIN CARBON STEEL
FINISH: CLEAN & DEBURR
TARE: 747.97 LBS TOTAL

ALL TANKS FEATURE HEAVY DUTY DOUBLE WELDED CONSTRUCTION AND FACTORY LEAK TESTED AT 3–5 PSI.









PRODUCT: PER BOM

WW ENGINEERING COMPANY
4323 W. 32ND STREET
CHICAGO, IL 60623
(773) 376-9494
FAX: (773) 376-0831

CREATED: 12/29/2020
UPDATED: 12/29/2020
AUTHOR: AMB

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment R

Fugitive Emission Calculations for Paved and Unpaved Roads

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Addendum 1 - Attachment R
PM10 Emissions from Paved and Unpaved Roadways

The following information details the calculation of estimated fugitive PM10 emissions from paved and unpaved roadways. Emission calculations were performed in accordance to AP42 Chapter 13.2.1 (Jan 2011) for paved roads and AP42 Chapter 13.2.2 (Nov 2006) for unpaved roads. These calculations were included in the application for the IEPA air emissions construction permit.

Vehicle Traffic on Paved Roads

The vast majority of material received at the proposed facility will be delivered by semi-trailers and the remaining portion will enter the facility in pickup truck sized vehicles driven by peddlers. Vehicles will enter the facility through a controlled gate and travel over a weigh scale before being routed to a designated unloading area. Proposed vehicle routes are shown in Figure 4-2 in the Metals Air Dispersion Modeling Report submitted to IEPA. Figure 4-2 is included herein for clarity.

Emissions from vehicle traffic on paved road surface are estimated using the methodology in AP-42, 13.2.1 Paved Roads (Jan 2011).

$$E_{ext} = (k * (sL)^{0.91} * (W)^{1.02}) * (1 - (P/(4N)) \quad (1)$$

Where,

E_{ext} =	Size specific annual average particulate emission factor (lb/VMT)
k = 0.0022	Particle size multiplier lb PM_{10}/VMT (AP-42 Table 13.2.1-1)
sL = 9.7	Mean controlled silt content (AP42 Table 13.2.1-3 Jan 2011 - Iron & Steel Range: 0.09 to 79; mean 9.7-g/m2)
W	Mean vehicle weight, tons (from facility representatives)
P = 120	Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N= 365	Averaging period, annual
75%	Emission control efficiency for sweeping or watering

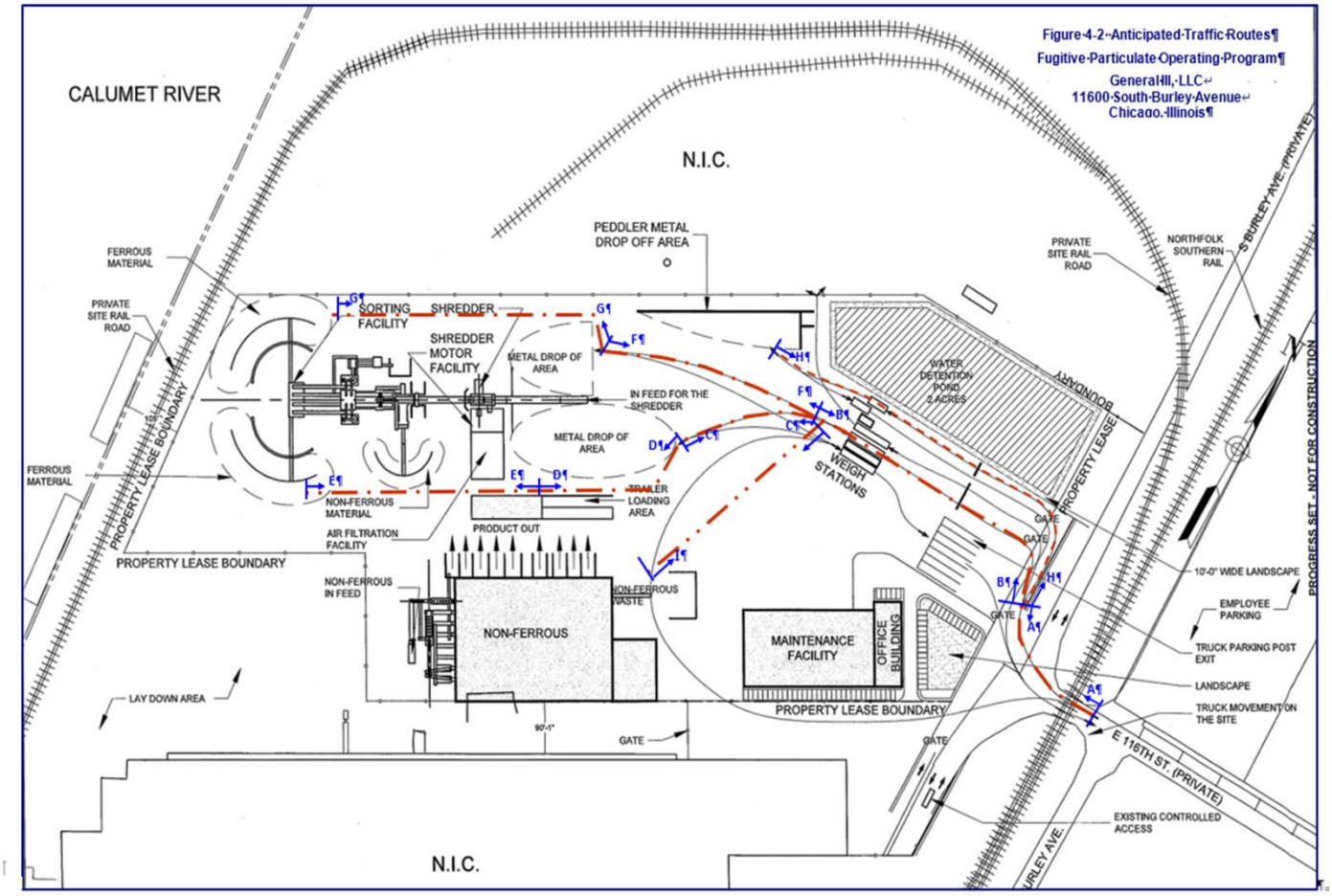
Table 1 shows type of vehicle and vehicle average weight per trip. These are based on analysis of vehicle weight at GII current operations. Uncontrolled and controlled emission factors in lb/VMT (vehicle miles traveled) were estimated for each type of vehicle using Equation 1, see Table 1.

In order to estimate the vehicle miles traveled in an hour, possible routes that each vehicle type travels were reviewed and measured, see Table 1- round trip miles. Assumptions were then made of the amount of materials moved within the plant to estimate the average number of trips made in an hour by each vehicle type. Controlled emissions for each vehicle type are shown in Table 1.

The roads in the plant were divided into 9 segments to describe vehicle routes. Segments are shown on

Figure 1 below. Segment A is outside the facility property line and is not included in this discussion. However, it was left here because it was shown on Figure 1. The route that each vehicle type takes is described as a combination of road segments, shown in Table 2.

Figure 1 – Anticipated Traffic Routes



For each vehicle type, the length of the segments that construct the subject vehicle route were expressed as a percentage of the total length of the route, as shown in Table 3. These ratios are multiplied by the PM_{10} emissions of each vehicle type emissions and are then added for each segment, see table 3.

For simplicity in the dispersion modeling the following road segments were combined: road segments C, D, and E and road segments F and G. Segment A/B in the model represents segment B, as no emissions from segment A need to be included. Breakdown of emissions per segment and per volume source are shown in Table 4.

Addendum 1 - Attachment R
PM10 Emissions from Paved and Unpaved Roadways

Table 1. Description of Vehicle Type and PM10 Emission Estimate

Paved Roads Vehicle Type	Gross Vehicle Weight (tons)	Tare Vechicle Weight (tons)	Mean Vehicle Weight (tons)	Average Number of Trips per Hours (trips/hr)	Round Trip Miles (miles)	Average Miles Traveled per Hour	Uncontrolled PM10 Emission Factor (lb/VMT)	Controlled PM10 Emission Factor Emissions (lb/VMT)	Controlled Emission Rate (lb/hr)
Peddler Scrap Deliveries	3.80	3.10	3.45	25.44	0.29	7.40	0.0565	0.0141	0.104
Truck Scrap Delivery to North Scrap Stockpile	32.00	17.00	24.50	3.53	0.37	1.29	0.4170	0.1043	0.135
Truck Scrap Delivery to South Scrap Stockpile	32.00	17.00	24.50	7.16	0.31	2.22	0.4170	0.1043	0.232
Ferrous Scrap Shipment from North Stockpile	38.00	15.50	26.75	1.45	0.55	0.80	0.4560	0.1140	0.091
Ferrous Scrap Shipment from South Stockpile	38.00	15.50	26.75	2.00	0.59	1.18	0.4560	0.1140	0.134
Ferrous Waste Shipped Off Site by Truck	40.00	15.50	27.75	0.03	0.55	0.02	0.4734	0.1184	0.002
Non Ferrous Products Shipped Off Site by Truck	38.00	15.50	26.75	0.16	0.43	0.07	0.4560	0.1140	0.008
Non Ferrous Waste Shipped Off Site by Truck	40.00	15.50	27.75	1.46	0.37	0.54	0.4734	0.1184	0.064
WA500 Loaders*	40.50	32.49	36.49	0.99	0.62	0.61	0.6260	0.1565	0.096
WA300 Loaders*	18.60	14.59	16.60	0.45	0.62	0.28	0.2803	0.0701	0.019
Totals									**0.885**

* Assumes that loaders will travel 100% on paved roads.

Table 2. Vehicle Routes Presented as Road Segments

	Paved Road Segments Travelled (ft)								
	0	556	264	303	433	411	481	768	423
Vehicle Type	**A***	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Peddler Scrap Deliveries								x	
Truck Scrap Delivery to North Scrap Stockpile		x				x			
Truck Scrap Delivery to South Scrap Stockpile		x	x						
Ferrous Scrap Shipment from North Stockpile		x				x	x		
Ferrous Scrap Shipment from South Stockpile		x	x	x	x				
Ferrous Waste Shipped Off Site by Truck		x				x	x		
Non Ferrous Products Shipped Off Site by Truck		x	x	x					
Non Ferrous Waste Shipped Off Site by Truck		x							x
WA500 Loaders				x	x	x	x		
WA300 Loaders				x	x	x	x		

Addendum 1 - Attachment R
PM10 Emissions from Paved and Unpaved Roadways

Table 3. Segment Ratio of Total Vehicle Route and PM_{10} Emissions per Segment

Vehicle Type	Ratio of Segment from Total Vehicle Route								
	A*	B	C	D	E	F	G	H	I
Peddler Scrap Deliveries		0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Truck Scrap Delivery to North Scrap Stockpile		0.57	0.00	0.00	0.00	0.43	0.00	0.00	0.00
Truck Scrap Delivery to South Scrap Stockpile		0.68	0.32	0.00	0.00	0.00	0.00	0.00	0.00
Ferrous Scrap Shipment from North Stockpile		0.38	0.00	0.00	0.00	0.28	0.33	0.00	0.00
Ferrous Scrap Shipment from South Stockpile		0.36	0.17	0.19	0.28	0.00	0.00	0.00	0.00
Ferrous Waste Shipped Off Site by Truck		0.38	0.00	0.00	0.00	0.28	0.33	0.00	0.00
Non Ferrous Products Shipped Off Site by Truck		0.50	0.24	0.27	0.00	0.00	0.00	0.00	0.00
Non Ferrous Waste Shipped Off Site by Truck		0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.43
WA500 Loaders		0.00	0.00	0.19	0.27	0.25	0.30	0.00	0.00
WA300 Loaders		0.00	0.00	0.19	0.27	0.25	0.30	0.00	0.00

	A*	B	C	D	E	F	G	H	I
Total Emission Rates per Segment (lb/hr)	0.00	0.36	0.10	0.05	0.07	0.11	0.06	0.10	0.03

* Segment A falls outside of the facilty fense and is not included in the modeling. However, it is left in the model due to initial set up of road segments.

Table 4. PM_{10} Emissions per Segment and per AERMOD Volume Sources

Paved Roads Segments in AERMOD Model	PM10 Emiss. Rate (lb/hr)	No. of Volume Sources	PM10 Emiss. per Vol. Source (lb/hr)
A*/B	0.36	10	0.03583
C/D/E	0.22	29	0.00748
F/G	0.18	25	0.00710
H	0.10	10	0.01044
I	0.03	17	0.00163

Note: For simplicity the following road segments were combined in the model: Road Segments C, D, & E, and Road Segements F & G.

Vehicle Traffic on Unpaved Roads

In the permit application, based on facility information, it was assumed that the majority of the roads will be paved. Only a small portion of facility roads, less than 5%, might be left unpaved. The unpaved roads will be in areas where regular daily traffic is not anticipated. For that reason, unpaved road emissions were not considered in the modeling but were included in the construction permit application (as presented below) for completeness.

Emissions from vehicle traffic on unpaved road surface are estimated using the methodology in AP-42, 13.2.2 Unpaved Roads (11/2006).

Addendum 1 - Attachment R
PM10 Emissions from Paved and Unpaved Roadways

$$E_{ext} = [(k * (s/12)^a * (W/3)^b]*[(N-P)/N]$$

Where,

E_{ext} =	Size specific annual average particulate emission factor (lb/VMT)
k = 1.5	Particle size multiplier lb PM_{10}/VMT (AP-42 Table 13.2.2-2)
s = 6	Mean controlled silt content (AP42 Table 13.2.2-1 Nov 2006 - Iron & Steel Production: mean = 6.0%)
W	Mean vehicle weight, tons (from facility representatives)
P = 120	Number of precipitation days (>0.01 in) per year (AP42 Fig 13.2.1.2 Jan 2011 - Chicago, IL)
N= 365	Averaging period, annual
50%	Emission control efficiency for sweeping or watering
a = 0.9 b=0.45	Constants, (AP-42, Table 13.2.2-2 Nov 2006 – Industrial Roads (Eq. 1a))

Table 1 (above) shows type of vehicle and vehicle average weight per trip. These are based on analysis of vehicle weight of GII current operations. Uncontrolled and controlled emission factors in lb/VMT (vehicle miles travel) are estimated for each type of vehicle in Table 1.

Rubber tired end loaders are the vehicle most likely to utilized unpaved roads. Emissions are shown in Table 5.

Table 5. PM_{10} Emissions from Unpaved Roads

Vehicle Type	Gross Vehicle Weight (tons)	Tare Vehicle Weight (tons)	Mean Vehicle Weight (tons)	Average Number of Trips per Hours (trips/hr)	Round Trip Miles (miles)	Average Miles Traveled per Hour	Uncontrolled Emissions (lb/VMT)	Controlled Emissions (lb/VMT)	Controlled Emission Rate (lb/hr)
WA500 Loaders	40.50	32.49	36.49	0.99	0.03	0.03	1.6609	0.8305	0.025
WA300 Loaders	18.60	14.59	16.60	0.45	0.03	0.01	1.1651	0.5826	0.008
Totals									0.033

Corrected PM10 Emission Rate for DC-01:

|The emission rate for the Fine Processing System was estimated to be 0.0086 lbs/min. However, it was incorrectly entered in the model as being in lb/hr. A revised emission rate of 0.5143 lb/hr was used and the PM_{10} model was re-run to quantify the effect of this correction. The revised model also incorporated final building heights and source characteristics.

The revised predicted impact is shown in the table below. The revised predicted impact is 30.02 µg/m3, revised from 29.37 µg/m3. It can be seen that the impact of this emission source is minimal.

Addendum 1 - Attachment R
PM10 Emissions from Paved and Unpaved Roadways

Revised PM_{10} Predicted Impacts

Pollutant	Meteorological Data	Averaging Period	Rank	AERMOD Predicted Concentration ($\mu g/m^3$)	Coordinates	
					East (m)	North (m)
PM_{10}	2012-2016	24-HR	6TH	30.02	454091	4614866

Comparison of Modeling Results to NAAQS Standard for PM_{10}

Parameter	Units	24-Hour Average
PM10 NAAQS Standard	µg/m3	150.00
Maximum Predicted PM10 Impact	µg/m3	30.02
Predicted Impact Meets Standard	Yes/No	Yes

Standard Cubic Feet vs. Dry Standard Cubic Feet:
Applying additional correction for actual standard cubic feet versus the dry standard cubic feet used in the current calculations is not expected to affect the result. In addition, there are no combustion sources in the Fine Processing Building and no water spraying. We can expect that there is minimal difference between dry and actual flow rate.

The earlier metals modeling used the correct emission rate from this baghouse (0.5143 lb/hr).

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Addendum 1 – Attachment S

Revision of Modeling for DC-01 PM10 Emission Rate

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Addendum 1 - Attachment S
Modeled Emission Rate for DC-01

The following information addresses two issues (17b and 17c) identified during CDPH's review of the initial Large Recycling Facility Permit application.

c. *The emission rate for the Fines Processing System of .0086 should be in pounds per minute (lbs./min), not pounds per hour (lbs./hr.). In addition, this value was not computed using the dry standard cubic feet (dscf) value. Show that:*

i) *the correct emission rate was used in the dispersion modeling; and*

ii) *the loss of accuracy in not using the dscf value in calculating the emission rate out of the Fines Processing System stack is insignificant*

i. Corrected PM_{10} Emission Rate for DC-01:

|The emission rate for the Fine Processing System was estimated to be 0.0086 lbs/min. However, it was incorrectly entered in the model as being in units of lb/hr. The lb/min value was converted to a lb/hr value (0.5143 lb/hr) and the PM_{10} modeling analysis was repeated. The revised model also incorporated final building heights and source characteristics.

The revised predicted impact is shown in the Table 1 below. The change in the PM_{10} emission rate resulted in a slight increase in the predicted maximum 6th highest 24-hour average concentration from 29.37 to 30.02 µg/m^3. This result demonstrates that this emission source (DC-01) has only minimal impact on the predicted off site concentrations of PM_{10}.

Table 1 Revised PM_{10} Predicted Impacts

Pollutant	Meteorological Data	Averaging Period	Rank	AERMOD Predicted Concentration (µg/m^3)	Coordinates	
					East (m)	North (m)
PM_{10}	2012-2016	24-HR	6TH	30.02	454091	4614866

Comparison of Modeling Results to NAAQS Standard for PM_{10}

Parameter	Units	24-Hour Average
PM10 NAAQS Standard	µg/m3	150.00
Maximum Predicted PM10 Impact	µg/m3	30.02
Predicted Impact Meets Standard	Yes/No	Yes

ii. Standard Cubic Feet vs Dry Standard Cubic Feet:

Modeling was performed at a design flow rate of 12,000 cfm for Dust Collector DC-01. This dust

collector treats air emissions from the Fines Processing Building, which is part of the Non-Ferrous Material Separation System.

The exhaust gases from emission units controlled by DC-01 do not include combustion gases. Further, the emissions sources in the Fines Processing Building do not process saturated materials or use water sprays. Therefore, correction of the exhaust gas flow rate would be limited to removal of ambient humidity, which would result in only a minimal reduction in the flow rate. Based on our professional opinion, this minor correction is not expected to have a significant impact on the predicted off-site PM_{10} concentrations.

It should be noted that the metals modeling analysis performed for IEPA did use the correct PM10 emission rate from DC-01 (0.5143 lb/hr).

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Addendum 1 – Attachment T

Radiation Detection Procedures and Equipment Specifications

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RADCOMM
RADIATION DETECTION SYSTEMS

RAD/COMM SYSTEMS CORP.
2931 Portland Drive
Oakville, Ontario
Canada L6H 5S4
Tel. (905) 829-8290
Fax. (905) 829-1406
N.A. Toll Free: 1-800-588-5229

January 5, 2021

Contact Name: Jeff Jones
Organization: General Iron

CALIBRATION OF RADCOMM EQUIPMENT

Dear Mr. Jones,

This letter is to address your query with regards to the recommended calibration frequency of the Radiation Detection Systems you have purchased.

With all radiation detection systems, the main component of the system is the detection medium which in this case is the PVT (RC4000) and Crystal (RC7000).

As part of our manufacturing and quality assurance processes ahead of initial installation, we ensure that this detection medium is factory calibrated to meet Radcomm's strict requirements for quality and accuracy of the product once onsite and working for you. This medium does degrade over time due to environmental conditions and other factors and although Radcomm puts in place protections to mitigate against any degradation, this effect cannot be fully mitigated. The annual calibration process that Radcomm strongly recommends is how we ensure that we are identifying proactively any impacts that your equipment is experiencing so that we can make necessary adjustments or recommendations.

The systems are all programmed to notify when calibration is required, specifically on the anniversary of initial calibration. Although calibration is not mandatory, we do highly recommend it as a way to ensure the most optimal operating quality of your investment.

In addition to RadComm's 1 year overall system warranty, RadComm also guarantees that all internal electrical assembly parts have a 10-year availability so that the system can be maintained without interruption.

If you have any questions, please feel free to contact me.

Erik Phongphilack
Service Manager
Radcomm Systems
T:905.829.8290x214

RADCOMM
RADIATION DETECTION SYSTEMS

Radiation Detection Procedures

Southside Recycling is equipped with a very extensive set of radiation detectors provided by RadComm Systems. The detectors purchased for the Facility inspect both inbound and outbound material for the presence of radioactivity. Inbound scrap metal is inspected by a radiation detector located at the truck scales. Unlike other recycling facilities, Southside Recycling has added an additional radiation detection system located above the material on a conveyor in the ferrous shredding system. Outbound scrap metal is inspected once again by a radiation detector located at entrance to the scale exiting the facility. Southside Recycling has a multi-tiered approach to detection of radioactive materials.

Following are the procedures to be followed by Southside Recycling personnel when inspecting for the presence of radioactive material:

1. If an incoming load of scrap metal sets off the radiation detection alarm at any truck scale, Southside Recycling scale personnel will instruct the driver of the vehicle to drive slowly past the radiation detector a second time in order to rule out the possibility of a false alarm.

2. If the load of scrap metal sets off the radiation detection alarm a second time, Southside Recycling scale personnel will view the radiation detection monitor in order to determine the approximate location of the radiation within the load.

3. Southside recycling personnel will use the handheld radiation detector to determine if the driver is the cause of the alarm due to a recent medical procedure. If the driver is determined to not be the issue then we will proceed to the next step. If the driver is determined to be the likely cause, then a substitute driver will drive the vehicle past the detector to determine if there is also an issue with the material.

4. If it's determined that the material is the likely cause of the alarm, then the driver of the truck will be directed to an isolated area of the facility specifically designated for handling potentially radioactive material.

5. Southside Recycling personnel that have been trained in the use of portable radiation detection equipment along with a heavy equipment operator will be directed to the designated area of the facility to inspect the load.

6. Using portable radiation detection equipment, Southside Recycling personnel will identify the specific piece or pieces of material that are radioactive.

7. If no potentially radioactive material is identified within the load of scrap, Southside Recycling personnel will inspect the emptied truck to determine whether residual material from a previous shipment unrelated to Southside Recycling may be the source of the radioactivity.

8. If the radiation detection alarm at the shredder discharge conveyor is set off, the conveyor will stop automatically and Southside Recycling personnel will inspect the material on the conveyor using portable radiation detection equipment to identify the source of the radiation. If no piece can be identified, the material on the conveyor is discharged off to the side and the material is run back through the scale conveyor detection system.

9. Any potentially radioactive material that is discovered will be separated from the remainder of the load and placed in a designated and properly labeled container, with cover, in order to prevent unauthorized access to the material. The material will then be transferred to the Radioactive Material Storage Room, which is located in a designated, remote area of the facility, and the Illinois Emergency Management Agency (IEMA) will be notified by calling (217) 785-9900.

   Note: Southside Recycling is not considered a generator of radioactive waste since any potentially radioactive material is handled and removed by IEMA personnel under the Illinois Orphan Source Recovery Program.

10. Southside Recycling will periodically review and revise these procedures as necessary to ensure the proper handling and appropriate disposition of all potentially radioactive materials.

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Addendum 1 – Attachment U

Example of Load Tracking Documentation

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GII Material Sales & Purchases by Year-Month-Day-Hour

Year	Month	Day	Time of Day (24Hr)	Source	Partner Type	Material Desc	Vehicle Type	Ticket No	Net Wt	NT	GT
2020	12	31	5	Inbound	Demo	Sheet Iron	T	TGJIFR	34,800	17.40	15.54
								TGJIFW	2,100	1.05	0.94
				Outbound	Customer	Regular Shredded	T	TGJIFP	44,380	22.19	19.81
								TGJIFQ	44,340	22.17	19.79
								TGJIFS	51,840	25.92	23.14
								TGJIFT	46,140	23.07	20.60
								TGJIFU	45,900	22.95	20.49
								TGJIFV	43,280	21.64	19.32
								TGJIFX	44,520	22.26	19.88
								TGJIFZ	44,720	22.36	19.96
								TGJIGH	46,820	23.41	20.90
			6	Inbound	Dealer	Complete Car-3	T	TGJIGB	26,180	13.09	11.69
						Empty Car-1	T	TGJIGE	22,120	11.06	9.88
						Sheet Iron	T	TGJIGR	36,440	18.22	16.27
								TGJIGZ	31,880	15.94	14.23
					Demo	Clean Sheet	T	TGJIFY	44,060	22.03	19.67
					Garbage	Nails, Nuts, Bolts, Screws	T	TGJIGM	21,600	10.80	9.64
					Peddler	Sheet Iron	T	TGJIGC	3,860	1.93	1.72
								TGJIGD	820	0.41	0.37
								TGJIGF	1,900	0.95	0.85
								TGJIGG	520	0.26	0.23
								TGJIGI	1,820	0.91	0.81
								TGJIGJ	880	0.44	0.39
								TGJIGS	3,940	1.97	1.76
								TGJIGU	1,300	0.65	0.58
								TGJIHB	500	0.25	0.22
				Outbound	Customer	Regular Shredded	T	TGJIGK	44,320	22.16	19.79
								TGJIGP	43,820	21.91	19.56
								TGJIGT	46,760	23.38	20.88
			7	Inbound	Dealer	Complete Car-3	T	TGJIHG	3,720	1.86	1.66
								TGJIHP	5,960	2.98	2.66
								TGJIHQ	28,360	14.18	12.66
						Incomplete Car-2	T	TGJIHQ	12,000	6.00	5.36
						Sheet Iron	T	TGJIHT	37,620	18.81	16.79
					Demo	Clean Sheet	T	TGJIHA	29,020	14.51	12.96
						Sheet Iron	T	TGJIGV	32,580	16.29	14.54
								TGJIHD	26,980	13.49	12.04
								TGJIHV	41,820	20.91	18.67

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Addendum 1 – Attachment V

Draft Health and Safety Plan

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Southside Recycling
Corporate Health and Safety Program

One of the guiding principles of Southside Recycling is the safety, health and wellbeing of each and every employee of this organization. We value honesty, integrity and teamwork, and we truly appreciate the contributions our employees make toward our shared success. Our goal is very simple… Everyone goes home every day. To this end, we operate with the objective of no loss or damage to people, property and/or our finished products. This is achieved in part through the concept that everyone shares equally in the responsibility of identifying hazards, following safety rules and operating practices, and communicating with one another. All jobs and tasks must be performed in a safe manner, as safety is an integral part of our success.

Health and Safety Policy

At Southside Recycling, no phase of the operation is considered more important than accident prevention. The following components define our Health and Safety Program:

- It is our policy to provide and maintain safe working conditions and to follow operating practices that will safeguard all employees. No job will be considered properly completed unless it is performed in a safe manner. Safety and health in our company must be a part of every operation. Without question, it is every employee's responsibility at all levels.
- We will maintain a safety and health program conforming to industry best practices and prescribed laws and regulations. To be successful, such a program must embody the proper attitudes toward injury and illness prevention on the part of supervisors and employees. It also requires cooperation in all safety and health matters, not only between supervisors and employees, but also between employees and their co-workers. Only through such a cooperative effort can an effective safety and health program be established and preserved.
- The safety and health of every employee is a high priority. Management accepts responsibility for providing a safe working environment and employees are expected to take responsibility for performing work in accordance with safe standards and practices. Safety and health will only be achieved through teamwork. Everyone must join together in promoting safety and health and taking every reasonable measure to assure safe working conditions throughout the company.
- **ZERO TOLERANCE VIOLATIONS** – Due to the potential for serious injury or death associated with violations of certain safety procedures, Southside Recycling has implemented a Zero Tolerance Policy resulting in immediate termination for direct violations of the following Safety Procedures:
    - Failure to isolate equipment/follow Lock Out/Tag Out when required.
    - Unauthorized Entry into a Confined Space.
    - Failure to use Fall Protection Equipment when working in elevated locations.

Personal Protective Equipment Written Program

Southside Recycling

11600 S. Burley Ave.,
Chicago, IL 60617

Table of Contents

PURPOSE and SCOPE

The purpose of this Program is to ensure that protective equipment, including personal protective equipment (PPE) for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, is provided, used, and maintained in a sanitary and reliable condition for all employees at Southside Recycling. The use of PPE may be necessary due to environmental or process hazards, chemical hazards, radiological hazards, or mechanical irritants encountered in the workplace. These hazards may be present in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

This Program establishes the minimum requirements for the proper selection, use, and care of PPE to protect employees from health and safety hazards that cannot reasonably be eliminated from the workplace. This Program has been developed in accordance with Occupational Safety and Health Act (OSHA) requirements as defined in 29 CFR 1910 – Subpart I – Personal Protective Equipment, and addresses all covered activities at this facility. This Program addresses PPE requirements for Eye and Face, Head, Foot, and Hand Protection. Respiratory Protection is not covered in this Program but is addressed separately if required.

Personal protective equipment should not be considered as the only means to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound work practices and procedures. In accordance with the OSHA hierarchy of hazard control, workplace hazards will be managed first through engineering controls, then through work practices and administrative measures, and finally through the use of PPE. As the name implies, personal protective equipment is designed to protect the individual person. However, if hazards can be controlled or eliminated on a larger scale through engineering or administrative means, the protection of all employees is more effectively achieved. PPE should be used to compliment other hazard control measures, and serves as the final barrier between an employee and potential workplace hazards that cannot be reasonably managed or controlled in other ways.

Personal Protective Equipment Program

This Program has been developed to ensure that all employees at Southside Recycling are provided with, and properly use, appropriate and necessary personal equipment to protect them from recognized and anticipated potential hazards in the workplace.

The Occupational Safety and Health Administration (OSHA) revised portions of the General Industry Safety Standards addressing Personal Protective Equipment (PPE). The revised Standards, which became effective 07/05/94, include general requirements for all personal protective equipment and standards that establish design, selection and use requirements for specific types of PPE:

- Eye and Face Protection,
- Head Protection,
- Foot Protection, and
- Hand Protection.

OSHA requires employers to provide employees with PPE when there is a risk of exposure to various hazards. OSHA also requires employees to properly use and care for the PPE that is provided. At Southside Recycling, all employees are required to wear necessary PPE as determined by workplace hazard assessments and/or as dictated by job-specific demands.

The revised regulations require that the employer assess the workplace to determine if there are, or are likely to be, hazards that call for the use of PPE. The employer must certify in writing that he has performed a workplace hazard assessment (See **Appendix A**).

If the assessment identifies hazards, the employer then has to select and require that covered employees use PPE that will protect the affected employees from those hazards. In addition, the employer must select PPE that properly fits each affected employee.

The OSHA Regulation stress the importance of employee training, and state that employees who use PPE must know:

- When PPE is needed,
- What PPE is needed,
- How to properly put on, wear, adjust and take off PPE,
- The useful life and limitations of PPE, and
- How to properly care for, maintain and dispose of PPE.

The employer must document training in writing, naming each employee who has been trained and stating that those individuals have received and understand the required training. OSHA states that employees must demonstrate an understanding of the training, and the ability to use PPE properly, before being

allowed to perform work that requires PPE. Additionally, employers must retrain employees when:

- An employee doesn't appear to have the understanding or skill required to use PPE, and/or
- Changes in the workplace or the types of PPE used make the previous training obsolete.

The OSHA Standard requires that PPE be free of defects and/or damage. The Regulations state that defective and/or damaged PPE shall not be used.

Hazard Identification and Assessment

Each piece of personal protective clothing and equipment is carefully designed to protect against specific hazards. PPE selection must be based on the actual and/or potential workplace and job-specific hazards in order to provide effective barriers to those hazards. OSHA recommends that employers conduct a workplace hazard assessment to evaluate each work area, and to identify sources of hazards that could harm employees. OSHA even identifies basic hazard categories to look for, such as:

- Impact,
- Penetration,
- Compression (roll-over),
- Chemicals,
- Heat,
- Harmful dust, and
- Light (optical) radiation.

This assessment process begins with a review of accident and injury records to identify hazards that could be controlled through the use of PPE. However, not all hazards have resulted in injury. Therefore, a detailed survey of the workplace is required in order to identify other hazards that could cause harm. Contact with moving machines or parts, sharp objects that could pierce or cut the hands, feet, or other body parts, eye hazards, and rolling or pinching objects that could crush the feet, and chemical exposures are all items that must be evaluated. Process generated hazards, such as hot work, welding, electrical hazards, harmful dust, and sources of injurious light radiation must also be considered.

After conducting an assessment and evaluating the identified hazards, PPE selection is made based on the types of protective clothing and equipment that provide the most appropriate barriers to those hazards. PPE selection is also based on comfort and fit. The employer must also provide instructions on the care and use of the PPE. Employees must be made aware of all warning labels, care and inspection requirements, and limitations of the PPE. Refer to **Appendix B** for additional OSHA guidelines on the assessment/selection process.

Eye and Face Protection – *29 CFR 1910.133*

OSHA revised its eye and face protection regulation to more clearly state when this type of gear is needed. The regulation requires workers to use protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation. The following summarizes these requirements as well as general guidance on the use of eye and face protection:

- When the risk is flying objects, OSHA requires workers to wear eye coverings that protect the eyes from the side as well as the front.
- When the risk is injurious light radiation (such as welding or cutting operations), OSHA offers a detailed chart that matches degree of radiation with the type of filter lenses needed to provide adequate protection.
- Those employees who wear prescription lenses while engaged in operations that involve eye hazards shall wear eye protection that incorporates the prescription in its design, or shall wear protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.
- OSHA warns that eyewear with metal frames should never be used in areas with potential electrical hazards as metal conducts electricity and wearing such frames would create a new hazard.
- OSHA requires that every eye and face protector shall be distinctly marked to facilitate identification of the manufacturer. The use of identifying markings allows the employer to verify that employees, visitors or contractors are wearing the appropriate protective equipment.
- Contact lenses or FDA standard hardened or plastic lenses shall not be considered as eye protection as required by these regulations.
- A face shield shall only be worn over primary eye protection devices, never in place of them.
- Lens defogging solution should be used if your eye and face protection tends to fog up.
- Glare from light sources can be minimized by using eyewear with shaded or special purpose lenses suitable to the particular situation.
- Eye and face protection must be inspected prior to and after each use.
- This equipment should be cleaned as needed with soap, mild detergent and water, or other lens cleaning products as specified by the manufacturer. Other manufacturer recommendations such as cleaning materials and storage/maintenance requirements must be followed in order for the equipment to maintain its effectiveness and protective properties.

Head Protection – *29 CFR 1910.135*

OSHA requires that each affected employee wear a protective helmet (hard hat) when working in areas where there is a potential for injury to the head from falling objects. Additionally, each affected employee when near exposed electrical

conductors that could contact the head must wear a helmet designed to reduce the hazard of electric shock.

Safety helmets are designed to provide protection against the hazards associated with falling objects and electrical equipment. Safety helmets can help prevent serious injury by resisting and deflecting the impact of a falling object as it strikes the top of the head. The ability of the protective helmet to absorb this impact is based upon the construction of the shell, the suspension, the inner space, and how all of these components function together.

Safety helmets are divided into two basic types and three classes:

TYPES:

- Type 1 - Helmets with a full brim; not less than 1/4 inch wide, and
- Type 2 - Brimless helmets with a peak extending forward from the crown.

CLASSES:

- Class G - Provides impact and penetration resistance and electrical protection from low-voltage conductors (up to 2,200 volts).
- Class E - Provides impact and penetration resistance and electrical protection from high-voltage conductors (up to 20,000 volts).
- Class C - Provides impact and some penetration resistance but no electrical protection.

Currently, most industrial safety helmets are constructed from a light-weight, high-density, polyethylene thermoplastic resin. The thermoplastic material is highly resistant to impact and penetration from falling objects and is not affected by water, oil and many acids. Additionally, thermoplastic shells have good dielectric properties.

Hard hats should never be worn once damaged and should be kept free from abrasions, nicks, cuts and scraps. Helmets should not be dropped, thrown, or used as a support. Safety helmets can sometimes be personalized using decals or other markings in order to prevent random exchange among workers. Care must be taken so that the marking does not affect the dielectric strength of the helmet or the ability to inspect and detect damage. The shell must never be cut or engraved. Some decals or hot stamp logos can be applied by the manufacturer and are designed to conform to dielectric requirements and ANSI specifications.

Safety helmets should be visually inspected daily for defects such as cracks, abrasions, pits, or marks that could impair the protection capacity. Components of the safety helmet including shell, suspension, headband and accessories should be inspected for signs of wear. Any helmet showing signs of wear, defects, or damage should be removed from service and replaced.

Cleaning should involve the removal of paints, oils and other adherent dirt and grease. The helmet shell can be cleaned in warm water (not in excess of 140°) that contains an appropriate detergent. The helmet should be scrubbed and then rinsed in clear warm water. After rinsing, the helmet should be wiped dry and inspected for damage that might only be apparent after cleaning. The manufacturer should be consulted prior to using a solvent as many solvents can be destructive to the shell or harm the helmet's dielectric properties.

Worker complaints regarding the use of head protection typically have to do with fit and comfort. Improper fit can cause headaches or cause the helmet to move around or fall off. Employees must be instructed on how to adjust the headband and choose the right size to assure both comfort and protection. Adjustments can be made to the headband size as well as to the vertical height of the suspension systems on most helmets. The proper band size should ensure that the helmet stays in place while the worker bends over but should not be so tight that is leaves a mark on the forehead. Hats should never be worn under a hard hat as these items can negatively affect the impact and stability features of a properly adjusted hard hat. Hard hat liners, designed to work with the hardhat suspension system should be used for protection against the cold.

Other employee complaints often have to do with the helmet making them either too hot or too cold. Neither of these complaints is really valid. Studies have shown that, worn in the summer, safety helmets are actually cooler than every day head wear. Safety helmets reflect heat as well or better than regular hats and the open space provided by the suspension allows air to circulate freely resulting in increased ventilation. Helmets worn in the winter can be cooler than normal head wear because of this increased ventilation. However, the use of a winter liner should eliminate this complaint.

Foot Protection – *29 CFR 1910.136*

OSHA requires that each affected employee wear protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where an employee's feet are exposed to electrical hazards.

Shoe manufacturers now offer many styles of "Safety" footwear. However, the quality and protection afforded by this broad range of footwear can vary. Safety shoes must meet the following general performance criteria:
Safety shoes have impact-resistant toes and heat-resistant soles that protect the feet against hot work surfaces common in roofing, paving and hot metal industries. The metal insoles of some safety shoes protect against puncture wounds. Safety shoes may also be designed to be electrically conductive to prevent the buildup of static electricity in areas with the potential for explosive atmospheres or nonconductive to protect workers from workplace electrical hazards.

It is the requirement of Southside Recycling that the safety footwear selected by

employees meets ANSI Z.4l-1991 standards. In general, a steel or composite-toe safety work boot, with appropriated soles is the required style of acceptable footwear at this facility.

Additional foot protection considerations include the following:

- Footwear with a rubber or plastic non-skid sole - provides the best traction and protection against oils, water, chemicals, and other common liquids that are often present on the floor of a workplace.
- Impact protection is required whenever employees are carrying or handling materials such as packages, heavy parts or tools, and during other activities where objects could be dropped or fall onto the feet.
- Compression protection is required for operations that could result in materials rolling over an employee's feet.
- Puncture protection is necessary whenever sharp objects could be stepped on and cause a foot injury.
- In some work situations, metatarsal protection should be provided.
- Safety Work Boots should be routinely inspected for wear, damage, contamination, and failures at the boot sole, boot seems and laces.

Depending on the activity, additional foot and lower leg protection may be warranted, including:

- **Leggings** protect the lower legs and feet from heat hazards such as molten metal or welding sparks. Safety snaps allow leggings to be removed quickly.
- **Metatarsal guards** protect the instep area from impact and compression. Made of aluminum, steel, fiber or plastic, these guards may be strapped to the outside of shoes.
- **Toe guards** fit over the toes of regular shoes to protect the toes from impact and compression hazards. They may be made of steel, aluminum or plastic.
- **Combination foot and shin guards** protect the lower legs and feet, and may be used in combination with toe guards when greater protection is needed.

Special Purpose Shoes

Work operations involving activities around electrical hazards generally require the use of electrical conductive or insulating safety shoes. Electrical protective footwear offers a rubber insulating sole that acts to guard against electric shock. Foot and leg protection choices include the following:

Electrically conductive shoes provide protection against the buildup of static electricity. Employees working in explosive and hazardous locations such as explosives manufacturing facilities or grain elevators must wear conductive shoes to reduce the risk of static electricity buildup on the body that could produce a spark and cause an explosion or fire. Foot powder should not be used

in conjunction with protective conductive footwear because it provides insulation, reducing the conductive ability of the shoes.
Silk, wool and nylon socks can produce static electricity and should not be worn with conductive footwear. Conductive shoes must be removed when the task requiring their use is completed. Note: Employees exposed to electrical hazards must never wear conductive shoes.

Electrical hazard, safety-toe shoes are nonconductive and will prevent the wearers' feet from completing an electrical circuit to the ground. These shoes can protect against open circuits of up to 600 volts in dry conditions and should be used in conjunction with other insulating equipment and additional precautions to reduce the risk of a worker becoming a path for hazardous electrical energy. The insulating protection of electrical hazard, safety-toe
shoes may be compromised if the shoes become wet, the soles are worn through, metal particles become embedded in the sole or heel, or workers touch conductive, grounded items. Note: Nonconductive footwear must not be used in explosive or hazardous locations.

Footwear suppliers and manufacturers should be able to provide information on the styles and materials used in their footwear that provides the best protection, comfort and wear capabilities.

Hand Protection – *29 CFR 1910.138*

OSHA regulations state that employers shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures, chemical burns; thermal burns; and harmful temperature extremes. Employers are required to base their selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.

OSHA acknowledged in the preamble to the Final Rule that although many hand injuries occur because employees fail to use protective gloves, many other injuries occur because employees are wearing the wrong type of glove for the job.

Almost anything in the workplace can be a hand hazard: hand or power tools, chemicals, scrap and hot metal are all common examples. Regardless of the task, your hands are on the front line.

Most hand and finger injuries fall into these categories:

- Traumatic injuries range from cuts and punctures to broken bones to the worse case**,** amputation

- Many cuts or punctures are minor, but if they go through the skin they can sever nerves, tendons, or ligaments, and cause infection.
- Contact injuries are usually skin diseases or burns that can result from direct contact with hot or cold objects, or chemicals, detergents, or metals.

Gloves are one of the best ways to protect your hands from hazards. However, the glove you use must protect against the particular hazard in question. The following is a discussion of various gloves and related hazards:

- Insulated gloves are designed to protect you against heat or cold. If you work around open flame, the fabric should be fire retardant; for radiant heat, it should be reflective. Leather may also be effective for working around hot surfaces and cotton may be sufficient if the degree of heat or cold isn't too severe.
- Special insulated rubber gloves are required around electricity.
- Metal mesh or cut-resistant gloves are the best for handling sharp objects.
- Leather gloves are the choice for rough surfaces.
- Fabric gloves are a good choice for handling slippery objects.
- Neoprene or nitrile rubber gloves are needed if you work with corrosives.
- Specialized chemical-resistant gloves for particular chemicals. When working with chemicals, check the MSDS or chemical resistance chart to determine the best glove choice.

Gloves must fit snugly and comfortably. Dexterity is important so that employees can perform the tasks assigned to them. Sizing and fit of gloves, as well as the type of material from which the gloves are constructed, will affect dexterity as well as level of protection the glove provides.

Body Protection

Employees who face possible bodily injury of any kind that cannot be eliminated through engineering, work practice or administrative controls, must wear appropriate body protection while performing their jobs. In addition to cuts and radiation, the following are examples of workplace hazards that could cause bodily injury:

- Temperature extremes;
- Electrical Hazards;
- Hot splashes from molten metals and other hot liquids;
- Potential impacts from tools, machinery and materials;
- Falls hazards;
- Hazardous chemicals.

There are many varieties of protective clothing available for specific hazards. Employers are required to ensure that their employees wear personal protective equipment only for the parts of the body exposed to possible injury. Examples of body protection include laboratory coats, coveralls, vests, jackets, aprons, flame retardant "greens" surgical gowns and full body chemical suits. If a hazard

assessment indicates a need for full body protection against toxic substances or harmful physical agents, the clothing should be carefully inspected before each use, it must fit each worker properly and it must function properly and for the purpose for which it is intended. Protective clothing comes in a variety of materials, each effective against particular hazards, such as:

- **Paper-like fiber** used for disposable suits provide protection against dust and splashes.
- **Treated wool and cotton** adapts well to changing temperatures, is comfortable, and fire-resistant and protects against dust, abrasions and rough and irritating surfaces.
- **Duck** is a closely woven cotton fabric that protects against cuts and bruises when handling heavy, sharp or rough materials.
- **Leather** is often used to protect against dry heat and flames.
- **Rubber, rubberized fabrics, neoprene and plastics** protect against certain chemicals and physical hazards. When chemical or physical hazards are present, check with the clothing manufacturer to ensure that the material selected will provide protection against the specific hazard.

This equipment is often quite specialized, and care must to be taken to ensure that the right type of PPE is being used for the hazards at hand. Sometimes additional training is required in the proper donning (do on) and doffing (do off) of this equipment, its use limitations, and any additional inspection and care requirements.

Hearing Protection

Hearing conservation is addressed under a specific OSHA standard and is not specifically covered within this program. However, once operations begin at Southside Recycling, we will conduct noise monitoring throughout the operation to determine employee exposures to sound. Based on this testing, we will evaluate the need for a formal Hearing Conservation Program and implement as appropriate.

Cleaning and Maintenance

It is important that all PPE be kept clean and properly maintained by the employee to whom it is assigned. Personal protective equipment must be inspected, cleaned and maintained by employees at regular intervals as part of their normal job duties in order to maintain effective PPE protection. Supervision is responsible for ensuring compliance with proper use, care, and cleaning responsibilities by employees. This is accomplished through employee training as well as management observations and periodic inspection of PPE in use.

In general, employees are not permitted to make repairs or modification to PPE, unless they have been trained and authorized by the Company and/or manufacturer. Damaged or excessively worn PPE should simply be turned in to management and replaced with new PPE. This ensures that employees are not

using equipment for which the inherent safety barriers or functionality has been compromised. Conversely, this equipment is not free, and it is the employee's responsibility to treat all PPE with care and avoid doing things that will damage or reduce the useful life of this equipment.

Employee Training and Program Effectiveness

The effectiveness of a PPE program is largely dependent on employee's understanding and willingness to comply. Since protective clothing is typically worn to protect against substantial hazards, employees who fail to comply are placing themselves and their coworkers at risk. Employee training is a cornerstone to a successful PPE Program. If employees truly understand and appreciate the value of PPE, they are much more likely to use it – at all times.

PPE training should emphasize the value of this equipment in creating effective barriers to hazards, as well as proper use, care and inspection of PPE. The PPE Standard states that employers are required to train each employee who must use PPE. At a minimum, our PPE training program addresses the following:

- When PPE is necessary.
- What PPE is necessary.
- How to properly put on, take off, adjust and wear the PPE.
- The limitations of the PPE.
- Proper care, maintenance, useful life and disposal of PPE.

Employers should make sure that each employee demonstrates an understanding of the PPE training as well as the ability to properly wear and use PPE before they are allowed to perform work requiring the use of the PPE. If an employer believes that a previously trained employee is not demonstrating the proper understanding and skill level in the use of PPE, that employee should receive retraining. Other situations that require additional or retraining of employees include changes in the workplace or in the type of required PPE that renders prior training obsolete.

It is the employees' responsibility to use the personal protective equipment the Company has determined to be necessary to provide protection from hazards while performing job duties. It is management's responsibility to ensure to PPE is being properly used and cared for by employees. Management also has a key role in reinforcing the use of PPE by their example. Managers and supervisors must adhere to all PPE requirements if we expect our employees to comply.

Enforcement of PPE use is sometimes necessary to assure adequate worker protection during all job operations. Management will conduct periodic audits of workers to ensure and reinforce proper use of PPE at all times. Failure to abide by the Company's PPE program will result in progressive disciplinary action, up to and including discharge. In addition to routine observations and inspections by management, the Safety Manager will periodically reassess the workplace. This assessment will be conducted because of process/operational changes,

changes in chemical usage, changes in activities that elevate or reduce existing hazards, new technologies, or for the purpose of reevaluation of existing hazards and current PPE requirements.

PPE Availability

The personal protective standards 29 CFR 1910.132 through 1910.138 establish the employer's obligation to provide personal protective equipment to employees.

The PPE standard requires employers to provide and to pay for personal protective equipment required by the employer for the worker to do his/her job safely and in compliance with OSHA standards. Where equipment is personal in nature and maybe used by workers off the job, the matter of who pays for the PPE may be left to labor - management negotiations.

Summary

Personal protective equipment comprises clothing and accessories designed to create a barrier between workers and hazards in the workplace. All employees must properly use and take care of their PPE – so it can take care of them. A good rule of thumb is to assess the hazards of a situation or activity, utilize good engineering and work practice measures, and finally, create barriers to remaining hazards through the proper use of appropriate Personal Protective Equipment. PPE is only effective if the individual uses it – and as with a seat belt, PPE cannot prevent an incident – but it can create barriers that will dramatically affect the outcome.

PPE and General Workplace Hazard Assessment Form

Company:	**Southside Recycling**	**Date:**	
Job:	**Inspector**		

Body Part	Specific Hazard	Required PPE
Eye & Face	*Impact*	Safety Glasses
	Chemical	NA
	Dust	Safety Glasses
	Glare	Shaded/Indoor/Outdoor Safety Glasses*
	Injurious Radiation	NA
	Other	
Head	*Impact*	Hardhat
	Harmful Contact	Hardhat
	Electrical Shock	NA
	Temperature Extremes	Hardhat Liner*
	Other	
Foot	*Impact*	Steel Toe Work Boots
	Penetration	Steel Toe Work Boots
	Compression	Steel Toe Work Boots
	Other	
Hand & Arm	*Penetration*	Leather Palm Work Gloves
	Chemical	NA
	Electrical Shock	NA
	Thermal Burns	NA
	Temperature Extremes	Glove Liners*
	Lacerations/Abrasions	Work Gloves
	Other	
Other Areas	*Fall Elevated Surface*	NA
	Chemical	NA
	Temperature (Hot/Cold)	Seasonal conditions
	Visibility	High Visibility Clothing
	Hearing Protection	To Be Determined

*** As needed**

OTHER	***Hazard***	***Controls***
Physical Hazards	*Truck/Vehicle Traffic*	High Vis Clothing; Speed Control; Directional Signage
	Struck By Material	Limit assistance with Peddlers; maintain clearance from truck/crane activities; maintain clearance with material transfers
	Mobile Equipment	High Visibility Clothing; Operator Training; Designated travel paths
	Electrical Hazards	NA
	Confined Spaces	NA
	Slips, Trips, Falls	Daily Housekeeping/inspection; maintain walkways, lighting, etc.
	Fall Elevated Surfaces	N/A
	Electrical Hazards	NA
Health Hazards	*Chemical*	NA
	Dust	Limited; engineering controls implemented; TBD if needed
	Noise	To Be Determined after start-up
	Ionizing Radiation	N/A

Notes:	

Certification: I, _____, certify that the workplace hazard assessment and evaluation has been conducted.

Signature: _____

PPE and General Workplace Hazard Assessment Form

Company:	**Southside Recycling**	**Date:**	
Job:	**Laborer/Picker**		

Body Part	Specific Hazard	Required PPE
Eye & Face	*Impact*	Safety Glasses
	Chemical	NA
	Dust	Safety Glasses
	Glare	I/O Safety Glasses*
	Injurious Radiation	NA
	Other	
Head	*Impact*	Hardhat
	Harmful Contact	Hardhat
	Electrical Shock	NA
	Temperature Extremes	Hardhat Liner*
	Other	
Foot	*Impact*	Steel Toe Work Boots
	Penetration	Steel Toe Work Boots
	Compression	Steel Toe Work Boots
	Other	
Hand & Arm	*Penetration*	Leather Palm Gloves
	Chemical	NA
	Electrical Shock	NA
	Thermal Burns	Leather palm/Jersey Gloves
	Temperature Extremes	Glove Liners*
	Lacerations/Abrasions	Leather palm/Jersey Gloves
	Other	
Other Areas	*Fall Elevated Surface*	NA
	Chemical	NA
	Temperature (Hot/Cold)	Seasonal Conditions
	Visibility	High Visibility Clothing
	Hearing Protection	To Be Determined

OTHER	*Hazard*	*Control*
Physical Hazards	*Moving Machinery*	Machine guarding required on all moving equipment/parts; daily inspect; work on equipment only under Lock Out/Tag Out protection.
	Conveyors	Conveyor guarding required on all conveyors; daily Inspect; LOTO
	Mobile Equipment	High Visibility Clothing; Operator Training; Designated travel paths
	Electrical Hazards	Limited access; training; Authorized Personnel only; proper installation
	Confined Spaces	NA
	Slips, Trips, Falls	Daily Housekeeping/inspection; maintain walkways, lighting, etc.
	Fall Elevated Surfaces	N/A
	Electrical Hazards	NA
Health Hazards	*Dust*	Limited; engineering controls implemented; TBD if needed
	Noise	To Be Determined after start-up
	Ionizing Radiation	N/A

Notes:	

Certification: I, _____, certify that the workplace hazard assessment and evaluation has been conducted.

Signature: _____

PPE and General Workplace Hazard Assessment Form

Company:	**Southside Recycling**	**Date:**	
Job:	**Maintenance**		

Body Part	Specific Hazard	Required PPE
Eye & Face	*Impact*	Safety Glasses
	Chemical	Chemical Resistant Goggles (when handling liquid chemicals)
	Dust	Safety Glasses
	Glare	Indoor/Outdoor Safety Glasses as needed
	Injurious Radiation	Tinted Face Shield **(Welding)** / Tinted Glasses **(Hot Work Cutting)**
	Other	Headgear/Face Shield **(Grinding/Working With Pressure)**
Head	*Impact*	Hardhat
	Harmful Contact	Hardhat
	Electrical Shock	Hardhat
	Temperature Extremes	Hardhat Liner*
	Other	Welding Helmet when welding
Foot	*Impact*	Steel Toe Boots
	Penetration	Steel Toe Boots
	Compression	Steel Toe Boots
	Other	
Hand & Arm	*Penetration*	Leather Work Gloves
	Chemical	Chemical Resistant Gloves (Handling Chemicals)
	Electrical Shock	Insulated Gloves - limited to Authorized Electrical worker
	Thermal Burns	Leather Work Gloves (Performing Hot Work)
	Temperature Extremes	Glove Liners*
	Lacerations/Abrasions	Leather Work Gloves
	Other	Activity specific conditions - TBD
Other Areas	*Fall Elevated Surface*	Full Body Harness/Self Retracting Lifeline
	Chemical	Chemical Resistant Gear (Working With Chemicals)
	Temperature (Hot/Cold)	Seasonal
	Visibility	High Visibility Striping
	Hearing Protection	Hearing Protection To Be Determined

** As needed*

OTHER	***Hazard***	***Control***
Physical Hazards	*Moving Machinery*	Machine guarding required on all moving equipment/parts; daily inspect; work on equipment only under Lock Out/Tag Out protection.
	Conveyors	Conveyor guarding required on all conveyors; daily Inspect; LOTO
	Mobile Equipment	High Visibility Clothing; Operator Training; Designated travel paths
	Electrical Hazards	Limited access; training; Authorized Personnel only; proper installation of electrical systems;
	Confined Spaces	Labelled/Controlled Access; Training; Authorized Entrants Only
	Slips, Trips, Falls	Daily Housekeeping/inspection; maintain walkways, lighting, etc.
	Fall Elevated Surfaces	Body Harness/Self-Retracting lifelines/anchors; Authorized Only
Health Hazards	*Chemical*	Limited chemical usage; use PPE and follow directions as needed; activity specific practices/controls;
	Dust	Limited; engineering controls implemented; TBD if needed
	Noise	To Be Determined after start-up
	Ionizing Radiation	N/A

Certification: I, _____, certify that the workplace hazard assessment and evaluation has been conducted.

Signature: _____

PPE and General Workplace Hazard Assessment Form

Company:	**Southside Recycling**	**Date:**	
Job:	**Mobile Equipment Operator**		

Body Part	Specific Hazard	Required PPE
Eye & Face	*Impact*	Safety Glasses
	Chemical	
	Dust	Safety Glasses
	Glare	Indoor/Outdoor Safety Glasses*
	Injurious Radiation	
	Other	
Head	*Impact*	Hardhat when outside unit protection**
	Harmful Contact	Hardhat when outside unit protection**
	Electrical Shock	
	Temperature Extremes	Hardhat Liner*
	Other	
Foot	*Impact*	Steel Toe Boots
	Penetration	Steel Toe Boots
	Compression	Steel Toe Boots
	Other	
Hand & Arm	*Penetration*	Work Gloves*
	Chemical	Work gloves as needed ***
	Electrical Shock	
	Thermal Burns	Limited; Work Gloves*
	Temperature Extremes	Glove Liners*
	Lacerations/Abrasions	Limited; Leather work gloves*
	Other	
Other Areas	*Fall Elevated Surface*	NA
	Chemical	NA
	Temperature (Hot/Cold)	Seasonal Conditions
	Visibility	High Visibility Vest
	Hearing Protection	Hearing Protection To Be Determined

*** As needed** **** When outside protection of unit.**

***** When changing out propane cylinders**

OTHER HAZARDS	***Hazard***	***Control***
Physical Hazards	*Moving Machinery*	Machine guarding required on all moving equipment/parts; daily
	Conveyors	NA
	Mobile Equipment	High Visibility Clothing; Operator Training; Designated travel paths
	Electrical Hazards	NA
	Confined Spaces	NA
	Slips, Trips, Falls	Daily Housekeeping/inspection; maintain walkways, lighting, etc.
	Fall Elevated Surfaces	N/A
	Electrical Hazards	NA
Health Hazards	*Dust*	Limited; engineering controls implemented; TBD if needed
	Noise	To Be Determined after start-up
	Ionizing Radiation	N/A

Notes:	

Certification: I, _____, certify that the workplace hazard assessment and evaluation has been conducted.

Signature: _____

PPE and General Workplace Hazard Assessment Form

Company:	**Southside Recycling**	**Date:**	
Job:	**Shredder Operator**		

Body Part	Specific Hazard	Required PPE
Eye & Face	*Impact*	Safety Glasses
	Chemical	NA
	Dust	Safety Glasses
	Glare	I/O Safety Glasses*
	Injurious Radiation	NA
	Other	
Head	*Impact*	Hardhat
	Harmful Contact	Hardhat
	Electrical Shock	NA
	Temperature Extremes	Hardhat liner*
	Other	
Foot	*Impact*	Steel Toe Boots
	Penetration	Steel Toe Boots
	Compression	Steel Toe Boots
	Other	
Hand & Arm	*Penetration*	Work Gloves as needed
	Chemical	Chemical Resistant gloves as needed for lubricants
	Electrical Shock	NA
	Thermal Burns	Work Gloves*
	Temperature Extremes	Glove liners*
	Lacerations/Abrasions	Work Gloves*
	Other	
Other Areas	*Fall Elevated Surface*	N/A
	Chemical	N/A
	Temperature (Hot/Cold)	Seasonal
	Visibility	High Visibility Clothing
	Hearing Protection	To Be Determined

*** As needed**

OTHER HAZARDS	*Hazard*	*Control*
Physical Hazards	*Moving Machinery*	Machine guarding required on all moving equipment/parts; daily inspect; work on equipment only under Lock Out/Tag Out protection.
	Conveyors	Conveyor guarding required on all conveyors; daily Inspect; LOTO
	Mobile Equipment	High Visibility Clothing; Operator Training; Designated travel paths
	Electrical Hazards	Limited access; training; Authorized Personnel only; proper installation
	Confined Spaces	Labelled/Controlled Access; Training; Authorized Entrants Only
	Slips, Trips, Falls	Daily Housekeeping/inspection; maintain walkways, lighting, etc.
	Fall Elevated Surfaces	N/A
	Electrical Hazards	Limited access; training; Authorized Personnel only; proper installation
Health Hazards	*Chemical*	Limited; no exposure sources; use PPE and follow directions as needed
	Dust	Limited; engineering controls implemented; TBD if needed
	Noise	To Be Determined after start-up
	Ionizing Radiation	N/A

Notes:	

Certification: I, _____, certify that the workplace hazard assessment and evaluation has been conducted.

Signature: _____

PPE and General Workplace Hazard Assessment Form

Company:	**Southside Recycling**	**Date:**	
Job:	**Supervisor**		

Body Part	Specific Hazard	Required PPE
Eye & Face	*Impact*	Safety Glasses
	Chemical	NA
	Dust	Safety Glasses
	Glare	Indoor/Outdoor as needed
	Injurious Radiation	NA
	Other	
Head	*Impact*	Hardhat
	Harmful Contact	Hardhat
	Electrical Shock	NA
	Temperature Extremes	Hardhat liner as needed
	Other	
Foot	*Impact*	Steel Toe Boots
	Penetration	Steel Toe Boots
	Compression	Steel Toe Boots
	Other	
Hand & Arm	*Penetration*	Work Gloves as needed
	Chemical	NA
	Electrical Shock	NA
	Thermal Burns	NA
	Temperature Extremes	Glove Liners*
	Lacerations/Abrasions	Work Gloves*
	Other	
Other Areas	*Fall Elevated Surface*	NA
	Chemical	NA
	Temperature (Hot/Cold)	Seasonal Conditions
	Visibility	High Visibility Clothing
	Hearing Protection	To Be Determined

*** As needed**

OTHER	***Hazard***	***Control***
Physical Hazards	*Moving Machinery*	Machine guarding required on all moving equipment/parts; daily inspect; work on equipment only under Lock Out/Tag Out protection.
	Conveyors	Conveyor guarding required on all conveyors; daily Inspect; LOTO
	Mobile Equipment	High Visibility Clothing; Operator Training; Designated travel paths
	Electrical Hazards	Limited access; training; Authorized Personnel only; proper installation
	Confined Spaces	Labelled/Controlled Access; Training; Authorized Entrants Only
	Slips, Trips, Falls	Daily Housekeeping/inspection; maintain walkways, lighting, etc.
	Fall Elevated Surfaces	N/A
Health Hazards	*Chemical*	Limited; no exposure sources; use PPE and follow directions as needed
	Dust	Limited; engineering controls implemented; TBD if needed
	Noise	To Be Determined after start-up
	Ionizing Radiation	N/A

Notes:	

Certification: I, _____, certify that the workplace hazard assessment and evaluation has been conducted.

Signature: _____

PPE and General Workplace Hazard Assessment Form

Company:	Southside Recycling	Date:	
Job:			

Body Part	Specific Hazard	Required PPE
Eye & Face	*Impact*	
	Chemical	
	Dust	
	Glare	
	Injurious Radiation	
	Other	
Head	*Impact*	
	Harmful Contact	
	Electrical Shock	
	Temperature Extremes	
	Other	
Foot	*Impact*	
	Penetration	
	Compression	
	Other	
Hand & Arm	*Penetration*	
	Chemical	
	Electrical Shock	
	Thermal Burns	
	Temperature Extremes	
	Lacerations/Abrasions	
	Other	
Other Areas	*Fall Elevated Surface*	
	Chemical	
	Temperature (Hot/Cold)	
	Visibility	
	Hearing Protection	

*** As needed**

OTHER	***Hazard***	***Control***
Physical Hazards	*Moving Machinery*	
	Conveyors	
	Mobile Equipment	
	Electrical Hazards	
	Confined Spaces	
	Slips, Trips, Falls	
	Fall Elevated Surfaces	
Health Hazards	*Chemical*	
	Dust	
	Noise	
	Ionizing Radiation	

Notes:	

Certification: I, _____, certify that the workplace hazard assessment and evaluation has been conducted.

Signature: _____

Appendix B

APPENDIX B TO SUBPART I TO PART 1910 --NON-MANDATORY COMPLIANCE GUIDELINES FOR HAZARD ASSESSMENT AND PERSONAL PROTECTIVE EQUIPMENT SELECTION

This appendix is intended to provide compliance assistance for employers and employees in implementing requirements for a hazard assessment and the selection of personal protective equipment.

1. Controlling hazards. PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

2. Assessment and selection. It is necessary to consider certain general guidelines for assessing the foot, head, eye and face, and hand hazard situations that exist in an occupational or educational operation or process, and to match the protective devices to the particular hazard. It should be the responsibility of the safety officer to exercise common sense and appropriate expertise to accomplish these tasks.

3. Assessment guidelines. In order to assess the need for PPE the following steps should be taken:

3a. Survey. Conduct a walk-through survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers and co-workers. Consideration should be given to the basic hazard categories:

(a) Impact
(b) Penetration
(c) Compression (roll-over)
(d) Chemical
(e) Heat
(f) Harmful dust
(g) Light (optical) radiation

3b. Sources. During the walk-through survey the safety officer should observe:
(a) sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects;
(b) sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, etc.;
(c) types of chemical exposures;
(d) sources of harmful dust;
(e) sources of light radiation, i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.;
(f) sources of falling objects or potential for dropping objects;
(g) sources of sharp objects which might pierce the feet or cut the hands;
(h) sources of rolling or pinching objects which could crush the feet;

(i) layout of workplace and location of co-workers; and
(j) any electrical hazards. In addition, injury/accident data should be reviewed to help identify problem areas.

3c. Organize data. Following the walk-through survey, it is necessary to organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper selection of protective equipment.

3d. Analyze data. Having gathered and organized data on a workplace, an estimate of the potential for injuries should be made. Each of the basic hazards (paragraph 3.a.) should be reviewed and a determination made as to the type, level of risk, and seriousness of potential injury from each of the hazards found in the area. The possibility of exposure to several hazards simultaneously should be considered.

4. Selection guidelines. After completion of the procedures in paragraph 3, the general procedure for selection of protective equipment is to:
a) Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do; i.e., splash protection, impact protection, etc.;
b) compare the hazards associated with the environment; i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment;
c) select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards; and
d) fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.

5. Fitting the device. Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

6. Devices with adjustable features. Adjustments should be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection against dust and chemical splash to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that it will not fall off during work operations. In some cases a chin strap may be necessary to keep the helmet on an employee's head. (Chin straps should break at a reasonably low force, however, so as to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed.

7. Reassessment of hazards. It is the responsibility of the safety officer to reassess the workplace hazard situation as necessary, by identifying and

evaluating new equipment and processes, reviewing accident records, and reevaluating the suitability of previously selected PPE.

8. Selection chart guidelines for eye and face protection. Some occupations (not a complete list) for which eye protection should be routinely considered are: carpenters, electricians, machinists, mechanics and repairers, millwrights, plumbers and pipe fitters, sheet metal workers and tinsmiths, assemblers, sanders, grinding machine operators, lathe and milling machine operators, sawyers, welders, laborers, chemical process operators and handlers, and timber cutting and logging workers. The following chart provides general guidance for the proper selection of eye and face protection to protect against hazards associated with the listed hazard "source" operations.

EYE AND FACE PROTECTION SELECTION CHART

Source	Assessment of Hazard	Protection
Impact – Chipping, grinding, machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting and sanding.	Flying fragments, objects, large chips, particles sand, dirt, etc.	Spectacles with side shields, goggles, face-shields. See notes (1), (3), (5), (6), (10). For severe exposure, use face-shield.
Heat – Furnace operations, pouring, casting, hot dipping and welding.	Hot sparks Splash from molten metals High temperature exposure	Face shields, goggles, spectacles with side protection. For severe exposure use face-shield. See notes (1), (2), (3). Face-shields worn over goggles. Se notes (10, (2), (3). Screen face-shields, reflective face-shields. See notes (1), (2), (3).
Chemicals – Acid and chemicals handling, degreasing plating.	Splash Irritating mists	Goggles, eyecup and cover types. For severe exposure, use face- shield. See notes (3), (11). Special-purpose goggles.
Dust – Woodworking, buffing, general dusty conditions.	Nuisance dust	Goggles, eyecup and cover types. See note (8).
Light and/or Radiation – Welding: Electric arc Welding Gas Cutting, Torch brazing, Torch soldering Glare	 Optical radiation Optical radiation Optical radiation Poor vision	 Welding helmets or welding shields. Typical shades: 10-14. See notes (9), (12). Welding goggles or welding face- shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4. See notes (9). Spectacles or welding face-shield. Typical shades, 1.5-3. See notes (30, (9). Spectacles with shades or special-purpose lenses, as suitable. See notes (9), (10.

Notes to Eye and Face Protection Selection Chart:

(1) Care should be taken to recognize the possibility of multiple and simultaneous

exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards should be provided. Protective devices do not provide unlimited protection.

(2) Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.

(3) Face-shields should only be worn over primary eye protection (spectacles or goggles).

(4) As required by the standard, filter lenses must meet the requirements for shade designations in Sec. 1910.133(a)(5). Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.

(5) As required by the standard, persons whose vision requires the use of prescription (Rx) lenses must wear either protective devices fitted with prescription (Rx) lenses or protective devices designed to be worn over regular prescription (Rx) eyewear.

(6) Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.

(7) Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.

(8) Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.

(9) Welding helmets or face-shields should be used only over primary eye protection (spectacles or goggles).

(10) Non-side-shield spectacles are available for frontal protection only, but are not acceptable eye protection for the sources and operations listed for "impact."

(11) Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from splash entry.

(12) Protection from light radiation is directly related to filter lens density. See note

Exhibit 2

FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY

Operations	**Electrode Size 1/32 in.**	**Arc Current**	*** Minimum Protective Shade**
Shield metal arc welding	less than 3 3-5 5-8 more than 8	less than 60 60-160 160-250 250-550	7 8 10 11
Gas metal arc welding and Flux cored arc welding		less than 60 60-160 160-250 250-500	7 10 10 10
Gas tungsten arc welding		less than 50 50-150 *250-550*	8 8 10
Air carbon	light	less than *500*	10

Arc cutting	heavy	500-1000	11
Plasma arc welding		less than 20 20-100 100-400 400-800	6 8 10 11
Plasma arc cutting	**light **medium **heavy	less than 300 300-400 400-800	8 9 10
Torch brazing Torch soldering Carbon arc welding			3 2 14

Exhibit 3

FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY

Operations	**Plate Thickness - Inches**	**Plate Thickness - Millimeters**	*** Minimum Protective Shade**
Gas Welding:			
Light	under 1/8	under 3.2	4
Medium	1/8 to 1/2	3.2 to 12.7	5
Heavy	over 1/2	over 12.7	6
Oxygen Cutting:			
Light	under I	under *25*	3
Medium	1 to6	25 to 150	4
Heavy	over6	over 150	5

***As a rule thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.*

****These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workplace*.

9. Selection guidelines for head protection. All head protection (helmets) is designed to provide protection from impact and penetration hazards caused by falling objects. Head protection is also available which provides protection from electric shock and burn. When selecting head protection, knowledge of potential electrical hazards is important. Class A helmets, in addition to impact and penetration resistance, provide electrical protection from low-voltage conductors (they are proof tested to 2,200 volts). Class B helmets, in addition to impact and penetration resistance, provide electrical protection from high-voltage conductors (they are proof tested to 20,000 volts). Class C helmets provide impact and penetration resistance (they are usually made of aluminum which conducts electricity), and should not be used around electrical hazards.

Where falling object hazards are present, helmets must be worn. Some examples include: working below other workers who are using tools and materials which could fall; working around or under conveyor belts which are carrying parts or materials; working below machinery or processes which might cause material or objects to fall; and working on exposed energized conductors.

Some examples of occupations for which head protection should be routinely considered are: carpenters, electricians, linemen, mechanics and repairers, plumbers and pipe fitters, assemblers, packers, wrappers, sawyers, welders, laborers, freight handlers, timber cutting and logging, stock handlers, and warehouse laborers.

10. Selection guidelines for foot protection. Safety shoes and boots which meet the ANSI Z41-1991 Standard provide both impact and compression protection. Where necessary, safety shoes can be obtained which provide puncture protection. In some work situations, metatarsal protection should be provided, and in other special situations electrical conductive or insulating safety shoes would be appropriate.

Safety shoes or boots with impact protection would be required for carrying or handling materials such as packages, objects, parts or heavy tools, which could be dropped; and, for other activities where objects might fall onto the feet. Safety shoes or boots with compression protection would be required for work activities involving skid trucks (manual material handling carts) around bulk rolls (such as paper rolls) and around heavy pipes, all of which could potentially roll over an employee's feet. Safety shoes or boots with puncture protection would be required where sharp objects such as nails, wire, tacks, screws, large staples, scrap metal etc., could be stepped on by employees causing a foot injury.

Some occupations (not a complete list) for which foot protection should be routinely considered are: shipping and receiving clerks, stock clerks, carpenters, electricians, machinists, mechanics and repairers, plumbers and pipe fitters, structural metal workers, assemblers, drywall installers and lathers, packers, wrappers, craters, punch and stamping press operators, sawyers, welders, laborers, freight handlers, gardeners and grounds-keepers, timber cutting and logging workers, stock handlers and warehouse laborers.

11. Selection guidelines for hand protection. Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that are capable of causing local or systemic effects following dermal exposure. OSHA is unaware of any gloves that provide protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals. Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn, and whether it can be reused.

It is also important to know the performance characteristics of gloves relative to the specific hazard anticipated; e.g., chemical hazards, cut hazards, flame

hazards, etc. These performance characteristics should be assessed by using standard test procedures. Before purchasing gloves, the employer should request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated.

Exhibit 4
CHEMICAL PROTECTIVE MATERIALS

Glove Materials	**Types of Chemicals Materials Protect Against**	**Types *of* Chemicals Materials Provide Little Protection Against**
Latex (natural rubber)	Alcohols, some aldehydes, organic acids, inorganic bases and salts, some ketones	Organic solvents, fuel, esters
Polyvinyl chloride	Alcohols, organic and inorganic acids, inorganic bases and salts	Esters, ketones, hydrocarbons
Nitrile rubber	Oils, greases, aiphatics, esters, glycol	Ketones, some organic solvents
Neoprene	Alcohols, aldehydes, amities, ethers, fuels, inorganic bases and salts, organic acids	Some hydrocarbons, some ketones
Polyvinyl alcohol	Some organic solvents	Water, water-based chemicals, light alcohols
Butyl rubber	Alcohols, aldehydes, ketones, organic acids, inorganic bases and salts	Fuels, hydrocarbons, chlorinated solvents

Other factors to be considered for glove selection in general include:
(A) As long as the performance characteristics are acceptable, in certain circumstances, it may be more cost effective to regularly change cheaper gloves than to reuse more expensive types; and,
(B) The work activities of the employee should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure of the hazard, and the physical stresses that will be applied.

With respect to selection of gloves for protection against chemical hazards:
(A) The toxic properties of the chemical(s) must be determined; in particular, the ability of the chemical to cause local effects on the skin and /or to pass through the skin and cause systemic effects;
(B) Generally, any "chemical resistant" glove can be used for dry powders;
(C) For mixtures and formulated products (unless specific test data are available), a glove should be selected on the basis of the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials; and,
(D) Employees must be able to remove the gloves in such a manner as to prevent skin contamination.

12. Cleaning and maintenance. It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision.

For the purposes of compliance with §1910.132(a) and (b), PPE should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the requisite protection.

It is also important to ensure that contaminated PPE which cannot be decontaminated is disposed of in a manner that protects employees from exposure to hazards.

Hazardous Energy Control Program (Lockout/Tagout)

Southside Recycling

11600 South Burley Avenue
Chicago, IL 60617

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PURPOSE and SCOPE

The purpose of this Program is to prevent personnel injury due to unexpected energization, start-up, or release of stored energy in, on or around machines, equipment or processes during servicing and maintenance activities. This Plan has been developed in accordance with Occupational Safety and Health Act (OSHA) requirements as defined in 29 CFR 1910.147 – The Control of Hazardous Energy (lockout/tagout).

It is the policy of Southside Recycling that all activities involving servicing or maintenance of equipment/machinery and/or processes be performed under the protection of this Hazardous Energy Control Program. This Program is intended to ensure that established procedures for affixing lockout and/or tagout devices to energy isolating devices are followed, and to otherwise disable machines or equipment to prevent unexpected energizaion, start-up, or release of stored energy during the servicing and maintenance of these machines and equipment. This Standard does not apply to the following activities:

- Exposure to hazardous energy is controlled completely by unplugging the equipment from an electric outlet, and the employee doing the servicing has exclusive control of the plug – this exemption only applies to "electricity only" energy sources such as hand and power tools.

- Hot Tap operations on pressurized pipelines distributing gas, steam, water or petroleum products and continuity of service is essential; shutdown is impractical; and other methods of employee protection are applied.

- Normal production operations, such as lubricating, cleaning and making minor adjustments and simple tool changes are not covered except when:
  - an employee is required to remove or bypass a guard or other safety device, or
  - an employee is required to place any part of his or her body into an area on a machine or piece of equipment where work is actually performed upon the material being processed, or where an associated danger zone exists during a machine operating cycle.

This Program includes specific and general energy control procedures for covered activities – **Appendix A and B** respectively, full employee protection, LOTO equipment requirements, employee training requirements and periodic compliance inspections **(Appendix C)**.

Employee understanding and utilization of these procedures is critical to the success of this Program. Employee violations of these procedures will result in disciplinary action up to and including termination.

Hazardous Energy Control Program (Lockout/Tagout)

Although Lockout/Tagout (LOTO) procedures are typically associated with servicing and maintenance activities, any and all employees can be impacted negatively by the unexpected release of hazardous energy. Furthermore, if adequate energy isolation devices and lockout practices are not used, maintenance personnel are at an even greater risk due to the actions of other employees who may have nothing to do with a specific maintenance activity, but could in some way cause the release of stored energy associated with that activity. For these reasons, all employees are covered by this Program, and are designated either as affected employees or authorized employees.

Affected employees must be aware of the contents of this Plan, the basic requirements for hazardous energy control, and their role in maintaining LOTO integrity. Affected employees do not isolate energy sources, apply lockout devices, or service equipment. However, they may be in an area, or operating a piece of equipment for which servicing and/or maintenance is being performed under LOTO. Affected employees can become authorized employees if/when their duties include performing covered activities (servicing and maintenance).

Authorized employees must be aware of the contents of this Plan, the basic **and** equipment-specific requirements and procedures for hazardous energy control, and their role in maintaining LOTO integrity. Authorized employees are any individuals who lock out, tag out and/or isolate a piece of equipment in order to perform servicing and/or maintenance on that equipment.

Regardless of an employee's designation (affected or authorized), it is critical that all employees have a basic understanding of this Program, including an awareness of hazardous energy sources, conditions that can subject them to these hazards, and knowledge of what to do (or not to do) in the event they encounter a LOTO activity. Finally, the success of any LOTO activity also depends on communication, including the spoken word, written procedures, locks, tags, signs and any other measures designed to communicate to others that a LOTO is being conducted.

STANDARD REQUIREMENTS

In accordance with this OSHA Standard, the following elements and procedures have been established for all LOTO activities at Southside Recycling.

These elements describe the basic requirements of the Program and are intended to ensure that the integrity of this Program is maintained at all times.

Energy Isolation

Energy isolation, lockout and tag out shall only be performed by the authorized employees who are performing the servicing or maintenance on that item. A "zero energy state" shall be maintained at all times, to the extent practicable.

Locks/Tags

Southside Recycling requires the use of a lockout device in all cases where the energy isolating devices are capable of being locked out. **IF IT CAN BE LOCKED – LOCK IT!** Each employee performing servicing or maintenance will affix and remove, as necessary, an individually identifiable lock on the energy-isolating device. All new equipment purchases and/or major equipment renovations shall be designed to accept a lockout device.

A tag out device is authorized only when the energy-isolating device is not capable of being locked out. The tag will identify the authorized employee and warn against unauthorized removal. Equipment-specific procedures will identify when this scenario is applicable. In all cases, a tag shall be treated as a lock and shall only be removed by the individual who affixed the tag.

Survey

A survey must be conducted to locate and identify all energy sources (electrical, mechanical, hydraulic, pneumatic, gravitational, chemical, residual, etc.) associated with the equipment, machinery and processes at this facility. This survey also incorporates Equipment-Specific LOTO procedures, which are used in combination with basic LOTO procedures, and are attached as **Appendix A** and **Appendix B**, respectively. This survey is reviewed annually, and modified when a new piece of equipment, process or procedure has been introduced to the workplace.

Energy Isolating Device Identification

All energy isolating devices should be adequately labeled or marked to indicate their function, equipment supply, and energy type and magnitude. Examples include manual circuit breakers, electrical disconnect switches, valves, and line blanks. These devices should correspond with LOTO procedures for each designated piece of equipment/machinery.

Hardware

The Company will provide required locks, tags, chains, wedges, key blocks, line blanks, adapter pins, self-locking fasteners and other appropriate hardware necessary to perform all LOTO activities at this facility. Locks and tags shall be of a distinctive design and appearance and be used "solely" for the purpose of providing personnel protection in accordance with these energy control procedures. Employees are required to maintain and care for any LOTO equipment that has been provided to them. Under no circumstances are employees to use LOTO equipment designated for someone else, or in a manner inconsistent with their intended use.

Employee Notification

All personnel affected by a LOTO activity shall be notified of the LOTO event before energy control measures begin, and after LOTO measures are completed. This is an essential step in the process, as it not only increases overall awareness of a LOTO event, it provides notice that could have an effect on other individuals, operations or processes.

SIX STEPS TO HAZARDOUS ENERGY CONTROL (LOTO)

In combination with equipment-specific procedures, employees involved in all LOTO events must adhere to the following sequence for energy control prior to any servicing or maintenance activities:

Preparation For Shutdown:

Before equipment or machinery is ever turned off, the authorized employee shall verify the types and magnitude of energy, the hazards of the energy to be controlled, and the method or means to control the energy. This is also the step whereby notification is made to all affected employees of a LOTO event, including affected equipment, machinery and/or processes.

Machine or Equipment Shutdown:

The equipment or machine to be serviced should be turned off or shut down using normal shutdown procedures. All operating controls should be turned off or returned to the neutral mode by the authorized employee(s). Emergency Stops should not be used to turn off equipment.

Machine or Equipment Isolation:

All required energy isolating devices should be located and operated in such a manner as to isolate the equipment/process from the energy source(s). This step should incorporate some type of physical measure to isolate each energy source. The objective is to achieve a “Zero Energy State”, whereby all inherent energy is eliminated, isolated or controlled.

Lockout/Tagout Device Application:

Appropriate LOTO devices should be applied to each energy-isolating device by the authorized employee(s). Ensure that locks are applied in such a manner as to hold the energy isolating device in a “safe” or “off” position. The purpose of this step is to secure the energy isolation device so that it cannot be overridden and energy restored to the unit. Locks and tags do not always isolate equipment – they secure the isolating devices that are isolating the equipment.

Release of Stored Energy:

After LOTO devices have been applied to all energy isolating devices, potentially hazardous stored or residual energy shall be relieved, disconnected, restrained and otherwise rendered safe. This may include activities like bleeding off pressure on a line, discharging a capacitor, or controlling gravitational issues. Care must be taken to ensure that stored energy cannot re-accumulate to hazardous levels – ongoing monitoring and energy discharge may be required.

Isolation Verification - Testing:

After ensuring that no personnel are exposed, one or both of the following actions should be taken to verify that isolation/de-energization of the machine, equipment or process has been achieved.

1. Operate the equipment/process controls (push buttons, switches, (etc.) to verify that energy isolation has been effective – restore all switches to the "Off" or "Safe" position.
2. Test the equipment to verify that the energy isolation has been effective and you have achieved a "zero energy state".

The control of hazardous energy has now been achieved.

Servicing/Maintenance Work

Once isolation and de-energization of the machine, equipment or process has been accomplished, authorized employee(s) can begin servicing or maintenance work. All authorized employee must have their own individual LOTO devices applied to equipment on which they are working. Under no circumstances is an employee authorized to perform servicing or maintenance on equipment for which he/she has not participated in the LOTO process. Specific procedures for group lockouts and shift change situations have also been developed within this Program and must be adhered to where applicable. LOTO procedures and associated equipment must be utilized for the duration of the servicing/ maintenance task.

Release From Lockout/Tagout

Before removing lockout/tagout devices and restoring energy to the machine or equipment, the following steps must be taken:

- Visually inspect the work area to ensure that all nonessential items have been removed,
- Ensure that all machinery, equipment and components are operationally intact, and
- Ensure that all employees are accounted for and are positioned safely away from the active work zone.

Removal of Lockout/Tagout Devices

After the above is accomplished, each lockout/tagout device must be removed from each energy-isolating device by the employee who applied the device. All affected employees must be notified that the lockout/tagout devices have been removed and energy is being restored to the machine, equipment or process.

It is Southside Recycling's policy that the authorized employee who affixes a lockout/tagout device is the only individual allowed to remove the device. Each employee working with and around hazardous energy sources must have the assurance that their lockout measures and associated equipment are within their personal control, and these protective devices will not be removed by anyone else except in an emergency situation.

We do not anticipate many situations that would justify one employee's removal of another's lockout/tagout devices. However, in a true emergency*****, the device may be removed by another authorized employee, under the direction of management, only after:

- It has been determined the authorized employee who applied the device is not at the facility,
- All reasonable efforts to contact the authorized employee to inform him/her that his/her lockout/tagout device is being removed, and
- Ensuring that the authorized employee has the knowledge before he/she resumes work.

***Please note that convenience does not constitute an emergency.**

Testing or Positioning of Machines

In situations in which lockout/tagout devices must be temporarily removed from the energy isolating devices and the machine or equipment energized to test or position the machine or equipment components, employees shall take the following sequence of actions:

1. Inspect the work area to ensure that all nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

2. The work area must be checked to ensure that all employees have been safely positioned or removed.

3. Each lockout/tagout device must be removed from each energy-isolating device by the employee who applied the device.

4. Energize and proceed with testing or positioning.

5. De-energize all systems and reapply energy control measures to continue the servicing and/or maintenance.

Group Lockout/Tagout

When servicing and/or maintenance are performed by more than one authorized employee, each must place his/her own personal lockout/tagout device on the energy isolating device(s). When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout/tagout device (hasp) may be used.

There may be situations where, due to the scope of the job, the complexity of the equipment/process, the number of involved personnel, etc., a more practical

method of lockout/tagout than individual single-source isolation is used. The following elements are required when a single lockout/tagout device is used:

- A designated individual (supervision) is assigned the responsibility to ascertain the exposure status of individual group members with regards to the lockout/tagout of the machine or equipment, to coordinate the affected work force and to ensure continuity of protection.

- The designated individual in charge of the servicing and/or maintenance group applies a group lockout/tagout device to the machine and/or equipment being serviced, and each authorized employee attaches his/her personal lockout/tagout device to the group device. These individual devices are removed by the employees who applied them, leaving the group device attached. These employees, by clearing the equipment and removing their own devices, indicate that they are no longer exposed to the hazards of the servicing/maintenance operation.

- The designated individual in charge of the group servicing operation then verifies that all elements of the group servicing have, in fact, been completed, and that it is safe to re-energize the system, prior to removal of the group device.

Shift or Personnel Changes

One of the most difficult problems to be dealt with involves the servicing and maintenance of equipment when work extends beyond one work shift. It is essential that lockout/tagout devices be maintained on energy isolating devices throughout shift and personnel changes.

At the same time the off-going shift authorized employee(s) remove their lockout/tagout devices from all energy isolating devices, the off-going supervisory personnel will affix his lockout/tagout device(s) on the energy isolating device(s).

The on-coming shift supervisory personnel will apply his lockout/tagout device(s) on the energy isolating device(s) as the off-going supervisory personnel removes his lockout/tagout device(s).

During the transfer of control measures, the off-going supervisory personnel will review with the on-coming supervisory personnel the progress of servicing and maintenance work completed by the off-going authorized employee(s). The on-coming supervisory personnel will provide instructions to the on-coming authorized employees as to what work remains to be completed.
The on-coming authorized employee(s) will place their lockout/tagout device(s) on the energy isolation device(s) at the same time the on-coming supervisory personnel removes his lockout/tagout device(s). The on-coming authorized employee(s) will conduct a visual inspection to verify and ensure the continued isolation of energy in the system and overall integrity of the LOTO program. This

process also provides a tracking mechanism for all off-going personnel, as any remaining locks/tags will indicate an employee has not yet been accounted for.

Contractors and Outside Personnel

Whenever outside servicing personnel are engaged to perform servicing and/or maintenance on our machinery, equipment or processes, we must provide the outside-authorized representative with a copy of our LOTO procedures. Likewise, the outside servicing company must provide us with their procedures so that we can ensure their procedures are at least as protective as ours. All employees affected by the outside servicing company's activities must understand the restrictions/prohibitions of the contractor's procedures and energy control program.

Training

At Southside Recycling, we believe that training is critical to ensure that the applicable provisions of the hazardous energy control program are known, understood and strictly adhered to by all employees.

Authorized employees demand the most training since they are charged with the responsibility for implementing energy control procedures. Therefore, it is important that they receive training in the recognition of all potential hazardous energy sources, the type and magnitude of the energy available in the workplace and the methods and means necessary for energy isolation and control.

It is vital to the safety of all authorized employees that all affected employees recognize LOTO devices, that they understand the purpose of those devices and most importantly, that they know not to disturb the LOTO devices or the equipment to which the devices are affixed. Affected employees are trained in these matters.

All other employees are informed of the Company’s LOTO Program, and that they are not to touch any locks, tags or equipment covered under this Program.

Training effectiveness diminishes over time; therefore annual retraining should be conducted. Additional or supplemental training will occur whenever it is determined there are deviations from or inadequacies in the energy control program, or when new equipment or processes are introduced to the operation.

Periodic Inspections

Quarterly inspection will be conducted to ensure the integrity of the hazardous energy control program. The components of the inspection include:

- whether employees are following the steps in the LOTO procedures;

- whether the employees involved know their responsibilities under the LOTO procedures; and
- whether the procedure is adequate to provide the necessary protection, and what changes, if any, are needed.

Certification of the inspection must identify the machine or equipment on which the energy control procedure was being used, the inspection date, the employees included in the inspection, and the person performing the inspection. Refer to **Appendix D** for the LOTO Inspection Form

Program Authority/Responsibility

Each Departmental Manager has the responsibility for the administration of Southside Recycling's "Control of Hazardous Energy Program" within their respective departments. The original copy of this program is maintained electronically as well as in the Safety Manager's office and will be made available, upon request, to employees, their representative or officials of OSHA. Copies of the General and Equipment-Specific LOTO Procedures are also supplied to supervision and maintenance personnel.

The Facility Manager or his designee will provide Contractors/Other Employees with the Company's "LOTO Procedures". Contractors/Temporary Agencies are required to train their own employees in accordance with 29 CFR 1910.147 – Control of Hazardous Energy Standard. The Facility Manager will ensure that periodic employee training on the contents of the LOTO Program is conducted

Maintenance and shift supervisors will conduct documented quarterly inspections to ensure all components of the LOTO program are being maintained.

All employees are expected to comply with all aspects of this mandatory program. Employee violations of these procedures will result in disciplinary action up to and including termination.

Summary

It is widely recognized that employees can be seriously or fatally injured when machinery and/or equipment they service or maintain unexpectedly energizes, starts up, or releases stored energy. There are some basic, common sense steps that employees can take to protect themselves from the hazardous energy sources associated with these servicing/maintenance activities. We address and describe these procedures within this Hazardous Energy Control (LOTO) Program. Cooperation and adherence to these mandatory procedures by all personnel is the best way to ensure that the employees at Southside Recycling are protected from the unexpected release of hazardous energy sources, and the potentially devastating impacts to employee health and safety.

This Program addresses all required components of the OSHA LOTO Standard. However, the key ingredients to successfully controlling hazardous energy sources can be summarized in the following 6 Steps to LOTO:

1. Prepare for shutdown;
2. Shut down the machine or equipment;
3. Disconnect or isolate the machine/equipment from its energy source(s);
4. Apply lockout or tagout device(s) to the energy isolating device(s);
5. Release, restrain or otherwise render safe all potential hazardous stored or residual energy sources. Prevent reaccumulation of energy sources;
6. Verify the isolation and deenergization of the machine/equipment.

By combining these 6 steps with equipment-specific procedures and the other components of this Program, we expect to achieve the goal of preventing personal injury during equipment maintenance and servicing activities.

Appendix A
Southside Recycling
Lockout/Tagout Survey and Procedures

Machinery/Equipment **Energy Sources**

MOBILE/FACILITY-WIDE EQUIPMENT

Forklifts, all Mechanical
Hydraulic
Electrical
Gravitational

Specific Lockout Procedure: Shut unit down, remove key; disconnect battery if working on electrical system; bleed off residual hydraulic pressure if necessary; secure or otherwise block mast, boom, etc., to prevent from drifting or falling.

****

Skid Steer Bobcats, all areas Mechanical
Hydraulic
Electrical
Gravitational

Specific Lockout Procedure: Shut unit down, remove key; disconnect battery if working on electrical system; bleed off residual hydraulic pressure if necessary; with bucket/attachment up – use cylinder blocking sleeve to secure bucket/attachment in locked position, or otherwise block attachment to prevent drifting or falling.

****

Pay loaders, all areas Mechanical
Hydraulic
Electrical
Pneumatic
Gravitational

Specific Lockout Procedure: Shut unit down, shut Master Switch off; disconnect battery if working on electrical system; bleed off residual hydraulic pressure if necessary; work only with bucket at rest or secure/block bucket to prevent from drifting or falling, bleed off residual air pressure on brake lines. Use Articulation Lock-Bar when servicing unit within articulation pinch zone and/or when shipping.

Machinery/Equipment	**Energy Sources**
Hydraulic Excavators, all areas	Mechanical Hydraulic Electrical Gravitational

Specific Lockout Procedure: Shut unit down, remove key; disconnect battery if working on electrical system; work with booms at rest or with boom blocked/secured to minimize movement; bleed off residual hydraulic pressure if working on hydraulics; secure cylinders and secure/block booms prior to removing cylinders.

****

Man-lift, all areas	Electrical Mechanical Hydraulic Gravitational

Specific Lockout Procedure: If possible, lower unit to ground before servicing. Shut off unit, remove key; disconnect battery if working on electrical system; relieve hydraulic pressure before working on hydraulics. If servicing in elevated position, use fall protection.

****

Portable Welders, all areas	Electrical – 480V Mechanical

Specific Lockout Procedure: Shut off power unit; release stored electrical energy prior to working on electrical components.

****

Machinery/Equipment	**Energy Sources**
Motor Control Center Cabinet	Electrical – 13800V

Specific Lockout Procedure: Main power supply to entire system has multiple Main Motor Control Centers – sections can be isolated by isolating at MCC. If energy isolation to entire system is required, throw main disconnect into MCC Cabinet. Position self to the side of MCC prior to de-energizing supply box – lock out MCC Cabinet. Electrical into MCC is still live – isolation is from MCC down.

****

Shredder	Electrical – 13200V Mechanical Hydraulic Gravitational

Specific Lockout Procedure: Main shredder motor (9000 hp) has its own main disconnect – de-energize this electrical supply when working on shredder; Shut off power switch; throw main disconnect at Motor Control Center. All downstream systems have individual boxes, individual disconnects and a main disconnect – isolate and lock out specific area of system where work is being performed – i.e. - sometimes hydraulic power is still required. There is also a main transformer that supplies the main MCC – typically power can be controlled/isolated at MCC. Be aware of residual materials on belts and within crusher or separation units.

****

Shredder Hydraulics	Electrical – 480V Mechanical Hydraulic

Specific Lockout Procedure: Various hydraulic pumps control different portions of unit. Feed Roll and Box pump has a main disconnect – shut off and lock at disconnect; Rotor Bearing has separate hydraulic pump and disconnect; Box Cylinders each have separate disconnect. Isolate individual systems as needed to perform work. Be aware of residual hydraulic pressure within systems. Be aware of shifting/falling items when working within system.

****

Machinery/Equipment	**Energy Sources**
Eddy Current Systems	Electrical – 480V Gravitational Mechanical

Specific Lockout Procedure: Shut unit down at local disconnect switch and lock/isolate at disconnect. All units equipped with PLCs that automatically release stored electrical energy from capacitor – allow residual electrical energy to discharge prior to working on unit – PLC will go dark when de-energized. Be aware of residual material on belts/chutes when servicing – remove as needed. Be aware that upstream supply belts don't bring additional material to unit – lock out upstream conveyors as needed. Secure/ block head pulley to prevent movement as necessary. Be aware of strong magnet on head-pulley.

****

Sensor Separators	Electrical – 480V Pneumatic Mechanical Gravitational

Specific Lockout Procedure: Shut system down at local disconnect switch and isolate at disconnect. All units equipped with PLCs that automatically release stored electrical energy from capacitor – allow residual electrical energy to discharge prior to working on unit – PLC will go dark when de-energized. Be aware of residual material on belts and shakers; shut off upstream conveyors as needed to prevent additional material from feeding into system. If necessary, bleed off residual air to unit prior to working on air spray bars.

****

Conveyors, all areas	Electrical – 480V Mechanical Gravitational

Specific Lockout Procedure: Shut off at local disconnect and lock at individual drive motor disconnect. Each conveyor is equipped with its own drive motor and disconnect. Be aware of residual material on belts and when working on elevated surfaces. Entire system can be isolated at MCC by turning off all power and shutting/locking main feed to MCC. If isolating at main MCC, **GROUP LOCKOUT IS REQUIRED**

****

Machinery/Equipment	**Energy Sources**
Vibrating Shaker Tables	Electrical – 480V Mechanical

Specific Lockout Procedure: Shut off power switch; throw main disconnect at Motor Control Center or local disconnect; be aware of residual material on tables.

****

Rotating Drum	Mechanical Electrical – 480V

Specific Lockout Procedure: Shut unit down at On/Off Switch, throw main disconnect before working on system and lock/isolate at main disconnect switch. Chock/block drum if needed to prevent drum movement; drain drum if needed. Follow Non-Permit Confined Space Entry requirements if entering drum. After isolating/locking, attempt to re-start drum by activating On/Off switch; attempt to re-engage disconnect to ensure disconnect is locked and confirm that drum is chocked if entry is warranted.

****

Air Compressor	Electrical – 110V Pneumatic

Specific Lockout Procedure: Shut off power at Main Distribution Panel outside plant; lock main disconnect before working on compressor. Bleed off any residual air pressure in system prior to working on lines.

****

Appendix B
Minimum LOTO Procedures

This procedure establishes the minimum requirements for the lockout/tagout of energy isolating devices. It shall be used in conjunction with equipment-specific procedures to ensure that machines and equipment are isolated from all potentially hazardous energy sources, and locked out/tagged out before employees perform any servicing or maintenance activities where the unexpected energization, start-up or release of stored energy could cause injury. All affected and authorized employees shall be instructed in the significance and purpose of the LOTO procedures.

Preparation for Lockout/Tagout

Identify all isolating devices to be certain which switch(s), valve(s) or other energy isolating devices apply to the equipment to be locked/tagged out. More than one energy source (electrical, mechanical, or others) may be involved.

Sequence of Lockout/Tagout Procedure

1. Notify all affected employees that a lockout/tagout system is going to be utilized and the reason therefore. The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards thereof.

2. If the machine or equipment is operating, shut it down by the normal operating procedure (depress stop button, open toggle switch, etc.)

3. Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s). Stored energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

4. Lockout and/or tagout the energy isolating devices with assigned individual lock(s) or tag(s).

5. Release, restrain or otherwise render safe all potential hazardous stored or residual energy sources. Prevent reaccumulation of energy sources.

6. After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. Return operating control(s) to "neutral" or "off" position after the test.

Appendix C
Periodic Inspection Form

This inspection is based on visual observations of the LOTO procedures, required protective equipment, proper source isolation and control, and interviews with employees conducting the LOTO procedure. Inspector should use this form to evaluate/confirm the following components in order to ensure that employees are familiar with their responsibilities under the LOTO procedure and that they continue to implement energy-control procedures properly. Completed inspections should be maintained in Appendix D of this program. Use of the Generic 6-Step Procedures in combination with equipment specific procedures (Appendix A) must be reviewed and utilized in performing this audit.

Inspectors Name: _____ **Date:**_____

Machine/Equipment under LOTO: _____

Employees conducting LOTO Procedure:

_____ _____

_____ _____

Component	Y/N	Recommendations/ Modifications to procedure
Are the 6-Step Procedure and specific LOTO requirements being followed?		
Do employees involved in LOTO know/understand their responsibilities?		
Is procedure adequate to provide necessary protection? Any changes?		

Appendix D
Definition of Terms

Affected Employee: An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized Employee: A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when the employee's duties include performing servicing or maintenance covered under this section.

Capable of Being Locked Out: An energy-isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability.

Energized: Connected to an energy source or containing residual or store energy.

Energy Isolating Device: A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker; a disconnected switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

Energy Source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hot Tap: A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lockout: The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device: A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

Normal Production Operations: The utilization of a machine or equipment to perform its intended production function.

Servicing and/or Maintenance: Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or start-up of the equipment or release of hazardous energy.

Setting Up: Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout: The placement of a tagout device on an energy-isolating device, in accordance with an established procedure, to indicate that the energy- isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout Device: A prominent warning device, such as a tag and means of attachment, which can be securely fastened to an energy-isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Hazard Communication Program

Southside Recycling

11600 S. Burley Ave.,
Chicago, IL 60617

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PURPOSE and SCOPE

The purpose of this Program is to ensure that the hazards of all chemicals used or handled at Southside Recycling have been identified, and that available information concerning these chemical hazards and appropriate protective measures is maintained and transmitted to employees on a continuing basis. This Plan has been developed in accordance with Occupational Safety and Health Act (OSHA) requirements as defined in 29 CFR 1910.1200 – Hazard Communication Standard.

The Company is committed to the concept that employees have both a need and a right to know the identity and hazards of the chemicals they may handle or encounter while at work. At Southside Recycling, we accomplish this objective through a standardized Program that incorporates the use of container labels and other visual warning signs, Safety Data Sheets (SDS) and other forms of chemical hazard information, assessment and monitoring of chemical use in the workplace, periodic employee training, and coordination with contractors.

This Hazard Communication Program describes the steps Southside Recycling has taken to ensure that the hazards of chemicals at this facility have been evaluated and that the information concerning chemical hazards is transmitted to employees. This is accomplished by:

- Identifying hazardous chemicals in the workplace and evaluating the potential physical and health hazards associated with these chemicals;
- Identifying work practices and other procedures necessary to control potential chemical hazards and exposures;
- Informing employees and others of potential chemical hazards, as well as the steps necessary to protect themselves during routine and non-routine activities and emergency situations; and
- Establishing procedures to ensure that the Program remains current.

In developing this performance-oriented program, Southside Recycling has utilized information provided by various government agencies (OSHA, NIOSH, ACGIH, NTP, IARP, EPA, etc.), trade associations, and where necessary, from workplace sampling and analyses. Collectively, this information is then used to assess potential chemical hazards, improve/enhance work practices to minimize exposures, and facilitate employee training and information needs.

The success of this Program requires a joint effort between management and employees to eliminate or minimize hazardous chemical exposures through safe work practices and procedures. This requires that all employee assume responsibility for his/her own health and safety, as well as consideration for the safety of others. We believe that knowledgeable, well trained employees are better able to perform their jobs safely and efficiently. To this end, we have developed an informational program including employee training, use of labels, signs and placards, identification of potentially hazardous areas, ongoing communications, and accessible SDS.

Employees are encouraged to utilize this information to enhance their own personal awareness of basic chemical safety – both at work and at home, Employees are required to comply with all established work procedures and rules, and are expected to follow all chemical-specific information relating to proper use, handling/storage, PPE requirements, and emergency procedures. In addition, if an employee encounters an unusual situation involving potentially hazardous chemical exposures, or for which procedures have not been explained, that employee must report to his/her immediate supervisor for additional instructions and training.

Our objective is to prevent undesirable health effects associated with chemical exposures in the workplace.

Hazard Communication Program

This Hazard Communication Program defines the methods and procedures utilized by Southside Recycling to perform the hazard assessment of the chemicals used at this facility, including chemical inventory, labeling and warning requirements, SDS management, employee information and training, non-routine tasks, and coordination with contractors.

Hazard Determination/Evaluation

Chemical manufacturers and importers are required to review available scientific evidence concerning the hazards of the chemicals they produce or import. They are required to report the information they find to their employees and to employers who distribute or use their products. This is typically done through the use of Safety Data Sheets (SDS) and container labeling. In addition to automatically providing SDS on all first time shipments, every container or package of hazardous chemicals shipped must be identified with the required information, including appropriate Department of Transportation (DOT) labeling and marking. In the event that new scientific evidence is discovered about a chemical, or other significant changes are made to an SDS, the supplier is obligated to provide an updated SDS to all customers. Our chemical hazard assessment process is based on the evaluations performed by these chemical manufacturers and importers. It is critical that we continue to monitor this information, and whenever possible, look for opportunities to reduce chemical hazards and minimize potential exposures. This can be accomplished by adjusting and improving work practices, ensuring proper Personal Protective Equipment (PPE) usage, ongoing employee training, and replacing existing chemicals with less hazardous materials.

Hazardous Chemical Inventory

In order to properly assess chemical hazards at Southside Recycling, the first step is to identify all chemicals that may be present in the workplace. A comprehensive list of all hazardous chemicals used or stored at this facility has been developed and is attached as **Appendix A** of this Program. This list has been complied for the entire workplace, and identifies typical volumes and primary work areas where the chemical is stored and/or used. Periodic review of workplace chemicals is performed to ensure that the list remains accurate. As new chemical purchases are made, these chemicals are also added to the list at the time of first purchase/delivery. The list is also important in tracking availability of SDS for all on-site chemicals. It serves as a quick way to verify that a SDS is available for every chemical present at this facility. Chemical identities/names must match with corresponding SDS names.

Heavy Metals in the Scrap Industry

Employees in scrap metal recycling facilities may be exposed to heavy metals as a result of several factors:

- material handling methods (torching, grinding, heating, shredding, dust generation) associated with the recycling process,
- the materials being recycled (stainless steel/chromium; weights/lead), and
- the form in which the materials are present (dust, fines, fumes generate a much greater potential for exposure than larger particles/items).

The heavy metals typically observed in scrap operations may include aluminum, arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc to name a few. Typically these heavy metals do not present exposure concerns in their normal physical state. However, exposure to these metals can occur as a result of the actions or work that is being performed on them. These metals are all solids at room temperature and are not likely to become airborne - inhalation exposures are dependent on particle size. However, poor hygiene, lack of PPE, and failure to properly decontaminate oneself can lead to ingestion exposures as well. It's difficult to inhale a lead wheel weight – but a person could eat one!

There are several methods of preparing scrap, and some of the actions applied to the recyclable items can reduce the particle size, making it much easier for metals to become airborne and enter the body through inhalation. Dust and fumes (tiny, smoke-borne particles) result from such things as heating and burning, sanding, grinding and other chemical or physical actions that break metal items down into smaller components. As mentioned, the other key to protecting yourself is to practice good hygiene while at work. Always wash your face and hands before eating, drinking, smoking, using bathroom facilities, or applying makeup, lip balm or other skin additives. Make a practice of keeping work boots, hard hats, gloves, outer clothing, and other work attire AT WORK or in your car trunk. Outer clothing can accumulate a variety of dirty contaminants over time and it's best to keep these items away from other non-contaminated things – avoid cross contamination.

In some cases, employees are knowingly working in elevated exposure areas. In these situations, additional measures are required for employee protection, including daily showers, outer PPE, use of respirators, and biological monitoring. These activities are usually limited to heavy torching and some maintenance work. It all comes down to what you are doing to the metal you are handling.

Container Labeling

Chemical manufacturers, importers and distributors must ensure that each container of hazardous chemical leaving their workplace is labeled in accordance with the new GHS Labeling system requirements. The new Globally Harmonized System has defined specific information, including new GHS pictograms that are now standardized and required on all container labels. Manufacturer's labeling must not conflict with DOT labeling and marking requirements either, and must also address other chemical-specific labeling requirements, if applicable.

In general, we utilize the required and existing labels provided by the manufactures at the time of delivery. As long as manufacturer's labels and DOT markings are maintained, there is no need to re-label containers. In fact, the

Standard states that *"employers shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information."*

The New Globally Harmonized Labeling System:

Label Elements: The HCS now requires the following elements on labels of hazardous chemicals:

• **Name, Address and Telephone Number** of the chemical manufacturer, importer or other responsible party.

• **Product Identifier** is how the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate product identifier. The same product identifier must be both on the label and in section 1 of the SDS.

• **Signal Words** are used to indicate the relative level of severity of the hazard and alert the reader to a potential hazard on the label. There are only two words used as signal words, **"Danger"** and **"Warning"**. Within a specific hazard class, "Danger" is used for the more severe hazards and "Warning" is used for the less severe hazards. There will only be one signal word on the label no matter how many hazards a chemical may have. If one of the hazards warrants a "Danger" signal word and another warrants the signal word "Warning," then only "Danger" should appear on the label.

• **Hazard Statements** describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. For example: "Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin." All of the applicable hazard statements must appear on the label. Hazard statements may be combined where appropriate to reduce redundancies and improve readability. The hazard statements are specific to the hazard classification categories, and chemical users should always see the same statement for the same hazards no matter what the chemical is or who produces it.

• **Precautionary Statements** describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling. There are four types of precautionary statements: prevention (to minimize exposure); response (in case of accidental spillage or exposure emergency response, and first-aid); storage; and disposal. For example, a chemical presenting a specific target organ toxicity (repeated exposure) hazard would include the following on the label: "Do not breathe dust/fume/gas/mist/ vapors/spray. Get medical advice/attention if you feel unwell. Dispose of contents/ container in accordance with local/regional/ national and international regulations."

- **PICTOGRAMS: OSHA Appendix C** - The new GHS warning labels are as follow:

Figure C.1 – Hazard Symbols and Classes

Flame	**Flame Over Circle**	**Exclamation Mark**	**Exploding Bomb**
			
Flammables Self Reactives Pyrophorics Self-heating Emits Flammable Gas Organic Peroxides	Oxidizers	Irritant Dermal Sensitizer Acute Toxicity (harmful) Narcotic Effects Respiratory Tract Irritation	Explosives Self Reactives Organic Peroxides

Corrosion	**Gas Cylinder**	**Health Hazard**	**Skull and Crossbones**
			
Corrosives	Gases Under Pressure	Carcinogen Respiratory Sensitizer Reproductive Toxicity Target Organ Toxicity Mutagenicity Aspiration Toxicity	Acute Toxicity (severe)

Figure C.2 – Exclamation Mark Pictogram

Hazardous Materials Information System (HMIS)

When necessary for internal labeling, either due to defaced/damaged labels, or transfer of chemicals to unlabeled containers, Southside Recycling utilizes the Hazardous Materials Information System (HMIS) for communicating required information, including chemical identity and related hazard information. All labels must be legible, in English, and prominently displayed on the container. Information is also provided in Spanish where necessary.

HMIS utilizes a very simple system of colors and numbers to communicate types of chemical hazards and their relative danger or severity. The system allows for very quick recognition of hazards based on this ranking process. The label system uses colored bars to distinguish broad categories of hazards as follows:

- **Blue = Health**
- **Red = Flammability**
- **Orange = Physical Hazards**
- **White = PPE Requirements and/or Special Hazards**

A numbered ranking system is then incorporated within each of these hazard categories to further communicate the relative degree of hazard associated with a given chemical, within that particular hazard class:

Health (HMIS® I)	
	The Health section conveys the health hazards of the material. The blue Health bar has two spaces, one for an asterisk and one for a numeric hazard rating. If present, the asterisk signifies a chronic health hazard, meaning that long-term exposure to the material could cause a health problem such as emphysema or kidney damage.
4	Life-threatening, major or permanent damage may result from single or repeated overexposures.
3	Major injury likely unless prompt action is taken and medical treatment is given.
2	Temporary or minor injury may occur.
1	Irritation or minor reversible injury possible.

0	No significant risk to health.

Flammability (HMIS® II)

Level of Hazard: (0 = low hazard to 4 = high hazard)	
4	Flammable gases, or very volatile flammable liquids with flash points below 73 °F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA) .
3	Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 °F and boiling points above 100 °F, as well as liquids with flash points between 73 °F and 100 °F. (Classes IB & IC).
2	Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 °F but below 200 °F. (Classes II & IIIA).
1	Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 °F. (Class IIIB).
0	Materials that will not burn.

Physical Hazard (HMIS® III)

Reactivity hazard are assessed using the OSHA criterion of physical hazards. Seven such hazard classes are recognized:

Water Reactives	**Organic Peroxides**
Explosives	**Compressed gases**
Pyrophoric materials	**Oxidizers**
Unstable Reactives	

Level of hazard: (0 = low hazard to 4 = high hazard):

4	Materials that are readily capable of explosive water reaction, detonation or explosive decomposition, polymerization, or self-reaction at normal temperature and pressure.
3	Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion.
2	Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.
1	Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.
0	Materials that are normally stable, even under fire conditions, and will **not** react with water, polymerize, decompose , condense, or self-react. Non-explosives.

Personal Protection (PPE)

HMIS® uses the white section to indicate what personal protective equipment (PPE) should be used when working with the material.

HMIS® Letter	Required Equipment

A	 Safety Glasses
B	 Safety Glasses  Gloves
C	 Safety Glasses  Gloves  Protective Apron
D	 Face Shield  Gloves  Protective Apron
E	 Safety Glasses  Gloves  Dust Respirator
F	 Safety Glasses  Gloves  Protective Apron  Dust Respirator
G	 Safety Glasses  Gloves  Vapor Respirator
H	 Splash Goggles  Gloves  Protective Apron  Vapor Respirator
I	 Safety Glasses  Gloves  Dust Respirator  Vapor Respirator
J	 Splash Goggles  Gloves  Protective Apron  Dust Respirator  Vapor Respirator
K	 Air Line Mask or Hood  Gloves  Full Suit  Boots
L through Z	**Site-specific label – SPECIAL HAZARDS** **Ask your supervisor for handling instructions**

The Label is your first source of information regarding the identity and hazards of a chemical.

All three systems (GHS, HMIS, and DOT), utilize a combination of colors, pictures and numbers to communicate chemical hazards. This approach crosses language barriers quite effectively and is easy to understand.

The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer during his/her work shift. If a container is not emptied within the shift, the employee is required to affix a completed HMIS label on the portable container.

Process equipment which incorporates container as defined by the rule, such as mixers and blenders, must be labeled according to the rule. We utilize a combination of signs, placards, process sheets, batch tickets, and other written materials to communicate required information for these systems/processes where applicable. Process piping systems, such as plant air and natural gas lines are color-coded and labeled in order to communicate the content of the system. For area-related chemical hazards, hazard warnings are posted around the perimeter of the area.

Safety Data Sheets (SDS)

OSHA requires that for each chemical or chemical product that manufactures, importers, and distributors produce, they must develop and provide a Safety Data Sheet (SDS) to all downstream users. It is the responsibility of the manufacturer to send an SDS to each employer. Each employer must ensure that a current SDS is available for every hazardous chemical in the workplace. The SDS is the primary source of information about chemicals, and is a key element to ensuring that detailed chemical information is available to all employees when needed. At Southside Recycling, SDS are maintained electronically within the Internet Cloud/Citrix System. Additionally, hard copies are kept by the Safety Department. Per the Standard, SDS are readily accessible to all employees at all times, and we encourage employees to refer to and use this information accordingly.

To ensure that SDS are obtained for all on-site chemicals, it is the policy of Southside Recycling to request an SDS with all first time purchases. The facility manager and/or purchasing agent shall ensure that this request has been made, and shall verify that an SDS was obtained at the time of delivery. Periodic inventories are conducted to confirm on-site chemicals and corresponding SDS. The Safety Manager will request a copy of any outdated SDSs.

OSHA requires the following specific information on every SDS:

Hazard Communication Safety Data Sheets

The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products. As of June 1, 2015, the HCS will require new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:

Section 1, Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) identification includes all hazards regarding the chemical; required label elements.

Section 3, Composition/information on ingredients includes information on chemical ingredients; trade secret claims.

Section 4, First-aid measures includes important symptoms/ effects, acute, delayed; required treatment.

Section 5, Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7, Handling and storage lists precautions for safe handling and storage, including incompatibilities.

Section 8, Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

Section 9, Physical and chemical properties lists the chemical's characteristics.

Section 10, Stability and reactivity lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information*

Section 13, Disposal considerations*

Section 14, Transport information*

Section 15, Regulatory information*

Section 16, Other information, includes the date of preparation or last revision.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15(29 CFR 1910.1200(g)(2)).

Employers must ensure that SDSs are readily accessible to employees.

See Appendix D of 1910.1200 for a detailed description of SDS contents.

Employees have the right to copy the SDS for their own use. Employees have the same rights to receive copies as provided by Access to Medical Records in 29 CFR 1910.1020. Employee representatives and OSHA also have the right to obtain SDS.

Employee Information and Training

As stated previously, the key to preventing chemical exposures is to enhance the awareness of employees regarding chemical hazards and appropriate methods of control. At Southside Recycling, our goal is to provide this level of awareness for all employees through an effective training and information program. This training is provided to all employees at the time of initial assignment and whenever a new physical or health hazard is introduced into their work area.

Training serves to explain how to obtain SDSs, and reinforces the information presented to employees through the labels and SDS. The use of labels and SDS

will only be successful when workers understand the information presented and are aware of the actions to be taken to avoid or minimize exposure and resulting adverse health effects. Our training program includes a combination of classroom lecture, audio/visual tools and hands-on training to educate, clarify and reinforce key elements of the program. The following topics are covered within the Program.

- **The Hazard Communication Standard/Globally Harmonized System (HCS)(GHS) –** Employees must be informed of the existence of the HCS/GHS, what the standard requires and how it will benefit and protect them. We explain that the purpose of the HCS/GHS is to ensure that the hazards of all chemicals produced are evaluated and that information concerning these hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication program that includes container labeling, safety data sheets, pictograms and employee training.
- Southside Recycling's **Written Hazard Communication Program –** Employees must be informed of the contents of this Program, the Programs location and access, and employee responsibilities.
- **Hazardous Chemical Inventory List –** Employees must be informed of the hazardous chemicals in their work areas, physical and health hazards associated with these chemicals, methods used to detect the presence or release of chemicals, and procedures/control measures to follow if employees are overexposed to hazardous chemicals.
- **Labels -** Labels are the most visible and frequently used source of information about chemicals. It is very important that employees have a thorough understanding of how to interpret information on labels in order to recognize the hazards of these chemicals and to adjust handling, use and protection measures accordingly.
- **Safety Data Sheets –** The purpose and content of the SDS is explained, including useful information contained within each section, a review of terms and definitions, how to get an SDS from management, and how this information can help and protect them in the workplace. For example, understanding the value of the information in "Routes of Entry" can increase the employee's desire to minimize exposures through PPE.
- **Non-Routine Tasks –** In the event that a non-routine task is undertaken, a pre-job briefing will be held to inform all affected employees of the hazards and control measures associated with the task.
- **Contractors –** Contractor responsibilities are reviewed. There employees may be subjected to chemical hazards at our facility, and our employees may be subjected to hazards introduced by the contractor.

Training serves to explain and reinforce the information presented to employees through the labels and SDS. The use of labels and SDS will only be successful when workers understand the information presented and are aware of the actions to be taken to avoid or minimize exposure and resulting adverse health effects.

Non-Routine Tasks

Whenever employees are assigned non-routine tasks, the facility manager or supervisor will instruct employee on the associated hazards and required safety equipment and work practices necessary for the task. In addition to chemical hazards, this may include hazards associated with stored energy, confined spaces, elevated working surfaces, etc. Non-routine tasks may include such things as cleaning/maintenance of pollution or process control equipment.

Management and supervision will evaluate all such tasks prior to assignment of employees. Supervision will instruct employees in the necessary safeguards and will provide necessary equipment and procedures to all assigned employees. This may include:

- Specific LOTO instructions
- CSE Entry Permit
- Elevated Work
- Respirators
- Special eye/face protection
- Impervious gloves, suits and other specialized personal protection
- Hot Work Permits

Contractors/Other Employees

Outside contractors will be advised by the facility manager or area supervisor of any chemical hazards they may encounter in the normal course of their work on Southside Recycling's premises. This meeting will also cover the HMIS labeling system, SDS location and accessibility, chemical protective measures, safe handling procedures, and emergency procedures.

Each contractor bringing chemicals on-site must provide the appropriate hazard information for the substances, including SDS, labels and precautionary measures to be taken when working with or around these chemicals.

The contractor is responsible for training his employees on the contents of our Hazard Communication Program including hazard recognition, personal protective equipment requirements, spill control, non-routine hazard protection, and other precautions or training required by OSHA or the manufacturer.

As with contractors, temporary agency employers are required to fulfill the requirements of the HCS for their employees. The temporary agency is required to provide generic hazard training and information concerning categories of chemicals employees may potentially encounter. We are then responsible for providing site-specific chemical hazard training.

As stated above, if any work is to be done below grade or in areas of concern, the contractor will be required to develop a Site Specific Health and Safety Plan for the project at hand.

Program Responsibility

The Facility Manager has ultimate responsibility for the administration of Southside Recycling's Hazard Communication Program. The original copy of this program is maintained electronically and will be made available, upon request, to employees, their representative or officials of OSHA – see **Appendix E** for request form.

A listing of all hazardous chemicals used at the facility is updated and maintained by the facility manager or his designee – this list is found in **Appendix A**.
Supervision will verify that all containers received for use are clearly labeled with the original manufacturer's labels including identity, appropriate hazard warning, and name/address of manufacturer. Supervision will ensure that all secondary containers are labeled using the HMIS labeling system.
Facility Manager/Supervision is responsible for coordination with outside contractors and temporary employees.
Facility Manager/Purchasing/management designee is responsible for obtaining and maintaining SDS for all on-site chemicals.
All employees are responsible to ensure existing labels on incoming containers are not removed or defaced.
All employees are expected to follow all procedures and use limitations as prescribed by chemical manufacturer's guidance as well as Company policies.

Summary

Southside Recycling's Hazard Communication Program has been developed to minimize undesirable health effect from hazardous chemical exposures to our employees. To accomplish this objective, the Company maintains a list of all hazardous chemicals used or stored at this facility, along with all corresponding material safety data sheets (SDS) for these chemicals. The labels and SDS provide detailed information about the possible hazards of a particular substance and provide additional information necessary when using these chemicals. We also provide a comprehensive training program to teach employees how to identify potential chemical hazards and how to work safely with these materials in the workplace.

These efforts have been made for the protection of all employees. Our success depends in large part on the actions and behavior of every employee. We strongly encourage all employees to learn about the potential hazards in their work area and to follow the Company's work procedures, obey the safety rules and always perform their jobs in a safe manner.

It is impossible for any written or formal program to fully cover all the potential problems or unusual circumstances which may occur in the workplace. For this

reason, we instruct all employees to seek guidance from their supervisor if they are uncertain about a task, condition, procedure or associated hazard. If everyone communicates and works together, the Company can succeed in providing a safe place in which to work.

Hearing Conservation Program

Southside Recycling

11600 South Burley Avenue
Chicago, IL 60617

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PURPOSE and SCOPE

The purpose of this Program is to establish practices and procedures intended to minimize noise exposures and provide adequate protection to our employees who may be exposed to occupational noise at or above an 8-hour time-weighted average of 85 decibels during the performance of their duties.

Short-term exposure to sudden and extremely loud noises can result in **acoustic trauma.** Long-term exposure to loud noises can result in **noise-induced hearing loss**. In both cases, the individual can be left with permanent hearing loss/damage. In order to minimize the potentially harmful effects of occupational exposure to noise, the elements contained in this Hearing Conservation Program must be followed as appropriate. Additionally, we also encourage employees to utilize these principals when dealing with non-work related noise exposures. The bottom line is that if an individual suffers hearing loss, they will most likely never get it back. Not only does this create additional hazards to the individual in the workplace, it affects the ability to communicate and to enjoy the many sounds of life – it affects the individual's quality of life.

This Program describes the minimum requirements that Southside Recycling will undertake to protect our employees from reasonably anticipated occupational exposures to noise. It covers all work activities and areas within this operation, with focus on engineering and work practice controls and methods that will reduce noise levels. It also addresses audiometric testing, noise monitoring, and Personal Protective Equipment (PPE). This Program has been developed in accordance with Occupational Safety and Health Act (OSHA) requirements as defined in 29 CFR 1910.95 – Occupational Noise Exposure.

Noise-induced hearing loss can be prevented. Southside Recycling is committed to identifying and implementing measures that will minimize or eliminate excessive noise exposures, and thereby reduce the potential for noise-induced hearing loss due to occupational exposures. Employee participation in the Company's hearing conservation program and utilization of hearing protection are critical to the success of this program. As previously mentioned, we encourage employees to practice the same principles in protecting their hearing when not at work – as exposures to loud noises can occur anywhere and with a variety of different activities – however, the consequences are the same.

Hearing Conservation Program

In order to establish an effective Hearing Conservation Program, we must first evaluate the work-place to determine if employee exposures to elevated noise levels are present – on a location and/or activity-specific basis. Once noise levels have been determined, efforts can be made to minimize excessive noise levels through a variety of engineering controls including noise source control measures, reducing the path of the noise/sound wave, and protection of the receiver (employee) from noise. These measures may include relocation of equipment/process or people; use of mufflers, barriers, sound absorbers and/or deflectors, and vibration/reverberation controls. Beyond these measures, job rotation and the use of PPE can help to minimize the harmful effects of noise.

Southside Recycling believes reasonably anticipated exposures encountered by our employees while performing their job duties can be controlled by utilizing feasible engineering and/or administrative controls. If such controls fail to reduce the sound levels to below 90 dBA, personal protective equipment must be provided and used to reduce the noise levels to within the accepted limits established by this Regulation.

Occupational Noise Exposure

The Occupational Safety and Health Administration (OSHA) General Industry Regulation 29 CFR 1910.95 – Occupational Noise Exposure specifies that protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table G-16 when measured on the A scale of a standard sound level meter at the slow response.

Table G-16
Permissible Noise Exposure

Duration Per Day, Hours	Sound Level dBA Slow Response
8	90
6	92
4	95
3	97
2	100
11/2	102
1	105
½	110
¼ or less	115

The Occupational Noise Exposure Regulation requires an employer to provide a continually effective hearing conservation program for all employees exposed to an 8-hour time-weighted average sound level (TWA) at or above 85 decibels.

The key elements of our Hearing Conservation Program include:

- Monitoring employees' noise exposures;
- Notifying employees of their monitoring results;
- Baseline and annual audiometric testing for employees exposed at or above an 8-hour time-weighted average of 85 decibels;
- Proper selection of hearing protection;
- Education and training of employees; and
- Recordkeeping of exposure monitoring and audiometric test results.

Monitoring

It is the policy of Southside Recycling to conduct periodic noise monitoring of the workplace to determine noise exposure levels. This assessment of the workplace cannot be performed until the facility is operational. Within 3 months of normal operations, a facility-wide assessment of worker noise levels will be conducted to objectively evaluate employee noise exposure levels. This will determine whether or not this a required program at this facility. Noise level surveys involve the use of specialized instrumentation, which measures noise levels and provides data necessary to determine if a potential noise problem exists. When results indicate that employee exposures may equal or exceed an 8-hour time-weighted average of 85 decibels, affected employees are required to participate in our Hearing Conservation Program. When new employees are hired, information and PPE requirements relating to noise exposures in their work area are provided. When any employee (new hire or transfer) is placed in an occupation where elevated noise levels are present, that employee will be required to participate in the Program. In addition to periodic noise monitoring, other factors that suggest noise exposures in the workplace may be at an elevated level include:

- Employee complaints about the loudness of noise;
- Indications that employees are losing their hearing; or
- Noisy conditions which make normal conversation difficult.

Monitoring will be repeated whenever a change in production, process, equipment or controls increases noise exposures to the extent that:

- Additional employees may be exposed at or above the action level, or
- The attenuation provided by hearing protectors being used by employees may be rendered inadequate.

Employee Notification

All employees exposed to sound levels at or above an 8-hour time-weighted average of 85 decibels must be notified of their monitoring results. However, it is our policy that all employees receive notification of their noise exposure results.

Observation of Monitoring

Southside Recycling will provide affected employees and/or their representatives with the opportunity to observe any noise measurement data conducted pursuant to this section.

Audiometric Testing

Audiometric testing involves utilization of testing apparatus and sophisticated electronic instrumentation that produces pure tones over a wide frequency of sound waves, and then measures an individual's responses and ability to detect sound at these varying frequencies – it measures the individual's hearing acuity.

When it comes to hearing, each individual has a current level of hearing acuity, which is in part, the sum total of their past exposures to noise, as well as individual physiological and medical factors. Consequently, there is no standard baseline from which all employees are compared. Rather, when a new employee is hired, an audiometric base-line is established. This initial measurement becomes the employee's "point of reference" – or baseline. All future audiometric testing is then referenced back to this baseline.

Annual audiograms must be provided to all employees who are included in the Hearing Conservation Program, at no cost to the employee. The annual audiogram must be compared to the baseline audiogram to determine whether there has been any change in the employee's hearing.

If the annual audiogram shows that an employee has suffered a standard threshold shift (STS), the employer may obtain a retest within 30 days and consider the results of the retest as the annual audiogram.

If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift has occurred, the employee will be informed of this fact in writing, within 21 days of the determination.

Unless a physician determines that the standard threshold shift (STS) is not work related or aggravated by occupational noise exposure, Southside Recycling will ensure the following steps are taken when a standard threshold shift occurs:

- Employees not using hearing protectors shall be refitted and retrained in their use and care, and required to use them;
- Employees already using hearing protectors shall be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation if necessary;
- The employee shall be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if the employer suspects that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors; and
- The employee is informed of the need for an otological examination if a medical pathology of the ear that is unrelated to the use of hearing protectors is suspected.

A standard threshold shift is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000 and 4000 Hz in either ear, with an average hearing level at these frequencies of 25 dB or greater. In determining a standard threshold shift has occurred, allowance may be made for the contribution of aging (presbycusis) to the change in the hearing level by correcting the annual audiogram.

We utilize occupational health professionals and qualified audiometric testing firms to assist us with valid baseline audiograms, annual audiograms, and the knowledge and expertise to assist us in interpreting these results and assessing potential hearing losses.

An annual audiogram may be substituted for the baseline audiogram when, in the judgment of the audiologist, otolaryngologist or physician who is evaluating the audiogram:

- The standard threshold shift revealed by the audiogram is persistent; or
- The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram.

Hearing Protection

Southside Recycling will make hearing protectors available to all employees exposed to a time-weighted average of 85 decibels or greater, at no cost to the employees. Management will ensure that hearing protection is worn by all employees who:

- Are exposed at or above 85 decibels and have experienced a standard threshold shift.
- Are exposed at or above an 8-hour time-weighted 90 decibels.

Southside Recycling will evaluate hearing protector's attenuation for the specific noise environments in which the protectors will be used. Hearing protectors must attenuate employee exposure to a TWA of 90 decibels. For employees who have experienced a standard threshold shift, hearing protectors must attenuate employee exposure to TWA of 85 decibels or below.

The regulations state that hearing protectors (several styles) must be made available to all employees exposed to 85 decibels or greater. Employees exposed to an 8-hour TWA of 90 decibels or greater are required to wear hearing protection. Employees exposed to a TWA of 85, but less than 90 decibels, have a choice whether to wear hearing protection if they have not experienced a standard threshold shift.

When selecting hearing protection, it is recommended that protectors attenuate the employee exposure to a TWA of 80 decibels, even though the regulations specify 85 and/or 90 decibels, depending on the employee's level of hearing. The hearing protectors selected must fit properly to ensure adequate attenuation while providing a high degree of comfort.

Training

It is our belief that the best way to maintain a safe workplace is to ensure that all employees have been provided with specific information intended to increase their awareness and knowledge regarding the given subject. Southside Recycling will provide a hearing conservation training program for all employees who are exposed to noise at or above a TWA of 85 decibels and will ensure employee participation. The training must be repeated annually for all covered employees. Training consists of:

- The effects of noise on hearing;
- The purpose of hearing protection, the advantages and disadvantages and attenuation of various types, and instructions on selection, fitting, use and care; and
- The purpose of audiometric testing and an explanation of the test procedures.
- Results of noise level surveys and high noise areas.
- Methods of reducing noise levels.

Access to Information

Upon request, Southside Recycling will make available to affected employees or their representative copies of this Standard and shall also have the Standard available in the workplace.

Recordkeeping and Record Retention

Southside Recycling will maintain accurate records of all employees' exposure measurements, and all employees' audiograms. Noise exposure measurement records must be retained for two (2) years. Audiometric test records must be retained for the duration of the affected employee's employment.

Program's Responsible Parties

The Safety and Environmental Manager has the responsibility for the overall administration of Southside Recycling's Occupational Noise Exposure – Hearing Conservation Program.

The Facility Manager, has the responsibility for the administration of the Company's Occupational Noise Exposure – Hearing Conservation Program at Southside Recycling. The original copy of this program is maintained in the Facility Manager's office and will be made available, upon request, to employees, their representative or officials of OSHA.

Summary

Exposure to loud noises are present everywhere – driving down the highway with windows open and music blaring, mowing the grass, and attending a concert are all examples of loud noises to which people are exposed. Although we cannot and do not wish to control what an individual does with their own time, we are required to control exposure to loud noises while in the workplace. Furthermore, when an individual suffers from hearing loss, it affects all aspects of their life – both at work and at home.

In the event that elevated noise levels are identified during initial monitoring, Southside Recycling will establish this Hearing Conservation Program to minimize the potentially harmful effects of exposure to occupational noise. This Program will consist of periodic noise level surveys of the workplace; measures to minimize loud noises in the workplace; baseline and annual audiometric testing of covered employees; use of personal protective equipment (PPE); employee training; and records management.

With the proper measures and equipment in place, and a knowledgeable and committed workforce, we believe that we can reduce or eliminate the potential for noise-induced hearing loss to our employees at this facility. We also believe that an individual's ability to hear goes beyond safety and has a direct impact on their quality of life – and we wish to promote this concept with all employees.

Appendix A
Definition of Terms

Action Level – An 8-hour time-weighted average of 85 decibels measured on the A-scale, slow response, or equivalently, a dose of fifty percent.
Audiogram – A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.
Audiologist – A professional, specializing in the study and rehabilitation of hearing, who is certified by an American Speech-Language-Hearing Association or licensed by a state board of examiners.
Baseline Audiogram – The audiogram against which future audiograms are compared.
Criterion Sound Level – A sound level of 90 decibels.
Decibel (dB) – Unit of measurement of sound level.
Hertz – Unit of measurement of frequency, numerically equal to cycles per sound.
Medical Pathology – A disorder or disease. For the purpose of this regulation, a condition or disease affecting the ear, which should be treated by a physician specialist.
Noise Dose – The ratio, expressed as a percentage, of (1) the time integral, over a stated time or event, of the 0.6 power of the measured SLOW exponential time-average, squared A-weighted sound pressure and (2) the product of the criterion duration (8 hours) and the 0.6 power of the squared sound pressure corresponding to the criterion sound level (90 dB).
Noise Dosimeter – An instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.
Otolaryngologist – A physician specializing in diagnosis and treatment of disorders of the ear, nose and throat.
Representative Exposure – Measurements of an employee's noise dose or 8-hour time-weighted average sound level that the employers deem to be representative of the exposures of other employees in the workplace.
Sound Level – Ten times the common logarithm of the ratio of the square of the measured A-weighted sound pressure to the square of the standard reference pressure of 20 micropascals. Unit: decibels (dB).
Sound Level Meter – An instrument for the measurement of sound level.
Time-weighted Average Sound Level – That sound level, which if constant over an 8-hour exposure, would result in the same noise dose as is measured.

Confined Space Entry Program

Southside Recycling

11600 S. Burley Ave.,
Chicago, IL

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PURPOSE and SCOPE

The purpose of this Program is to establish practices and procedures designed to protect employees from the hazards associated with entry into both permit and non-permit-required confined spaces. Southside Recycling has established a Confined Space Entry Program designed to prevent unauthorized entry into any confined space at this facility, and to reduce the potential for personal injuries associated with authorized confined space entry activities. This Program has been developed in accordance with OSHA 29 CFR 1910.146 – Permit-Required Confined Spaces.

It is the policy of Southside Recycling that all activities associated with entry into a confined space must be under the protection of this Confined Space Entry (CSE) Program. This program covers all employees and outside contractors conducting confined space entry work at this facility. The elements contained in this program must be followed in all entries into either permit-required or non-permit required confined spaces. These elements include pre-entry hazard assessment, safe entry practices and procedures, personal protective equipment requirements, attendant and rescue requirements, on-going evaluation and monitoring, and employee training/authorization requirements.

Permit-required confined spaces present greater hazards than those present in non-permit confined spaces. However, in either situation it is critical to follow all requirements and precautions as described in this Program. Additionally,

EMPLOYEES ARE FORBIDDEN FROM ACCESSING/ENTERING ANY PERMIT-REQUIRED CONFINED SPACE WITHOUT PRIOR AUTHORIZATION, INCLUDING USE OF A CONFINED SPACE ENTRY PERMIT.

Confined Space Entry Program

At Southside Recycling, our core business activities do not involve entry into confined spaces at this facility. However, sometimes confined spaces need to be entered for various reasons, including inspection and testing of equipment, processes and materials; cleaning to remove undesired materials, or to prepare for different usage; repair and maintenance operations (including welding, painting, etc); and rescue of injured or incapacitated individuals.

The first step in establishing a CSE Program is to identify all confined spaces present at this facility. This requires a detailed survey of the entire facility including not only operational equipment, but such things as facility drainage sewers and utility access vaults.

The Occupational Safety and Health Administration (OSHA) defines a confined space as follows:

1. The space is large enough and so configured that an employee can bodily enter and perform work; and
2. The space has limited or restricted means for entry or exit; and
3. The space is not designed for continuous employee occupancy.

As a rule of thumb, the following areas are typically classified as confined spaces and must be identified and treated with caution:

- Silos
- Tanks
- Vats
- Vessels
- Boilers
- Compartments
- Ducts
- Sewers
- Pipelines
- Utility manholes
- Furnaces
- Air exhaust plenums
- Bag houses
- Vaults
- Bins
- Tubs
- Pits
- De-greasers
- Tunnels
- Crawlspaces
- Incinerators
- Scrubbers
- Hoppers
- Railroad tank cars
- Dike areas
- Trenches

Many workplaces contain spaces that are considered to be "confined spaces" because their configurations hinder the activities of any employee who must enter into, work in, and exit from them. In many instances, employees who work in confined spaces also face increased risk of exposure to serious physical injury from hazards such as entrapment, engulfment, and hazardous atmospheric conditions. Confinement itself may pose entrapment hazards, and work in confined spaces may keep employees closer to hazards, such as an asphyxiation atmosphere, than they would be otherwise. For example, confinement, limited access, and restricted airflow can result in hazardous conditions that would not arise in an open workplace.

Not all confined spaces possess the same hazards, and OSHA has designated a separate category for those confined spaces that present increased hazards and a greater potential for injury. The term "permit-required confined space" refers to those “permit spaces” that meet the definition of a "confined space" **and** pose an elevated level of hazard due to **any** of the following conditions or characteristics:

1. Contains or has the potential to contain a hazardous atmosphere; **or**
2. Contains a material that has the potential for engulfing an entrant; **or**
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section; **or**
4. Contains any other recognized serious safety or health hazard.

Standard Requirements

This Standard requires employers to evaluate the workplace to determine if any permit-required confined spaces are present (See **Appendix A**). If these spaces are present, the employer must inform exposed employees by posting danger signs identifying the existence and location of these permit spaces. The employer must restrict access to these permit spaces and must determine whether or not employees will enter into permit spaces. There are several options available to employers, depending on the degree of entry activities and types of confined spaces and associated hazards that employees may encounter. The Standard also requires a host of other protective measures for CSE activities, which are covered within this Program.

Workplace Analysis and Hazard Evaluation

As stated, OSHA requires employers to perform a workplace analysis to determine if any spaces fit the criteria for a permit-required confined space – Appendix A. After conducting a walk-through analysis of the entire workplace, both permit and non-permit confined spaces have been identified and are listed in **Appendix B.** This survey identifies all confined spaces, their location and associated entry permit requirements.

Prevention of Unauthorized Entry

In order to prevent unauthorized entry into any confined space, it is our policy to identify and label all confined spaces at this facility; limit, restrict, or otherwise isolate access to these spaces; and provide basic training to all employees regarding confined space hazard awareness, forbidden access, and authorized entry requirements. Once the confined space survey has been conducted, all identified confined spaces at this facility shall be marked or labeled with one of the following or with like information:

DANGER **CONFINED SPACE** **AUTHORIZED** **PERSONNEL ONLY**	or…	**DANGER** **PERMIT REQUIRED** **CONFINED SPACE** **DO NOT ENTER**

Confined Space Entry Options

Based on entry activities as well as confined space classifications, employers have options regarding how to address permit-required confined space entries in their facility. These options incorporate the potential hazards, hazard control measures, and alternate procedures based on hazardous conditions within the

confined space. The following are examples of typical permit-required confined spaces and their associated hazards.

Permit-Required Confined Spaces	Typical Associated Hazards
Truck Scales Pits	Hazardous atmosphere; engulfment; slip, trip or fall; and electrical shock.
Railroad Scales Pits	Hazardous atmosphere; engulfment; slip, trip or fall; and electrical shock.
Baler Hopper	Hazardous atmosphere and entrapment.
Shear Hopper	Hazardous atmosphere and entrapment.
Bag House	Hazardous atmosphere; slip, trip or falls; entrapment and health hazard.
Cyclones	Hazardous atmosphere; slip, trip or falls; entrapment and health hazard.
Ventilation Duct Work	Hazardous atmosphere; slip, trip or falls; entrapment and health hazard.
Shredder/Fragmentizer	Hazardous atmosphere; slip, trip or falls; and entrapment.
Maintenance Work Pit	Hazardous atmosphere and slip, trip or falls.
Pipeline/Sewer Line	Hazardous atmosphere, engulfment, slip, trip.
Railroad Tank Cars	Hazardous atmosphere, slip, trip.
Scrubber Pit	Hazardous atmosphere; engulfment; and slip, trip or falls.
Baler/Shear Hydraulic Tank	Hazardous atmosphere.

Non-Permit Required Confined Spaces

Those confined spaces that do not meet any of the criteria for identification as a permit-required confined space are not subject to the permit-required CS Entry requirements. However, it is our policy to treat every confined space as potentially hazardous, and take appropriate precautions as prescribed within this Program in the event that one of these spaces must be entered. This includes such things as site and hazard control, use of LOTO, team entries and PPE use. A list of entry requirements has been developed and is included in the Appendix.

Option I - Prohibited Entry

If employees are not to enter a permit-required confined space, the employer must take effective measures to prevent the employees from entering such spaces. Non-permit confined spaces must be re-evaluated when there are changes in their use or configuration and, where appropriate, must be reclassified. This scenario may arise when an employer hires a contractor who specializes in permit-required CSE activities. In these cases, the following requirements as described within the Standard and are required:

With Option I, if a host employer utilizes a contractor/3rd party to perform work in a permit-required confined space, the host employer must:

- Inform the contractor of the known permit spaces and the known and/or measured hazard within each,
- Inform the contractor of any precautions or procedures for the protection of employees implemented in or near permit spaces where contractor personnel will be working,
- Coordinate entry operation when both host and contractor personnel will be working in or near permit spaces, and
- Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.

The contractor must inform the host employer of the permit program that the contractor will follow, and must provide documentation of their program as well as copies of all completed CS Entry Permits.

Option II - Hazardous Atmosphere Space Program

Under the following conditions, the employer may use alternate procedures for worker entry into a permit space if the employer can demonstrate that:

- The only hazard posed by the permit space is an actual or potential hazardous atmosphere,
- Continuous forced air ventilation alone is sufficient to make and maintain the permit space safe for entry,
- Monitoring and inspection data supports the demonstrations, and
- The determinations and supporting data are made available to each employee who enters the permit space.

If an initial entry of the permit space is necessary to obtain the above data, the initial entry must be performed as outlined under Option III. When utilizing Option II, the following requirements shall be followed at all times:

Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed. When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary

barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.

Before an employee enters the space, the internal atmosphere of the space must be tested, with a calibrated direct-reading instrument, for the following conditions in the following order:

- **Oxygen Content:** hazardous levels below 19.5% or above 23.5%,
- **Flammable Gases/Vapors:** hazardous level in excess of 10% of its Lower Flammable Limit (LFL) or Lower Explosive Limit (LEL),
- **Toxic Air Contaminants**: in excess of established dose or permissible exposure limits.

Continuous forced air ventilation must be used to eliminate any hazardous atmospheres. The forced air ventilation must be directed to ventilate the immediate areas where an employee is or will be present within the space and continued until all employees have left the space.

The atmosphere within the space must be periodically tested to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

If a hazardous atmosphere is detected during entry all employees are to be removed from the space. The employer must then determine how the hazardous atmosphere developed and implement protective measures before employees are allowed to re-enter the space. A written certification must be completed and made available to each employee entering the space.

The same procedures as outlined in Option I apply when a host employer arranges to have employees of a contractor perform work that involves permit space entry where alternate procedures are used.

At Southside Recycling, we typically do not have any permit-required confined spaces that fall into the Hazardous Atmosphere category. However, in the event that this situation should arise, all applicable requirements as described above shall be followed to ensure safe entry into such confined spaces.

Option III - Permit-Required Confined Space Program

If the permit-required confined space contains/exhibits hazards other than as described under **Option II - Hazardous Atmosphere Space Program,** and employees will be required to enter these spaces, the employer must develop and implement a permit-required confined space program. Under the permit-required confined space program the employer must:

- Prevent unauthorized entry,
- Identify and evaluate the permit space hazards,

- Develop and implement means, procedures, and practices for safe entry,
- Provide and maintain appropriate equipment,
- Evaluate permit space conditions,
- Identify and designate key roles and duties,
- Provide and implement an entry permit system,
- Provide and make available rescue and emergency services,
- Provide and document training.

As stated above, at Southside Recycling, we generally do not enter permit-required confined spaces, and would normally utilize a contractor who specializes in confined space entry work. In the event that entry is warranted, all required elements of our Permit-Required Confined Space Entry Program are followed.

Reclassification as a Non-Permit Space

A space classified as a permit-required confined space may be reclassified as a non-permit-required confined space provided that the space no longer has or contains any of the listed hazardous characteristics. This reclassification may continue for as long as the listed hazards remain eliminated. The employer shall document the basis for determining that all hazards in the permit space have been eliminated through a certification that contains the date, the location of the space and the signature of the person making the determination. The certification will be made available to each employee entering the space. This is an option that is sometimes utilized. These confined spaces exhibit hazards that are eliminated/controlled through protection under our Lock Out/Tag Out (LOTO) program. Once LOTO has been implemented, these spaces no longer contain hazards that would warrant use of the permit-entry system, and are suitable for reclassification as Non-Permit spaces.

Confined Space Entry Requirements

Permit-Required Confined Space Entry – All Entries

It is the policy of Southside Recycling that **NO EMPLOYEE** is permitted to enter or participate in a permit-required CSE without having first obtained a completed CS Entry Permit – issued by an authorized supervisor. Further, adherence to these general requirements, as well as specific requirements of the CS Entry Permit MUST BE FOLLOWED at all times. This ensures that all covered employees remain under the protection of this CSE Program, throughout the duration of the entry. CS Entry Permits expire at the end of the shift in which they were issued. Entries extending beyond one shift must have updated CS Entry permits issued at the beginning of each new shift by the incoming entry supervisor.

The following steps must be taken when conducting all Permit-Space entries:

- Review/confirm that established and acceptable entry conditions for the permit-required confined space have been met;
- Isolate the permit-space. The permit space must be isolated from serious hazards. This includes adherence to all LOTO and access requirements;
- Drain, purge and ventilate the atmosphere of the permit-space. If the permit space exhibits immediately dangerous to life or health (IDLH) atmospheres, these conditions must be eliminated and controlled before employees are allowed to enter. This may include ventilating or purging the space of the life threatening substance or atmosphere;
- Site control barriers must be established that prevent unauthorized entry into the space and protect employees inside the space from objects or persons outside the space;
- Verify that conditions within the permit-space are suitable for entry throughout the duration of the entry event – this includes:
    - Ongoing monitoring and testing of conditions and atmospheres within the space;
    - Verify and ensure continued lockout/isolation of energy sources;
    - Verify that hydraulic, chemical or other material lines remain clear and isolated;
    - Ensure that ventilation continues and protect the quality of ventilation air;
    - Ensure barriers and other site control measures are maintained.

Required/Appropriate Entry Equipment

It is our policy to provide and maintain, at no cost to employees, the appropriate equipment needed for safe permit-space entry. This may include the following:

- Direct read, air testing and monitoring equipment,
- Ventilation equipment,
- Communication equipment and lighting,
- Personal protective equipment, including respiratory and fall protection,
- Lifting and material handling equipment,
- Barriers, guards and shields,
- Access equipment such as ladders and tripods,
- Rescue/emergency equipment not available through rescue services.

Permit Space Conditions

In the event that we must enter a permit-required space, in all cases we will test and/or monitor potentially hazardous conditions in the permit space before and during entry. Testing for atmospheric hazards is as follows:

- First test for oxygen levels – acceptable range is 19.5% to 23% oxygen,
- Then test for combustible gases/vapors – acceptable range is <10% LEL,
- Then for toxic gases/vapors – will be dependent on material previously in the space – some maintenance activities could generate flammable or toxic atmospheres not previously present in the space – ie. painting.

Other considerations/hazards that must be assessed before each CSE include:

- Local site control and security measures;
- Lighting, temperature extremes and noise levels – around the area and within the space;
- Electrical and grounding concerns;
- Ventilation issues – quality and placement of forced air supply;
- Water, drainage and other fluid related issues;
- Sufficient numbers of properly trained/authorized personnel;
- Communication issues and signals;
- Work being performed within the confined space – what hazards are presented or introduced by the work being performed.

Entry Personnel – Key Roles and Duties

In addition to ensuring that all hazards have been addressed and controlled, and that all required equipment and site control measures have been implemented, all personnel involved in any confined space entry work must be trained and qualified for the functions and activities to which they are assigned.

OSHA has established three categories for CSE personnel and their respective duties: Authorized Entrant, Entry Attendant and Entry Supervisor.

Authorized Entrant: Is an employee authorized by the employer to enter a permit space. This is the person who faces the greatest risk of injury from exposure to the hazards contained within the space. The employer must ensure that all authorized entrants:

- Know the hazards that may be faced during entry including information on the mode of exposure and signs/symptoms of overexposure;
- Is able to recognize signs or symptoms of exposure,
- Understands the consequences of exposure to the hazards,
- Knows the proper use of required equipment,
- Communicates with the attendant as necessary to enable the attendant to monitor the status of the space and to enable the attendant to alert the entrants of the need to evacuate the space as needed,
- Alert the attendant whenever the entrant:
    - Recognizes any warning signs or symptoms of exposure to a dangerous situation, or,
    - Detects a prohibited condition,
- Exit from the permit space as quickly as possible whenever:
    - An order to evacuate is given by the attendant or the entry supervisor,
    - The entrant recognizes any warning signs or symptoms of exposure to a dangerous situation,
    - The entrant detects a prohibited condition,
    - An air evacuation alarm is activated.

Entry Attendant: Is an employee who monitors the status of authorized entrants and the conditions within the permit space. This individual is the lifeline for the authorized entrant. The employer must ensure that each attendant:

- Knows the hazard that may be faced during entry including information on the mode of exposure;
- Is aware of possible behavioral effects of hazard exposure in authorized entrants including signs and symptoms of overexposure;
- Continuously maintains an accurate count of authorized entrants in the permit space by use of information provided on the permit;
- Remains outside the permit space and actively observes entrants during entry operations until relieved by another attendant,
- Communicates with authorized entrants as necessary to monitor their status and alert them of the need to evacuate the space,
- Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space,
- Orders the authorized entrants to evacuate the space immediately if the attendant:
    - Detects a prohibited condition,
    - Detects the behavioral effects of hazard exposure in an authorized entrant,
    - Detects a situation outside the space that could endanger the authorized entrants,
    - Cannot effectively and safely perform all required duties.
- Summon emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards,

- Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:
    - Warn the unauthorized persons to stay away from the space,
    - Advise the unauthorized persons that they must exit if they have entered the space, and/or,
    - Inform the authorized entrants and entry supervisor if unauthorized persons have entered the space,
- Performs non-entry rescues as specified by the employer's rescue procedures, and,
- Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

Entry Supervisor: Has overall accountability for safe entry including.

- Knowledge of the hazards faced during entry, including signs and symptoms of overexposure;
- Verifies that all tests specified on the entry permit have been conducted and all equipment and procedures specified on the permit are in place before endorsing the permit and allowing entry to begin;

- Terminates the entry and cancels the permit when the entry operations have been completed or when a condition not allowed under the entry permit arises in or near the permit space;
- Verifies that rescue services are available and that means for summoning them are operable;
- Removes unauthorized individuals who enter or attempt to enter the permit space during entry operations,
- Determines that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained. This determination is to be done at intervals dictated by the hazards and operations performed within the space. Also, this determination must be passed on when the entry supervisor is relieved, such as at change of shift.

Entry Permit System

The Standard requires the use of a written confined space entry permit for each CS Entry that is conducted. Prior to entry, the Entry Supervisor is responsible for completing the CSE Permit and verifying that all conditions identified on the Permit are in place and maintained. Entry into any permit-required confined space is prohibited unless a completed CSE Permit has been issued for the specified time and with the specified individuals. The permit also serves to communicate and document the measures taken to protect authorized entrants from permit space hazards. The CSE permit:

- Must be signed by the identified entry supervisor before entry begins,
- Must be made available at the time of entry to all authorized entrants and the attendants,
- Must identify the location and purpose of the entry.
- Establishes the duration of time for which the CSE is valid – 1 shift.
- Identifies all individuals and their respective roles during entry activities.
- Identifies the hazards and respective control measures associated with the space and related entry activities.
- Identifies isolation and site control measures.
- Identifies the need for other permits (ie. Hot Work), and
- Identifies emergency and rescue procedures.

The entry supervisor must terminate entry and cancel the entry permit when:

- Entry operations covered by the entry permit have been completed, or,
- A condition that is not allowed under the entry permit arises in or near the permit space.

It is our policy to review our CSE Program, using the cancelled permits, within one (1) year after each entry and revise the program as necessary to ensure employees participating in the entry program are adequately protected from permit space hazards.

All completed CSE Permits are retained for at least one (1) year to facilitate the review of the permit-required confined space program.

Additionally, we conduct periodic audits of CSE operations, with emphasis on assessing whether those measures taken under the existing CSE Permit Program are effectively protecting employees from recognized hazards. These audits are also utilized in revising the Program to correct deficiencies found to exist – before future entries are authorized.

Rescue and Emergency Services

The employer must develop and implement procedures for summoning rescue and emergency services or for rescuing entrants from permit spaces.

Retrieval Systems: The employer must use a retrieval system or method whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. If used, the retrieval system must meet all of the following requirements:

- Chest or full body harness on each entrant,
- Retrieval line attached to the center of the entrant's back or above entrant's head on wristlets if the employer can demonstrate that use of a chest or full body harness is infeasible or creates a greater hazard and that wristlets is the safest and most effective alternative,
- Other end of retrieval line must be attached to a mechanical device or fixed point outside the permit space so that rescue can begin as soon as necessary. A mechanical device is required to retrieve personnel from vertical type permit spaces more than five (5) feet deep.

Rescue Services: Depending on the nature of the entry, we may decide to use either on-site or off-site rescue services.

Off-Site Rescue Services: In the event that we utilize off-site rescue service, such as a community based fire department or rescue squad, we will first:

- Inform the rescue service of the hazards they may confront when called on to perform a rescue, and,
- Provide the rescue service with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.

In the event that off-site services are needed for rescue purposes, we follow the guidelines prescribed by OSHA and found in Appendix F.

On-Site Rescue Services: In the event that we will enter permit spaces to perform rescue services, the following requirements apply to each member of the rescue team:

- Is provided with and is trained to use appropriate personal protective equipment and rescue equipment,

- Is trained to perform necessary rescue duties,
- Receives the same information and training as do authorized entrants,
- Practice making permit space rescues at least one every twelve (12) months by means of simulated rescue operations from actual or representative permit spaces using dummies, manikins, or actual persons,
- Be trained in basic first-aid and cardiopulmonary resuscitation (CPR). Only one member of the on-site rescue service need to have a current CPR and first aid certificate.

Our primary mechanism for rescue is through self-extraction if at all possible. Additionally, all entries are made with the use of retrieval mechanisms that allow us to extract an entrant remotely, without the need to send rescuers into a permit space. However, all CS entries must anticipate and be prepared for the need to enter a permit space to facilitate the removal of a distressed entrant.

Training

At Southside Recycling, awareness level training is provided to all employees. Additional training for entry personnel includes the basic awareness training provided to all employees as well as more detailed information pertaining to the understanding, knowledge, and skills necessary for the safe performance of the duties assigned for permit-required confined space entry.

Training is provided to each affected employee:

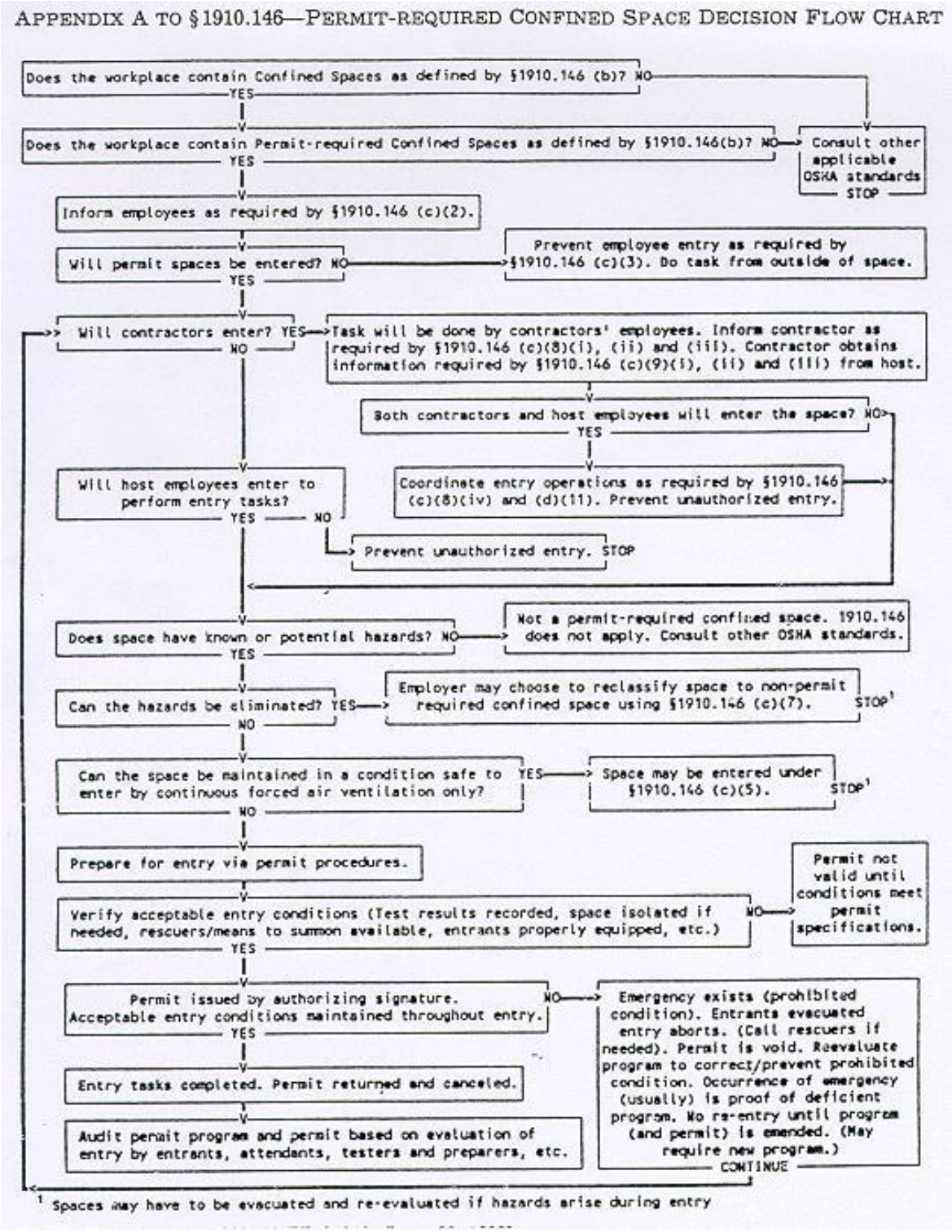
- Before the employee is first assigned to confined space duties, or,
- Before there is a change in assigned duties, or,
- Whenever there is a change in permit space operations that presents a hazard which an employee has not been trained, or,
- Whenever we believe there have been changes or inadequacies in the confined space program that presents a hazard to employees.
- Additional specialized training is required for all rescue personnel.

In addition to periodic refresher training, new/revised procedures and a review/ critique of past entries is provided as necessary, to comply with the overall objective and required employee proficiency necessary for safe CS entry.

Summary

Confined Spaces present a variety of potential hazards to entrants and would-be rescuers. At Southside Recycling, all confined spaces have been identified and secured. Generally, we do not have a need or reason to enter a confined space during the normal course of work. In the event that a CS Entry is required, the rules and guidelines as prescribed within this document must be followed in order to sufficiently control hazards and minimize the potential for injury to employees.

Appendix A
Confined Space Decision Flow Chart



Appendix B
Southside Recycling
Confined Space Survey

Confined Space	Work Area/Location	Permit Required?
Main Shredder Chamber	Shredder	Yes
Feed Hoppers	Throughout facility	No*
Sensor Discharge Chutes	At all sensors	No*
Storm Water Drainage Piping	Subsurface throughout facility	Yes
Cyclone		
Trammel		
Dust Collector Ducting		
Dust Collector		

Appendix C
Contractor Responsibilities

Outside Contractors, while working at or on Southside Recycling's property, must comply with the permit space requirements that apply to all employers. Each Contractor who is retained to perform permit space entry operations must:

- Obtain any available information regarding permit space hazards and entry operations from Southside Recycling management team,

- Coordinate entry operations with the manager, when both our personnel and Contractor personnel will be working in or near permit spaces,

- Inform Southside Recycling management of the permit program that the Contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

The Contractor will be expected to review the data supplied by us, and train his employees in accordance with OSHA's "Permit-Required Confined Space" Standard – 29 CFR 1910.146.

I, _____, hereby certify that I have received the appropriate information from the Company; that I have reviewed the information; and that employees who will perform work on _____'s premises have received the proper training.

Name: _____ Signature: _____

Title: _____ Company:_____

Date: _____ Witness: _____

Appendix D
Sample Entry Permit for Permit-Required Confined Space Entries

Confined Space Entry Permit
Date and Time Issued: _____ Date and Time Expires: _____
Job site/Space I.D.: _____ Job Supervisor:_____
Equipment to be worked on: _____ Work to be performed: _____

Stand-by personnel: _____ _____ _____

1. Atmospheric Checks: Time _____
Oxygen _____%
Explosive _____% L.F.L.
Toxic _____PPM

2. Tester's signature: _____

3. Source isolation (No Entry):

	N/A	Yes	No
Pumps or lines blinded,	( )	( )	( )
disconnected, or blocked	( )	( )	( )

4. Ventilation Modification:

	N/A	Yes	No
Mechanical	( )	( )	( )
Natural Ventilation only	( )	( )	( )

5. Atmospheric check after isolation and Ventilation:

Oxygen _____%	>	19.5	%
Explosive _____% L.F.L	<	10	%
Toxic _____PPM	<	10	PPM H(2)S

Time _____
Testers signature: _____

6. Communication procedures: _____
_____

7. Rescue procedures: _____
_____
_____
_____

8. Entry, standby, and back up persons:	Yes	No
Successfully completed required training?		
Is it current?	( )	( )

9. Equipment:	N/A	Yes	No
Direct reading gas monitor - tested	( )	( )	( )
Safety harnesses and lifelines for entry and standby persons	( )	( )	( )
Hoisting equipment	( )	( )	( )
Powered communications	( )	( )	( )

SCBA's for entry and standby persons	( )	( )	( )
Protective Clothing	( )	( )	( )
All electric equipment listed Class I, Division I, Group D and Non-sparking tools	( )	( )	( )

10. Periodic atmospheric tests:

Oxygen	____%	Time ____		Oxygen	____%	Time ____	
Oxygen	____%	Time ____		Oxygen	____%	Time ____	
Explosive	____%	Time ____		Explosive	____%	Time ____	
Explosive	____%	Time ____		Explosive	____%	Time ____	
Toxic	____%	Time ____		Toxic	____%	Time ____	
Toxic	____%	Time ____		Toxic	____%	Time ____	

We have reviewed the work authorized by this permit and the information contained here-in. Written instructions and safety procedures have been received and are understood. Entry cannot be approved if any squares are marked in the "No" column. This permit is not valid unless all appropriate items are completed.

Permit Prepared By:
(Supervisor)_____
Approved By: (Unit Supervisor)_____
Reviewed By (Cs Operations Personnel) :
_____
_____
(printed name) (signature)

This permit to be kept at job site. Return job site copy to Safety Office following job completion.

Copies: White Original (Safety Office)
Yellow (Unit Supervisor)
Hard(Job site)

Appendix D - 2

ENTRY PERMIT

PERMIT VALID FOR 8 HOURS ONLY. ALL COPIES OF PERMIT WILL REMAIN AT JOB SITE UNTIL JOB IS COMPLETED

DATE: - - SITE LOCATION and DESCRIPTION _____
PURPOSE OF ENTRY _____
SUPERVISOR(S) in charge of crews Type of Crew Phone #
_____
_____
COMMUNICATION PROCEDURES _____
RESCUE PROCEDURES (PHONE NUMBERS AT BOTTOM) _____
_____

* BOLD DENOTES MINIMUM REQUIREMENTS TO BE COMPLETED AND REVIEWED PRIOR TO ENTRY*

REQUIREMENTS COMPLETED	DATE	TIME
Lock Out/De-energize/Try-out	____	____
Line(s) Broken-Capped-Blanked	____	____
Purge-Flush and Vent	____	____
Ventilation	____	____
Secure Area (Post and Flag)	____	____
Breathing Apparatus	____	____
Resuscitator - Inhalator	____	____
Standby Safety Personnel	____	____
Full Body Harness w/"D" ring	____	____
Emergency Escape Retrieval Equip	____	____
Lifelines	____	____
Fire Extinguishers	____	____
Lighting (Explosive Proof)	____	____
Protective Clothing	____	____
Respirator(s) (Air Purifying)	____	____
Burning and Welding Permit	____	____

Note: Items that do not apply enter N/A in the blank.

**RECORD CONTINUOUS MONITORING RESULTS EVERY 2 HOURS

CONTINUOUS MONITORING** TEST(S) TO BE TAKEN	Permissible Entry Level	_____
PERCENT OF OXYGEN	19.5% to 23.5%	___ ___ ___ ___ ___ ___ ___ ___
LOWER FLAMMABLE LIMIT	Under 10%	___ ___ ___ ___ ___ ___ ___ ___
CARBON MONOXIDE	+35 PPM	___ ___ ___ ___ ___ ___ ___ ___
Aromatic Hydrocarbon	+ 1 PPM * 5PPM	___ ___ ___ ___ ___ ___ ___ ___
Hydrogen Cyanide	(Skin) * 4PPM	___ ___ ___ ___ ___ ___ ___ ___
Hydrogen Sulfide	+10 PPM *15PPM	___ ___ ___ ___ ___ ___ ___ ___
Sulfur Dioxide	+ 2 PPM * 5PPM	___ ___ ___ ___ ___ ___ ___ ___
Ammonia	*35PPM	___ ___ ___ ___ ___ ___ ___ ___

* Short-term exposure limit: Employee can work in the area up to 15 minutes.

+ 8 hr. Time Weighted Avg.: Employee can work in area 8 hrs (longer with appropriate respiratory protection).

REMARKS:_____

GAS TESTER NAME & CHECK #	INSTRUMENT(S) USED	MODEL &/OR TYPE	SERIAL &/OR UNIT #
_____	_____	_____	_____
_____	_____	_____	_____

SAFETY STANDBY PERSON IS REQUIRED FOR ALL CONFINED SPACE WORK

SAFETY STANDBY PERSON(S)	CHECK #	CONFINED SPACE ENTRANT(S)	CHECK #	CONFINED SPACE ENTRANT(S)	CHECK #
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

SUPERVISOR AUTHORIZING - ALL CONDITIONS SATISFIED_____

DEPARTMENT/PHONE _____

AMBULANCE 2800 FIRE 2900 Safety 4901 Gas Coordinator 4529/5387

Appendix E

Definitions

Acceptable Entry Conditions - means the condition that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

Attendant - means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

Authorized Entrant - means an employee who is authorized by the employer to enter a permit space.

Blanking or Blinding - means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Confined Space - means a space that: 1) is large enough and so configured that an employee can bodily enter and perform assigned work; 2) has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and 3) is not designed for continuous employee occupancy.

Double Block and Blind - means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Emergency - means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Engulfment - means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entry - means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuring work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry Permit (Permit) - means the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in paragraph (f) of the standard.

Entry Supervisor - means the person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required.

Hazardous Atmosphere - means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

2) Airborne combustible dust at a concentration that meets or exceeds its LFL;

3) Atmosphere oxygen concentration below 19.5 percent or above 23.5 percent;

4) Atmosphere concentration of any substance for which a dose or a permissible exposure limit has been established by OSHA and which could result in employee exposure in excess of its dose or permissible exposure limit;

5) Any other atmosphere condition that is immediately dangerous to life or health.

Hot Work Permit - means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediately Dangerous To Life Or Health - means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Inerting - means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

Isolation - means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or remove sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

Line Breaking - means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Non-Permit Confined Space - means a confined space that does not contain or with respect to atmosphere hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Oxygen Deficient Atmosphere - means an atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen Enriched Atmosphere - means an atmosphere containing more than 23.5 percent oxygen by volume.

Permit-Required Confined Space (Permit Space) - means a confined space that has one or more of the following characteristics:

1) Contains or has a potential to contain a hazardous atmosphere;

2) Contains a material that has the potential for engulfing an entrant;

3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a small cross-section; or

4) Contains any other recognized serious safety or health hazard.

Permit-Required Confined Space Program (Permit Space Program) - means the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

Permit System - means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Prohibited Condition - means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Rescue Service - means the personnel designated to rescue employees from permit spaces.

Retrieval System - means the equipment (including a retrieval line, chest or full-body harness, wrist-lets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

Testing - means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

Appendix F

OSHA Prescribed Examples of CS Entries

ENTRY WITHOUT PERMIT/ATTENDANT

Certification. Confined spaces may be entered without the need for a written permit or attendant provided that the space can be maintained in a safe condition for entry by mechanical ventilation alone, as provided in 1910.146(c)(5). All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. Any employee required or permitted to pre-check or enter an enclosed/confined space shall have successfully completed, as a minimum, the training as required by the following sections of these procedures. A written copy of operating and rescue procedures as required by these procedures shall be at the work site for the duration of the job. The Confined Space Pre-Entry Check List must be completed by the LEAD WORKER before entry into a confined space. This list verifies completion of items listed below. This check list shall be kept at the job site for duration of the job. If circumstances dictate an interruption in the work, the permit space must be re-evaluated and a new check list must be completed.

Control of atmospheric and engulfment hazards.

Pumps and Lines. All pumps and lines which may reasonably cause contaminants to flow into the space shall be disconnected, blinded and locked out, or effectively isolated by other means to prevent development of dangerous air contamination or engulfment. Not all laterals to sewers or storm drains require blocking. However, where experience or knowledge of industrial use indicates there is a reasonable potential for contamination of air or engulfment into an occupied sewer, then all affected laterals shall be blocked. If blocking and/or isolation requires entry into the space the provisions for entry into a permit-required confined space must be implemented.

Surveillance. The surrounding area shall be surveyed to avoid hazards such as drifting vapors from the tanks, piping, or sewers.

Testing. The atmosphere within the space will be tested to determine whether dangerous air contamination and/or oxygen deficiency exists. Detector tubes, alarm only gas monitors and explosion meters are examples of monitoring equipment that may be used to test permit space atmospheres. Testing shall be performed by the LEAD WORKER who has successfully completed the Gas Detector training for the monitor he will use. The minimum parameters to be monitored are oxygen deficiency, LFL, and hydrogen sulfide concentration. A written record of the pre-entry test results shall be made and kept at the work site for the duration of the job. The supervisor will certify in writing, based upon the results of the pre-entry testing, that all hazards have been eliminated. Affected employees shall be able to review the testing results. The most hazardous conditions shall govern when work is being performed in two adjoining, connecting spaces.

Entry Procedures. If there are no non-atmospheric hazards present and if the pre-entry tests show there is no dangerous air contamination and/or oxygen deficiency within the space and there is no reason to believe that any is likely to develop, entry into and work within may proceed. Continuous testing of the atmosphere in the immediate vicinity of the workers within the space shall be accomplished. The workers will immediately leave the permit space when any of the gas monitor alarm set points are reached as defined. Workers will not return to the area until a SUPERVISOR who has completed the gas detector training has used a direct reading gas detector to evaluate the situation and has determined that it is safe to enter.

Rescue. Arrangements for rescue services are not required where there is no attendant. See the rescue portion of section B., below, for instructions regarding rescue planning where an entry permit is required.

B. ENTRY PERMIT REQUIRED

Permits. Confined Space Entry Permit. All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. Any employee required or permitted to pre-check or enter a permit-required confined space shall have successfully completed, as a minimum, the training as required by the following sections of these procedures. A written copy of operating and rescue procedures as required by these procedures shall be at the work site for the duration of the job. The Confined Space Entry Permit must be completed before approval can be given to enter a permit-required confined space. This permit verifies completion of items listed below. This permit shall be kept at the job site for the duration of the job. If circumstances cause an interruption in the work or a change in the alarm conditions for which entry was approved, a new Confined Space Entry Permit must be completed.

Control of atmospheric and engulfment hazards.

Surveillance. The surrounding area shall be surveyed to avoid hazards such as drifting vapors from tanks, piping or sewers.

Testing. The confined space atmosphere shall be tested to determine whether dangerous air contamination and/or oxygen deficiency exists. A direct reading gas monitor shall be used. Testing shall be performed by the SUPERVISOR who has successfully completed the gas detector training for the monitor he will use. The minimum parameters to be monitored are oxygen deficiency, LFL and hydrogen sulfide concentration. A written record of the pre-entry test results shall be made and kept at the work site for the duration of the job. Affected employees shall be able to review the testing results. The most hazardous conditions shall govern when work is being performed in two adjoining, connected spaces.

Space Ventilation. Mechanical ventilation systems, where applicable, shall be set at 100% outside air. Where possible, open additional manholes to increase air circulation. Use portable blowers to augment natural circulation if needed. After a suitable ventilating

period, repeat the testing. Entry may not begin until testing has demonstrated that the hazardous atmosphere has been eliminated.

Entry Procedures. The following procedure shall be observed under any of the following conditions: 1.) Testing demonstrates the existence of dangerous or deficient conditions and additional ventilation cannot reduce concentrations to safe levels; 2.) The atmosphere tests as safe but unsafe conditions can reasonably be expected to develop; 3.) It is not feasible to provide for ready exit from spaces equipped with automatic fire suppression systems and it is not practical or safe to deactivate such systems; or 4.) An emergency exists and it is not feasible to wait for pre-entry procedures to take effect.

All personnel must be trained. A self contained breathing apparatus shall be worn by any person entering the space. At least one worker shall stand by the outside of the space ready to give assistance in case of emergency. The standby worker shall have a self contained breathing apparatus available for immediate use. There shall be at least one additional worker within sight or call of the standby worker. Continuous powered communications shall be maintained between the worker within the confined space and standby personnel.

If at any time there is any questionable action or non-movement by the worker inside, a verbal check will be made. If there is no response, the worker will be moved immediately. Exception: If the worker is disabled due to falling or impact, he/she shall not be removed from the confined space unless there is immediate danger to his/her life. Local fire department rescue personnel shall be notified immediately. The standby worker may only enter the confined space in case of an emergency (wearing the self contained breathing apparatus) and only after being relieved by another worker. Safety belt or harness with attached lifeline shall be used by all workers entering the space with the free end of the line secured outside the entry opening. The standby worker shall attempt to remove a disabled worker via his lifeline before entering the space.

When practical, these spaces shall be entered through side openings -- those within 3 1/2 feet (1.07 m) of the bottom. When entry must be through a top opening, the safety belt shall be of the harness type that suspends a person upright and a hoisting device or similar apparatus shall be available for lifting workers out of the space.

In any situation where their use may endanger the worker, use of a hoisting device or safety belt and attached lifeline may be discontinued.

When dangerous air contamination is attributable to flammable and/or explosive substances, lighting and electrical equipment shall be Class 1, Division 1 rated per National Electrical Code and no ignition sources shall be introduced into the area.

Continuous gas monitoring shall be performed during all confined space operations. If alarm conditions change adversely, entry personnel shall exit the confined space and a new confined space permit issued.

Rescue. Call the fire department services for rescue. Where immediate hazards to injured personnel are present, workers at the site shall implement emergency procedures to fit the situation.

Non-Mandatory Appendix F -- Rescue Team or Rescue Service Evaluation Criteria

(1) This appendix provides guidance to employers in choosing an appropriate rescue service. It contains criteria that may be used to evaluate the capabilities both of prospective and current rescue teams. Before a rescue team can be trained or chosen, however, a satisfactory permit program, including an analysis of all permit- required confined spaces to identify all potential hazards in those spaces, must be completed. OSHA believes that compliance with all the provisions of §1910.146 will enable employers to conduct permit space operations without recourse to rescue services in nearly all cases. However, experience indicates that circumstances will arise where entrants will need to be rescued from permit spaces. It is therefore important for employers to select rescue services or teams, either on-site or off-site, that are equipped and capable of minimizing harm to both entrants and rescuers if the need arises.

(2) For all rescue teams or services, the employer's evaluation should consist of two components: an initial evaluation, in which employers decide whether a potential rescue service or team is adequately trained and equipped to perform permit space rescues of the kind needed at the facility and whether such rescuers can respond in a timely manner, and a performance evaluation, in which employers measure the performance of the team or service during an actual or practice rescue. For example, based on the initial evaluation, an employer may determine that maintaining an on-site rescue team will be more expensive than obtaining the services of an off-site team, without being significantly more effective, and decide to hire a rescue service. During a performance evaluation, the employer could decide, after observing the rescue service perform a practice rescue, that the service's training or preparedness was not adequate to effect a timely or effective rescue at his or her facility and decide to select another rescue service, or to form an internal rescue team.

A. Initial Evaluation

I. The employer should meet with the prospective rescue service to facilitate the evaluations required by §1910.146(k)(1)(i) and §1910.146(k)(1)(ii). At a minimum, if an off-site rescue service is being considered, the employer must contact the service to plan and coordinate the evaluations required by the standard. Merely posting the service's number or planning to rely on the 911 emergency phone number to obtain these services at the time of a permit space emergency would not comply with paragraph (k)(1) of the standard.

II. The capabilities required of a rescue service vary with the type of permit spaces from which rescue may be necessary and the hazards likely to be encountered in those spaces. Answering the questions below will assist employers in determining whether the rescue

service is capable of performing rescues in the permit spaces present at the employer's workplace.

1. What are the needs of the employer with regard to response time (time for the rescue service to receive notification, arrive at the scene, and set up and be ready for entry)? For example, if entry is to be made into an IDLH atmosphere, or into a space that can quickly develop an IDLH atmosphere (if ventilation fails or for other reasons), the rescue team or service would need to be standing by at the permit space. On the other hand, if the danger to entrants is restricted to mechanical hazards that would cause injuries (e.g., broken bones, abrasions) a response time of 10 or 15 minutes might be adequate.

2. How quickly can the rescue team or service get from its location to the permit spaces from which rescue may be necessary? Relevant factors to consider would include: the location of the rescue team or service relative to the employer's workplace, the quality of roads and highways to be traveled, potential bottlenecks or traffic congestion that might be encountered in transit, the reliability of the rescuer's vehicles, and the training and skill of its drivers.

3. What is the availability of the rescue service? Is it unavailable at certain times of the day or in certain situations? What is the likelihood that key personnel of the rescue service might be unavailable at times? If the rescue service becomes unavailable while an entry is underway, does it have the capability of notifying the employer so that the employer can instruct the attendant to abort the entry immediately?

4. Does the rescue service meet all the requirements of paragraph (k)(2) of the standard? If not, has it developed a plan that will enable it to meet those requirements in the future? If so, how soon can the plan be implemented?

5. For off-site services, is the service willing to perform rescues at the employer's workplace? (An employer may not rely on a rescuer who declines, for whatever reason, to provide rescue services.)

6. Is an adequate method for communications between the attendant, employer and prospective rescuer available so that a rescue request can be transmitted to the rescuer without delay? How soon after notification can a prospective rescuer dispatch a rescue team to the entry site?

7. For rescues into spaces that may pose significant atmospheric hazards and from which rescue entry, patient packaging and retrieval cannot be safely accomplished in a relatively short time (15-20 minutes), employers should consider using airline respirators (with escape bottles) for the rescuers and to supply rescue air to the patient. If the employer decides to use SCBA, does the prospective rescue service have an ample supply of replacement cylinders and procedures for rescuers to enter and exit (or be retrieved) well within the SCBA's air supply limits?

8. If the space has a vertical entry over 5 feet in depth, can the prospective rescue service properly perform entry rescues? Does the service have the technical knowledge and equipment to perform rope work or elevated rescue, if needed?

9. Does the rescue service have the necessary skills in medical evaluation, patient packaging and emergency response?

10. Does the rescue service have the necessary equipment to perform rescues, or must the equipment be provided by the employer or another source?

B. Performance Evaluation

Rescue services are required by paragraph (k)(2)(iv) of the standard to practice rescues at least once every 12 months, provided that the team or service has not successfully performed a permit space rescue within that time. As part of each practice session, the service should perform a critique of the practice rescue, or have another qualified party perform the critique, so that deficiencies in procedures, equipment, training, or number of personnel can be identified and corrected. The results of the critique, and the corrections made to respond to the deficiencies identified, should be given to the employer to enable it to determine whether the rescue service can quickly be upgraded to meet the employer's rescue needs or whether another service must be selected. The following questions will assist employers and rescue teams and services evaluate their performance.

1. Have all members of the service been trained as permit space entrants, at a minimum, including training in the potential hazards of all permit spaces, or of representative permit spaces, from which rescue may be needed? Can team members recognize the signs, symptoms, and consequences of exposure to any hazardous atmospheres that may be present in those permit spaces?

2. Is every team member provided with, and properly trained in, the use and need for PPE, such as SCBA or fall arrest equipment, which may be required to perform permit space rescues in the facility? Is every team member properly trained to perform his or her functions and make rescues, and to use any rescue equipment, such as ropes and backboards, that may be needed in a rescue attempt?

3. Are team members trained in the first aid and medical skills needed to treat victims overcome or injured by the types of hazards that may be encountered in the permit spaces at the facility?

4. Do all team members perform their functions safely and efficiently? Do rescue service personnel focus on their own safety before considering the safety of the victim?

5. If necessary, can the rescue service properly test the atmosphere to determine if it is IDLH?

6. Can the rescue personnel identify information pertinent to the rescue from entry permits, hot work permits, and MSDSs?

7. Has the rescue service been informed of any hazards to personnel that may arise from outside the space, such as those that may be caused by future work near the space?

8. If necessary, can the rescue service properly package and retrieve victims from a permit space that has a limited size opening (less than 24 inches (60.9 cm) in diameter), limited internal space, or internal obstacles or hazards?

9. If necessary, can the rescue service safely perform an elevated (high angle) rescue?

10. Does the rescue service have a plan for each of the kinds of permit space rescue operations at the facility? Is the plan adequate for all types of rescue operations that may be needed at the facility? Teams may practice in representative spaces, or in spaces that are "worst-case" or most restrictive with respect to internal configuration, elevation, and portal size. The following characteristics of a practice space should be considered when deciding whether a space is truly representative of an actual permit space:

(1) Internal configuration.

(a) Open -- there are no obstacles, barriers, or obstructions within the space. One example is a water tank.

(b) Obstructed -- the permit space contains some type of obstruction that a rescuer would need to maneuver around. An example would be a baffle or mixing blade. Large equipment, such as a ladder or scaffold, brought into a space for work purposes would be considered an obstruction if the positioning or size of the equipment would make rescue more difficult.

(2) Elevation.

(a) Elevated -- a permit space where the entrance portal or opening is above grade by 4 feet or more. This type of space usually requires knowledge of high angle rescue procedures because of the difficulty in packaging and transporting a patient to the ground from the portal.

(b) Non-elevated -- a permit space with the entrance portal located less than 4 feet above grade. This type of space will allow the rescue team to transport an injured employee normally.

(3) Portal size.

(a) Restricted -- A portal of 24 inches or less in the least dimension. Portals of this size are too small to allow a rescuer to simply enter the space while using SCBA. The portal size is also too small to allow normal spinal immobilization of an injured employee.

(b) Unrestricted -- A portal of greater than 24 inches in the least dimension. These portals allow relatively free movement into and out of the permit space.

(4) Space access.

(a) Horizontal -- The portal is located on the side of the permit space. Use of retrieval lines could be difficult.

(b) Vertical -- The portal is located on the top of the permit space, so that rescuers must climb down, or the bottom of the permit space, so that rescuers must climb up to enter the space. Vertical portals may require knowledge of rope techniques, or special patient packaging to safely retrieve a downed entrant.

Emergency Action and Fire Prevention Plan

Southside Recycling

11600 South Burley Avenue
Chicago, IL 60617

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PURPOSE and SCOPE

The purpose of this Plan is to establish written policies and procedures designed to minimize the negative impacts to our employees, business assets and the environment from fires and other emergency situations that could occur at this facility. This Plan has been developed in accordance with Occupational Safety and Health Act (OSHA) requirements as defined in 29 CFR 1910 Subpart E.

The first section of the Plan describes required practices and procedures for all employees in the area of fire prevention. If we can prevent or minimize conditions that produce undesirable fires from starting, we greatly reduce the potential for injury or loss of life and property.

The second section of the Plan describes measures we will take in the event of a reasonably anticipated emergency situation to protect our employees, property and the environment from further damage or loss. These situations may include fires and explosions, hazardous chemical releases, severe weather conditions, and personal injury. The success of this Plan is dependent on the ability of all employees to recognize situations that could lead to an emergency, actual emergencies, and critical response measures including immediate notification and evacuation procedures.

In the event of an emergency, management and employees must know what to do. Some emergency situations will warrant total and immediate evacuation of all employees. In other emergencies, a partial evacuation of nonessential employees, with defensive measures by other employees may be necessary for continued plant operations. In some cases, only those employees in the immediate area of an emergency may be expected to evacuate or move to safe areas. All employees must know what is expected of them in these anticipated emergency situations in order to assure their own safety as well as the safety of others.

Fire Prevention Plan

Undesirable fires are preventable and avoidable – yet they occur every day. And the catastrophic results – loss of life and property – are simply unacceptable. For a fire to occur, certain and predictable conditions must be met. But how many of us are aware of these conditions, and what we can do to eliminate them?

It is the Policy of Southside Recycling to conduct our business in a manner consistent with this Plan, and to take all reasonable measures necessary to ensure the safety of our employees, minimize potential environmental impacts, and protect the physical assets of our business in the event of a fire. This is accomplished through a program of established work practices, acceptable facility conditions, employee training and drills, and adherence to this Plan in the event of an undesirable fire.

The purpose of this Fire Prevention Plan is to:

- identify conditions and practices that can result in a fire at this facility;
- enhance the awareness of all employees regarding conditions and practices that can lead to a fire;
- ensure that established practices and procedures are followed to minimize or eliminate situations that can lead to an undesirable fire; and
- establish emergency procedures designed to prevent loss of life and limit property damage and environmental impacts in the event of a fire.

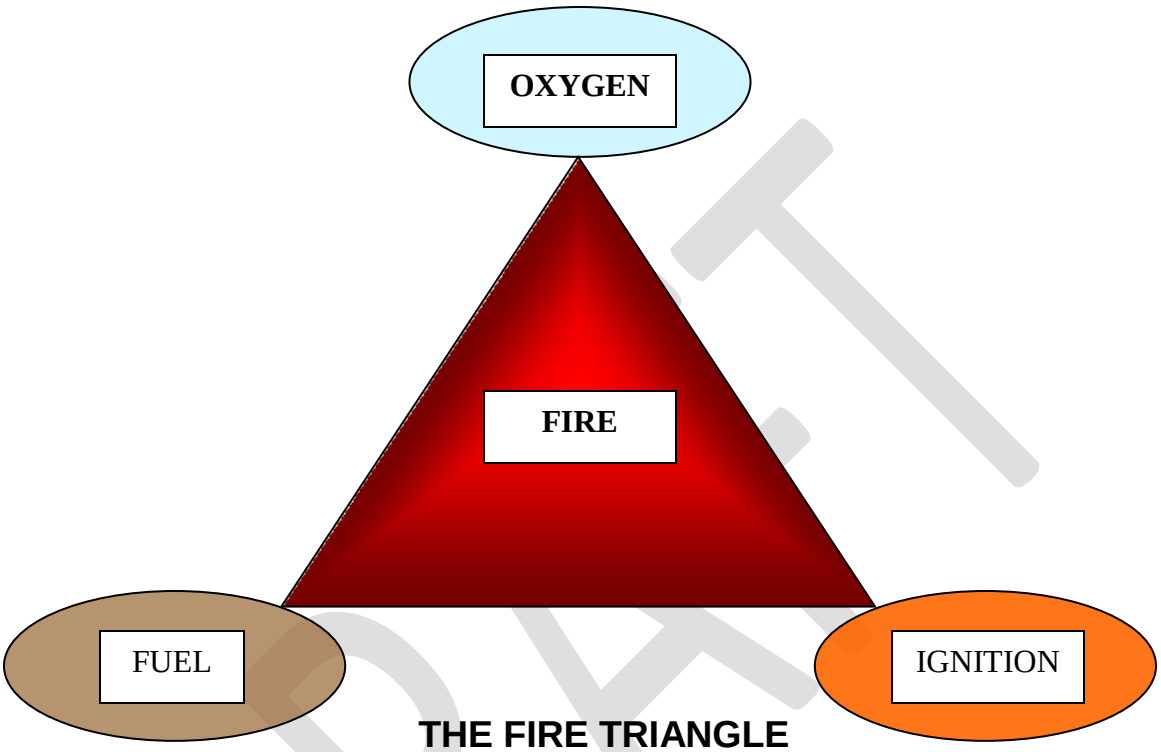
Fires can develop quickly, and a building structure or work area can become fully involved in a matter of minutes, if not seconds. It is not the intent of this Plan to direct employees to aggressively attack or fight a fire – we are not a Fire Brigade. Rather, the procedures described in this Plan are intended to minimize conditions leading to a fire, and guide employees in defensive tactics to remove themselves from harm, and reduce damage and loss to facility assets.

General facts about fire:

- No facility or structure is absolutely fireproof.
- Fire, flame, heat, smoke and toxic gases will spread through a building both vertically and horizontally.
- The spread of heat, smoke, and toxic gases is probably the greatest single danger to life – smoke and toxic gases are responsible for 75% of fire deaths in buildings.
- Early on-site detection of a fire is essential – there are usually only a few minutes between the beginning of combustion and the development of a fully involved destructive fire.
- What happens (or doesn't happen) in the first few minutes of a fire pretty well determines if the fire can be controlled or not.
- People and their actions are key elements – over half of all fires are the result of human element problems – lack of awareness or response.

Fire Prevention

In general, for a fire to occur, three conditions must be present – OXYGEN, a FUEL SOURCE and an IGNITION SOURCE. When these three conditions are met, we have established "THE FIRE TRIANGLE".



THE FIRE TRIANGLE

Basically, when all three ingredients are present in sufficient quantity, a chemical reaction takes place, energy is released, and a fire occurs. The whole concept of fire prevention revolves around controlling or eliminating one or more of these ingredients so that the Fire Triangle cannot be completed or sustained – and fire cannot occur.

OXYGEN: Oxygen is present in the atmosphere at approximately 20.8%. Under normal conditions, there isn't much we can do about that – oxygen is present and one third of the fire triangle is satisfied. Depending on the fuel source, combustion can be supported with oxygen concentrations as low as 12-14%. As oxygen concentrations increase to levels above 23.5%, materials not normally prone to rapid combustion become ready fuel sources – like hair and clothing. A good rule of thumb: ***the more oxygen that is present, the more aggressively and rapidly a fire will burn***. That's why blowing on a campfire helps get it going better – and using compressed oxygen to blow dust off yourself is a BAD idea. One last point about oxygen – there is a group of chemicals known as Oxidizers. These are substances that yield oxygen readily to stimulate the combustion of certain other substances. They are bad actors in that their presence increases

the potential for a fire – they actively supply oxygen and enhance the chemical reaction necessary to support the combustion process.

FUEL SOURCES: Most anything can become a fuel under the right conditions – sufficient/excessive oxygen and/or a strong enough ignition/heat source. There is a huge range for fire potential when discussing fuel sources. Key ingredients for a good fuel source are the hydrogen and carbon content, as well as oxygen, nitrogen and sulfur. For this reason, organic compounds like oils, hydrocarbons, alcohols and coal tars naturally present a greater fire hazard – they are rich in carbon and hydrogen. Organic liquids and gases present an even greater potential as the nature of liquids, vapors and gases offers an elevated opportunity for supplying fuel – evaporation and available surface area increase the interaction with oxygen, and thus enhances the potential for fire. Everyday items like paper and cardboard, oily rags, wood, and the many chemicals that surround us are ready sources of fuel if introduced to the Fire Triangle.

IGNITION SOURCES: Ignition sources are things that provide sufficient heat or energy to initiate the chemical reaction we call combustion. Open flames, electricity and electric arcs, sparks, sufficiently hot surfaces, static buildup, and certain chemical reactions are all good examples of ignition sources. When the other two components of the Fire Triangle are satisfied, the Ignition Source becomes the catalyst that initiates the combustion process.

FIRE PREVENTION AND CONTROL: Fire prevention focuses on managing conditions and practices to ensure that the three components of the Fire Triangle do not exist together. Fire control involves removing one of the three components after a fire has occurred. It is much **easier to manage and control** the three components of the Fire Triangle **before** they meet, rather than to **separate** them **after** a fire has started.

One of the first rules of fire prevention is good housekeeping. By controlling the buildup and accumulation of fuel sources like paper, cardboard and chemicals, we significantly reduce the potential for a fire. **NO FUEL = NO FIRE**. Not only can good housekeeping prevent a fire from starting, good housekeeping can:

1) Make evacuation and rescue efforts easier.
2) Help prevent the spread of a fire.
3) Make fighting a fire an easier and safer task.

Some specific housekeeping rules that directly impact fire prevention are:

- Flammable and Combustible liquids must be stored and covered in approved containers, away from potential ignition sources;
- All chemical spills must be cleaned up immediately;
- Cleanup materials and damaged containers must be properly managed;
- Combustible materials and trash must not be allowed to accumulate, and must be stored away from potential ignition sources;
- Routine cleanup of accumulated debris and dust on floors and around equipment, exhaust systems and electrical units to reduce fuel sources;

- Aisle ways must be kept free of clutter and trash;
- Fire exits must never be blocked.

Major Fire Hazards: There are some basic conditions and hazards present in most industrial settings. The following are common types of hazards and conditions that could result in an undesirable fire at this facility:

1. Electrical equipment is the number one cause of workplace fires. Electrical fires are the result of:
    - Overloaded fuses, circuits, motors, or outlets;
    - Wiring with frayed or worn insulation;
    - Loose ground connections;
    - Lights or machinery coming in contact with combustible materials.

2. Flammable liquids like gasoline, kerosene, solvents, and many chemicals present a fire hazard mainly because of their vapors. When these flammable vapors concentrate, and come in contact with an ignition source, you have a fire and possibly an explosion.

3. Smoking is another cause of fire. Lit cigarettes or matches can easily ignite many things capable of burning, like wood, paper or flammable liquids.

4. Space heaters are another fire source usually due to improper use and close proximity to combustible materials.

5. Welding and cutting operations are a fire hazard because of the flames and sparks (ignition sources) they create.

6. Spontaneous combustion – the slow buildup of heat in combustible materials like oily rags, which eventually erupts into fire.

7. Chemicals that are not a major fire hazard alone may become one when mixed with an incompatible substance such as: air; water; heat; or other chemicals. This is known as reactivity.

8. Exposure from adjoining buildings or neighbors – you may be doing all the right things, but your upwind neighbor just lit a REALLY BIG barbecue.

9. Static buildup and discharge, mainly during flammable liquid transfer.

10. Additional fire hazards associated with this operation are identified in Appendix C of this Plan.

Hazard Control and Minimization: Each of us has the opportunity to protect ourselves and our co-workers from fires by using caution and common sense to avoid conditions that could cause a fire. These common sense principals work at home as well:

1. Electrical equipment and wiring;
    - Never use wiring with insulation that is frayed or worn – replace it.
    - Keep electrical boxes and motor control centers closed at all times.
    - Check that ground connections are sound as this keeps electricity confined to a safe path.
    - Don't overload fuses, circuits, motors, or outlets.
    - Use the correct fuse for the job.
    - Avoid using temporary wiring and minimize extension cords.

2. Do not store items/material near lights or machinery.

3. Watch for over-heated transmission shafts or bearings, especially if in an area with dust, lint or grease which could burn.

4. Flammable/Combustible liquids:
    - Check MSDS to determine if a liquid is flammable before you use it.
    - Only use flammable liquids in well ventilated areas.
    - Avoid using near heat, fire, cigarettes, sparking tools, or anything that could produce an ignition source.
    - Store flammable liquids in approved containers, away from ignition sources.
    - Use bonding and grounding when transferring flammable liquids.
    - Keep containers closed when not in use.
    - Clean up leaks and spills immediately.
    - Don't ignore odors that indicate the presence of chemical vapors.

5. Smoking:
    - This is the easiest ignition source to prevent - restrict smoking to authorized areas and use ashtrays. Obey "No Smoking" signs.
    - Use common sense and don't smoke in areas where something flammable could ignite – like while pumping gasoline.
    - Extinguish matches and cigarettes carefully and properly.

6. Space heaters should only be used when absolutely necessary, with these fire prevention precautions:
    - Use only in well-ventilated areas.
    - Use only the fuel specified for that heater.
    - Position heater away from all combustible materials.

7. Welding, cutting and brazing: These activities naturally generate heat, flames, and sparks.
    - Whenever possible, conduct these operations in a separate room with a fire-resistant floor, or a clean dry wood floor covered with material that won t burn – wetting surfaces down first will also help.
    - Use a welding screen around the operation.
    - Keep welding and cutting operations as far away as possible from flammable liquids, vapors, dusts, and combustible materials.
    - Before welding or cutting on tanks, pipes and other containers, identify prior contents, verify that residual vapors are not present.
    - Use the Hot Work Permit System, including pre-job assessment, control of fuel sources, readily available extinguishing equipment, and a fire watch during and after the project.

8. Spontaneous Combustion is a slow buildup of heat that creates a fire. It occurs often when an accumulation of rags and waste has been saturated with flammable or oily materials.
    - Dispose of flammable/oily waste in closed, airtight metal containers, and empty the containers daily.
    - Keep flammable waste that cannot be put in containers in a cool, dry, well-ventilated area, and dispose of frequently.

9. Practice GOOD HOUSEKEEPING – many of the conditions that result in fires are due to poor housekeeping – a place for everything and everything in its place.

Firefighting Control Measures: Most firefighting is best left to the professionals - the local fire department. Our purpose here is to provide information to help get you out of a bad situation, not to aggressively attack a fire. Firefighting techniques vary depending on type of fire, fuel source, stage of the fire, available extinguishing materials, air flow, and so on. However, the basic principal of removing/eliminating one or more of the three components of the Fire Triangle is critical to extinguishing a fire.

OXYGEN: By removing oxygen, you suffocate or smother the fire. Sand, dirt, wet blankets or inert gases will starve many fires of oxygen and suppress the fire. Foams and other chemicals are also used to smother flammable liquids and vapors by isolating the fuel source from needed oxygen. Put a lit candle in a jar and cover it – the candle will extinguish in a matter of seconds.

FUEL SOURCES: By physically removing the fuel source, you eliminate the fire. However, this is difficult, dangerous and usually not practical.

IGNITION SOURCES: Once a fire has developed, ignition sources don't really matter. But, by removing heat through cooling, the energy needed to support the chemical reaction is no longer available – water is the most common coolant.

Fire Suppression Equipment: Portable fire extinguishers are available throughout the facility for escape purposes and/or for incipient and smoldering stage fires. All employees should have an understanding of the type of fire extinguisher to use for a certain type of fire. Not all fire extinguishers can put out all types of fires. In fact, using the wrong fire extinguisher on some fires can actually spread the fire. All fire extinguishers are identified by type of fire they will put out, as noted below:

Types of Fires and Corresponding Fire Extinguishers:

Class A: Class A extinguishers are used to put out fires involving ordinary burnables like wood, paper, rags, cloth, or trash, when you want to wet down and cool the area. The extinguishers themselves may use water, water base foam, loaded steam, or a multipurpose dry chemical to put out the fire.

Class B: Class B extinguishers are used to put out fires involving gases or flammable liquids such as oil, gasoline, paints, solvents, and grease. The extinguishers may use carbon dioxide, foam, or dry chemicals to put out the fire either by cutting off oxygen or reducing flame.

Class C: Class C extinguishers are used for fires involving or surrounding electrical equipment fires. The extinguishers usually use carbon dioxide or a dry chemical to put out fires. **Note:** Never use water on an electrical fire. Water conducts electricity and using it on an electrical fire could mean a dangerous shock for the person operating the extinguisher.

Combination ABC or BC: Combination ABC or BC extinguishers are used when a fire combines one or more of the three types of fires we have described.

Class D: Class D extinguishers are used for fires in combustible metals including sodium, magnesium, zinc, potassium, powdered aluminum, and titanium.

All employees should have an understanding of proper fire extinguisher use and the various types of extinguishers. Most importantly, people are not replaceable - buildings and equipment are. If a fire cannot be easily controlled by existing fire extinguishers, alert others, leave the area and call for professional assistance. The primary use of fire extinguishers is for escape purposes.

Fire Extinguisher Use: By remembering the simple acronym **"PASS"**, you can use most any fire extinguisher effectively:

P = Pull the pin on the handle of the extinguisher;
A = Aim the nozzle at the base of the fire;
S = Squeeze the handle to begin discharging the contents of the extinguisher;
S = Sweep nozzle across the base of the fire to distribute extinguishing agent.

First Aid

If you are involved in a fire, you may have to administer first aid until medical help arrives. Here are some recommendations:

- If clothing catches fire, **STOP**, **DROP** to the floor or ground, and **ROLL** to smother the flames – this isn't as easy as it sounds – people panic.
- If someone has inhaled smoke, get the person to fresh air immediately. If they're not breathing and you know CPR, administer it. Otherwise, get someone who can.
- If someone is on fire, wrap the person in a blanket, coat or other preferably wet material that can help smother the flames.
- If someone has been burned, cut away any loose clothing, but don't remove clothing that is stuck to a burn.
- Put cool water on burns, and then if possible, cover them with a moist sterile dressing. If the arms or legs have been burned, elevate them.

And, whatever you do, notify others and get medical attention for any victims.

Specific emergency situations and corresponding response measures for Southside Recycling are described in the following section – Emergency Action Plan.

SUMMARY: The old adage ***"An ounce of Prevention is worth a pound of Cure"*** certainly holds true in the area of fire prevention. By adhering to the following basic procedures, we will go a long way towards avoiding a fire – at work or at home:

- Practice Good Housekeeping – clean up your work area daily, put things away, and don't allow material and debris to accumulate.
- Routinely inspect equipment and electrical items for damage, wear and buildup of dirt, grease, and other possible fuel sources.
- Routinely perform preventive maintenance – well greased equipment doesn't wear as fast and doesn't generate excessive heat.
- Don't store items near or around electrical equipment, lights, heaters, etc.
- Respect all chemicals you work with or around – follow all handling and storage requirements, keep containers closed, clean up spills promptly.
- Watch for and control/eliminate possible ignition sources.
- Routinely inspect and maintain emergency equipment.
- Always ensure a safe means of escape from your work area.
- PAY ATTENTION!!! Be aware of conditions that will produce or support the Fire Triangle.
- Avoid conditions that can lead to fires – and you won't have fires.

Emergency Action Plan

This Emergency Action Plan (EAP) has been developed to ensure employee safety in the event of a fire or other emergency. It establishes notification procedures, describes emergency evacuation and accountability procedures, and identifies potential site-specific emergencies and response measures.

Fires, severe weather, chemical releases, and personal injury are all situations that would constitute an emergency, and will require some level of emergency response including possible evacuation of the facility. Additionally, any of these events may require the need for outside emergency responders. It is critical to establish basic procedures during NON-EMERGENCY times, when we are calm and thinking clearly – and then trust and follow those procedures during an actual emergency, when we may be panicked and disoriented or confused.

Our primary objective is the safety of all employees. To ensure employee and visitor safety, our plan is designed to get personnel away from danger, account for all employees and visitors, and treat injuries. If safe to do so, we will also attempt to take defensive measures designed to minimize potential impacts to the environment and limit business losses.

There are two old sayings that apply to emergencies:

- **Murphy's Law:** Whatever can go wrong, will go wrong.

- **Boy Scout Slogan:** Be prepared.

In most emergencies, the employee's role is limited. One of the keys to handling these situations is to turn them over to people who have received special training and who have the proper equipment for the job. But even if you are not part of an emergency response crew, you still have two important roles to play:

- Quickly and safely get yourself away from the hazard or danger.
- Immediately notify others;

Accidents can and do happen. It is critical that all employees are familiar with the procedures to follow in an emergency. In a real emergency, there is no time to think – if you want to survive, you have to act quickly and correctly. The following is a guide for employees to follow in the event of an emergency. A facility floor plan, evacuation routes, and RALLY POINTS are posted at the facility and attached – Appendices A and B. There is also a list of anticipated emergencies and response measures for this facility – Appendix C. All employees are required to become familiar with evacuation routes and are encouraged to familiarize themselves with the various types of emergencies and appropriate response measures for this site. All employees are required to follow the minimum response procedures, including notification and evacuation.

Emergency Evacuation Procedures and Escape Routes

In the event an emergency alarm is sounded, or you become aware of an emergency, take the following steps:

- **STAY CALM AND DON'T PANIC!!!**
- As you are leaving, shut off equipment and close doors if safe to do so.
- Proceed to the nearest available and safe exit and leave the building as quickly as possible. Go to your designated RALLY POINT and wait.
- If others are in your immediate surroundings (employees or customers), direct them to come with you.
- If you observe an emergency situation unfolding – IMMEDIATELY notify your supervisor and initiate any alarm procedures.
- Floor plans showing the emergency escape routes have been developed and are posted in various areas of the facility – BECOME FAMILIAR with these routes and their proximity to your work area – Appendix A.
- Stairwells are the primary means for evacuation, and elevators should only be used by fire/EMT, or to assist physically handicapped personnel.
- Once at the Rally Point, don't wander around or leave the area. We must be able to account for all employees. Assist with the head count if able.
- Employees must not re-enter a building/area until an ALL-CLEAR has been issued by the Manager or Emergency Response Coordinator (ERC).

Critical Plant Operations Procedures

There are no critical office or yard operations that must be maintained during an evacuation. However, there may be situations where designated response personnel will remain within the facility to perform emergency response measures for which they are trained, provided they can perform these duties in a safe manner. At no time will any employee put him/herself at unnecessary risk.

Employee Head Count Procedures

The Facility Manager or the designated ERC will conduct head counts once evacuation has been completed. Before evacuating the facility, designated employees will check offices, rooms and other enclosed spaces in the workplace for employees who may be trapped or otherwise unable to evacuate the building. Under no circumstances should any employee enter an unsafe area or condition.

Rescue and Medical Duties

In the event of a serious accident or injury, the need for professional medical assistance may be necessary. Emergency Phone Numbers are posted at each phone. The decision to request outside emergency assistance (fire, police, EMS) shall be made by the Facility Manager or designated ERC. Until professional

assistance arrives, provide any medical assistance you are trained and qualified to perform. In general, don't move an injured person.

Outside Notification Procedures: Emergency Phone Numbers are posted at all telephones. In general, the decision to summon outside help will be made by the Facility Manager, ERC or supervisor. However, in the event that you need assistance from emergency services (Fire, EMS, Ambulance/Rescue, Police), do the following:

- Remain calm;
- If possible, use a land line rather than a cell phone;
- Speak clearly and slowly;
- Give the exact location of the emergency;
- Describe the situation with as much detail as possible – type and nature of emergency, victims, any chemical information, etc.;
- Give the phone number and address from where you are calling;
- Do not hang up until told to do so.
- Ensure that a spotter has been sent to the facility entrance to guide outside response personnel to the emergency.

Professional emergency services responding to a call will usually assume responsibility for coordinating response measures, and will direct all rescue and medical duty assignments upon their arrival on-site. The facility manager or ERC should remain available to provide information to emergency responders.

Fire and Emergency Reporting Procedures

In the event of a fire, immediately notify an equipment operator to radio supervision or notify supervision directly; supervision shall notify local fire department/emergency response team. If unable to notify management, yell as you calmly leave the area. The supervisor or manager will assess the situation and call for emergency assistance. Emergency telephone numbers are posted at all phones. Ensure that a spotter has been sent to the facility entrance to direct fire and rescue services to the emergency location. All other employees are to evacuate the building/area of fire and proceed to the Rally Point. The professional fire fighters will handle the fire.

In the event of severe weather, tornado, etc., the facility manager or his/her designee will make the decision to move employees to the designated Severe Weather Shelter. At the time of this notification, all employees are required to evacuate to their assigned shelters - see Appendix B. Weather reports are monitored anytime bad weather is forecast via weather radios or the internet. In the event of high winds, be aware of flying debris and stay clear of downed power lines.

Other anticipated site-specific emergencies and corresponding response measures are described in Appendix C.

Management Responsibilities and Accountability:

The facility manager and designees are responsible for the following activities:

1. Immediately notify fire, EMS and police as needed in the event of an emergency affecting personnel or the facility.
2. Ensure that medical attention is given to any injured personnel.
3. Make decisions relating to evacuation and other response measures in the event of an emergency.
4. As soon as practical, notify RMG Directors and Health and Safety Mgr.
5. Ensure that an Incident Investigation is initiated as soon as feasible.
6. Ensure that all employees have received training on reporting fires and other emergencies, the location of fire exits and evacuation routes.
7. Ensure that fire/ER drills are conducted annually to acquaint employees with emergency procedures and evaluate plan effectiveness.
8. Ensure that designated employees are trained in the use of fire fighting and other emergency equipment and basic first aid techniques.
9. Maintain contact information for key response personnel in a safe place for immediate use in the event of an emergency.

Emergency Response Coordinator (ERC) Information

Facility Manager/ERC	Contact Info. W/H/C	Duties
	W: H: C:	Initiate/oversee evacuation; contact EMS; direct response measures; coordinate with RMG. Oversee investigation.
Alternate ERC	W: H: C:	Facilitate evacuation; conduct head counts; assist with response; contact EMS if needed; investigate incident
Alternate ERC/HSE	W: H: C:	Facilitate evacuation; conduct head count; assist with response; contact EMS if needed; investigate incident

Training

Basic Emergency Response procedures must be simple, direct and carried out without confusion. All employees must understand notification procedures, how to get help, emergency equipment locations, escape routes and rally points, and tasks that may be required of them during an emergency. The success of this Plan is dependent on employee knowledge and actions. All employees will receive training at the time of hire, and annually. Unannounced drills are also conducted to measure training and response effectiveness.

This Plan will be reviewed and amended as conditions change or when drills or actual emergencies uncover discrepancies in the Plan.

Appendix A

Floor Plans/Maps
&
Emergency Evacuation Routes

Southside Recycling

Appendix B

Rally Points
&
Severe Weather Shelter(s)

Southside Recycling

Appendix C

Site-Specific
Potential Emergencies
And
Response Measures

Southside Recycling

Appendix C
Emergency Response Procedures
Southside Recycling

COVERED ACTIVITIES/AREAS INCLUDE:

Offices:
Main Shredder:
Maintenance:
Non Ferrous:

Responsible Parties: (Emergency Response Coordinators)

Facility Manager:	Kevin Trant – ERC
Safety Manager:	Nicholas Blachuciak – Alternate ERC
Shredder Manager:	– Alternate ERC
Maintenance Manager:	– Alternate ERC

Facility Communications:

- Communications via radio between supervision/management and crane/ loader operators;
- Communications to laborers/3rd party/Trucks is then verbal

Rally Points:

- **Offices** – Employee parking lot at east end of Crusher building;
- **Shredder** – Employee parking lot at east end of Crusher building.
- **Non Ferrous** -

Potential Emergencies:

Building Fire
Scrap or residue pile catches fire
Equipment catches fire
Employee/person injured
Explosion or sudden pressure release
Natural Gas Leak
Problem with torching equipment/leaking hose or cylinder damage
Chemical release from equipment or cast washing operation
Truck/crane/loader flips
Air emissions (smoke, chemical, etc.) from off-site affect area
Severe weather: lightning, high winds, tornado, temp. extremes

General Procedures:

- Upon observing/becoming aware of a problem, immediately notify management.
- Manager/supervisor should immediately assess situation visually, from a safe (upwind/uphill) approach, in addition to info relayed from call.
- If serious fire or personal injury is involved, responding management personnel should immediately call 911 for emergency assistance.
- Dispatch a "Spotter" to main drive at S. Burley and 116th Street to direct response personnel.
- If facility personnel are at risk, immediately initiate Evacuation and direct all employees to designated Rally Points.
- Secure area and ensure that all individuals are accounted for. Keep people upwind of situation.
- Notify Southside Recycling security gate, and corporate HSE.

Specific Emergency Procedures:

Building Fire:

- If fire is observed, immediately notify manager/supervisor for assessment/ evacuate local personnel to Rally Point and conduct head count.
- If fire is large, unconfined, or producing smoke, evacuate all personnel to Rally Point and conduct head count; contact local Fire Dept for assistance.
- If fire is incipient and local fire extinguishers can be use to suppress, attempt to extinguish – Do not actively attack fire or place self at risk.
- Send Spotter to entrance; notify SCPM Security Gate and Corporate HSE.

Scrap or Residue Pile Fire:

- Remove all personnel and equipment (if safe to do so) from area and conduct a head count.
- If fire is small, attempt to separate material from rest of pile with loader – DO NOT PLACE SELF OR EQUIPMENT AT RISK – attempt to create remote fire break and reduce fuel source.
- If fire is large, contact local Fire Dept. for emergency assistance – smoke from burning plastic can be noxious/toxic.
- Send Spotter to main entrance
- Secure area and keep personnel upwind of incident.
- Make appropriate notifications to SCPM Security gate and corporate HSE.

Equipment On Fire:

- Immediately notify management.
- If operator is still in control of equipment, and it is safe to do so, attempt to quickly position equipment outside and at least 25 feet from any other structure; otherwise, immediately exit equipment.

- If fire is small, attempt to extinguish without placing self at risk – do not re-board burning equipment – additional extinguishers available on other equipment and mounted in various areas.
- Secure area and ensure all employees are accounted for.
- If needed, call local Fire Dept. for assistance, send Spotter to entrance.
- Create remote dirt/FloorDri containment berm/dike if necessary to minimize off-site migration of oils/contaminated runoff from fire water.
- Make appropriate notifications to Southside Recycling Security gate and corporate HSE.

Personal Injury:

- Notify management immediately.
- Ensure that victim is not in immediate risk of additional injury.
- Ensure that you are not at risk by attempting to help/attend to victim.
- Secure area and assess victim and nature of injuries.
- Call 911 for emergency assistance if warranted – send Spotter.
- If corrosive chemical exposure is involved, immediately flush victim with copious amounts of water and neutralizing agent – remove contaminated clothing; avoid chemical exposures to responders.
- Address any potential blood borne pathogen exposures.
- Begin to conduct investigation.
- Make appropriate notifications to Southside Recycling Security gate and corporate HSE.

Explosion/Sudden Pressure Release:

- Notify management, if warranted, evacuate all personnel to Rally Point and conduct head count.
- If explosion is at Shredder and fire results, activate Water Deluge System on crusher; run belts out to clear fire/fuel from system.
- If there are injuries or missing personnel, follow personal injury procedures and immediately call 911 for assistance.
- If no injuries or missing personnel, assess situation and conditions surrounding explosion/pressure relief – IF SAFE TO DO SO.
- Approach from upwind direction and attempt to determine nature and cause of incident.
- IF hazardous conditions still exist, contact 911 for assistance.
- If incident has passed, no residual chemicals are present, and hazards no longer exist, conduct thorough investigation – notify corporate HSE.

Leaking Welding/Cutting/Torching Equipment:

- Under normal circumstances, this situation should not constitute an emergency. Routine monitoring of all associated equipment will minimize the potential for catastrophic incident.
- Upon discovering a leak, immediately extinguish torch and close supply valves at oxy/fuel source (cylinder or tank).
- Notify management of situation and severity.
- Follow LOTO procedure for repair to hose or torch.

- If a problem exists with a tank or cylinder, immediately contact supplier for assistance. DO NOT ATTEMPT TO REPAIR OR OTHERWISE WORK ON A LEAKING TANK OR CYLINDER.

Chemical Release:

- Notify management and remove all personnel from immediate area.
- Secure area and keep personnel upwind/uphill from release.
- If material is known (oil from equipment, etc), follow spill response procedures.
- If material is corrosive, establish remote containment with FloorDri, dirt or other containing media. For small spills, slowly neutralize contained material AFTER release has been stopped and employees accounted for.
- If large or uncontrolled release, evacuate local personnel and contact corporate HSE, local emergency response spill contractor and/or local Fire Dept/HazMat for assistance.
- If material is unknown, contact corporate HSE for guidance, contact local FD/HazMat and/or Emergency Response spill contractor if warranted.
- If personal injury or fire is involved, follow applicable procedures.

Equipment Tips/Flips Over:

- Notify management and ensure that no personnel are injured.
- If there are victims, follow Injury Procedure.
- Secure area and ensure there are no ignition sources present.
- Dike or otherwise contain any spilled material.
- Investigate cause of tip – take pictures to document and support.
- Using standard methods and practices, attempt to upright equipment, only if it can be done so safely. Ensure there are no overhead lines or other conditions that could create additional problems.
- Seek outside assistance if warranted. Notify corporate HSE.

Off-Site Emissions:

- In the event that an airborne noxious or otherwise hazardous emission source migrates towards/onto this facility, immediately notify Southside Recycling management as other personnel/operations could be at risk.
- Evacuate employees to front of building near Rally Point and conduct head count.
- If plume is approaching, move side wind and upwind from the plume.
- If possible, stay inside building until plume has passed.
- If injuries occur, follow Injury Procedures.
- Notify Corporate HSE and local Fire Dept/HazMat for assistance.

SEVERE WEATHER: The Facility can monitor weather conditions via the internet. During periods when severe weather is imminent, facility personnel will monitor local weather conditions in real time and respond accordingly. Most operations are indoors and inclement weather does not impact operations. However, high winds and/or tornadoes could place employees at risk.

Lightning and thunderstorms – these events typically pass through an area rather quickly.

- Contact management and seek shelter until event passes – usually within 15-30 minutes.
- If outdoors in a crane, exit crane if still safe to do so, if lighting is imminent, stay in crane and avoid using any electronic devices or contacting metal surfaces, wait for lightning to pass.

High winds – high winds can create hazardous conditions due to excessive dust, the possibility of small and often sharp material becoming airborne, and loss of control of equipment (crane booms). This condition should be assessed by management with input from local weather forecast.

- If winds are excessive, stop work and remove personnel from high hazard areas until conditions subside.
- Avoid areas where loose material could become airborne (building or roof panels).

Tornado –

- Immediately evacuate all personnel to Safe Haven and conduct head count.
- Notify management and ensure that warning has been relayed to all other on-site operations. If possible, notify corporate HSE.
- Wait for event to pass.

Temperature extremes – although these operations are primarily in buildings, there is a potential for hazardous temperature extremes (severe cold and excessive heat). These conditions should be monitored on a daily basis by all personnel. Employees are expected to come to work prepared to deal with daily conditions. Employees are trained in recognizing hazardous conditions and symptoms of heat/cold stress. Failing to address these conditions can lead to personal injury/ medical emergencies and should be monitored by all on a daily basis. This type of emergency is predictable and should not happen. If an individual does experience a temperature extreme-related injury, follow Injury Procedure – severe cases can be Life Threatening.

POST-EMERGENCY PROCEDURES:

After an emergency has occurred, and all conditions have stabilized, it is critical that a thorough and complete Incident Investigation be completed. This investigation should not only address the causes of the emergency, but should focus on the response and reaction times as well as effectiveness of response measures. Depending on the type and nature of an emergency, additional reporting requirements to various government agencies and insurance carriers may be required. Seek guidance and assistance from Corporate HSE. In addition to an Incident Investigation, it is necessary to generate the following information:

- An accurate and thorough account of all incurred physical property damages and losses (equipment, structures, property, environment),
- Photographs, drawings, etc. that document and portray the type, nature and degree of losses/damage.
- Detailed account of response/mitigation measures and associated costs.
- Costs associated with lost/damaged equipment and property.

These findings must be evaluated by management and lessons learned must be integrated into revised Emergency Response Procedures for potential future events. Training with all personnel covering the causes, investigation findings, and any procedural changes shall be conducted as warranted.

These emergency response procedures be reviewed annually, and associated training will be then be conducted annually and/or after an even that triggers use of this Emergency Response Plan.

Bloodborne Pathogen Exposure Control Plan

Southside Recycling
11600 S. Burley Ave.,
Chicago, IL

Table of Contents

PURPOSE and SCOPE

The purpose of this plan is to establish written procedures designed to eliminate or minimize employee exposures to bloodborne pathogens and other potentially infectious body fluids that employees could encounter during the performance of their duties.

This document describes the minimum requirements that Southside Recycling has taken to protect our employees from reasonably anticipated occupational exposure to blood and other potentially infectious body fluids. In addition to basic engineering controls, work practices and personal protective equipment (PPE), employee training, immunization and post-exposure follow-up are critical to the success of this program. See **Appendix A** for Definition of Terms applicable to this Standard.

It is the policy of Southside Recycling to practice the concept of "**Universal Precautions**", which is an approach to infection control whereby all human blood and body fluids are treated as if known to be infectious for hepatitis B virus (HBV), human immunodeficiency virus (HIV) and other bloodborne pathogens.

We are confident that potential exposures encountered by our employees while performing their job duties can be controlled by the layering of protection in the form of engineering controls, work practices, PPE, training, use of disinfectants, vaccination and post-exposure evaluation and follow-up.

Exposure Control Program

At Southside Recycling, the foundation of our exposure control program is the acceptance and practice of "Universal Precautions" by all employees. All human blood and body fluids are to be treated as if known to be infectious for hepatitis B virus (HBV), human immunodeficiency virus (HIV) and other bloodborne pathogens. Fortunately, during the normal course and scope of our operations, the potential for contact with blood and other body fluids is almost non-existent.

Exposure Determination

Our normal operations do not present the potential for employee exposure to human blood and body fluids. The only reasonably anticipated occupational exposure to blood and potentially infectious materials would be during the administration of first aid treatment by supervisory personnel or employees acting under the Good Samaritan philosophy. Ultimately, if we can prevent injuries, we eliminate the conditions (blood and body fluids) that lead to an exposure event.

At Southside Recycling, we do not require employees to administer first-aid of any kind. Emergency medical response has been established for this facility

through the use of the 911 Emergency Medical System. We have also coordinated with our local Occupational Health facilities to provide additional medical assistance as needed. However, there may be injury situations in which an employee is compelled to provide emergency first aid. Although the decision to assist is a personal one, we want to ensure that any employee offering help has taken the steps necessary to protect him or herself. Management/staff personnel may take on a more active role in providing basic first aid, however this is not required. Any employees in the job classifications listed below could have occupational exposure as a result of their first-aid response activities:

Facility Manager	Cleaning Crews
Laborers	Equipment Operators

In addition to first aid administration, individuals assigned to perform janitorial work could have occupational exposures while performing the duties of cleaning washrooms, restrooms and receptacles intended for reuse which have a reasonable likelihood of becoming contaminated with blood or other potentially infectious materials. Typically, janitorial work is contracted out resulting in no exposure to our employees.

If outside janitorial service firms/contractors are used, they must be provided with a copy of the Bloodborne Pathogen Standard so they can implement the provisions of the Standard to ensure their employees' occupational exposures are minimized or eliminated. See **Appendix B**.

Methods of Compliance

It is the policy of Southside Recycling to practice Universal Precautions in all situations where the potential for exposure to blood and other body fluids exists. Further, we utilize a combination of engineering controls, work practices, personal protective equipment, and use of disinfectants to eliminate or minimize employee exposure.

Engineering Controls: It is our policy to implement engineering controls, whenever feasible, as the primary means to eliminate or minimize employee exposure. We do not handle needles, sharps or other typical vectors of blood borne pathogens which limits opportunities for engineering control utilization.

Hand-washing facilities are accessible to employees, and generally include waterless hand cleaners, disinfectants, tepid running water, non-abrasive hand soap and clean cloths or paper towels. Emergency flushing facilities and/or showers are available if needed and are provided so that adequate flushing of contaminated material can be washed from the skin, eyes or mucous membrane in excessive/gross contamination situations.

Work Practice Controls: It is our policy to utilize work practices that reduce the likelihood of exposure by regulating the manner in which tasks are performed.

1.) Employees are required to use appropriate personal protective equipment and clothing whenever there is reasonably anticipated exposure to blood and other body fluids.
2.) Employees are required to wash their hands and any other exposed skin with soap and water immediately or as soon as feasible after removal of gloves or other personal protective equipment. Eyes, mouth or other mucous membranes are to be thoroughly flushed with water following contact with blood or other body fluids.
3.) Upon removal of personal protective equipment and clothing, employees are required to place the equipment or clothing in appropriately designated containers for decontamination or disposal.
4.) Contaminated First-Aid supplies must be placed in designated containers for decontamination or disposal.
5.) Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure.
6.) Immediate control, clean-up and disinfection of all surfaces contaminated with blood and/or other body fluids.

Personal Protective Equipment: In addition to engineering and work practice controls, personal protective equipment is to be used at all times. Appropriate PPE, including gloves, face shields/masks, eye protection and mouth-to-mouth resuscitation masks are available, and should be used by employees providing any first aid treatment. PPE is available through area supervisors as well as at the main office. Nearly all PPE associated with the administration of first-aid is disposable. Decontamination of this equipment is generally not advised and any used/contaminated PPE is to be placed in designated waste receptacle containers and disposed of accordingly.

An employee may temporarily and briefly decline to use PPE if, under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance its use would have prevented the delivery of health care or would pose an increasing hazard to the safety of the worker. A documented investigation of the circumstances surrounding such instances must be conducted to determine if changes can be instituted that would prevent a reoccurrence of such a situation in the future.

Housekeeping: An important part of our control plan is to ensure our facility is maintained in a clean and sanitary condition. Basic janitorial services including periodic cleaning of offices, restrooms, showers, lunchrooms and locker rooms is

performed by our personnel. Typically these services are provided at least weekly, if not more often. In the event that an exposure incident occurs (an injury resulting in the release of blood or other body fluids) housekeeping/ decontamination measures are instituted immediately. Areas of focus include washrooms/sinks, showers, restrooms, eye wash stations, drinking fountains, any areas/surfaces where first aid was administered, and first aid cabinets.

All equipment, environmental media and working surfaces are required to be cleaned and decontaminated immediately or as soon as feasible after contact with blood or other potentially infectious materials. A 0.1% Bleach solution or other commercially recognized disinfectant (alcohol solution) must be used for decontamination of all potentially contaminated surfaces and areas.

Containers intended for reuse which have a reasonable likelihood for becoming contaminated with blood or other potentially infectious materials must be inspected and decontaminated on a regularly scheduled basis and cleaned and decontaminated immediately or as soon as feasible upon visible contamination. We use receptacle liners in all waste receptacles, which limits contamination to these units.

Hepatitis B Vaccination – Post Exposure and Follow-Up

At Southside Recycling, we realize that even with good adherence to our exposure prevention practices, exposure incidents can still occur. Therefore, we have implemented a hepatitis B vaccination program, as well as established procedures for post exposure evaluation and medical follow-up should exposure to bloodborne pathogens occur.

Vaccination Program: To eliminate the risk of hepatitis B infection, we have made available the hepatitis B vaccination, at no cost, to all employees who have occupational exposure to bloodborne pathogens (required to administer first aid). Pre-exposure vaccination is the most effective method for preventing such infection. See **Appendix C** for Vaccination Log.

Hepatitis B vaccines are given intramuscularly in deltoid, in three doses over a six-month period. These vaccines induce protective antibody levels in 85% to 97% of healthy adults. Protection against both the illness and development of the carrier lasts at least nine years and perhaps considerably longer.
Since we do not require any employees to perform first-aid, this is a voluntary program, and although we emphasize the importance of such vaccinations, it is the employees right to accept or decline this measure. If an employee declines to be vaccinated, he/she must sign a "release" statement acknowledging that the vaccination was offered, but the employee declined – see **Appendix D** for an example of the Vaccination Declination release, and **Appendix D2** for the log.

Post-exposure Evaluation and Follow-Up: It is our policy to offer as soon as possible, a confidential medical evaluation and follow-up to any employee encountering an exposure incident. The post-exposure evaluation and follow-up includes the following requirements:

1.) A thorough accident investigation must be conducted to determine the circumstances of the incident, route(s) of exposure and the identification of the source individual.
2.) The source individual's blood is to be tested as soon as feasible and after consent is obtained to determine hepatitis B virus and human immunodeficiency virus infectivity. If consent is not obtained, we must document that legally required consent cannot be secured. In those States where consent is not required by law, the source individual's blood, if available must be tested and the results documented.
3.) Source individual's test results are to be provided to the exposed employee. We must inform the exposed employee of the laws and regulations concerning disclosure of the identity and infectious status of the source individual.
4.) Blood from an exposed employee is to be collected as soon as feasible after the exposure incident and tested after consent is obtained for determination of hepatitis B virus and human immunodeficiency virus serological status.
5.) If an exposed employee consults to baseline blood collection after an exposure incident, but does not give consent at that time for human immunodeficiency virus serologic testing, the sample must be preserved for at least 90 days. If within 90 days of the exposure incident, the employee elects to have the baseline sample tested, such testing must be done.
6.) Post-exposure prophylaxis, when medically indicated, must be made immediately available to exposed employees following an exposure incident, at no cost to the employee.

Health Care Professional: Southside Recycling has ensured that the health care professional responsible for our employee's hepatitis B vaccination and post-exposure follow-up has a copy of the Bloodborne Pathogen Standard. In the event of an exposure incident, the health care professional will be provided with a description of the exposed employee's duties at the time of exposure, route(s) of exposure, source individual's blood test results, and relevant medical records of the exposed employee. Within 15 days of the follow-up evaluation, a copy of the health care professional's written report must be provided to the exposed employee.

Hazard Communication: Exposed employees will be advised of any potential bloodborne pathogen hazards through the use of labels, signs, information and training to minimize or eliminate these types of exposure.

Label/Signs - The containers used for the storage, decontamination or disposal of personal protective equipment and first aid supplies must be fluorescent orange or orange/red to signify a "biohazard." The standard label is as follows:

Information/Training - All employees with occupational exposure to bloodborne pathogens will receive training about the hazards associated with blood and other potentially infectious materials, as well as protective measure to be taken to minimize the risk of occupational exposure. Effective training is a critical element of Southside Recycling's exposure control plan.

Our training focuses on hazards associated with bloodborne pathogens; the modes of transmission; the exposure control plan; the use of engineering controls, work practices and personal protective equipment; hepatitis B vaccination program and post-exposure evaluation and follow-up; and actions to be taken in an emergency involving blood or other potentially infectious materials.

Additional training will be provided whenever changes such as modification of tasks or procedures or institution of new tasks or procedures that may affect the employee's occupational exposure.

Recordkeeping: Records related to bloodborne pathogens including exposure incidents, post-exposure evaluation and follow-up, hepatitis B vaccination status and training must be maintained.

Medical Records - Records must be maintained in a manner that would provide useful information to the employer, the employees and Secretary of Labor Representatives without compromising employees' confidentiality. A separate file is created for each exposure event and all relevant information is maintained in this file. See **Appendix E** for Exposure Event Log.

Training Records - Training records, indicating dates of training sessions, the content of those training sessions along with the names of all persons receiving training and the names of persons conducting the training are maintained by the facility manager or his designee.

The Bloodborne Pathogens Standard and our Exposure Control Plan are to be readily accessible to all employees who have occupational exposure to bloodborne pathogens.

Summary: The purpose of this Exposure Control Plan is to establish written procedures designed to eliminate or minimize employee exposures to bloodborne pathogens and other potentially infectious body fluids that employees could encounter during the performance of their duties. Fortunately, the potential for employees to be involved with an exposure incident is almost non-existent, as our operations do not normally bring any employees into contact with potential bloodborne pathogens. The only reasonably anticipated way in which an employee could potentially be exposed to bloodborne pathogens would be during the administration of or assistance with first aid measures, or in the decontamination of body fluids following an injury.

Our goal at Southside Recycling, is that every employee goes home every day – injury free. The more we achieve this goal, the more we eliminate the potential for a bloodborne pathogen exposure incident – no injuries, no blood or other body fluids.

However, in the event that there is an injury, the elements of this Plan must be followed to prevent potential exposures. These elements include practicing the concept of **UNIVERSAL PRECAUTIONS** – which assume that any and all blood and other body fluids is contaminated. In addition to this concept, engineering and work practice controls designed to minimize potential exposures has been established. Further, appropriate PPE, decontamination supplies and practices, employee training, voluntary vaccinations, and medical assistance/post-exposure evaluations are all critical components of this program. And when layered together, these components can provide the protection needed to eliminate exposures to bloodborne pathogens and possible adverse health effects to our employees.

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Appendix A
Definition of Terms

Assistant Secretary: The Assistant Secretary of Labor for Occupational Safety and Health, or designated representative.

Blood: Human blood, human blood components, and products made from human blood.

Bloodborne Pathogens: Pathogenic microorganisms that are present in human blood and can cause disease in humans. The pathogens include, but are not limited to hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Clinical Laboratory: A workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.

Contaminated: The presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Contaminated Laundry: Laundry that has been soiled with blood or other potentially infectious materials or may contain sharps.

Contaminated Sharps: Any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

Decontamination: The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

Director: The Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designated representative.

Engineering Controls: Controls (e.g., sharps disposal containers, self-sheathing needles) that isolate or remove the bloodborne pathogens hazard from the workplace.

Exposure Incident: A specific eye, mouth, or mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

Hand Washing Facilities: A facility providing an adequate supply of running potable water, soap and single use towels or hot hair drying machines.

Licensed Healthcare Professional: A person whose legally permitted scope of practice allows him or her to independently perform the activities required by paragraph (f) Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up:

- HBV means hepatitis B virus.
- HIV means human immunodeficiency virus.

Occupational Exposure: Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Other Potentially Infectious Materials:

1.) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.

2.) Any unfixed tissue or organ (other than intact skin) from a human (living or dead).

3.) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

Parenteral: Piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

Personal Protective Equipment: Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

Production Facility: A facility engaged in industrial-scale, large-volume or high concentration production of HIV or HBV.

Regulated Waste: Liquid or semi liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

Research Laboratory: A laboratory producing or using research-laboratory-scale amounts of HIV or HBV. Research laboratories may produce high concentrations of HIV or HBV but not in the volume found in production facilities.

Source Individual: Any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.

Sterilize: The use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

Universal Precautions: An approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

Work Practice Controls: Controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by two-handed technique).

Appendix B
3rd Party Janitorial Service Agreement

Outside Contractors/Servicing Personnel, while working on the property or in the facilities of Southside Recycling must comply with the Bloodborne Pathogens requirements that apply to all employers. Each Contractor/Service Firm retained to perform janitorial services for Southside Recycling must:

- Obtained a copy of the OSHA Standard – Bloodborne Pathogens from the facility where janitorial services will be conducted so that they can implement the provisions of the standard to ensure their employees' occupational exposures are minimized or eliminated, and

- Obtained a copy the facility's written schedule for cleaning and the method(s) of decontamination whereby the schedule is followed to ensure a clean and sanitary facility.

I, _____, hereby certify that I have received the appropriate information from the Company, I have reviewed the information and employees who will perform work on Southside Recycling's premises have received the proper training.

Name: _____ Signature: _____

Title: _____ Company: _____

Date: _____ Witness: _____

Appendix C
Vaccination – Participants Records

Employee's Name	Shots Start Date	Completion Date

Appendix D
Vaccination Declination Form

Date: _____

Employee's Name:_____

Employee's Soc. Sec. No.:_____

Employee's Position:_____

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

_____
Employee's Signature

_____
Witness's Signature

Appendix D_2
Vaccination Declination Log

Employee's Name	Date Declined	Form Attached

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment W

List of Flammable or Explosive Materials

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Estimated Amounts of Flammable or Explosive Materials

Propane

- *500 gallons*

Acetylene

- *1,500 cubic feet*

Gasoline

- *60 Gallons*

Miscellaneous Solvents (parts washer solvent, penetrating fluids, etc.)

- *30 gallons*

Miscellaneous Aerosol Cans (lubricants, paints, etc.)

- *50 cans*

Notes:

- *The quantities listed above are estimated amounts of the material on hand at any one time.*
- *Propane and Acetylene cylinders are secured by chains or in stored in dedicated cages or racks.*
- *Estimated number of propane cylinders: 10 – 100# cylinders; 30 – 33# cylinders.*
- *Gasoline, solvents and aerosol cans are stored in explosion-proof containers/cabinets.*

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment X

Procedures and Equipment to Prevent RTO Explosion

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RK
& Associates, Inc.

June 25, 2020

R17421-6.2

Mr. Eric Jones
Illinois Environmental Protection Agency - Bureau of Air
1021 North Grand Avenue East
Springfield, IL 62702

Proposed Shredder LEL Sensor and RTO Bypass Stack
General III, LLC – 11600 South Burley - Chicago, Illinois
Construction Permit 19090021; Site ID No.: 031600SFX

Dear Mr. Jones:

On May 18, 2020, GII, LLC (GII) experienced an explosion in the Regenerative Thermal Oxidizer (RTO) used to control Volatile Organic Compounds (VOC) emissions from a hammermill metal shredder. Although an investigation of this incident has not yet been finalized, GII believes that the source of the explosion may have been either the failure of equipment or instrumentation on the RTO resulting in a buildup of natural gas in the RTO or the volatilization of VOCs in the shredder resulting in a VOC-rich gas stream exceeding its Lower Explosive Limit (LEL) which traveled from the shredder to the RTO.

If the explosion was the result of a failure of the RTO or any of its systems, GII will rely on the RTO manufacturer to make the necessary repairs or design changes to prevent another explosion. These repairs or design changes will be made prior to startup.

To address the possibility that the explosion was caused by VOC-rich exhaust gas from the shredder, GII is proposing to install a gas flammability monitor immediately downstream of the shredder emission capture hood to continuously measure the percent of the LEL in the shredder exhaust gas. Upon sensing a an LEL concentration at, or above the monitor's set point, the proposed system would simultaneously stop the shredder feed , isolate the RTO by closing the poppet valves, shut off the RTO natural gas supply, and activate a bypass damper in the duct work upstream of the RTO inlet fan forcing the VOC-rich shredder exhaust gas to vent to atmosphere. Preventing VOC-rich exhaust gas from reaching the RTO will eliminate the potential for an explosion.

The information in this correspondence presents a detailed description of the LEL monitor and bypass vent proposed for General III, LLC (GIII) and further describes how the measured LEL value from the monitor will be used to estimate VOM (lbs) released to the atmosphere during a Bypass Event.

2 South 631 Route 59, Suite B
Warrenville, Illinois 60555
(630) 393-9000
Fax (630) 393-9111

LOWER EXPLOSIVE LEVEL (LEL) MONITOR

Following the above referenced explosion, GIII consulted with various experts, which included the incident investigation contractor, manufacturer of the RTO and the manufacturers of the LEL monitors to select and design the installation of the proposed monitor.

The term, Lower Explosive Limit (LEL) is defined as the lowest concentration (by volume percent) of a gas or vapor in air that is capable of producing a flash of fire in the presence of an ignition source. Concentration of a combustible gas that is lower than its LEL is too lean to burn. The term Lower Flammability Limit (LFL) is defined as the lowest concentration of a flammable gas required to create a flame. For the purposes of this document, the terms LEL and LFL are interchangeable.

The Flammability Analyzer, also referred to as a LEL monitor, selected for this application is a PrevEx Model SNR674 Flammability Analyzer manufactured by Control Instruments Corporation located in Fairfield, New Jersey.

This monitor contains a carefully metered hydrogen pilot flame used to directly measure the total flammability of a sample gas. The flame burns continuously inside a small chamber in the monitor housing. Potentially flammable vapors from the process exhaust gas are drawn into the chamber, where they are incinerated by the flame. A temperature detector measures the resulting change in flame temperature and transmits the information for display in % LFL (equivalent to % LEL) format

This LEL monitor operates with a response time of 1 second or less and an accuracy of +/- 3% of full scale. This is due the monitor's direct mounting design. By mounting the monitor directly on the process exhaust duct, without heat traced sample lines, pumps, or blowers, the unpredictability of moving parts is eliminated, and the sample path length is shortened significantly. Under normal operating conditions, given the existing configuration of the shredder exhaust gas ducting, it is anticipated that gas exiting the shredder emission capture hood will reach the RTO in five to six seconds. The one second response time of the LEL monitor will provide sufficient time to activate the bypass vent and prevent VOC-rich gas from reaching the RTO.

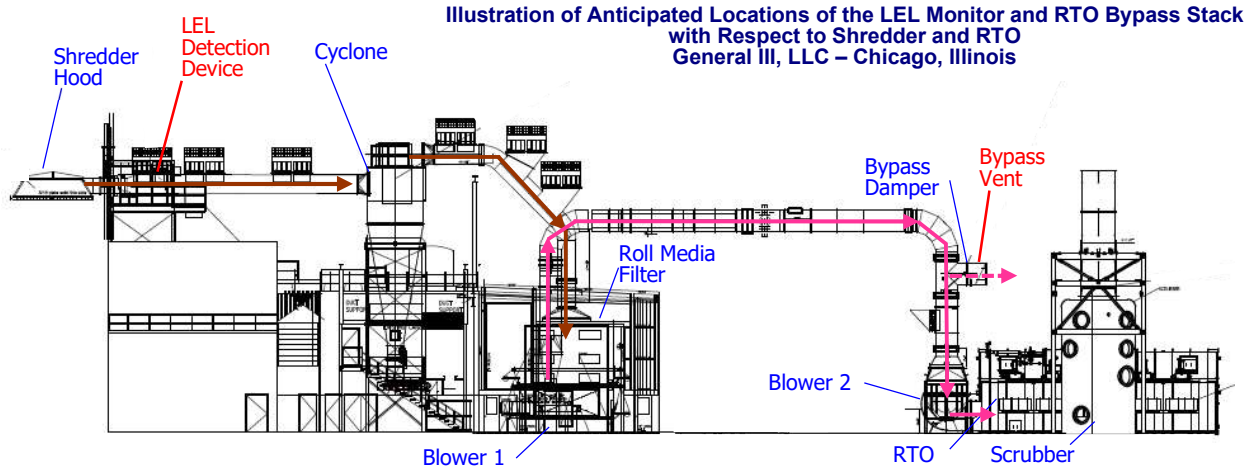
Control Instruments' brochure for its line of PrevEx Flammability Analyzers and the specifications for the Model SNR674 are attached to this correspondence for your review.

LOCATION OF LEL MONITOR AND RTO BYPASS VENT

The LEL monitor at GIII will be located outside of the shredder enclosure in the duct work close to the discharge from the shredder emissions collection hood. The bypass vent will be located in the duct work upstream of the RTO inlet fan at a location that will provide the maximum distance between the monitor and bypass vent to maximize the time for the system to react to an alarm before VOC-rich gas reaches the RTO.

As an example, the following illustration depicts the anticipated locations for the LEL monitor and RTO bypass vent with respect to the shredder emissions control system components. An induced draft fan (Blower 1) pulls the shredder exhaust gas from the hood, past the LEL monitor and then through the cyclone and roll media filter. Blower 1 then pushes the exhaust gas to the RTO inlet fan, which boosts its pressure to force the gas through the RTO and scrubber.

As shown in the example illustration below, the proposed location of the LEL monitor and RTO bypass stack will maximize the time available between an LEL alarm and opening of the bypass vent to prevent a VOC-rich gas from entering the RTO.



BYPASS VENT MONITORING

A position monitor will be installed on the actuator for the bypass damper to monitor the damper position. Data from this monitor (open/close) will be captured by a Programmable Logic Controller (PLC) and maintained in the electronic database.

LEL MONITOR ALARM SET POINT

The proposed LEL monitor will measure the % of LEL in the shredder exhaust gas on a second by second basis. This data will be captured by a PLC programed to trigger an alarm at a designated set point. There is no industry data regarding LEL setpoints for a hammermill shredder. Therefore, it is not possible to identify a set point without knowing what the site specific range of expected LEL data will be.

There are two objectives for establishing a LEL alarm point. In the order of importance, they are:

1. minimize the LEL alarm set point to minimize the chance that a gas stream exceeding the LEL could reach the RTO; and,
2. establish an LEL alarm set point that will avoid unnecessary Bypass Events.

The lack of available data on the expected range and frequency of LEL values makes it impractical to identify an LEL alarm set point at this time. For the purposes of permitting, it would be reasonable to identify a maximum LEL set point, satisfactory to the Agency and to GII, that would provide an adequate margin of safety against a future explosion but still provide the flexibility for the facility to evaluate the site specific relationship between a lower LEL setpoint and the corresponding frequency of Bypass Events.

GIII's primary goal is to minimize the probability of another explosion, but at the same time, GIII does not want unnecessary Bypass Events. The process of establishing the relationship between a LEL setpoint and corresponding frequency of Bypass Events will be a continuous one and will require periodic changes in the LEL set point over time. Any permit condition addressing an LEL setpoint must provide the flexibility to adjust the LEL alarm setpoint at the facility's discretion.

In support of the RTO design , measurements of the GII shredder exhaust gas downstream of the roll media filter taken during emission testing, identified an average observed % LEL value of approximately 2.7%. This means that the average observed volume of combustible gas in the shredder exhaust stream during the sample period was 2.7% of the LEL. Applicable safety rules (NFPA 86) states that a process can operate up to a level of 50% of the LEL when equipped with a continuous LEL analyzer. In the absence of a continuous analyzer, the maximum recommended LEL is 25%.

Based on the above, a permit condition could require that the LEL alarm setpoint should be set at a value of no greater than 25%. That being said, in order to minimize the number of unnecessary Bypass Events, the alarm set point should be set at a level that represents the upper end of the observed range of % LEL. After initially establishing this set point, LEL data will be periodically evaluated by GIII to determine if the LEL alarm set point can be further reduced without causing unnecessary Bypass Events.

BYPASS EVENT

A Bypass Event as described herein, would occur when the alarm set point of the LEL monitor is reached. When an LEL alarm occurs, the following will occur automatically (not necessarily in this order).

- An alarm will sound in the shredder control room.
- The Shredder feed will be stopped.

- The RTO bypass vent will be opened to prevent VOC-rich gas from reaching the RTO.
- The natural gas supply to the RTO will be shut off.
- The RTO poppet valves will close to further isolate the RTO.

RESTART SHREDDER AND RTO

After a Bypass Event, when GII determines that operation of the shredder can safely resume, the following will occur.

- The RTO poppet valves will resume normal operation.
- Natural gas supply to the RTO will be restored.
- The RTO will go through a normal startup procedure.
- The bypass damper will be closed.
- Once the RTO reaches its established operating temperature, the shredder feed will resume operation.

ESTIMATE OF BYPASS EVENT VOM EMISSIONS

The monitor manufacturer will provide calculations that the facility can use to convert the % LEL output from the LEL monitor to an equivalent concentration of propane in parts per million dry basis. This concentration will be combined with the estimated volume of shredder exhaust gas following the initiation of a Bypass Event. These values will be used to calculate the VOM emissions (lb/hr) from each Bypass Event.

VOM is generated from the material being shredded due to the heat generated from breaking apart the metal. The heat generated is sufficient to cause water injected into the shredder to instantaneously flash to steam. Based on the above, it is assumed that VOM related to the scrap metal being fed is also flashed, or immediately volatilized, upon contact with the shredder hammers. Based on the above, once the feed to the hammermill shredder is stopped, the generation of VOM in the shredder is expected to continue for only one to two seconds. The second by second data from the LEL monitor will be used to confirm the duration of the elevated % LEL.

GIII will monitor the fan amperage of the Roll Media Filter exhaust fan motor on a minute by minute basis. The amperage monitor will have an accuracy of +/- 5 percent. At the time of a Bypass Event, the fan amperage will be used to estimate the shredder exhaust gas flow rate. The amperage at the start of an event will be compared to fan amperage from the most recent successful VOM emission test of the shredder RTO. If the amperage values are consistent, the shredder exhaust gas flow rate will be assumed

to be equal to the RTO inlet gas flow rate from the emission test. If the amperage differs significantly, a fan curve will be used to identify the estimate flow rate, corresponding to the measured fan amperage at the start of an event.

This estimated volume of exhaust gas, combined with the propane concentration equivalent to the measured % LEL will be used to estimate total VOM emission (lbs/event) from a Bypass Event.

BYPASS EVENT DATA COLLECTION

The output from the LEL monitor and the bypass damper position will be captured by a PLC and stored in the electronic database.

For each event when the emergency bypass vent on the RTO is open while feed material is being sent to or being processed in the Hammermill Shredder System, the following records will be used to document the event: the date, starting time and duration of the event; a description of the event; the monitored flammability of the gas stream at the start of the event; an estimate of the additional VOM emissions attributable to the event, with supporting data; the likely explanation for the event.

In addition, based on normal data collection, the shredder and RTO/Scrubber operating data prior to and during a Bypass Event will also be available.

BYPASS EVENT REPORTING

GIII will generate a summary report for each Bypass Event that will identify the time the event, the estimated uncontrolled VOM emissions, identification of any unusual characteristics of the scrap being processed (if any), the potential cause of the event (if one can be identified), corrective actions that may be warranted (based on an identified cause of the event), and the time the bypass damper was closed and shredder feed resumed.

We trust that the above information is sufficient to meet your needs at this time. An electronic copy of this document has also been forwarded to you, Bob Bernoteit, and Ms. Julie Armitage.

If you have any questions or need any additional information, please don't hesitate to contact us at 630-393-9000.

AdYours very truly,
RK & Associates

John G. Pinion
Associate Engineer

cc: Mr. Jim Kallas – General III, LLC – Chicago, Illinois (via e-mail)
Ms. Julie Armitage – IEPA Bureau of Air – Springfield, Illinois (via-e-mail)
Mr. Bob Bernoteit - IEPA Bureau of Air – Springfield, Illinois (via-e-mail)

RK
& Associates, Inc.

Proposed Shredder LEL Monitor
and RTO Bypass Stack
GII, LLC – Chicago, Illinois
Site ID No.: 031600BTB

GII, LLC
1909 North Clifton Avenue
Chicago, Illinois 60614

ATTACHMENT A

CONTROL INSTRUMENTS CORPORATION
PREVEX FLAMMABILITY ANALYZER BROCHURE AND
SPECIFICATIONS FOR MODEL SNR674 FLAMMABILITY ANALYZER.

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PrevEx
Flammability Analyzer
Control Instruments
Corporation

The PrevEx, formerly the 670 series of analyzers, is Control Instruments' Flammability Analyzer for Lower Flammable Limit monitoring. Its new name boasts its ability to prevent explosions and its new look adds flavor to the industrial environment. To top it off, it still solves all of the sampling, measuring, and reporting problems found in industrial process applications while promising accuracy, consistency, and reliability. The PrevEx allows you to protect your investment: it keeps your facility, employees, and environment safe while increasing your productivity and eliminating downtime. Its accuracy surpasses that of any other analyzer, due to its unique flame temperature technology, delivering the highest degree of safety. This exclusive design is based on a sensing-flame concept that has since proven itself to be the most reliable detection system in the industry. Unlike catalytic sensors that can become contaminated, give false readings or fail outright, the PrevEx has many impressive features to ensure unmatched safety, extreme accuracy, and ultra-fast response time, even when sampling a mixture of several different flammable vapors. The PrevEx Flammability Analyzer is efficient and economical, leaving you feeling confident in its performance. After all, a monitoring system is only as good as the sensor it employs! Read on to find out more of the PrevEx's exclusive features and see how it truly prevents fires and explosions.

Prevent Exp

PrevEx Delivers
Unmatched Safety

The PrevEx Flammability Analyzer incorporates several fail-safe features designed to ensure perfect safety under all conditions. In fact, the inherent design of the sensing flame technology is that the flame must always be on and the system working properly or an alarm is given. This leaves no problem undetected. Whether it is a loss of fuel, air, sample flow or power, a malfunction relay is automatically tripped and the operator is notified immediately of a status change. By contrast, catalytic sensors and other "indirect" measuring systems can become corroded, obstructed or poisoned, yet still register as normal. The alarm relays include warning, danger, fault, horn, service needed, and system under calibration. These built-in relays guarantee complete safety and reliability, allowing for only true indications on the meter. From a safety viewpoint, the sensing flame technology has no equal. The PrevEx also exhibits a very stable zero with a calibration accuracy of less than 5% error per year. In recognition to the PrevEx's inclusive fail-safe features, our flammability analyzer has received the following approvals:

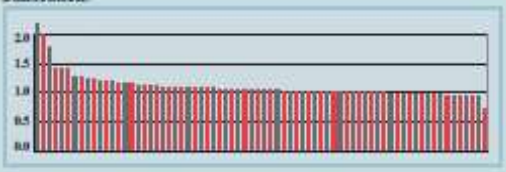
No Condensation
Yields True Sample

The essence of the PrevEx detection system lies in its ability to perform accurately under the demands of the industrial environment. Industrial processes contain compounds that condense and contaminate a sensor. With condensation comes clogging, fouling, and poisoning, which restricts the sample flow to the analyzer, removing important elements from the sample stream. This results in an inaccurate reading. To combat this problem and assure a true sample, the PrevEx has a corrosion resistant, heated sample train through which the sample is delivered. The heat eliminates that condensation and withstands corrosive elements, leaving you with an accurate representation of your process. To be doubly sure that you are receiving an accurate reading free of contamination, the PrevEx Flammability Analyzer collects the sample using an aspirator, driven by compressed air. There is no pump or blower; instead microprocessor control guarantees constant sample flow and pressure through the train, assuring you of the highest level of accuracy. To top it off, even the sensor itself is free of poisoning from various organo-metallics, halogenated hydrocarbons, silicones, or plasticizers. This reliable performance leaves your plant safe and secure, avoiding unnecessary downtime and frequent maintenance.

losions

Universal Calibration

The PrevEx gives consistent and reliable readings even when faced with multiple or changing solvent concentrations. In fact, the PrevEx Flammability Analyzer has the ability to read multiple solvent formulations more accurately than any other sensor in the entire industry, resulting in the least amount of detection error from solvent to solvent. This is due to the powerful universal calibration feature, made possible through the PrevEx's sensing flame technology. This technology provides the ability to accurately measure solvent concentrations for an array of solvents, even though the meter was calibrated on only one specific solvent. That's right with the PrevEx there is no need for recalibration, giving you excellent cross-calibration accuracy and ultimately eliminating incorrect readings. So, there is no need to shut down your system or buy multiple sensors to monitor various solvents simultaneously, with the PrevEx just one calibration offers protection with accuracy for your present and future needs. In the graph below, each bar illustrates the response factor for a particular solvent. For most combustible gases it ranges from 0.8 to 1.2 and for solvents from 0.9 to 1.1. The uniformity of the bars indicates Universal Calibration.

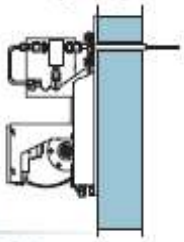


Sensing Flame Technology

The PrevEx Flammability Analyzer contains a carefully metered pilot, or sensing flame. It is a direct measure of the total flammability of the sample, not to be confused with the industry's FID. This flame burns continuously inside a small chamber of the sensor housing. Flammable vapors are drawn from the sample point into the chamber, where they are incinerated by the flame. A temperature detector measures the resulting change in flame temperature and transmits the information for display in % LFL format. Should a problem of any kind arise the flame temperature must change and the control monitor always lets you know immediately.

Direct Mount Provides Fastest Response Time

When it comes to giving you early warning no other design even comes close to the PrevEx's less than 1-second response time. This impressive response, which is eight times faster than the industry's average sensor, is due to the PrevEx's direct mount design. By mounting the sensor directly on the process duct without heat trace sample lines, pumps, or blowers, you eliminate the unpredictability of moving parts and shorten the sample path significantly. This radically reduces sample delivery time, while ultimately accelerating response time. The PrevEx Flammability Analyzers are readily accessible. They easily attach to a wide variety of process walls and duct types and are unaffected by high process temperatures, making installation and operation uncomplicated. Field pneumatic and electrical connections are easily made at the bottom of the analyzer. If necessary, an optional wall-mount design is available.



PrevEx mounted directly on process duct

Efficient Operation Reduces Maintenance

The PrevEx Flammability Analyzer's all inclusive design is easily operated and maintained. The front panel includes a complete set of status indicators and an eight-character alpha-numeric LCD display. Using just two pushbuttons, you can access all calibration, programming and diagnostic routines. And for complete access, contacts are also provided for two external control inputs. A window in the outer cover lets you see the entire front panel. This is where calibration adjustments can be initiated. Since the PrevEx comes equipped with solenoid valves for both zero and span test gas, an integral microprocessor automatically makes all calibration adjustments for you. The window also permits non-intrusive local access; you simply shine a flashlight at photo-transistors to activate a command menu. To make operation even more efficient the PrevEx can be accessed remotely. You simply connect directly to your PLC or a display meter in the operator panel through the built-in 4-20mA analog output. If you need true, two-way digital communication with remote control, the PrevEx provides a Modbus RS-485 serial port and optional operator interface panels. This extremely efficient process greatly reduces maintenance time. Of course, all parts are readily available and quickly replaced when needed, so when you want to inspect or service a unit the job is fast and easy.

Field pneumatic and electrical connections made at bottom of PrevEx

PrevEx Tailored

To Your Requirements

The PrevEx Flammability analyzer consists of several models designed to fit your specific monitoring needs. All models monitor a number of common vapors and are unaffected by processes as diverse as flexographic printing and ceramic kilns. The first two industrial strength analyzers, the SNR675 running at 270°C and the SNR674 running at 200°C, are suitable for the most demanding conditions of industrial monitoring, where high flash point solvents, resins, and plasticizers may be present. The next model, the SNR672 running at 120°C above the dew point of water vapor and most industrial solvents, is intended for application conditions that aren't as severe. These models are all available with the NEMA 4X outdoor housing for outdoor installation in any kind of climate. And for relatively clean applications such as rotogravure and flexographic printing we offer the SNR671 which is run at 60°C.

NEMA 12/13
Indoor Housing

NEMA 4X
Outdoor Housing

Find Out More

Today

Control Instruments Corporation has been engineering solutions to gas and solvent vapor monitoring problems since 1969. We work hard to assess your risks and carefully tailor a monitoring system to meet your needs. For detailed information, system specifications, and pricing, please contact us today.

PrevEx

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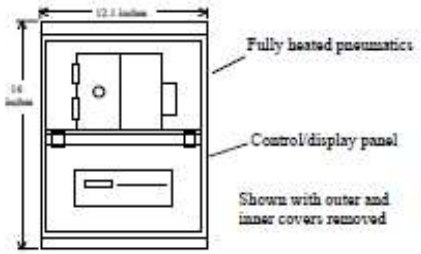
Control Instruments Corporation

25 Law Drive, Fairfield, NJ 07004-3295 USA
Telephone 973-575-9114 Fax 973-575-0013
Email: sales@controlinstruments.com
Internet: www.controlinstruments.com

Product Specifications



SNR674 PrevEx® Flammability Analyzer

Specifications

Calibration:	0 to 100% Lower Flammable Limit (LFL)
Operating Temperature	Sensor heated to 200°C (392°F)
Accuracy	± 3% of full scale reading or 10% of applied gas whichever is greater.
Repeatability	Within 1% of measurement range
Zero Stability	± 1% in 30 days
Span Stability	± 5% per year
Cell Response Time	Less than 1 second
Power Requirement	120 VAC +10% –15% 50/60 Hertz 400 Watts maximum, 230 VAC optional
Oxygen	12 to 21% oxygen in sample 0 to 21% oxygen in sample (optional)
Fuel Requirements	99.99% prepurified Hydrogen
Fuel Consumption	58 liters/day 40-45PSIG hydrogen
Compressed Air	20 PSIG, regulated, clean, dry
Air Consumption	42 SCFH, 21 LITERS/minute
Humidity Range	0% to 100% Relative Humidity
Relays	Three (3) SPDT 60 Watt contacts Three (3) SPST 60 Watt contacts
Relay functions	Six relays for: Warning; Danger; Fault; Horn; Calibration-in-Progress and Service Needed
Alarm Function	Adjustable alarm ranges
Analog Output	4-20mA, 275 Ω max. includes line length
Digital Output	RS-485 Serial, Modbus protocol
Flame Cell Material	Hard-coat aluminum
Sample Train Material	Hard-coat aluminum & stainless steel
Flame Cell Rating	Explosion Proof Class I, Division 1
Hazardous Area Rating	Class I, Div 2, Groups A, B, C, D Purged to Class I Division 1 (optional)
Enclosure Rating	NEMA 12/13, indoor NEMA 4X, outdoor (optional)
Assembly Dimensions	16" H x 12.1" W x 8. 5" D
Approvals	FM (standard) FMc, CE, ATEX (optional)

Analyzer Design

The Model SNR674 is an industrial strength assembly consisting of a heated flame cell and an integrated controller that continuously measures total flammable vapor concentrations from 0 to 100% of the Lower Flammable Limit (LFL) range. Optional modifications allow the SNR674 to sample low oxygen and inert atmospheres.

Control Instruments' proprietary flame temperature technology assures an accurate and linear response. A carefully metered pilot flame incinerates the sample; the resulting change in flame characteristics is proportional to the total concentration of flammable vapors present.

Heated Sampling System

To avoid condensation during sampling, the entire analyzer pneumatic assembly is heated to 200°C (392°F). This eliminates both inaccurate readings caused by solvent dropout as well as excessive maintenance time due to sample condensation and clogging. A concentric sampling probe further assures accurate, trouble-free sampling.

It is suitable for monitoring many common solvent vapors. The analyzer is unaffected by the temperature of the process and can sample streams above 1500°F.

The assembly mounts directly onto the process ductwork, as close as possible to the sample pickup point. This eliminates external heated sample lines and allows the fastest response time.

The analyzer employs customer-supplied compressed air to drive its integrated air-aspirated sampling system. This method is simple, has no moving parts and requires very little maintenance. The sampling system does not require bottled air or sample pumps.

Autocalibration solenoids, which allow remote activation of calibration tests, are standard.

Failsafe Operation

A fault relay de-energizes whenever any of the following occur: controller electrical failure; loss of system power; loss of heat; loss of flow through the flame cell; and downscale readings caused by loss of flame or fuel.

Outputs

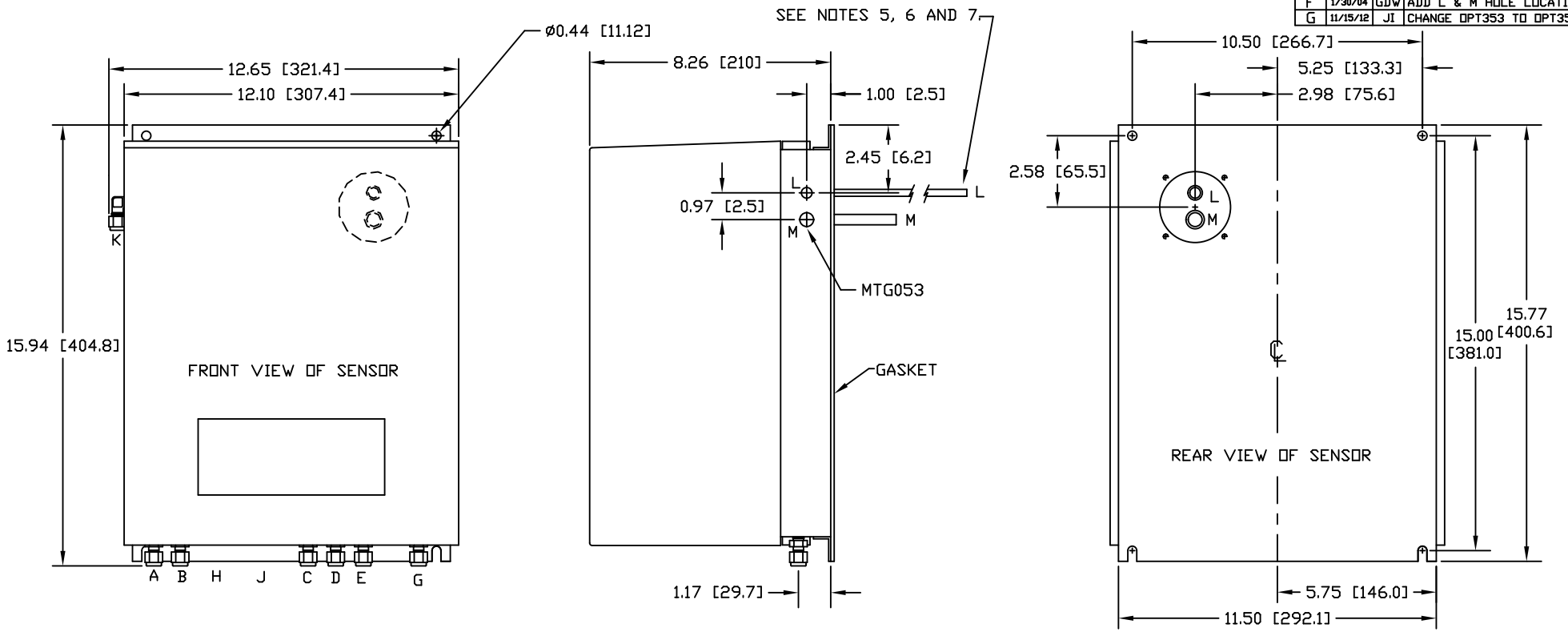
The system includes six relays: single-pole, double-throw relays for Warning, Danger, Fault; and single-pole, single-throw relays for Horn, Calibration-in-Progress and Service Needed. Other standard outputs include a 4-20mA analog output and an RS-485 serial port with Modbus protocol. Digital remote access and control is made possible with optional operator interface panels.

Performance

Detector response time is less than 1 second. The analyzer exhibits a very stable zero: less than one percent drift in thirty days. Calibration accuracy has less than five percent error per year.

C7FTA114

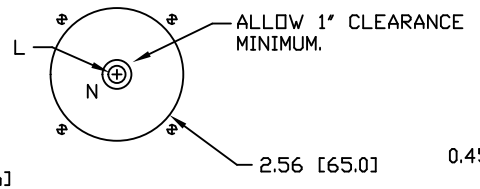
SYM	DATE	BY	REVISIONS
A	8/24/99	GDW	CORRECTED DRAWING
B	3/1/00	GDW	FMR APPROVAL
C	3/1/00	GDW	FMR APPROVAL
D	6/5/00	GDW	REMOVE DUCT VIEW
E	4/10/01	GDW	REMOVE "F" FITTING
F	1/30/04	GDW	ADD L & M HOLE LOCATION
G	11/15/12	JI	CHANGE OPT353 TO OPT353HP



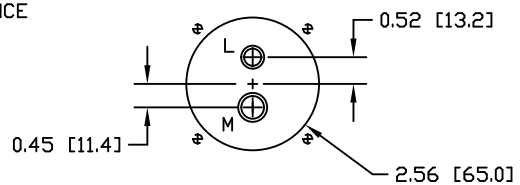
CONNECTIONS:

A. FUEL	1/4" TUBE
B. DILUTION AIR INLET (OPT353HP)	1/4" TUBE
C. PURGE PRESSURE REFERENCE (OPTIONAL)	1/4" TUBE
D. SPAN GAS	1/4" TUBE
E. ZERO GAS	1/4" TUBE
F.	
G. COMPRESSED AIR.	1/4" TUBE
H. POWER INPUT.	3/4 NPT
J. COMMUNICATION WIRING.	3/4 NPT
K. PURGE EXHAUST (NO CONNECTION)	1/4" TUBE
L. SAMPLE INLET (4 FT SUPPLIED)	1/4" TUBE
M. EXHAUST (2 FT SUPPLIED)	3/8" TUBE
N. EXHAUST, HTR063 (3.5 FT SUPPLIED)	3/4" TUBE

HTR063
CONCENTRIC PROBE



SAMPLE/EXHAUST LOCATION
MTG054 WITHOUT HTR063



NOTES:

1. ALL DIMENSIONS = INCH [mm]
2. SAMPLE AND EXHAUST CAN BE TWO SMALL OR ONE LARGE CLEARANCE HOLE. A 2" [51mm] DIAMETER HOLE WILL CLEAR BOTH HOLES.
3. INSULATE OR SUPPORT TUBES SO THEY DO NOT CONTACT COOL SURFACES.
4. MTG053 HAS NO SAMPLE/EXHAUST TUBES SUPPLIED.
5. THE SAMPLE PROBE SHOULD BE LOCATED WHERE IT WILL GIVE A REPRESENTATIVE READING OF THE PROCESS.
6. THE EXHAUST TUBE SHOULD BE LOCATED WHERE IT WILL NOT DILUTE THE SAMPLE.
7. CUT SUPPLIED SAMPLE AND EXHAUST TUBES TO LENGTH.
8. SENSOR WEIGHT 35-40 LBS.

REQ	ITEM	PART NO.	DESCRIPTION

LIST OF MATERIALS

DO NOT CHANGE WITHOUT AGENCY APPROVAL

DIM. IN INCHES UNLESS SPECIFIED OTHERWISE

TOLERANCES
DEC. ± 0.01" (0.25) FRACT. ± ANG. ±

PREVEX SERIES FTA MOUNTING

CLIENT

SPEC. NO.

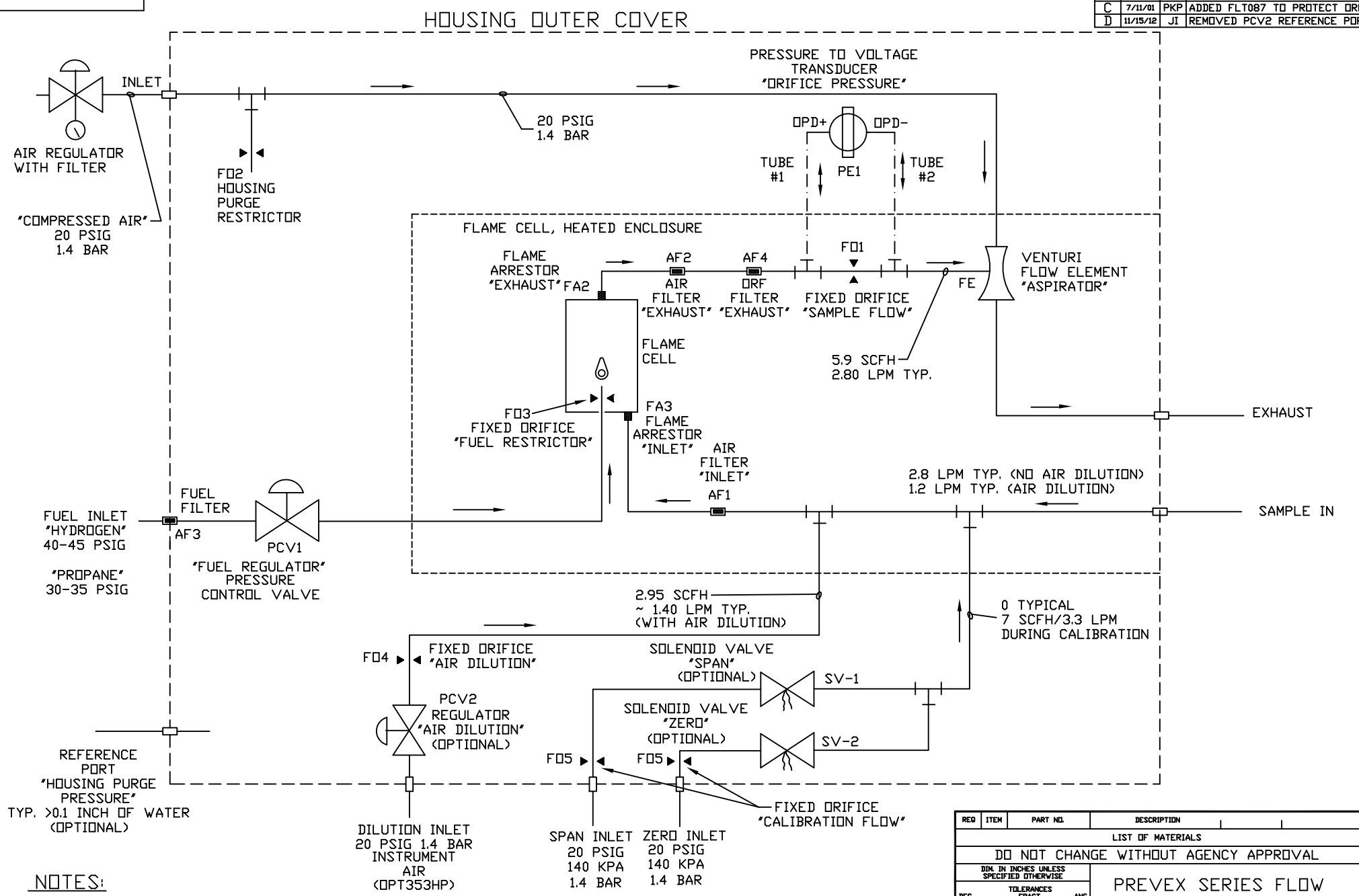
CONTROL INSTRUMENTS Corporation
25 Law Drive
Fairfield, N.J. 07004 U.S.A.

DWN.	ENGR.	SCALE
S.A.A.	G.D.W.	1=3
DATE 8/9/99	DATE 8/9/99	REVISION G

DRAWING NO. C7FTA114

C6FTA117

SYM	DATE	BY	REVISIONS
A	9/21/99	GDW	ADDED AIR DILUTION
B	3/1/00	GDW	FMR APPROVAL
C	7/11/01	PKP	ADDED FLT087 TO PROTECT ORF
D	11/15/12	JI	REMOVED PCV2 REFERENCE PORT



NOTES:

1. A SINGLE CALIBRATION INLET IS SUPPLIED WHEN AUTOCALIBRATION IS NOT SPECIFIED.

LEGEND: ____ . ____ STATIC LINE, NO FLOW

REQ	ITEM	PART NO.	DESCRIPTION

LIST OF MATERIALS

DO NOT CHANGE WITHOUT AGENCY APPROVAL

DIM. IN INCHES UNLESS SPECIFIED OTHERWISE

TOLERANCES DEC. ± FRACT. ± ANG. ±

PREVEX SERIES FLOW

CLIENT

SPEC. NO.

CONTROL INSTRUMENTS Corporation
25 Law Drive
Fairfield, N.J. 07004 U.S.A.

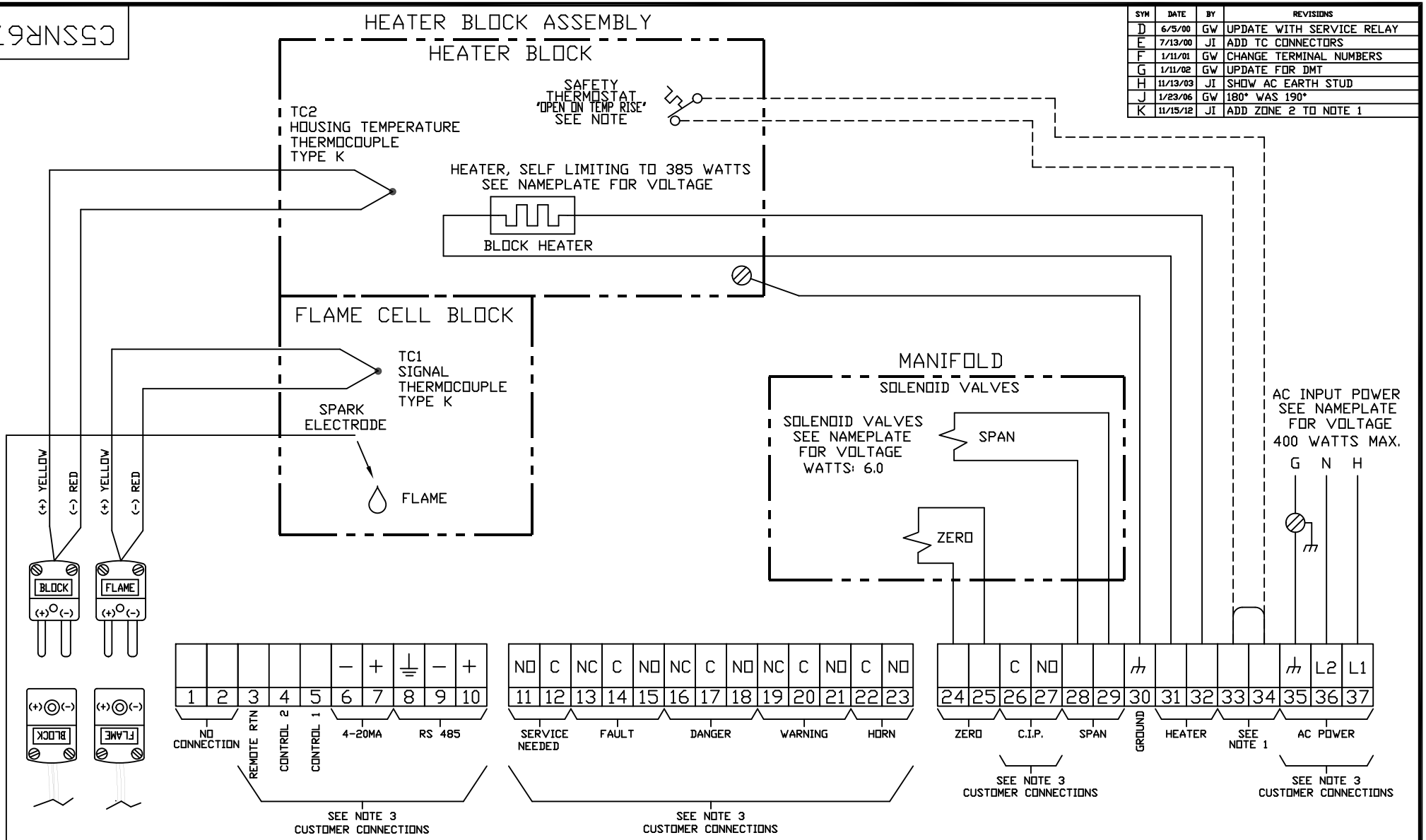
DWN. GDW	ENGR. GDW	SCALE
DATE 7/2/99	DATE 7/2/99	REVISION D

DRAWING NO. C6FTA117

C5SNR671

HEATER BLOCK ASSEMBLY

SYM	DATE	BY	REVISIONS
D	6/5/00	GW	UPDATE WITH SERVICE RELAY
E	7/13/00	JI	ADD TC CONNECTORS
F	1/11/01	GW	CHANGE TERMINAL NUMBERS
G	1/11/02	GW	UPDATE FOR DMT
H	11/13/03	JI	SHOW AC EARTH STUD
J	1/23/06	GW	180° WAS 190°
K	11/15/12	JI	ADD ZONE 2 TO NOTE 1



NOTE 1. THERMOSTAT IS REQUIRED FOR USE IN ZONE 1 OR ZONE 2 AREAS. JUMPER 33-34 MUST BE REMOVED.

MODEL NUMBER DESIGNATION	NORMAL OPERATING TEMPERATURE	SAFETY THERMOSTAT SETTING	IEC 79-8 T RATING
SNR671-T6	60C	82C	T6
SNR672-T4	100C	118C	T4
SNR672-T3	120C	200C	T3
SNR674-T3	180C	200C	T3
SNR674-T2	200C	300C	T2

NOTE 2. POWER IS FACTORY CONFIGURED EITHER FOR 120 VAC OR 230 VAC BUT NOT BOTH. USE OF INCORRECT VOLTAGE WILL CAUSE DAMAGE. SEE NAMEPLATE FOR CORRECT VOLTAGE.

NOTE 3. TERMINALS 3 - 10, 11 - 23, 26 - 27 & 35 - 37 ARE CUSTOMER CONNECTIONS. ALL OTHER TERMINALS ARE FACTORY WIRED AND COMPLETE.

REQ	ITEM	PART NO.	DESCRIPTION
LIST OF MATERIALS			

DO NOT CHANGE WITHOUT AGENCY APPROVAL

DIM. IN INCHES UNLESS SPECIFIED OTHERWISE
TOLERANCES DEC. ± FRACT. ± ANG. ±

INTERNAL WIRING PREVEX SERIES

CLIENT

SPEC. NO.

CONTROL INSTRUMENTS Corporation
25 Law Drive
Fairfield, N.J. 07004 U.S.A.

DWN.	ENGR.	SCALE
S.A.A.	G.D.W.	
DATE 8/9/99	DATE 8/9/99	REVISION K

DRAWING NO. C5SNR671

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& Associates, Inc.

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Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment Y

Site Plan with Fire Extinguisher Locations

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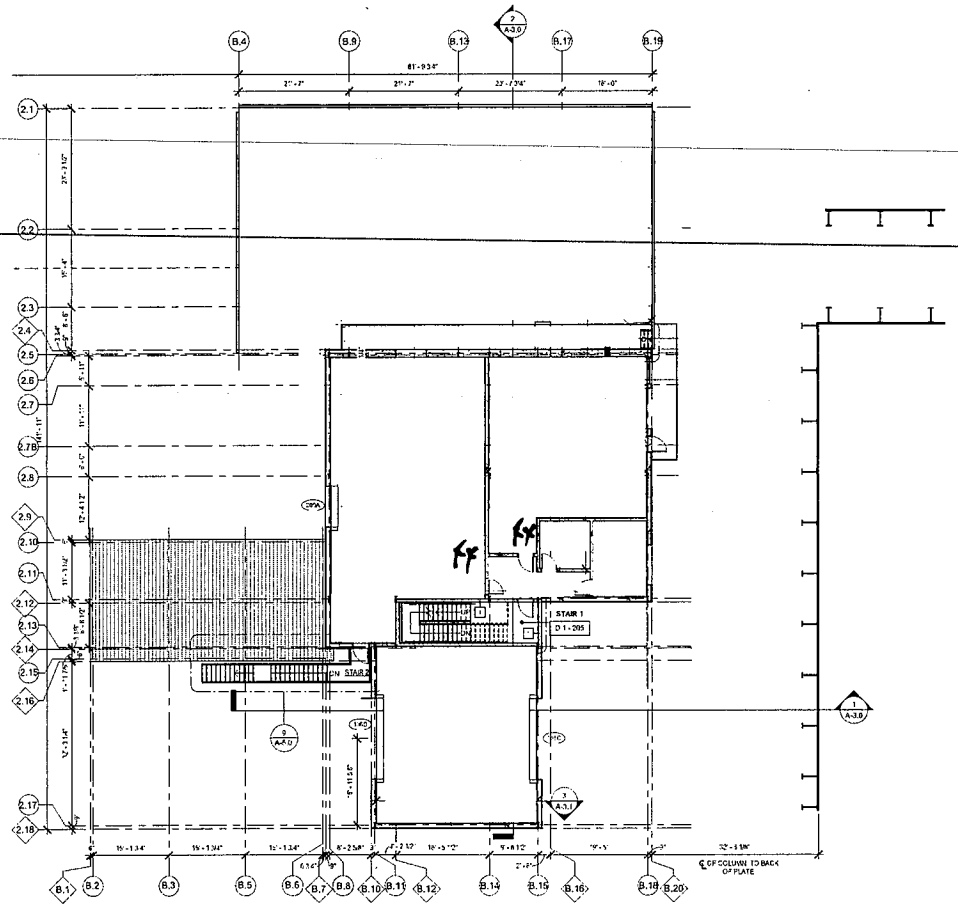


1 SECOND FLOOR PLAN
3/32" = 1'-0"

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 N. LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

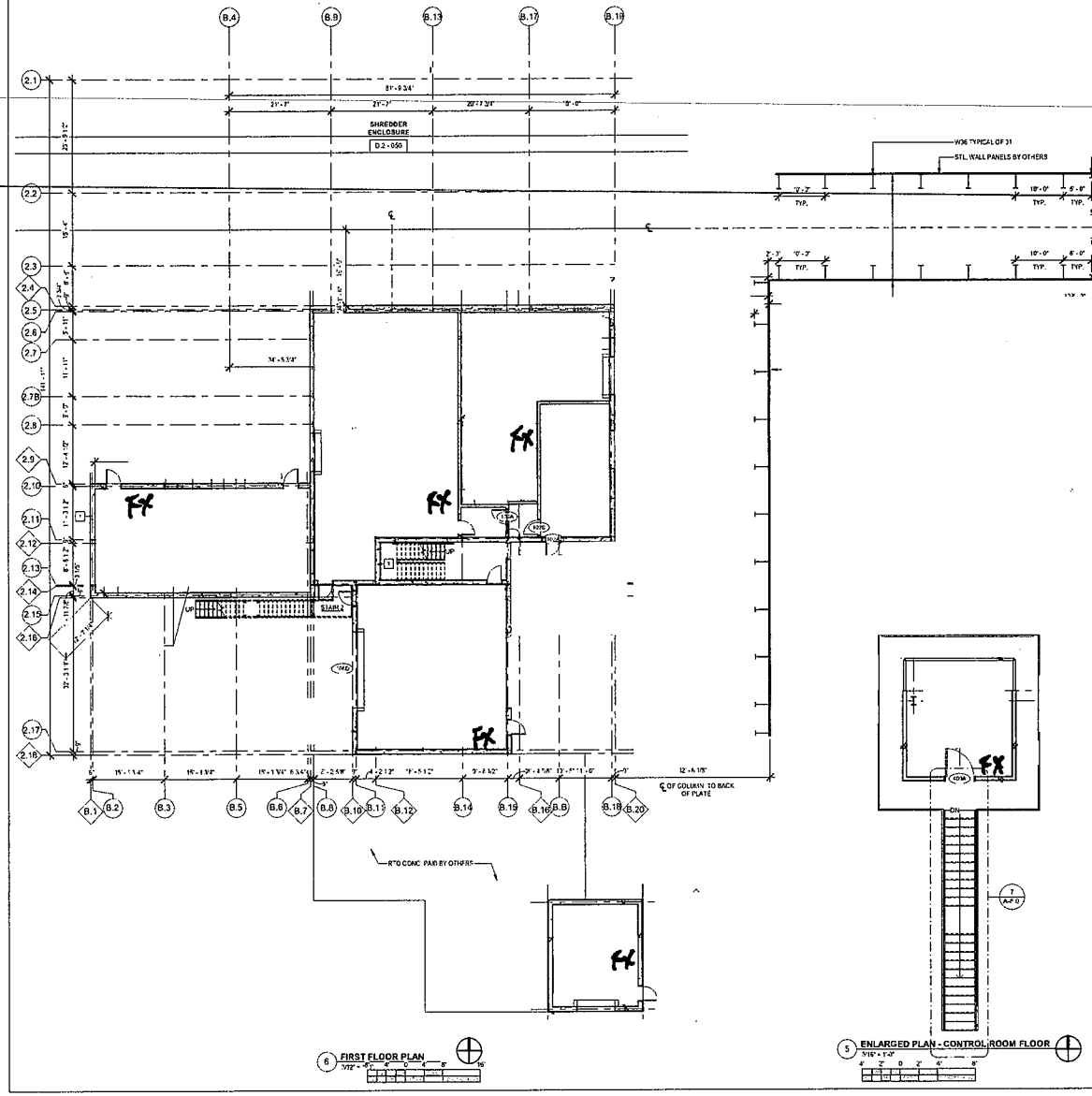
PROJECT:
GENERAL III, LLC
STRUCTURE D - SHREDDER SORTING BUILDINGS
11554 S. AVENUE O
CHICAGO, IL. 60617

#	DATE	ISSUE
6	10/08/2020	REISSUE FOR PERMIT REVISION
5	7/14/2020	REVISION
4	6/15/2020	REVISION
3	5/22/2020	ISSUE FOR PERMIT REVISION
2	04/16/2020	REVISION TO PERMIT
1	09/27/2019	ISSUED FOR PERMIT REVIEW

SECOND FLOOR PLAN

PROJECT #:	DATE:
7561	09/27/2019

A-1.1



6 FIRST FLOOR PLAN
1/16" = 1'-0"

5 ENLARGED PLAN - CONTROL ROOM FLOOR
3/16" = 1'-0"

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 N. LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

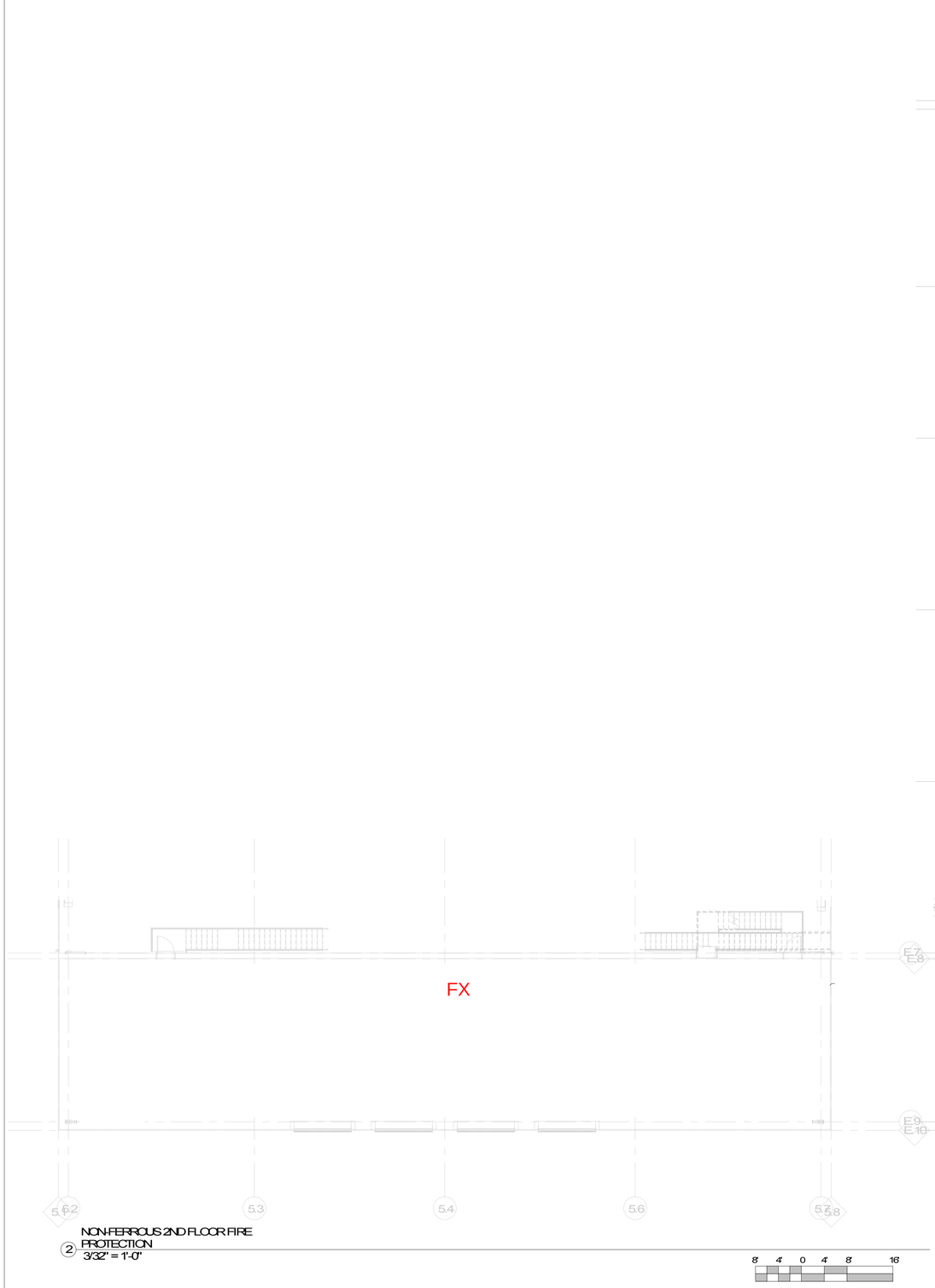
PROJECT:
GENERAL III, LLC
STRUCTURE D - SHREDDER SORTING BUILDINGS
11554 S. AVENUE O
CHICAGO, IL. 60617

5	10/29/2020	REISSUE FOR CONSTRUCTION
5	9/8/2020	REVISION
4	6/4/2020	REVISION
3	05/22/2020	ISSUE FOR PERMIT REVISION
1	09/27/2019	ISSUED FOR PERMIT REVIEW
#	DATE	ISSUE

FIRST FLOOR PLAN

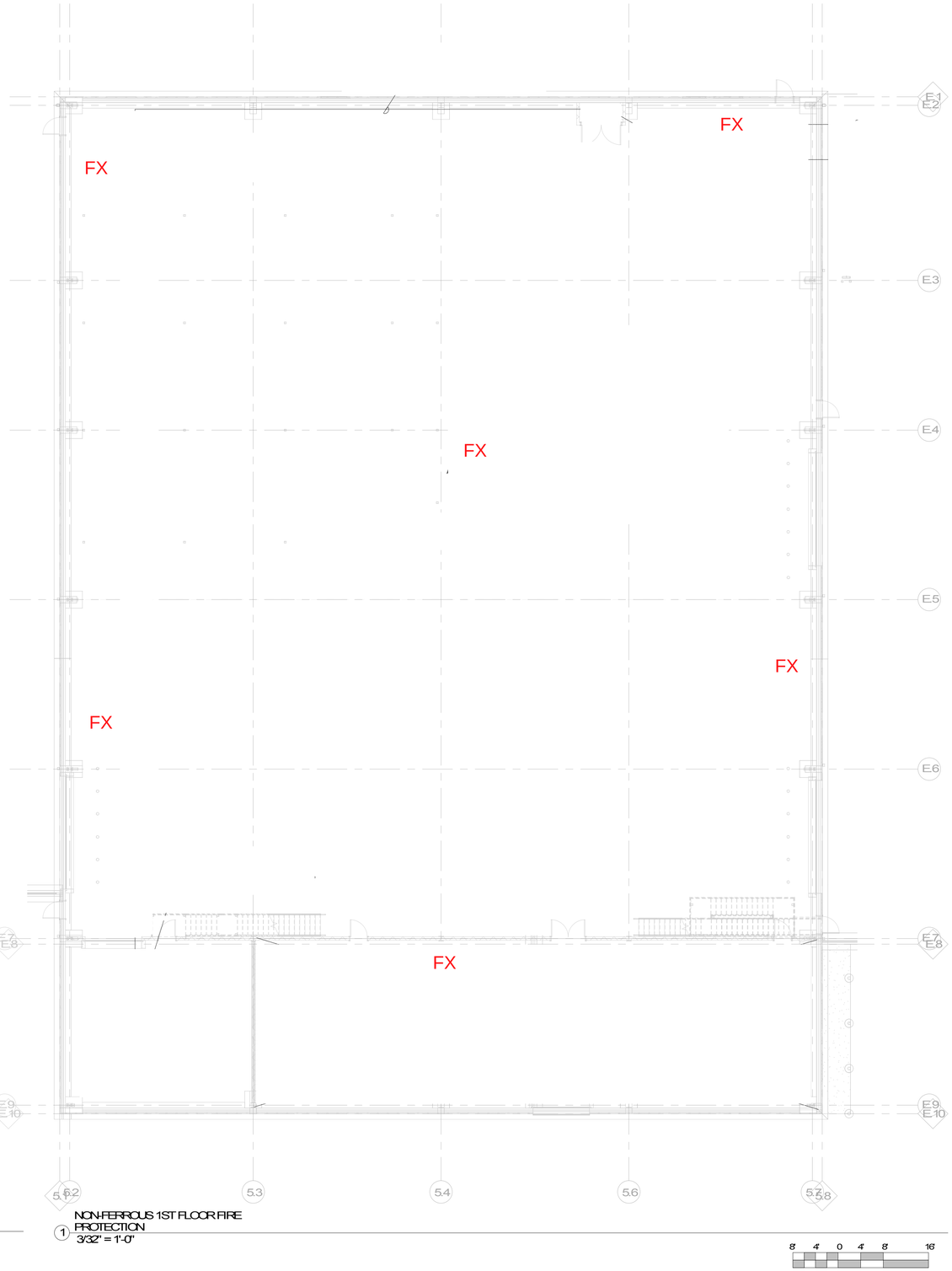
PROJECT #:	DATE:
7563	09/27 2019

A-1.0



2 NON-FERROUS 2ND FLOOR FIRE PROTECTION
3/32" = 1'-0"

8' 4' 0 4' 8' 16'



1 NON-FERROUS 1ST FLOOR FIRE PROTECTION
3/32" = 1'-0"

8' 4' 0 4' 8' 16'

KNIGHT Engineers & Architects
Knight E/A Inc.
221 N LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

PROJECT:
GENERAL III, LLC
STRUCTURE C - NON-FERROUS BUILDINGS
11551 S. AVENUE O
CHICAGO, IL, 60617

#	DATE	ISSUE
4	10/08/2020	RE-ISSUE FOR CONSTRUCTION
3	06/22/2020	REVISION TO PERMIT
2	01/06/2020	ISSUE FOR BID
1	09/27/2019	ISSUE FOR PERMIT REVIEW

NON-FERROUS BUILDING FIRE PROTECTION PLAN

PROJECT #	DATE:
7563.01	06/22/20

FP-1.1

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment Z

Procedures and Equipment for Detecting Hotspots

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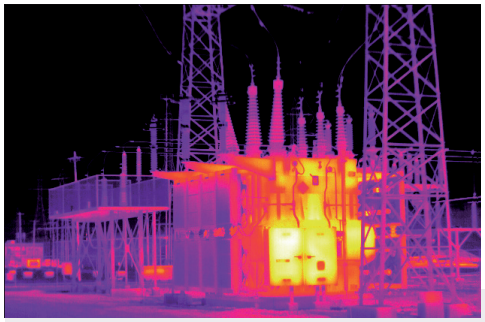
FIXED MOUNT THERMAL IMAGING CAMERA FOR CONDITION MONITORING AND FIRE PREVENTION

FLIR A310 f

FLIR A310 f thermal cameras can be installed almost anywhere to monitor the condition of your critical equipment and other valuable assets. Designed to help safeguard your plant and measure temperature differences, they allow you to see problems before they become costly failures -- preventing downtime and enhancing worker safety.

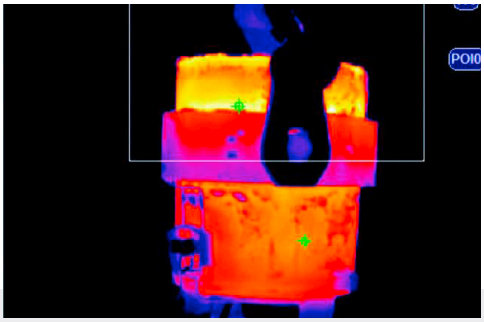
FLIR A310 f is ideal for various applications that require temperature measurement capabilities including: substation, transformer, waste bunker, and coal pile monitoring.

www.flir.com/automation



EXCELLENT IMAGE QUALITY

FLIR A310 f contains an uncooled Vanadium Oxide (VOx) microbolometer detector, producing crisp, 320 x 240 resolution thermal images and making small temperature differences clearly visible. The camera features a built-in lens with motorized focus, the ability to stream video over Ethernet to view live images on a PC, communication and power over Ethernet cable, and can be controlled remotely over the Web and TCP/IP protocol.



BUILT-IN ANALYSIS AND ALARM FUNCTIONS

FLIR A310 f comes standard with built-in analysis functions like spot, area measurement, and temperature difference. Alarms can be set to go off as function of analysis, internal temperature or digital input. The camera automatically sends analysis results, IR images, and more as an e-mail on schedule or at alarm. Autonomous dispatch of files or e-mails, acting as an FTP- or SMTP-client is possible. Since FLIR A310 f is Ethernet/IP and Modbus TCP compliant, analysis and alarm results can easily be shared to a PLC. Digital inputs/outputs are available for alarms and control of external equipment. An image masking function allows you to select only the relevant part of the image for your analysis.

DESIGNED FOR USE IN HARSH ENVIRONMENTS

A310 f is an extremely rugged system that meets IP66 requirements, protecting the camera from dust and water. Automatic heaters keep the camera window clear from ice so the system can continue working in temperatures down to –25°C (–13°F).

SPECIFICATIONS

System Overview	FLIR A310 f
IR resolution	320 × 240 pixels
Thermal sensitivity/NETD	< 0.05°C @ +30°C (+86°F) / 50 mK
Field of view (FOV)	FLIR A310f 15°: 15° × 11.25° FLIR A310f 25°: 25° × 18.8° FLIR A310f 45°: 45° × 33.8° FLIR A310f 6°: 6° × 4.5° FLIR A310f 90°: 90° × 73°
Minimum focus distance	FLIR A310f 15°: 1.2 m (3.93 ft.) FLIR A310f 25°: 0.4 m (1.31 ft.) FLIR A310f 45°: 0.20 m (0.66 ft.) FLIR A310f 6°: 6° × 4.5° FLIR A310f 90°: 20 mm (0.79 in.)
Focal length	FLIR A310f 15°: 30.38 mm (1.2 in.) FLIR A310f 25°: 18 mm (0.7 in.) FLIR A310f 45°: 9.66 mm (0.38 in.) FLIR A310f 6°: 76 mm (3.0 in.) FLIR A310f 90°: 4 mm (0.157 in.)
Spatial resolution (IFOV)	FLIR A310f 15°: 0.82 mrad FLIR A310f 25°: 1.36 mrad FLIR A310f 45°: 2.45 mrad FLIR A310f 6°: 0.33 mrad FLIR A310f 90°: 6.3 mrad
Lens identification	Automatic
F-number	1.3
Imaging and optical data	
Image frequency	30 Hz
Focus	Automatic or manual (built in motor)
Zoom	1–8× continuous, digital, interpolating zooming on images
Detector data	
Detector type	Focal Plane Array (FPA), uncooled microbolometer
Spectral range	7.5–13 µm
Detector pitch	25 µm
Detector time constant	Typical 12 ms
Measurement	
Object temperature range	–20 to +120°C (–4 to +248°F) 0 to +350°C (+32 to +662°F)
Accuracy	±4°C (±7.2°F) or ±4% of reading
Measurement analysis	
Spotmeter	10
Area	10 boxes with max./min./average/position
Isotherm	1 with above/below/interval
Measurement option	Measurement Mask / Filter Schedule response: File sending (ftp), email (SMTP)
Difference temperature	Delta temperature between measurement functions or reference temperature
Reference temperature	Manually set or captured from any measurement function
Atmospheric transmission correction	Automatic, based on inputs for distance, atmospheric temperature and relative humidity
Optics transmission correction	Automatic, based on signals from internal sensors
Emissivity correction	Variable from 0.01 to 1.0
Reflected apparent temperature correction	Automatic, based on input of reflected temperature
External optics/ windows correction	Automatic, based on input of optics/window transmission and temperature
Measurement corrections	Global and individual object parameters
Alarm	
Alarm functions	6 automatic alarms on any selected measurement function, Digital In, Camera temperature, timer
Alarm output	Digital Out, log, store image, file sending (ftp), email (SMTP), notification

Ethernet	
Ethernet	Control, result and image
Ethernet, type	100 Mbps
Ethernet, standard	IEEE 802.3
Ethernet, connector type	RJ-45
Ethernet, communication	TCP/IP socket-based FLIR proprietary
Ethernet, video streaming	MPEG-4, ISO/IEC 14496-1 MPEG-4 ASP@L5
Ethernet, image streaming	16-bit 320 × 240 pixels @ 7-8 Hz- Radiometric
Ethernet, power	Power over Ethernet, PoE IEEE 802.3af class 0
Ethernet, protocols	Ethernet/IP, Modbus TCP, TCP, UDP, SNTP, RTSP, RTP, HTTP, ICMP, IGMP, ftp, SMTP, SMB (CIFS), DHCP, MDNS (Bonjour), uPnP
Set-up	
Color palettes	Color palettes (BW, BW inv, Iron, Rain)
Set-up commands	Date/time, Temperature°C/°F
Storage of images	
Storage media	Built-in memory for image storage
File formats	Standard JPEG, 16-bit measurement data included
Digital input/output	
Digital input, purpose	Image tag (start/stop/general), Input ext. device (programmatically read)
Digital input	2 opto-isolated, 10–30 VDC
Digital output, purpose	As function of ALARM, Output to ext. device (programmatically set)
Digital output	2 opto-isolated, 10–30 VDC, max 100 mA
Digital I/O, isolation voltage	500 VRMS
Digital I/O, supply voltage	12/24 VDC, max 200 mA
Digital I/O, connector type	6-pole jackable screw terminal
Power system	
External power operation	The camera operates on 12/24 VDC, 9 W max. (allowed range: 10-30 VDC) and heaters on 24 VDC, 25 W max. In total: 34 W.
External power, connector type	2-pole jackable screw terminal
Voltage	Allowed range 10–30 VDC
Environmental data	
Operating temperature range	–25°C to +50°C (–13°F to +122°F)
Storage temperature range	–40°C to +70°C (–40°F to +158°F)
Humidity (operating and storage)	IEC 60068-2-30/24 h 95% relative humidity +25°C to +40°C (+77°F to +104°F)
EMC	• EN 61000-6-2 (Immunity) • EN 61000-6-3 (Emission) • FCC 47 CFR Part 15 Class B (Emission)
Encapsulation	IP 66 (IEC 60529)
Bump	5 g, 11 ms (IEC 60068-2-27)
Vibration	2 g (IEC 60068-2-6)
Physical data	
Weight	5 kg (11.0 lb.)
Size (L × W × H)	460 × 140 × 159 mm (18.1 × 5.5 × 6.3 in.)
Housing material	Aluminum
System features	
External power operation (heater)	24 VDC, 25 W max.
External power, connector type (heater)	2-pole jackable screw terminal
Voltage (heater)	Allowed range 21-30 VDC
Automatic heaters	Clears window from ice
Shipping information	
List of contents	Cardboard box, Infrared camera with lens and environmental, housing, FLIR Sensors Manager download card, FLIR Tools & Utilities CD-ROM, Lens cap, Printed documentation, Small accessories kit, User documentation CD-ROM

Specifications are subject to change without notice. For the most up-to-date specs, go to www.flir.com

CORPORATE HEADQUARTERS
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27700 SW Parkway Ave.
Wilsonville, OR 97070
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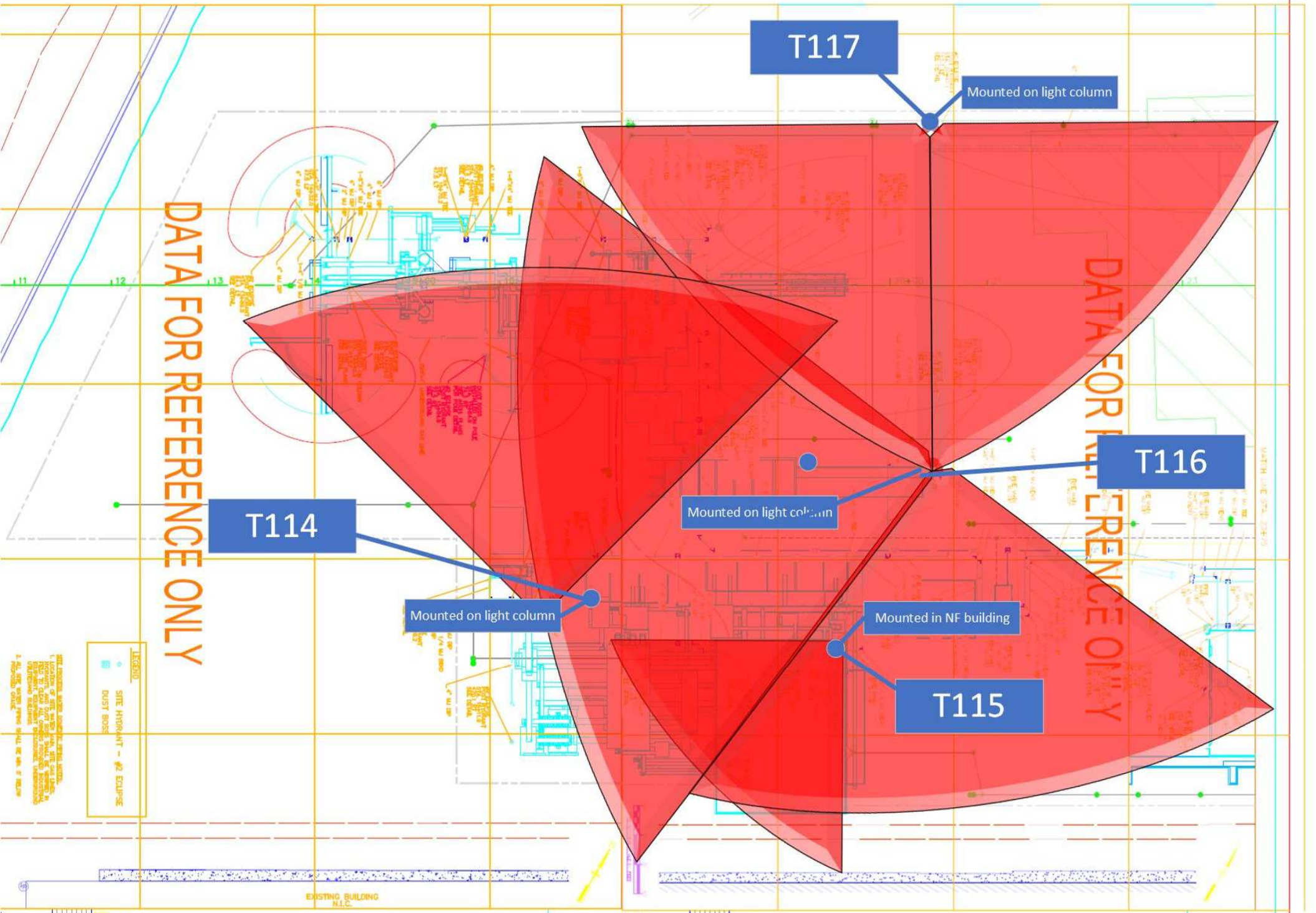
3430 South Service Road, Suite 103
Burlington, ON L7N 3J5
Canada
PH: +1 800.613.0507

www.flir.com
NASDAQ: FLIR

17-1683-INS-AUT

FLIR® | The World's Sixth Sense®


T117
Mounted on light column
T116
Mounted on light column
T114
Mounted on light column
Mounted in NF building
T115
DATA FOR REFERENCE ONLY
DATA FOR REFERENCE ONLY
LEGEND
SITE HYDRANT - #2 ECLIPSE
DUST BOSS
EXISTING BUILDING
N.I.C.

Procedures Upon Fire Rover Alarm Notification

Upon receiving notification from Fire Rover's operator of a high rate of temperature rise, or evidence of a fire, the following actions are taken:

1. The supervisor notifies all personnel having 2-way radios of the location of the potential hotspot.

2. Assessment of the hotspot is made.

3. If a material handler is required to segregate the hotspot, it is immediately brought to the area.

4. A water truck is immediately brought in close proximity to the hotspot and it begins wetting down the hotspot.

5. Personnel with fire hoses and fire extinguishers report to the area and begin spraying the hotspot with water. Personnel with the fire extinguishers remain in place ready to extinguish the hotspot as directed.

6. A larger foam extinguishing agent, supplied by Fire Rover, is immediately brought to the hotspot and is ready to be deployed at the hotspot as directed.

7. Upon extinguishing the hotspot, personnel remain in the area for an extended period maintaining a fire watch and spraying water on the hotspot.

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment AA

Vector Management Services Letter

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Smithereen Pest Management
7400 N. Melvina Ave. Niles, IL 60714 847-647-0010 Fax: 847-647-0606 www.smithereen.com

Southside Recycling

11600 S. Burley Ave

Chicago IL, 60617-7201

1/4/2021

To whom it may concern:

Smithereen Pest Management is working with Southside Recycling in creating a vector control program for the following location listed above. This includes Surveillance/Capture of rodents (mice and rats) and insects(common ants, beetles, roaches and occasional invaders). Smithereen will be providing treatment to decrease and eliminate populations that are Surveillanced and Captured. Devices will be placed outside of the building structures and inside the building structures with a barcode. During services these barcodes will be scanned and proper information will be inputted into the technicians handheld to record accurate Surveillance and Captures from the stations. Reports will be available to show trend analysis of the stations and populations. Service reports will be provided after each service.

Chris Magnuson
Branch Manager
630-688-9629

RK
& Associates. Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment BB

Vehicle Operating Plan

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Vehicle Operating Plan

All vehicles in the Vehicle Operating Plan perform various roles to support the production equipment. Vehicles will be located throughout the operation as managers determine need based upon the production and/or maintenance activities at any given time.

Front end loaders will prioritize areas where larger volume of materials are produced such as scrap unloading area, ferrous discharge, residue discharge and non-ferrous feeder. The loaders will be used to push material as well as load trucks and feeder. A typical loader bucket is 5-9 cubic yards.

Skid Steers will operate in tighter areas where loaders are not practical, such as underneath structures and will typically prioritize clean up areas, moving small amounts of material to be re-processed. A typical skid steer bucket is < 0.5 cubic yard.

Forklifts will operate in areas where material or maintenance parts are boxed or skidded. This will typically be around the mill, around maintenance building and in the non-ferrous building.

Two Fuel Trucks have capacity of 4,000 and 4,500 gallons, while two Water Trucks both have 2,000 gallon capacity. Maintenance Truck and Sweeper are also used to support the activities of the Facility as required. The Fuel Trucks will be located near the Maintenance Building and be used to fuel that equipment that is not practical to move to and from its operating area due to unnecessary wear and tear on the equipment, ground surface, waste of time and fuel. Water Trucks, Sweeper and Maintenance Truck will also be located near the Maintenance Building and be used as managers dictate to maintain equipment and manage cleanliness and dirt on roadway surfaces.

It is the company policy that all operators will exhibit proficiency in operation and/or go through company training program. Operators will perform Daily Inspection Checklist and maintenance professionals will perform preventative maintenance based on upon hours of operation of each vehicle but no less than 200 hours.

RK & Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment CC

Shredder Fluff Analytical Results

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Republic Services

18500 N. Allied Way, Phoenix, AZ 85054

SPECIAL WASTE DEPARTMENT DECISION

	Waste Profile #	Expiration Date	
	4718Y116276	1/31/2021	

I. Decision Request: ☐ Initial ☑ Recertification ☐ Change

Disposal Facility: 4718 - Newton Co. L/F

Generator Name: GII, LLC

Generator Site Address: 1909 N. Clifton

City: Chicago	County:	State: IL	Zip:

Name of Waste: Shredder Fluff Residue

Estimated Annual Volume: 180,000 Tons

II. Special Waste Department Decision: ☑ Approved ☐ Rejected

Management Method(s): ☑ Landfill ☐ Solidification ☐ Bioremediation ☐ Deep Well ☐ Transfer Facility

Problematic Special Waste according to Republic? ☐ Yes ☑ No

If yes, which one?

Approved by Special Waste Review Committee? ☐ Yes ☐ No ☑ Not Applicable

Precautions, Conditions or Limitations on Approval

The generator must supply Total PCBs (reported as mg/kg dry), TCLP 8 RCRA metals testing semi-annual basis. The next sample must be taken between 8/15/2020 and 12/30/2020. A completed Recertification form must accompany the semi-annual analytical and be submitted to the Special Waste Group prior to 1/31/2021.

Special Waste Analyst Signature: _____ **Name (Printed):** Suzanne Glass

Date: 8/18/2020

III. Facility Decision: ☐ Approved ☐ Rejected

Precautions, Conditions or Limitations on Approval

By signing below, the General Manager or Designee agrees that a fully executed Special Waste Service Agreement is on file for this profile and that the special waste file is complete.

General Manager or Designee: _____ **Name (Printed):** _____

Date: 8/18/2020

Special Waste Profile - Recertification

Disposal Facility: 4718 Newton County Landfill IN

Waste Profile #: 4718Y116276

Sales Rep #:

I. Generator Information

Generator Name: GII, LLC

Generator Site Address: 1909 N. Clifton Avenue

City: Chicago County: Cook State: Illinois Zip: 60614

State ID/Reg No: State Approval/Waste Code: NAICS: 423930

Generator Mailing Address ☐ (if different)

City: County: State: --Select State-- Zip:

Generator Contact Name: Adam Labkon Email: AdamLabkon@general-iron.com

Phone Number: 773-619-1444 Ext: Fax Number: 773-327-8732

II. Waste Stream Information

Name of Waste: ASR

Check Section 1 or 2 below

1. ☐ ***There has been a change*** in the characteristics of the waste stream due to the following:
   a. Change of a raw material used in the waste generating process.
   b. Change in the waste generating process itself.
   c. Change in a physical characteristic of the waste.
   d. New information has been documented concerning the human health effects of exposure to the waste.

   If any of these changes have occurred, a new profile sheet must be completed, and new analysis and/or SDS must be provided as appropriate.

2. ☑ ***There have been no changes*** that would alter the physical characteristics of the special waste stream. Updated analytical may be required.

III. Representative Sample Certification

☐ **No Sample Taken**

☑ **Sample Taken** **Type of Sample** Composite Sample

Is the representative sample collected to prepare this profile and laboratory analysis, collected in accordance with U.S. EPA 40 CFR 261.20(c) guidelines or equivalent? ☑ **Yes** ☐ **No**

Sample Date: 8/12/20

Sample ID Numbers: L1250087-01; L1250082-01; L1250082-02; L1250065-01

Special Waste Profile - Recertification

REPUBLIC SERVICES

IV. Certification

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true, complete and accurate description of the waste material being offered for disposal and all known or suspected hazards have been disclosed. All Analytical Results/Material Safety Data Sheets submitted are truthful and complete and are representative of the waste.

I further certify that by utilizing this profile, neither myself nor any other employee of the company will deliver for disposal or attempt to deliver for disposal any waste which is classified as toxic waste, hazardous waste or infectious waste, or any other waste material this facility is prohibited from accepting by law. I shall immediately give written notice of any change or condition pertaining to the waste not provided herein. Our company hereby agrees to fully indemnify this disposal facility against any damages resulting from this certification being inaccurate or untrue.

I understand that attaching an electronic signature, I am signing this document, consent to complete this transaction and receive all related communication electronically, and agree this document will be binding as though I had physically signed it. A printout of this document may be accepted with the same authority as the original."

If electronic signature is preferred, please submit completed (unsigned) form to your Special Waste Coordinator or Special Waste Sales Executive to initiate signature process.

I further certify that the company has not altered the form or content of this profile sheet as provided by Republic Services.

Jim Kallas	Environmental Manager	GII, LLC
Authorized Representative Name (Printed)	Title (Printed)	Company Name

	8/18/20
Authorized Representative Signature	Date

Industrial Environmental Consultants, LLC
2603 Fessey Park Road • PO Box 40066
Nashville, Tennessee 37204
615-730-5059
Website: iecnashville.com

LETTER OF TRANSMITTAL

TO:	Mr. Mark Weintraub Reserve Management Group 4550 Darrow Road Stow, OH 44224	DATE:	08/18/20
		PROJECT NO:	19045A
		RE:	General Iron Industries, Inc.

WE ARE SENDING YOU: ☒Attached ☐Previously Faxed ☐Under separate cover

VIA: ☐Overnight ☐2nd Day ☒Regular Mail & Email

THE FOLLOWING ITEMS:
☒Exhibits ☐Shop Drawings ☐Permit Application
☐Reports ☐Survey ☐Change Order
☐Plan ☐Specifications ☐Other:

COPIES	DATE	PGS	DESCRIPTION
1	08/12/20		Exhibit Nos. 1-3: Summary of Analytical Data - Sample A
1	08/12/20		Chain of Custody and Laboratory Result

THESE ARE TRANSMITTED as checked below:

☐For approval ☐Approved as submitted ☐Resubmit copies for approval
☒For your use ☐Approved as noted ☐Submit copies for distribution
☐As requested ☐Returned for correction ☐Return corrected prints
☐For your information ☐Returned report

REMARKS:

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Attorney Work Product and
Attorney Client Communication

COPY TO:

SIGNED: J. Claiborne Thornton, III
J. Claiborne Thornton, III, P.E.
President

ph

If enclosures are not as indicated, kindly notify us at once.

EXHIBIT NO. 1

GENERAL IRON INDUSTRIES, INC.
CHICAGO, ILLINOIS

SUMMARY OF ANALYTICAL DATA
SHREDDER RESIDUE MONITORING
TOXICITY CHARACTERISTIC LEACHING PROCEDURE

AUGUST 12, 2020

PARAMETER	CONCENTRATION	EPA LIMIT
TCLP METALS (mg/L)[1]		
Arsenic	<0.100	5.0
Barium	0.370	100
Cadmium	<0.100	1.0
Chromium	<0.100	5.0
Lead	0.480	5.0
Mercury	<0.0100	0.2
Selenium	<0.100	1.0
Silver	<0.100	5.0

[1] EPA Method 1311

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Attorney Client Communication

INDUSTRIAL ENVIRONMENTAL CONSULTANTS, LLC
Environmental Engineers & Consultants
2603 Fessey Park Road, P. O. Box 40066
Nashville, TN 37204

jw\19045A

EXHIBIT NO. 2

GENERAL IRON INDUSTRIES, INC.
CHICAGO, ILLINOIS

SUMMARY OF ANALYTICAL DATA
SHREDDER RESIDUE MONITORING
CONSTITUENT ANALYSIS (mg/Kg)

AUGUST 12, 2020

PARAMETER	COMP 2,4,9	EPA LIMIT
PCB	1.73	50.0
% Moisture	21.1	N.S.

N.S. - No Standard

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Attorney Work Product and
Attorney Client Communication

INDUSTRIAL ENVIRONMENTAL CONSULTANTS, LLC
Environmental Engineers & Consultants
2603 Fessey Park Road, P. O. Box 40066
Nashville, TN 37204

jw\19045A

EXHIBIT NO. 3

GENERAL IRON INDUSTRIES, INC.
CHICAGO, ILLINOIS

SUMMARY OF ANALYTICAL DATA
SHREDDER WASTE MONITORING
TOXICITY CHARACTERISTIC LEACHING PROCEDURE

AUGUST 12, 2020

PARAMETER	#2	#4	#9	CONCEN-TRATION	EPA LIMIT
TCLP METALS (mg/L)[1]					
Arsenic	<0.100	---	---	<0.100	5.0
Barium	0.370	---	---	0.370	100
Cadmium	<0.100	<0.100	<0.100	<0.100	1.0
Chromium	<0.100	---	---	<0.100	5.0
Lead	0.648	0.398	0.393	0.480	5.0
Mercury	<0.0100	---	---	<0.0100	0.2
Selenium	<0.100	---	---	<0.100	1.0
Silver	<0.100	---	---	<0.100	5.0

[1] EPA Method 1311

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Attorney Client Communication

INDUSTRIAL ENVIRONMENTAL CONSULTANTS, LLC
Environmental Engineers & Consultants
2603 Fessey Park Road, P. O. Box 40066
Nashville, TN 37204

jw\19045A

Industrial Environmental Consultants, LLC
2603 Fessey Park Road, Ste 2
Nashville, Tennessee 37204
Office: 615-730-5059 Fax 615-730-9278

Client Chain of Custody

Project No. 190458

Page ____ of ____

PART I - Generator Information

GENERATOR: GII, LLC

ADDRESS: 1909 N. CLIFTON AVENUE

CITY: CHICAGO STATE: IL ZIP: 60614

SAMPLE POINT(S):

SAMPLER NAME: JIM KALLAS (PRINT) (SIGN)

COMPANY NAME: GII, LLC

PART II - Sample Information

Sample Matrix Codes

DW	Drinking Water	OL	Oil
WW	Wastewater	SL	Sludge
GW	Groundwater	SO	Soil
SW	Stormwater	SR	Shredder residue
SU	Surface water	EC	Eddy current

Sample I.D.	Date	Time	Matrix	Comp	Grab	Requested Analysis									Total No. of Containers
#1	8/12/20	11:55AM													
#2		12:02PM													
#3		12:08PM													
#4		12:21PM													
#5		12:27PM													
#6		12:34PM													
#7		12:41PM													
#8		12:47PM													
#9		12:54PM													
#10		1:00PM													

PART III - Chain of Custody

	Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)
1		8/12/20	9:20PM	
2				
3				
Received for Laboratory By: (Signature)		8/13/20	7:25am	Custody Seals Intact: Yes / No; Temp (°C)
Jennifer West				

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 17, 2020

Privileged and Confidential
Attorney Work Product and
Attorney Client Communication

Industrial Environmental Consultants

Sample Delivery Group:	L1250087
Samples Received:	08/13/2020
Project Number:	19045A
Description:	Shredder Residue (SR)
Report To:	Lab Manager
	PO Box 40066
	Nashville, TN 37204

Entire Report Reviewed By:

Heather J Wagner
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

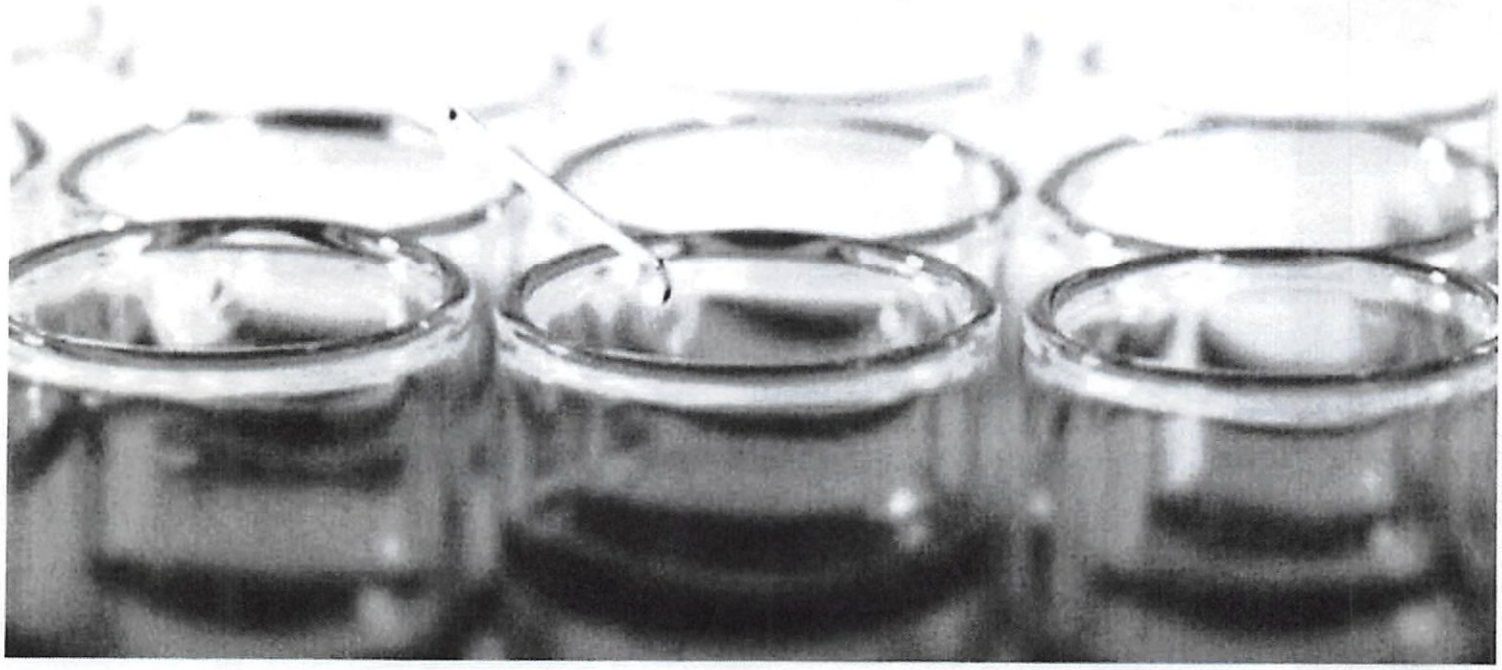

TABLE OF CONTENTS

ONE LAB. NATIONWIDE

	Collected by	Collected date/time	Received date/time
2 L1250087-01 Waste		08/12/20 12:02	08/13/20 14:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1525821	1	08/15/20 21:07	08/15/20 21:07	JGB	Mt. Juliet, TN
Mercury by Method 7470A	WG1527114	1	08/17/20 07:23	08/17/20 14:38	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010C	WG1527184	1	08/17/20 08:43	08/17/20 11:55	CCE	Mt. Juliet, TN

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Attorney Client Communication

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

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Attorney Client Communication

Heather J Wagner
Project Manager

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		8/15/2020 9:07:55 PM	WG1525821
Fluid	1		8/15/2020 9:07:55 PM	WG1525821
Initial pH	9.59		8/15/2020 9:07:55 PM	WG1525821
Final pH	5.19		8/15/2020 9:07:55 PM	WG1525821

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
	mg/l		mg/l	mg/l			
Mercury	ND		0.0100	0.20	1	08/17/2020 14:38	WG1527114

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
	mg/l		mg/l	mg/l			
Arsenic	ND		0.100	5	1	08/17/2020 11:55	WG1527184
Barium	0.370		0.100	100	1	08/17/2020 11:55	WG1527184
Cadmium	ND		0.100	1	1	08/17/2020 11:55	WG1527184
Chromium	ND		0.100	5	1	08/17/2020 11:55	WG1527184
Lead	0.648		0.100	5	1	08/17/2020 11:55	WG1527184
Selenium	ND		0.100	1	1	08/17/2020 11:55	WG1527184
Silver	ND		0.100	5	1	08/17/2020 11:55	WG1527184

Method Blank (MB)

(MB) R3560695-1 08/17/20 14:05

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Mercury	U		0.00330	0.0100

Laboratory Control Sample (LCS)

(LCS) R3560695-2 08/17/20 14:07

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Mercury	0.0300	0.0318	106	80.0-120	

Method Blank (MB)

(MB) R3560610-1 08/17/20 10:58

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Arsenic	U		0.0330	0.100
Barium	U		0.0330	0.100
Cadmium	U		0.0330	0.100
Chromium	U		0.0330	0.100
Lead	U		0.0330	0.100
Selenium	U		0.0330	0.100
Silver	U		0.0330	0.100

Laboratory Control Sample (LCS)

(LCS) R3560610-2 08/17/20 11:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	10.0	9.72	97.2	80.0-120	
Barium	10.0	9.67	96.7	80.0-120	
Cadmium	10.0	9.67	96.7	80.0-120	
Chromium	10.0	9.89	98.9	80.0-120	
Lead	10.0	9.96	99.6	80.0-120	
Selenium	10.0	9.93	99.3	80.0-120	
Silver	2.00	1.87	93.4	80.0-120	

L1250079-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1250079-01 08/17/20 11:03 • (MS) R3560610-4 08/17/20 11:09 • (MSD) R3560610-5 08/17/20 11:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	10.0	ND	9.84	9.87	98.4	98.7	1	75.0-125			0.288	20
Barium	10.0	0.366	10.0	10.1	96.4	96.9	1	75.0-125			0.489	20
Cadmium	10.0	0.103	9.82	9.86	97.1	97.5	1	75.0-125			0.402	20
Chromium	10.0	ND	9.82	9.78	97.7	97.3	1	75.0-125			0.415	20
Lead	10.0	0.791	10.7	10.7	98.7	99.4	1	75.0-125			0.693	20
Selenium	10.0	ND	10.0	10.0	100	100	1	75.0-125			0.154	20
Silver	2.00	ND	1.85	1.84	92.4	92.0	1	75.0-125			0.531	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-05-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

IEC
2603 Fessey Park Road
Nashville, TN 37204
615-730-5059

Billing Information:

Analysis / Container / Preservative

Pres Chk

Pace Analytical

Report to:
Lab Manager

Email To:
lab@indenvconsultants.com

Project Description: Shredder Residue (SR)

City/State Collected: IL

Phone
Fax

Client Project # 19045 A

Lab Project #

L# L250087
D132

Collected by (print):

Site/Facility ID #

P.O. #

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Collected by (signature):

Rush? (Lab MUST Be Notified)
Same Day / Next Day / Two Day / Three Day / Five Day / 5 Day (Rad Only) / 10 Day (Rad Only)

Quote #

Date Results Needed

Immediately Packed on Ice N ___ Y ___

No. of Cntrs

TCLP RCRA Metals

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TCLP RCRA Metals
1	Comp	OT		8/12/20	1200	1	X

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other SR

Remarks:
Please include initial and secondary pH data if applicable. Also include Mass and Volume used for extraction if applicable.

pH ___ Temp ___
Flow ___ Other ___

Samples returned via:
__ UPS __ FedEx __ Courier X

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient Volume Sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Trip Blank Received: Yes (No) HCl / MeoH TBR

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
	8/13/20	12:45	
Relinquished by: (Signature)	Date	Time	Received by: (Signature)
	8-13-20	14:36	
Relinquished by: (Signature)	Date	Time	Received for lab by: (Signature)
			Hussein

Temp: Amb °C Bottles Received: 1

Date: 8-13-20 Time: ~~12:45~~ 1430 TD

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

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Attorney Client Communication

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National Center for Testing & Innovation

ANALYTICAL REPORT

August 17, 2020

Privileged and Confidential
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Attorney Client Communication

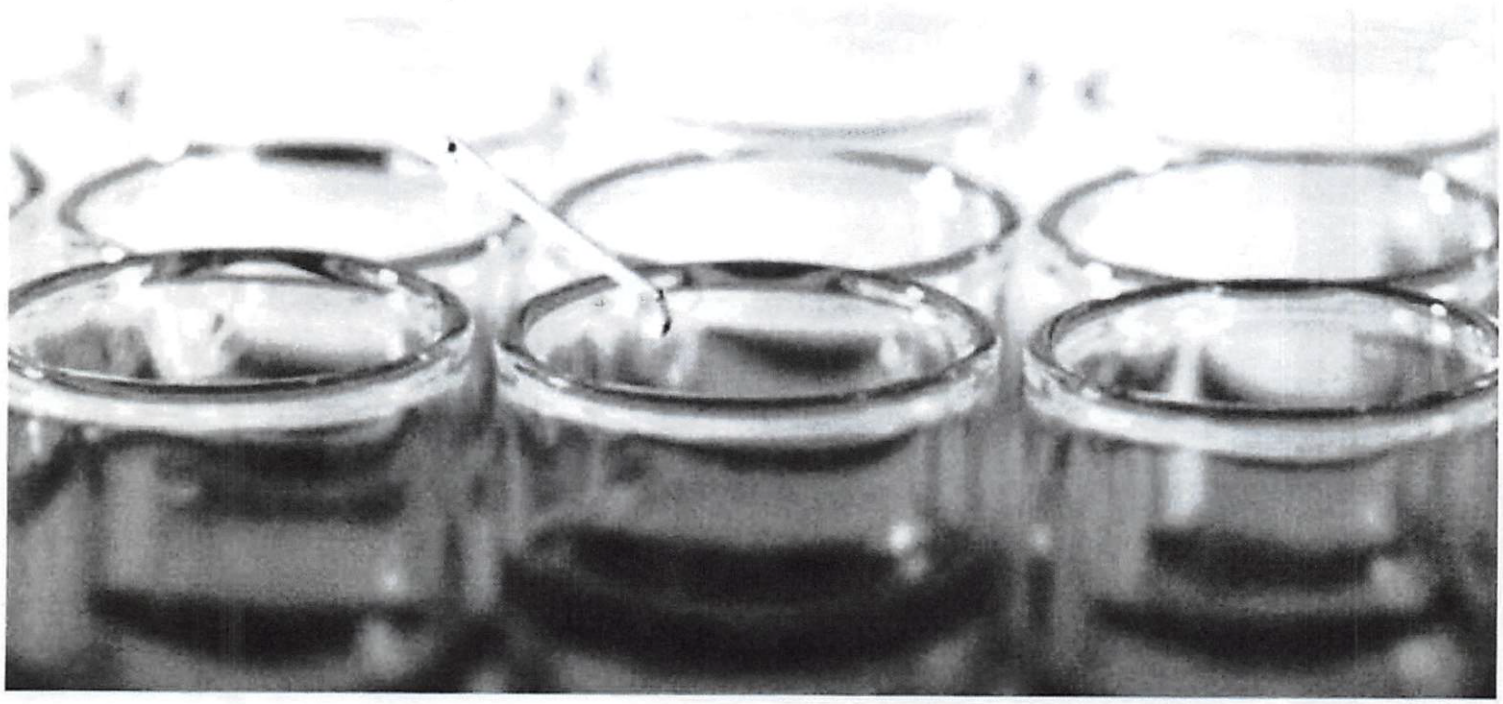
Industrial Environmental Consultants

Sample Delivery Group:	L1250082
Samples Received:	08/13/2020
Project Number:	19045A
Description:	Shredder Residue (SR)
Report To:	Lab Manager
	PO Box 40066
	Nashville, TN 37204

Entire Report Reviewed By:

Heather J Wagner
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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ONE LAB. NATIONWIDE

4 L1250082-01 Waste

			Collected by	Collected date/time	Received date/time	
				08/12/20 12:21	08/13/20 14:30	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1525821	1	08/15/20 21:07	08/15/20 21:07	JGB	Mt. Juliet, TN
Metals (ICP) by Method 6010C	WG1527184	1	08/17/20 08:43	08/17/20 11:24	CCE	Mt. Juliet, TN

9 L1250082-02 Waste

			Collected by	Collected date/time	Received date/time	
				08/12/20 12:54	08/13/20 14:30	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1525821	1	08/15/20 21:07	08/15/20 21:07	JGB	Mt. Juliet, TN
Metals (ICP) by Method 6010C	WG1527184	1	08/17/20 08:43	08/17/20 11:49	CCE	Mt. Juliet, TN

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Attorney Work Product and
Attorney Client Communication

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Heather J Wagner
Project Manager

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		8/15/2020 9:07:55 PM	WG1525821
Fluid	1		8/15/2020 9:07:55 PM	WG1525821
Initial pH	10.29		8/15/2020 9:07:55 PM	WG1525821
Final pH	5.51		8/15/2020 9:07:55 PM	WG1525821

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Cadmium	ND		0.100	1	1	08/17/2020 11:24	WG1527184
Lead	0.398		0.100	5	1	08/17/2020 11:24	WG1527184

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		8/15/2020 9:07:55 PM	WG1525821
Fluid	1		8/15/2020 9:07:55 PM	WG1525821
Initial pH	7.93		8/15/2020 9:07:55 PM	WG1525821
Final pH	5.04		8/15/2020 9:07:55 PM	WG1525821

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
	mg/l		mg/l	mg/l			
Cadmium	ND		0.100	1	1	08/17/2020 11:49	WG1527184
Lead	0.393		0.100	5	1	08/17/2020 11:49	WG1527184

Method Blank (MB)

(MB) R3560610-1 08/17/20 10:58

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Cadmium	U		0.0330	0.100
Lead	U		0.0330	0.100

Laboratory Control Sample (LCS)

(LCS) R3560610-2 08/17/20 11:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Cadmium	10.0	9.67	96.7	80.0-120	
Lead	10.0	9.96	99.6	80.0-120	

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1,6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1,4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

IEC
2603 Fessey Park Road
Nashville, TN 37204
615-730-5059

Billing Information:

Analysis / Container / Preservative

Pres Chk

Pace Analytical

Report to: Lab Manager

Email To: lab@indenvconsultants.com

Project Description: Shredder Residue (SR)

City/State Collected: IL

Phone: Fax:

Client Project # 19045 λ

Lab Project #

L# L1250087

D131

Tab

Collected by (print):

Site/Facility ID #

P.O. #

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Collected by (signature)

Immediately Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TCLP Pb, Cd	
4	Comp	OT		8/12/20	1211	1	X	-01
9	Comp	OT		8/12/20	1254	1	X	-02

* Matrix
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other SR

Remarks:
Please **include initial and secondary pH data if applicable. Also include Mass and Volume used for extraction if applicable.**

pH _____ Temp _____

Flow _____ Other _____

Samples returned via: __ UPS __ FedEx __ Courier X

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive Intact: __Y __N
Correct Bottles Used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
[signature]	8/13/20	12:45	[signature]		
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.6 °C	Bottles Received: 2
[signature]	8-13-20	14:30			If preservation required by Login: Date/Time
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 8-13-20	Time: 1246
			[signature] Hussein		Hold: / Condition NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 14, 2020

Privileged and Confidential
Attorney Work Product and
Attorney Client Communication

Industrial Environmental Consultants

Sample Delivery Group:	L1250065
Samples Received:	08/13/2020
Project Number:	19045A
Description:	Shredder Residue (SR)
Report To:	Lab Manager
	PO Box 40066
	Nashville, TN 37204

Entire Report Reviewed By:

Heather J Wagner
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

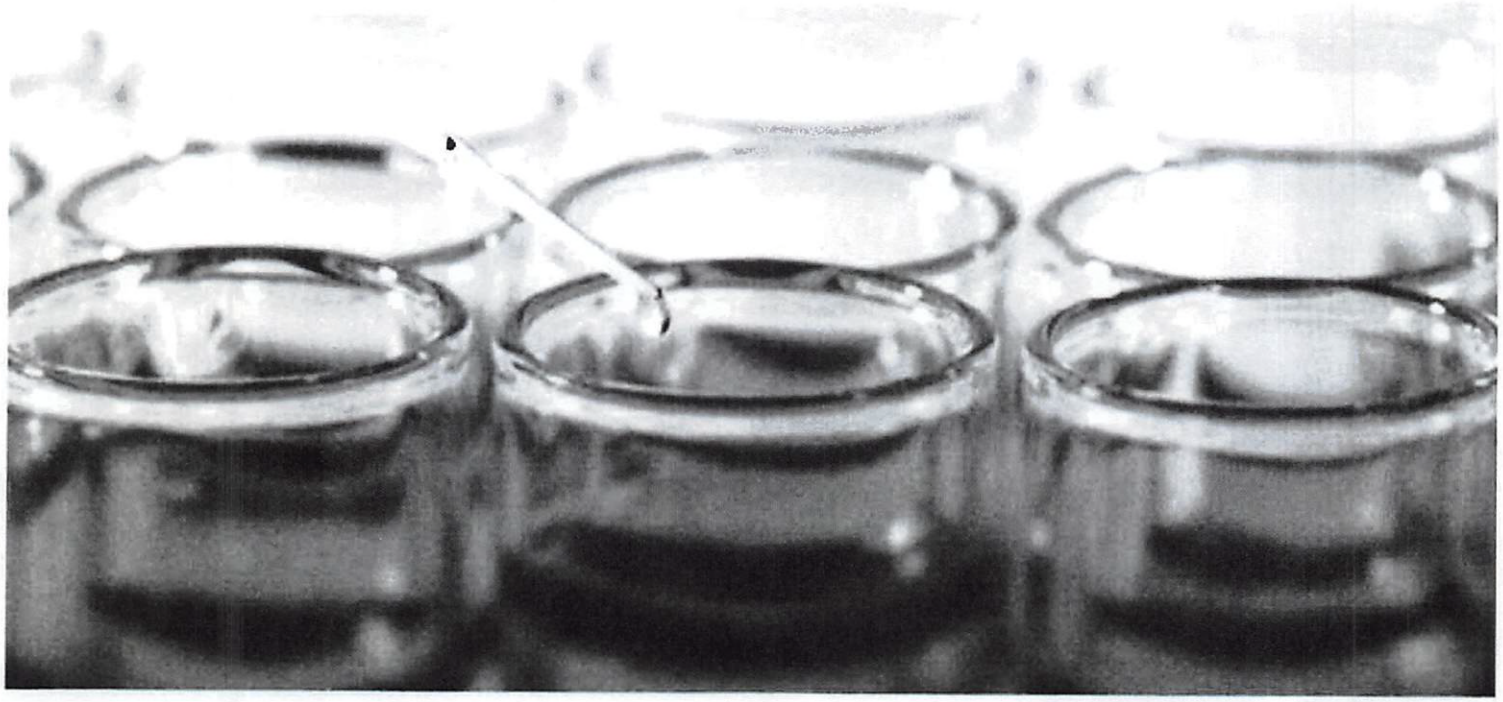

TABLE OF CONTENTS

ONE LAB. NATIONWIDE.

COMP 2,4,9 L1250065-01 Solid

			Collected by	Collected date/time	Received date/time	
				08/12/20 12:02	08/13/20 11:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1525769	1	08/13/20 23:20	08/13/20 23:26	KBC	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1525913	1	08/14/20 10:05	08/14/20 13:33	SSH	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1525913	2	08/14/20 10:05	08/14/20 15:09	SSH	Mt. Juliet, TN

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Attorney Work Product and
Attorney Client Communication

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Privileged and Confidential
Attorney Work Product and
Attorney Client Communication

Heather J Wagner
Project Manager

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	%				
Total Solids	78.9		1	08/13/2020 23:26	WG1525769

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
PCB 1016	ND		0.0431	1	08/14/2020 13:33	WG1525913
PCB 1221	ND		0.0431	1	08/14/2020 13:33	WG1525913
PCB 1232	ND		0.0431	1	08/14/2020 13:33	WG1525913
PCB 1242	1.34		0.0861	2	08/14/2020 15:09	WG1525913
PCB 1248	ND		0.0215	1	08/14/2020 13:33	WG1525913
PCB 1254	0.386		0.0215	1	08/14/2020 13:33	WG1525913
PCB 1260	ND		0.0215	1	08/14/2020 13:33	WG1525913
(S) Decachlorobiphenyl	*49.3*	J2	*50.0-150*		*08/14/2020 13:33*	WG1525913
(S) Decachlorobiphenyl	*43.7*	J2	*50.0-150*		*08/14/2020 15:09*	WG1525913
(S) Tetrachloro-m-xylene	*53.8*		*50.0-150*		*08/14/2020 15:09*	WG1525913
(S) Tetrachloro-m-xylene	*61.0*		*50.0-150*		*08/14/2020 13:33*	WG1525913

Method Blank (MB)

(MB) R3559865-1 08/13/20 23:26

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00100			

L1250071-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1250071-01 08/13/20 23:26 • (DUP) R3559865-3 08/13/20 23:26

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	92.0	95.5	1	3.73		10

Laboratory Control Sample (LCS)

(LCS) R3559865-2 08/13/20 23:26

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3559961-1 08/14/20 12:52

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
PCB 1016	U		0.0118	0.0340
PCB 1221	U		0.0118	0.0340
PCB 1232	U		0.0118	0.0340
PCB 1242	U		0.0118	0.0340
PCB 1248	U		0.00738	0.0170
PCB 1254	U		0.00738	0.0170
PCB 1260	U		0.00738	0.0170
(S) Decachlorobiphenyl	*76.0*			*50.0-150*
(S) Tetrachloro-m-xylene	*83.2*			*50.0-150*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3559961-2 08/14/20 13:05 • (LCSD) R3559961-3 08/14/20 13:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.0625	0.0420	0.0445	67.2	71.2	50.0-150			5.78	37
PCB 1016	0.0625	0.0482	0.0485	77.1	77.6	50.0-150			0.620	35
(S) Decachlorobiphenyl				*77.1*	*80.0*	*50.0-150*				
(S) Tetrachloro-m-xylene				*86.4*	*87.2*	*50.0-150*				

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Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
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Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.

ACCREDITATIONS & LOCATIONS

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Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

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IEC
2603 Fessey Park Road
Nashville, TN 37204
615-730-5059

Billing Information:

Analysis / Container / Preservative

Pace Analytical

Report to: Lab Manager

Email To: lab@indenvconsultants.com

Project Description: Shredder Residue (SR)

City/State Collected: IL

Phone: Fax:

Client Project # 19045 A

Lab Project #

Collected by (print):

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

No. of Cntrs

PCB % DW

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time		
Comp 249	Comp	OT		8/11/20	1202	2	X

L# 11250065
D128

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Remarks | Sample # (lab only)
-01

* Matrix
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Biosolids
WW - WasteWater
DW - Drinking Water
OT - Other SR

Remarks:
Please include initial and secondary pH data if applicable. Also include Mass and Volume used for extraction if applicable.

pH ____ Temp ____
Flow ____ Other ____

Samples returned via:
__ UPS __ FedEx __ Courier X

Tracking #

Trip Blank Received: Yes / No
HCL / MeoH
TBN

Temp: Amb °C Bottles Received: 2

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Relinquished by (Signature)	Date	Time	Received by: (Signature)
	8-13-20	11:45	
Relinquished by (Signature)	8-13-20	14:30	Received by: (Signature)
Relinquished by (Signature)	Date	Time	Received for lab by: (Signature)
			ISA Hussein

Date: 8-13-20 Time: 1145 1430 TD

Privileged and Confidential
Attorney Work Product and
Attorney Client Communication

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment DD

IEPA Fugitive Particulate Operating Program

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RK
& Associates, Inc.

June 25, 2020

R17421-7.2

Mr. Eric Jones
Illinois Environmental Protection Agency - Bureau of Air
1021 North Grand Avenue East
Springfield, IL 62702

Revised Fugitive Particulate Operating Program for a
Scrap Metal Recycling Facility
General III, LLC – 11600 South Burley - Chicago, Illinois

Dear Mr. Jones:

Please find attached a revised copy of the Fugitive Particulate Operating Program for the proposed General III, LLC (GIII) Scrap Metal Recycling Facility located in Cook County at 11600 South Burley Avenue in Chicago, Illinois. This revised copy of the Program addresses comments received from IEPA on June 19 and 24, 2020.

An electronic copy of the above referenced document has also been forwarded to you and Ms. Julie Armitage.

If you have any questions or need any additional information, please don't hesitate to contact us at 630-393-9000.

Yours very truly,
RK & Associates

John G. Pinion
Associate Engineer

cc: Mr. Jim Kallas – General III, LLC – Chicago, Illinois (via e-mail)
Ms. Julie Armitage – IEPA Bureau of Air – Springfield, Illinois (via-e-mail)

2 South 631 Route 59, Suite B
Warrenville, Illinois 60555
(630) 393-9000
Fax (630) 393-9111

Fugitive Particulate Operating Program
General III, LLC –
11600 S Burley Avenue - Chicago, Illinois

June 25, 2020

R17421-7.2

Prepared for:

General III, LLC
1909 North Clifton Avenue
Chicago, Illinois 60614
Attn: Mr. Jim Kallas

Prepared by:

John G. Pinion
Principal Engineer
RK & Associates, Inc.

RK & Associates Inc

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Warrenville, Illinois 60555
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RK & Associates, Inc.

1.0 INTRODUCTION

This Fugitive Particulate Operating Program (Program) has been prepared for the General III, LLC (GIII) scrap metal recycling facility as a condition of Illinois Environmental Protection Agency (IEPA) Construction Permit No. 19090021.

GIII is a recycling facility (Facility) located in an existing established industrial district. GIII is configured to process 1,000,000 tons per year of shreddable recyclables in various forms to produce uniform grades of ferrous and non-ferrous metals. Proposed scrap handling and processing activities include raw material receiving, sorting, shredding, metal separation, recovery of ferrous and non-ferrous metals, and shipment of finished products to customers.

The objective of this Program is to identify, monitor, and treat (as may be necessary) sources of Visible Emissions (defined in Section 1.3). GIII is implementing this Program to meet applicable regulatory standards.

1.1 Facility Location and Contact Information

Business Name:	General III, LLC
Source Location:	11600 South Burley – Chicago, Illinois 60617 Hyde Park Township, Cook County Illinois
Latitude/Longitude	41.685201° N / -87.545847" W – Approximate Location of Front Gate
Office/Mailing Address:	1909 N. Clifton Avenue – Chicago, Illinois 60614
Authorized Representative Responsible for this Program:	Mr. Jim Kallas – Environmental Manager 847-508-9170 – jimkallas@general-iron.com
IEPA Site ID No.:	031600SFX
SIC Code:	5093 – Scrap and Waste Materials
NAICS Code:	423930 – Recyclable Material Merchant Wholesalers

1.2 Regulatory Requirements

1.2.1 General Limitation for Fugitive Particulate Matter – 35 IAC 212.301

GIII is subject to the general limitation for fugitive particulate matter identified in 35 IAC 212.301, which requires that:

No person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally toward the zenith at a point beyond the property line of the source.

1.2.2 Requirement to Prepare and Implement a Fugitive Particulate Operating Program

Pursuant to 35 IAC 212.302, a Fugitive Particulate Operating Program is required for any facility with operations belonging to specified groups of Standard Industrial Classification (SIC) Codes **and** that are located within a specified area. GIII is located in Cook County, which is a specified area under 35 IAC 212.302; however, GIII's SIC Code (5093 Scrap and Waste Materials) is **not** among the specified SIC codes. Therefore, GIII is not subject to a requirement to have a Fugitive Particulate Operating Program.

Although not required by regulations, this Fugitive Particulate Operating Program establishes the best management practices that will be used to minimize potential Visible Emissions and ensure compliance with 35 IAC 212.301.

1.3 Definition of Visible Emissions

For the purposes of this Program, "Visible Emissions" means the existence of visible fugitive particulate matter emissions that threaten to cross the Industrial Campus Boundary.

Visible Emissions do not include steam (water vapor), engine combustion exhaust, and particulate matter emitted from permitted exhaust stacks with or without a pollution control device because each permitted exhaust point has a separate opacity limit and particulate mass emission limit included in the facility construction/operation permit.

1.4 Industrial Campus Boundaries

For the purposes of this Program, the "property line" as referenced in 35 IAC 212.301, is the boundary of the existing Industrial Campus located at 11600 South Burley Avenue in Chicago, Illinois identified in Figure 2-2 (Industrial Campus Boundary).

2.0 FACILITY SITE MAP

The location of GIII is shown on Figures 2-1 and 2-2. GIII operates on approximately 25 acres within the Industrial Campus. Four other affiliated material recycling businesses are located within the Industrial Campus. Combined emissions from these other businesses qualify for, and are currently registered under, IEPA's Registration of Smaller Source (ROSS) Program.

The GIII scrap metal recycling facility is shown on Figure 2-3. The Facility Site Map indicates the locations of the Facility boundaries, buildings, location of material handling and processing areas, shredder enclosure, shredder emission control system, stockpiles, truck scales and facility vehicle entrance.

When initially constructed the Facility surface area will be comprised of 62% concrete and asphalt pavement and 8% stormwater retention pond. The remaining area includes ancillary support buildings, green space and unpaved surface consisting compacted asphalt gravel, asphalt grindings or similar materials.

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3.0 FACILITY OPERATIONS AND APPLICATION OF BEST MANAGEMENT PRACTICES FOR MITIGATION OF VISIBLE EMISSIONS

Raw materials are delivered to the facility from a variety of sources including retail, commercial/industrial accounts via trucks or contract haulers and peddlers via peddler vehicles. Peddlers and semi-trucks entering the facility first pass through a truck scale.

Semi- trucks are then directed to a material staging area near the raw material stockpiles. Designated Facility personnel inspect all loads for unauthorized materials in accordance with Facility procedures. In this regard, the facility is subject to a Feed Stock Management Plan requirement in the facility construction permit. After unloading, the semi-trucks and peddler vehicles exit the Facility after passing over the appropriate truck scale.

The shredding process produces ferrous metal and Automobile Shredder Residue (ASR) which contains non-metallic material, non-ferrous metal and a limited amount of ferrous metal. Ferrous metal is processed to remove non-metallic material through a series of material handling steps in the Ferrous Metal Processing system to produce clean ferrous metal.

The ASR is directed to a stockpile for temporary storage prior to processing. ASR is transferred a short distance from the ASR stockpile to the Non-Ferrous Metal Processing system using a rubber-tired loader. ASR is processed by a variety of advanced material handling and separation equipment in the Non-Ferrous Metal Processing system to recover various sizes and grades of non-ferrous metals. Non-metallic material removed by the Non-Ferrous Metal Processing system is directed to a stockpile prior to being loaded into semi-trucks for off-site disposal at an appropriately licensed landfill.

Wherever the information in this Section 3 references application of water for mitigation of Visible Emissions, the following limitations are applicable:

- Application of water will be limited following precipitation events exceeding 0.1 inches.
- Application of water cannot be performed when temperatures are near or below freezing because water application will create unsafe conditions. During these time periods, the facility will lower the posted speed limit to 5 mph.

Table 3-1 summarizes facility operations with the potential to generate Visible Emissions and the Best Management Practices (BMPs) that will be utilized to achieve compliance with 35 IAC 212.301. For the purposes of this Program, compliance with 35 IAC 212.301 is determined at the Industrial Campus Boundary. Detailed descriptions of the BMPs are presented in Section 4.0.

Table 3-1 – Summary of Facility Operations and Best Management Practices for Mitigation of Visible Emissions

Operation	Best Management Practices					
	Inspections/ Observations	Water Atomizing Dust Bosses	Sweeping/ Watering of Paved Areas	Watering of Unpaved Areas	Additional BMPs	As Described in Section
Raw Material Unloading/Handling	X	X	X		Feed Stock Management Plan	3.1
Material Transfer Points	X	X			Conveyor covers on selected conveyors	3.2
Intermediate and Product Stockpiles	X	X	X		Partial enclosures (side walls) on selected stockpiles	3.3
Fluff Storage and Loadout	X	X	X		Fluff storage bin with steel walls on three sides and equipped with a cover.	3.4
Material Loadout	X		X		Water spray	3.5
Traffic Areas – Paved Areas	X	X	X		Water Truck, Sweeper, and vehicle speed limit of 10 mph	3.6
Traffic Areas – Unpaved Areas	X	X		X	Water Truck, Sweeper, and vehicle speed limit of 10 mph	3.7
Employee Parking	X		X	X	Speed bumps and speed limit signs to limit speed to 10 mph.	3.8
Vehicle Tarping					Trailers of outbound Fluff will be tarped.	3.9
Barge Loading	X				Specially designed chute extending downward from end of conveyor. When using mobile equipment drop distances will be reduced and water will be applied to material prior to loading.	3.10
Rail Car Loading	X				Minimize drop distance. Water material prior to loading.	3.11
Industrial Campus Boundary	X				Identify the source(s) of Visible Emissions and take corrective actions as described herein.	3.12

3.1 Raw Material Unloading/Handling

Raw scrap in bulk trucks (semi-trailers) is dumped on the ground near the shredder infeed conveyor where cranes equipped with magnets or grapples sort through the material and place it on a raw material stockpile or onto the shredder infeed conveyor of the shredder. These or other cranes equipped with magnets or grapples then transfer the material from the stockpiles to the shredder infeed conveyor.

The space available for stockpiling raw material is limited, and therefore, the material is typically processed within several days of its receipt. The raw material stockpiles will not be used for long term storage.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations of each raw material unloading and handling area for the presence of Visible Emissions three times per day and record the results on a Visible Emissions Observation and Control (VEOC) form. If Visible Emissions are identified, observers will notify the Facility Manager who will be responsible for deployment of Visible Emissions mitigation measures.

B. Visible Emissions Mitigation Measures:

i. Dust Boss water atomizers will be positioned to mist the raw material handling area and will be utilized to mitigate Visible Emissions.

ii. Areas adjacent to raw material handling operations will be included in the watering and sweeping of paved areas described in Section 3.8.

3.2 Material Transfer Points

Material will be primarily transported through the Ferrous and Non-Ferrous Material Processing Systems on a series of belt conveyors. A material transfer point is the point at which material from an upstream conveyor is transferred to a downstream conveyor, the point at which an upstream conveyor feeds a piece of processing equipment, or the point at which a piece of processing equipment discharges material onto a takeaway conveyor. Visible Emissions from a transfer point may occur when the material being transferred has a high concentration of fine material and low moisture content.

Figure 3-1 identifies conveyors in the Ferrous Material Processing System that are equipped with covers, which are limited to the ASR takeaway conveyors and the Fluff take away conveyors.

Figure 3-2 identifies conveyors in the Non-Ferrous Material Processing System that are equipped with covers, which include all outside conveyors except those that convey clean metallic products that do not contain material that is subject to becoming Visible Emissions.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations of specific areas that include material transfer points for the presence of Visible Emissions three times per day and record the results on a VEOC form. When Visible Emissions are identified, observers will notify the Facility Manager who will be responsible for deployment of Visible Emissions mitigation measures.

B. Visible Emissions Mitigation Measures:

i. Water will be applied to facility areas with the highest potential for Visible Emissions.

3.3 Intermediate and Product Stockpiles

The space available for stockpiling intermediates and products is limited and, therefore, these materials are typically processed or shipped off site regularly. These stockpiles will not be used for long term storage of materials.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations of material stockpiles for the presence of Visible Emissions once per day at each stockpile with the results recorded on a VEOC form. If Visible Emissions are identified, observers will notify the Facility Manager who will be responsible for deployment of Visible Emissions mitigation measures.

B. Visible Emissions Mitigation Measures:

i. Dust Boss water atomizers will be positioned to mist stockpiles when Visible Emissions are observed.

i. With the exception of the Raw Material stockpiles, the two Ferrous Metal Stockpiles, and the ASR stockpile, all stockpiles identified in facility emission estimates will have solid partitions on three sides.

ii. Areas adjacent to stockpiles will be included in the watering and sweeping of paved areas described in Section 3.8.

3.4 Fluff Storage and Loadout

"Fluff" is the term used to refer to the waste product from the Non-Ferrous Material Processing System.

The Fluff Storage Bin has been designed to mitigate Visible Emissions from the bin. The Fluff Storage Bin is enclosed on three sides by steel walls and on the top with a fixed cover.

One side of the bin is required to be open to allow access for a rubber-tired end loader for material loadout to trucks. The open side of the bin faces west, away from residential areas located east of the facility. A Dust Boss is also located near the west side of the bin to mitigate Visible Emissions.

A rubber-tired end loader is used to transfer fluff from the Fluff Storage Bin to trailers. After the trailers are filled, they are tarped before they leave the facility.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations of the Fluff Storage Bin for the presence of Visible Emissions three times per day and record the results on a VEOC form. At least one of these observations will be made during Fluff loadout. If Visible Emissions are identified, observers will notify the Facility Manager who will be responsible for deployment of Visible Emissions mitigation measures.

B. Visible Emissions Mitigation Measures:

i. A Dust Boss water atomizer, located near the bin, will be used to mist the west side of the bin to mitigate fugitive dust and the material loadout area if Visible Emissions are observed.

ii. Areas adjacent to the Fluff Storage Bin will be included in the watering and sweeping of paved areas described in Section 3.8.

3.5 Truck Loadout

Product loadout occurs when stockpiled material is transferred to trucks using a rubber-tired loader, or material handler.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations of each loadout area that is active at the time the observations are performed. Each active material loadout area is observed for the presence of Visible Emissions three times per day and results are recorded on a VEOC form. If Visible Emissions are identified, observers will notify the Facility Manager who will be responsible for deployment of Visible Emissions mitigation measures.

B. Visible Emissions Mitigation Measures:

i. Water will be applied to material and adjacent loadout areas when Visible Emissions are observed.

ii. Areas adjacent to material loadout activity will be included in the watering and sweeping of paved areas described in Section 3.8.

3.6 Paved Areas

The paved areas with the highest potential for Visible Emissions are the traffic routes used by vehicles delivering raw material or transporting materials from the site.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations of paved vehicle traffic routes for the presence of Visible Emissions and record the results on a VEOC form. The most frequently traveled routes will be observed three times per day and less traveled routes and non-traffic paved areas will be observed once per day. Observation locations will be identified prior to facility startup.

B. Visible Emissions Mitigation Measures:

i. Speed limit signs, limiting vehicle speed to 10 mph, will be posted on vehicle travel routes.

ii. Water will be applied to the most frequently used paved areas at least once per day, subject to the weather conditions identified above. Water will be applied to less frequently traveled routes at a frequency required to mitigate Visible Emissions, subject to weather conditions identified herein. Additional applications may be made in response to Employee Observations.

Operation of the water truck will be documented in a water truck log that will identify the area(s) where water is applied, the approximate amount of water applied, the time of application, the name of the person operating the water truck, and the reason for application (i.e., routine daily application or in response to an Employee Observation). If water is not be applied, the reason will be noted on the VEOC form.

iii. Sweeping of the most frequently traveled routes will occur at least once per day when the facility is operating subject to the weather conditions identified above. Sweeping of less frequently traveled routes will occur at a frequency required to mitigate Visible Emissions, subject to weather conditions identified herein.

Operation of the sweeper will be documented in a sweeper log that will identify the area(s) swept, the date/time sweeping was performed, the name of the person operating the sweeper, and the reason for sweeping (i.e., routine daily sweeping or in response to an Employee Observation). If sweeping is not performed, the reason will be noted on the VEOC form.

iv. Rumble Strips will be installed at the entrance to the outgoing scale to remove loose material from exterior of vehicle trailers and vehicle tires.

The Rumble Strip area will be routinely inspected, and accumulated material removed on a regular basis to ensure effective operation.

3.7 Unpaved Areas

Limited areas within the Facility that are not paved with concrete or asphalt are covered with compacted asphalt grindings or similar material. Visible Emissions from unpaved areas are associated with vehicle use.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations of unpaved areas for the presence of Visible Emissions and record the results on a VEOC form. The most frequently used areas will be observed three times per day and less frequently used areas will be observed once per day. Observation locations will be identified prior to facility startup.

B. Visible Emissions Mitigation Measures:

i. Speed limit signs, limiting vehicle speed to 10 mph will be posted on vehicle travel routes.

ii. Water will be applied to the most frequently used unpaved areas at least once per day subject to the weather conditions identified above. Water will be applied to the less frequently used areas at a frequency required to mitigate Visible Emissions, subject to weather conditions identified herein. Additional applications may be made in response to Employee Observations.

Operation of the water truck will be documented in a water truck log that will identify the area(s) where water is applied, the approximate amount of water applied, the time of application, the name of the person operating the water truck, and the reason for application (i.e., routine daily application or in response to an Employee Observation). If water is not be applied, the reason will be noted on the VEOC form.

iii. If Visible Emissions are observed from unpaved areas during weather conditions that prohibit water application, alternative control measures will be evaluated. Evaluation and potential application of alternative mitigation measures will be based on operating experience and routine observations. Alternative mitigations measures may include but are not limited to minimizing activity in unpaved areas, application of surfactant prior to winter conditions, or placement of additional asphalt grindings or similar material.

3.8 Employee Parking Area

There is administrative parking adjacent to the administration building inside of the Facility. The administrative parking area will be maintained as described in Section 3.8.

There is also an employee parking lot located east of the railroad tracks that parallels the east Industrial Campus Boundary and just north of vacated 116th Street, which is a nonpublic street west of Avenue O used by the Facility under an existing easement agreement.

Because employee vehicles will not routinely enter the facility, material track-in to the parking area will be negligible.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations of the employee parking lot for the presence of Visible Emissions and record the results on a VEOC form. The parking area will be observed once per day when employees are entering or leaving the area. If Visible Emissions are identified, observers will notify the Facility Manager who will be responsible for deployment of Visible Emissions mitigation measures.

B. Visible Emissions Mitigation Measures:

i. The employee parking area will be equipped with speed bumps and speed limit signs will be posted to limit vehicle speeds to 10 mph.

ii. When Visible Emissions are observed, water will be applied to those areas.

Operation of the water truck will be documented in a water truck log that will identify the area(s) where water is applied, the approximate amount of water applied, the time of application, the name of the person operating the water truck, and the reason for application (i.e., routine daily application or in response to an Employee Observation).

iii. Sweeping of the paved areas of the employee parking lot will be performed once per month subject to the weather conditions identified above.

Operation of the sweeper will be documented in a sweeper log that will identify the area(s) swept, the date/time sweeping was performed, the name of the person operating the sweeper, and the reason for sweeping (i.e., routine daily sweeping or in response to an Employee Observation).

3.9 Vehicle Tarping

Tarps are utilized on outgoing Fluff trailers because this material has the potential to become airborne during transport. Fluff trailers are tarped before leaving the Facility.

Based on operating experience, Fluff is the only material, incoming or outgoing, that has the potential to become airborne during transportation. It is not practical to tarp trailers of inbound scrap metal, outbound trailers of shredded metal or other products because these materials do not generate airborne material during transport and, if covered, tarps would be cut or torn by pieces of scrap and further damaged during transport. The Illinois Department of Transportation (IDOT) governs the transport of material on roadways.

Outbound rail cars and barges filled with shredded steel and other products are also not tarped because these materials do not generate airborne material during transport. Outbound trucks, rail cars and barges are all constructed with solid floors and side walls but have open tops to facilitate loading and unloading.

A. Inspections/Observations:

i. Outbound rail cars and trucks leaving the site, including Fluff trailers, are visually inspected by scale operators.

These inspections are part of the normal responsibilities of the scale operators and are not recorded or otherwise documented.

B. Visible Emissions Mitigation Measures:

i. Fluff trailers are tarped before leaving the Facility.

3.10 Barge Loading

Barges will be loaded by a conveyor equipped with a specially designed chute. Barges could also be loaded by mobile equipment, in which case, water will be applied to the material to mitigate potential for Visible Emissions.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations of Barge Loading for the presence of Visible Emissions at least once during the loading of each barge and record the results on a VEOC form. If Visible Emissions are identified, observers will notify the Facility Manager who will be responsible for deployment of Visible Emissions mitigation measures.

B. Visible Emissions Mitigation Measures:

i. When loading barges with a conveyor, the conveyor will be equipped with a specially designed chute extending downward or a water spray to mitigate Visible Emissions.

ii. When loading barges with mobile equipment, drop distances will be minimized and water will be applied to the material to mitigate Visible Emissions.

iii. Areas adjacent to Barge Loading will be included in the watering and/or sweeping of paved and/or unpaved areas described in Sections 3.8 and 3.9.

3.11 Rail Car Loading

Rail cars are loaded by material handlers that include end loaders, grapples, and magnets. Grapple and magnet operators are trained to limit the drop distance of material into the rail cars to minimize the potential for Visible Emissions.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations of Rail Car Loading for the presence of Visible Emissions at least once each day during the loading of rail cars and record the results on a VEOC form. If Visible Emissions are identified, observers will notify the Facility Manager who will be responsible for deployment of Visible Emissions mitigation measures.

B. Visible Emissions Mitigation Measures:

i. Material drop distances will be minimized by grapple and magnet operators to minimize the potential for Visible Emissions.

ii. When loading rail cars with mobile equipment, drop distances will be minimized and water will be applied to the material to mitigate Visible Emissions.

iii. Areas adjacent to Rail Car Loading will be included in the watering and/or sweeping of paved and/or unpaved areas described in Sections 3.8 and 3.9.

3.12 Industrial Campus Boundary Line Observations for Visible Emissions

Observations will be performed at the North, South, East, and West Industrial Campus boundaries.

A. Inspections/Observations:

i. Trained personnel will conduct visual observations at least once per day of the North, South, East and West boundaries of the Industrial Campus for the presence of Visible Emissions and record the results on a VEOC form.

B. Visible Emissions Mitigation Measures

i. If Visible Emissions are noted crossing the Industrial Campus boundary, facility personnel will investigate potential sources of the observed Visible Emissions and take corrective action to mitigate the observed Visible Emissions.

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4.0 RECORDKEEPING

Records will be maintained as required by this Program and the permit.

4.1 Meteorological Data

An onsite meteorological data station (met station) will be installed and operated to record hourly temperature, wind speed, wind direction, barometric pressure, relative humidity, and precipitation amounts. The met station will be centrally located at a minimum height pursuant to applicable USEPA protocols and guidance. Met data will be downloaded and stored electronically at the Facility.

Meteorological data will be recorded and maintained electronically on site. Data will include hourly temperature, wind speed, wind direction, barometric pressure, relative humidity, and precipitation amounts.

4.2 Visible Emissions Observation and Control Form

A Visible Emissions Observation and Control (VEOC) Form will be used to record the results of Visible Emissions observations described in Section 3 and the corresponding mitigation measures applied.

The VEOC form will include the following information:

- Date/Time
- Name of Observer
- Area(s) Observed
  - Time of Observation
  - Visible Emissions Observed – Yes/No
    - Approximate migration distance from source (ft)
  - Mitigation Measures Applied – Yes/No
    - If Yes, identify Mitigation Measures Implemented

4.3 Water Truck Log

The water truck will make routine rounds in the areas identified in Figure 4-2. A log of water truck use will be generated by the operator to record water applications to paved and unpaved areas. This log will include:

- Date/Time
- Reason No Watering Was Performed (if applicable)
- Name of Water Truck Operator
- Reason for Water Application
  - Scheduled, or

  - Corrective Action in response to a Visible Emissions Observation
- Area(s) of Water Application
  - Time of Application
  - Approximate Amount of Water Applied (gallons)

4.4 Sweeper Log

A log of sweeper operation will be generated by the operator to record sweeping events. This log will include:

- Date/Time
- Reason No Sweeping Was Performed (if applicable)
- Name of Sweeper Operator
- Reason for Sweeping
  - Scheduled, or
  - Corrective Action in response to a Visible Emissions Observation
- Area(s) Swept
  - Time of Sweeping

4.5 Dust Boss Water Application

A water meter will be used to document the daily volume of water applied by the Dust Boss system. Figure 4-1 identifies the anticipated location of Dust Bosses.

4.6 Visible Emissions Mitigation Equipment Replacement and Maintenance

Records of replacement or maintenance performed on Visible Emissions mitigation equipment will be performed in accordance with manufacturers recommendations and records will be maintained by the Facility personnel. This information will identify:

- Maintenance performed on the water truck
- Maintenance performed on the sweeper
- Maintenance of Dust Bosses
- Replacement of Dust Bosses or other equipment

4.7 Monthly Inspections of Visible Emissions Mitigation Equipment

Facility personnel will perform monthly visual inspections of the following Visible Emissions mitigation equipment to ensure it is in good operating condition and functioning as intended.

Monthly visual inspections of the following equipment will be performed to ensure these are in good condition.

- Shredder Enclosure
- Ferrous Material Processing System Conveyor Covers
- Non-Ferrous Material Processing System Conveyor Covers
- Fluff Storage Bin
- Barge Loading Chute
- Water application systems

Results of these inspections will be recorded on a form that will include the following information:

- Equipment Being Inspected
- Date/Time of Inspection
- Person Conducting Inspection
- Check List of Equipment Features and Condition (acceptable / unacceptable)
    - Description of unacceptable conditions
- Date of corrective action (if required).
    - Description of Correction Action (if required)

The above referenced checklists will be developed after construction is complete.

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5.0 VOLUNTARY QUARTERLY REPORTING

Although not required, the following information will be reported to the IEPA on a quarterly basis. Quarterly reports will be submitted by the first day of the second month following the end of each calendar quarter.

January through March	Submitted May 1st
April through June	Submitted by August 1st
July through September	Submitted by November 1st
October through December	Submitted by February 1st

Each quarterly report will include the following information:

- Industrial Campus boundary line observation records
- Water Truck Log
- Sweeper Log
- Dust Boss system water application (gal/day)
- Summary of equipment replacement and maintenance of Visible Emissions mitigation equipment.

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6.0 PROGRAM AMENDMENT

This Fugitive Particulate Operating Program shall be amended from time to time so that the operating program is current. Program amendments will be submitted to the Illinois EPA within thirty (30) days of such amendment. Any future revision to this Program made by GIII is automatically incorporated by reference as an enforceable condition of the Facility construction/operation permit, unless it is expressly disapproved, in writing, by the Illinois EPA. In the event that the Illinois EPA notifies GIII of a deficiency with any revision to the Program, GIII will revise and re-submit the Fugitive Particulate Operating Program within thirty (30) days of receipt of notification to address the deficiency.

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RK
& Associates, Inc.

Fugitive Particulate Operating Program

General III, LLC
11600 South Burley
Chicago, Illinois 60614

FIGURES

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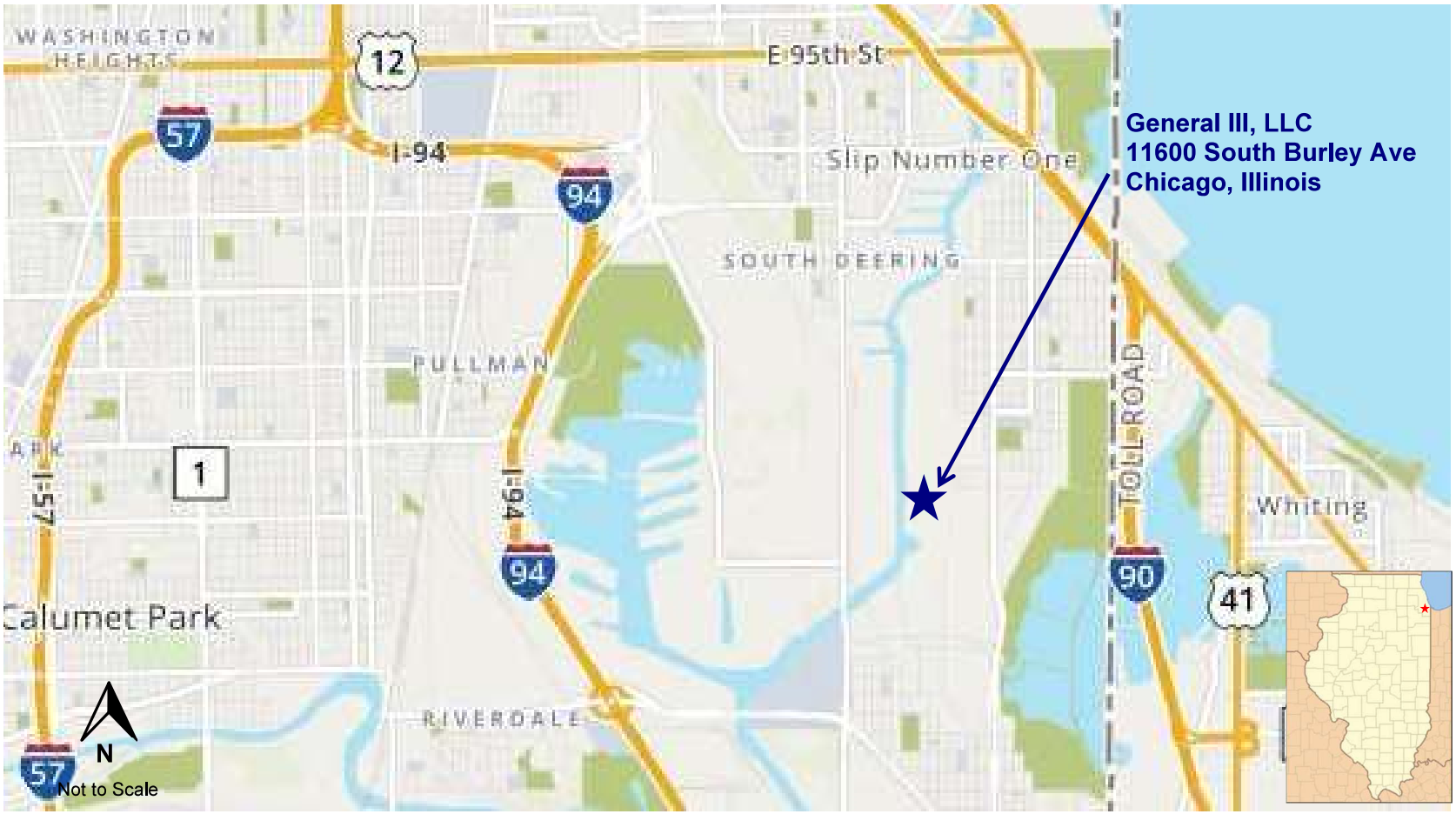


RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	Fugitive Particulate Operating Program	Facility Location Map General III, LLC 11600 South Burley, Chicago, Illinois			2-1
	DRAWN BY::	APPROVED BY:: JGP	PROJECT NUMBER R19439-7.10	DATE DRAWN: 11-01-2019	REVISED DATE

RK & Associates, Inc. 2S631 ROUTE 59, SUITE B WARRENVILLE, IL 60555 630-393-9000/630-393-9111	Fugitive Particulate Operating Program	Facility Layout Map General III, LLC 11600 South Burley, Chicago, IL			2-2
	DRAWN BY:	APPROVED BY: JGP	PROJECT NUMBER: R19439-7.10	DATE DRAWN: 11-01-2019	REVISED DATE

Figure 2-3 GIII Facility Layout
Fugitive Dust Operating Program
General III, LLC
11600 South Burley Avenue
Chicago, Illinois

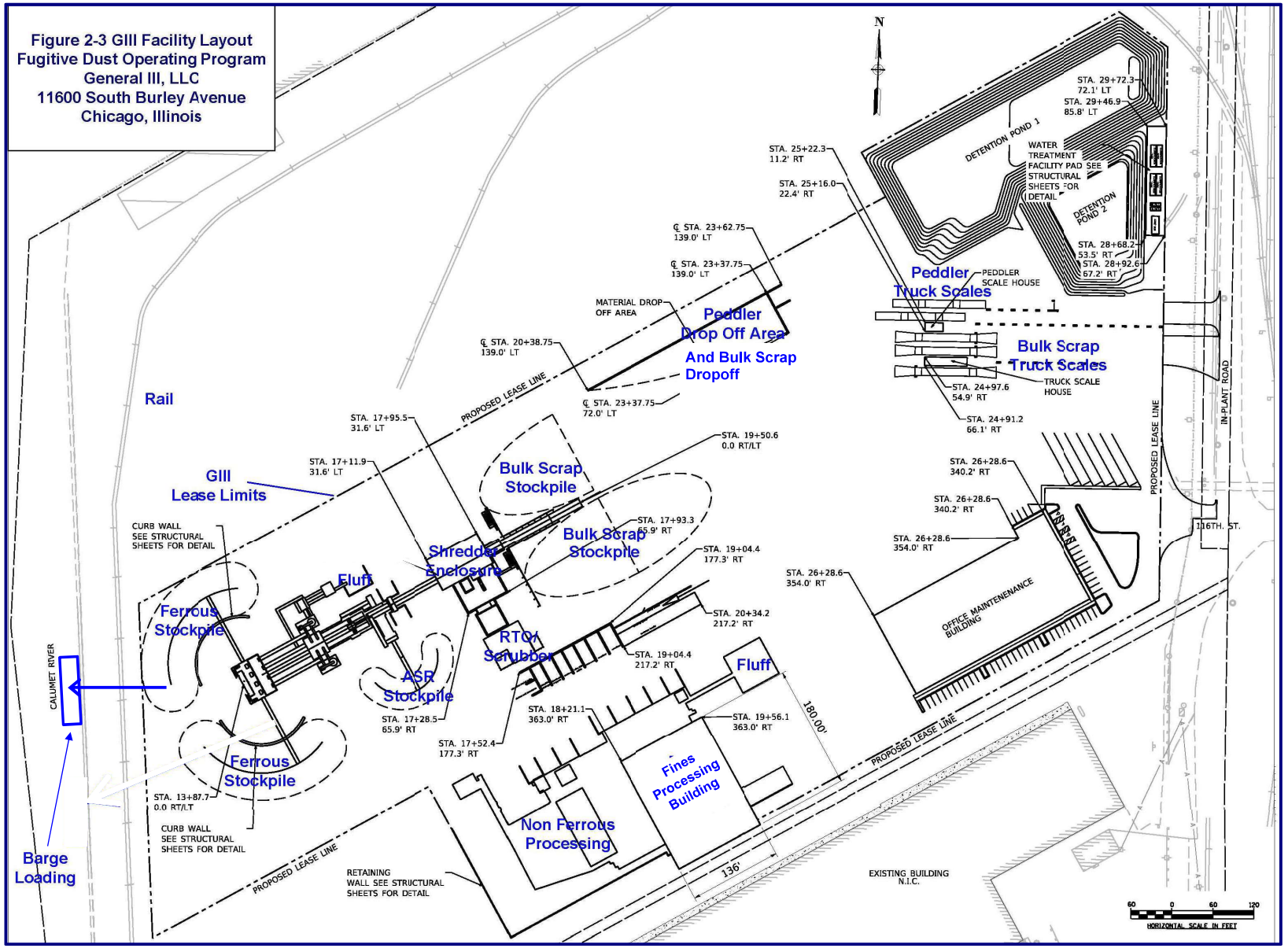
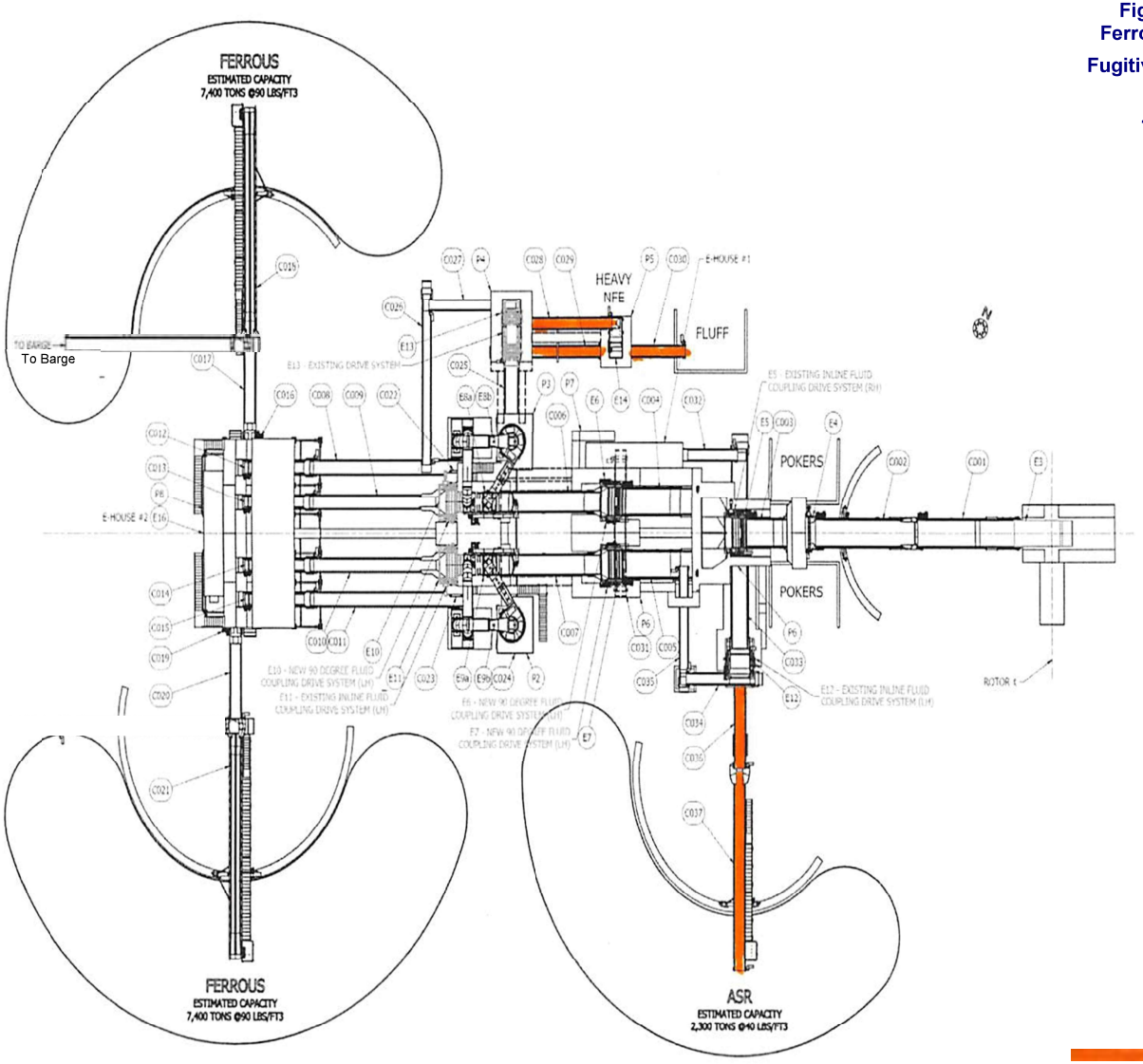


Figure 3-1 – Covered Conveyors
Ferrous Material Processing System

Fugitive Particulate Operating Program

General III, LLC
11600 South Burley Avenue
Chicago, Illinois



= Covered Conveyor

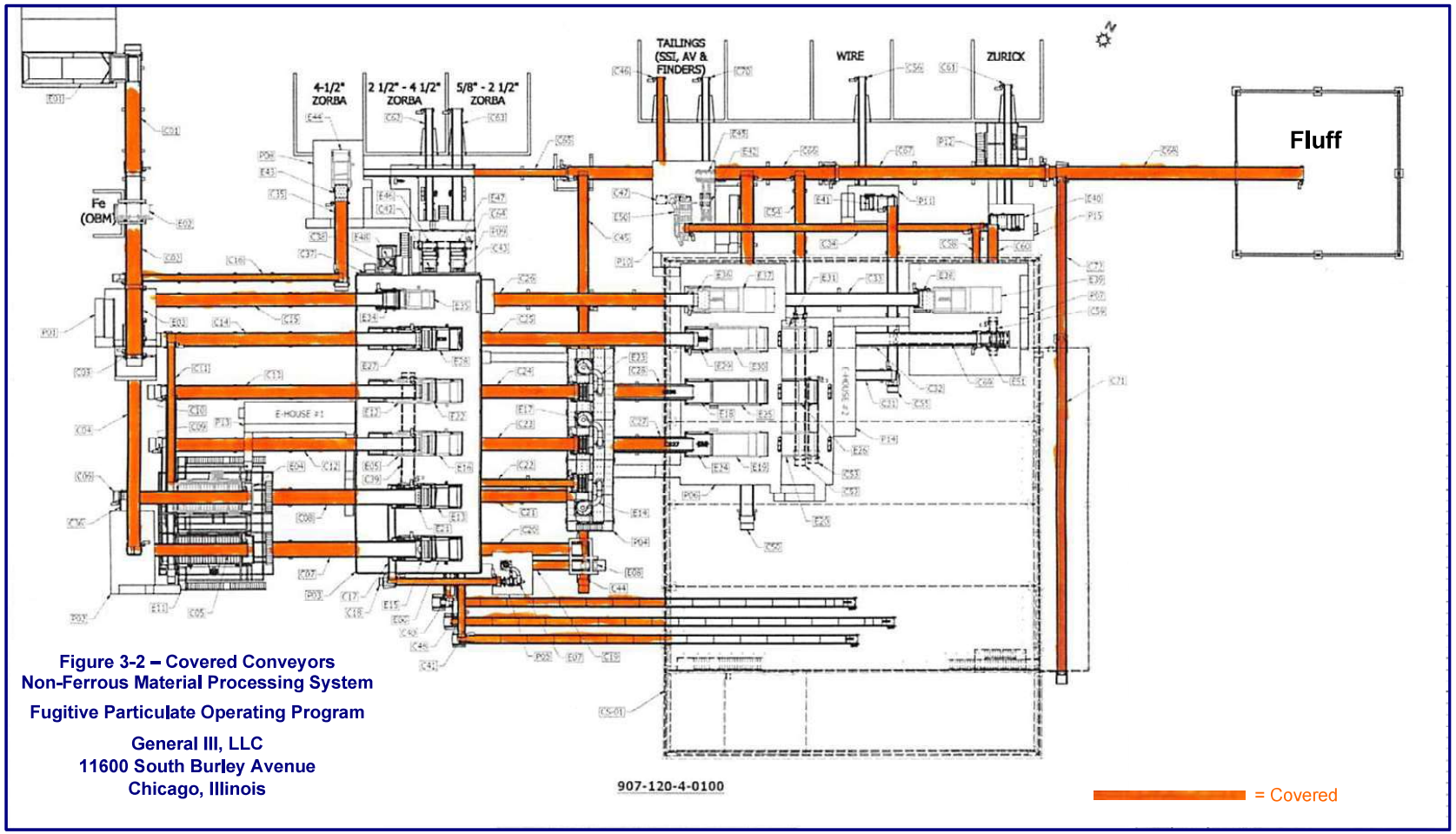
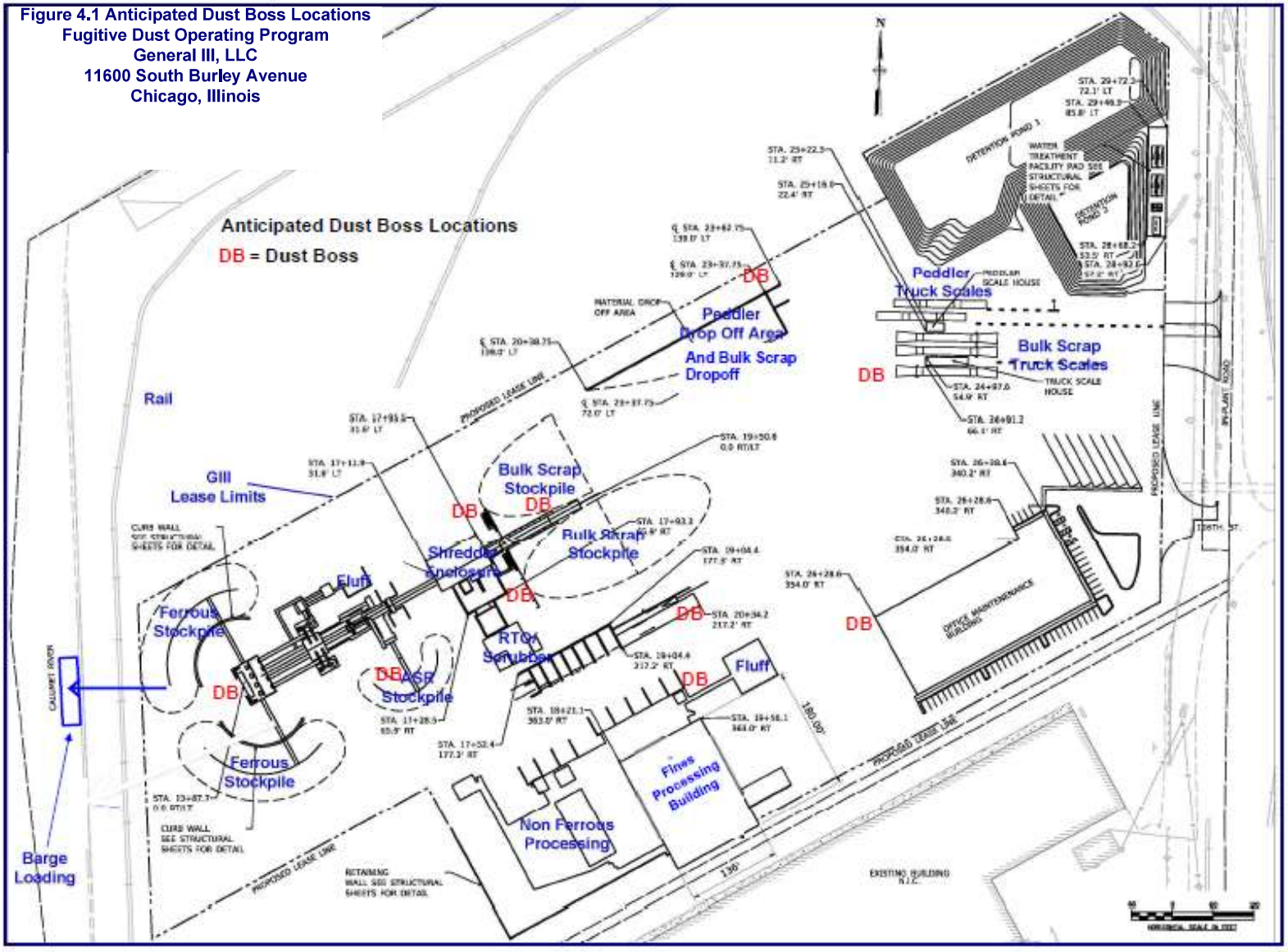


Figure 3-2 – Covered Conveyors
Non-Ferrous Material Processing System

Fugitive Particulate Operating Program

General III, LLC
11600 South Burley Avenue
Chicago, Illinois

Figure 4.1 Anticipated Dust Boss Locations
Fugitive Dust Operating Program
General III, LLC
11600 South Burley Avenue
Chicago, Illinois



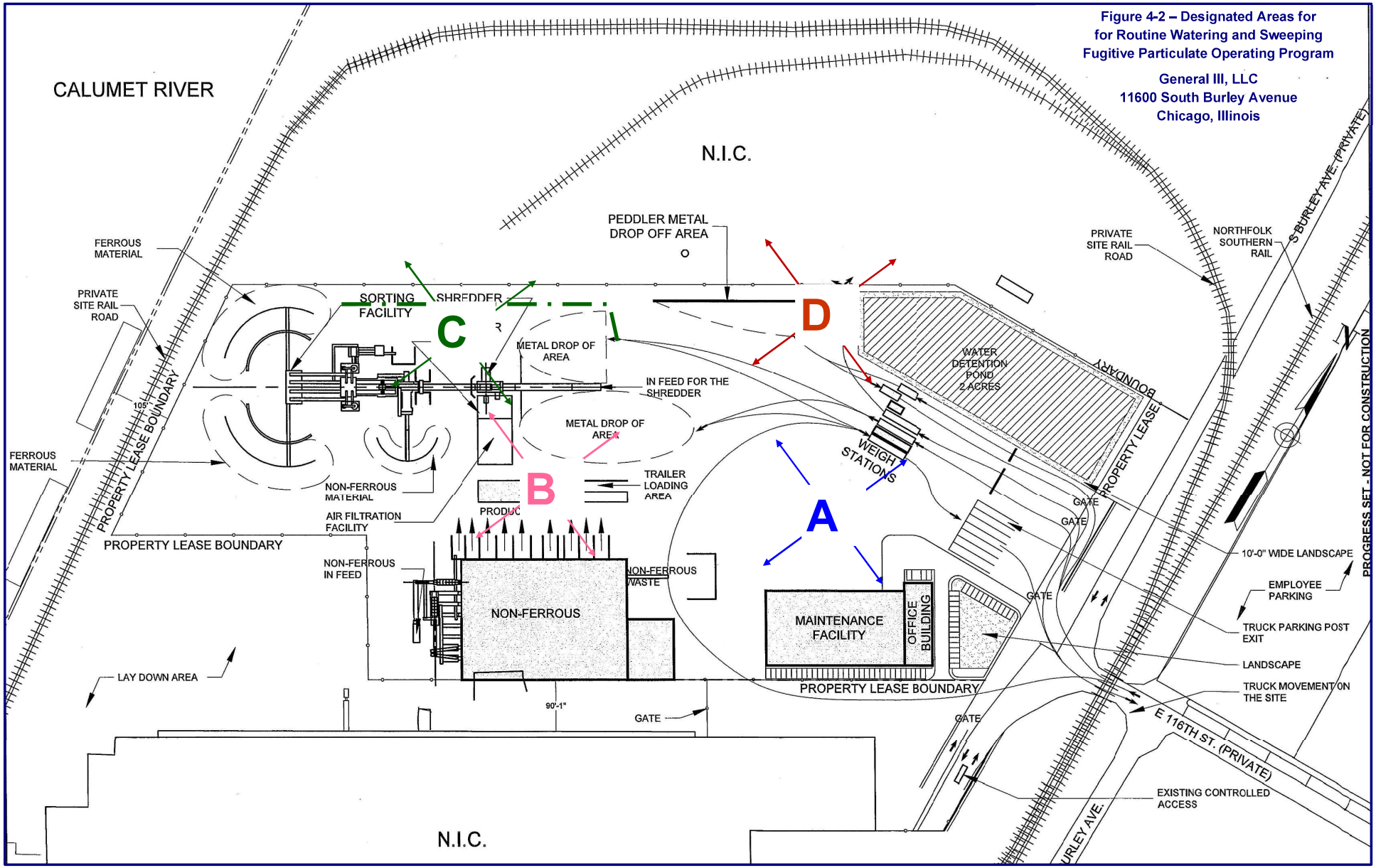


Figure 4-2 – Designated Areas for
for Routine Watering and Sweeping
Fugitive Particulate Operating Program
General III, LLC
11600 South Burley Avenue
Chicago, Illinois
CALUMET RIVER
N.I.C.
PEDDLER METAL
DROP OFF AREA
FERROUS
MATERIAL
PRIVATE
SITE RAIL
ROAD
SORTING
FACILITY
SHREDDER
C
D
METAL DROP OF
AREA
IN FEED FOR THE
SHREDDER
PRIVATE
SITE RAIL
ROAD
NORTHFOLK
SOUTHERN
RAIL
S BURLEY AVE. (PRIVATE)
WATER
DETENTION
POND
2 ACRES
BOUNDARY
PROPERTY LEASE
FERROUS
MATERIAL
PROPERTY LEASE BOUNDARY
METAL DROP OF
AREA
WEIGH
STATIONS
NON-FERROUS
MATERIAL
B
TRAILER
LOADING
AREA
AIR FILTRATION
FACILITY
A
GATE
GATE
10'-0" WIDE LANDSCAPE
PROPERTY LEASE BOUNDARY
NON-FERROUS
IN FEED
NON-FERROUS
NON-FERROUS
MAINTENANCE
FACILITY
OFFICE
BUILDING
GATE
EMPLOYEE
PARKING
TRUCK PARKING POST
EXIT
LANDSCAPE
LAY DOWN AREA
90'-1"
GATE
PROPERTY LEASE BOUNDARY
TRUCK MOVEMENT ON
THE SITE
GATE
E 116TH ST. (PRIVATE)
EXISTING CONTROLLED
ACCESS
BURLEY AVE.
N.I.C.
PROGRESS SET - NOT FOR CONSTRUCTION

RK
& Associates, Inc.

Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment EE

Street Sweeper Specifications

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Street Sweeper Specifications

Year/Make/Model:	Elgin Pelican
Wheel Base:	127.4”
Overall Length:	15’-10”
Height:	9’-7”
Width:	8’-6”
Weight:	14,290 pounds
Engine:	John Deere 100 H.P. Turbo
Fuel Tank:	35 gallons
Spray Water Tank:	180 gallons
Turning Radius:	15’-0”
Dumping Height:	9’-6”
Dumping Clearance Height:	16’-0”
Sweeping Path:	10’-0”
Hopper Size:	3.5 cubic yards

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January 2021

Addendum 1 – Attachment FF

Dust Boss Coverage Areas

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Dust Boss
Spray Radius
(typical)

N

STA. 29+72.3
72.1' LT
STA. 29+46.9
85.8' LT
DETENTION POND 1
WATER TREATMENT FACILITY PAD SEE STRUCTURAL SHEETS FOR DETAIL
DETENTION POND 2
STA. 28+68.2
53.5' RT
STA. 28+92.6
67.2' RT

STA. 25+22.3
11.2' RT
STA. 25+16.0
22.4' RT
STA. 23+62.75
139.0' LT
STA. 23+37.75
139.0' LT
MATERIAL DROP OFF AREA
PEDDLER SCALE HOUSE
STA. 20+38.75
139.0' LT
STA. 23+37.75
72.0' LT
STA. 24+97.6
54.9' RT
TRUCK SCALE HOUSE
STA. 24+91.2
66.1' RT
IN-PLANT ROAD
PROPOSED LEASE LINE

STA. 17+95.6
32.4' LT
PROPOSED LEASE LINE
STA. 19+56.9
0.0 RT/LT
STA. 17+11.4
32.4' LT
STA. 25+40.8
353.7 RT
STA. 14+42.9
29.2' LT
CURB WALL SEE STRUCTURAL SHEETS FOR DETAIL
SHREDDER BUILDING
STA. 17+93.1
65.5' RT
STA. 17+28.4
52.9' RT
STA. 16+81.9
52.9' RT
STA. 19+04.4
177.3' RT
STA. 17+71.2
65.5' RT
STA. 20+51.2
217.2' RT
STA. 23+27.6
353.7 RT
STA. 17+93.9
140.7' RT
OFFICE MAINTENANCE BUILDING
STA. 21+25.7
307.3' RT
STA. 21+07.7
307.3' RT
STA. 19+04.4
217.2' RT
CALUMET RIVER
Dust Boss
(typical)
STA. 17+78.8
140.7' RT
STA. 17+52.4
177.3' RT
STA. 19+55.9
363.1 RT
STA. 14+42.9
29.2' RT
STA. 18+21.2
363.1 RT
NON-FERROUS BUILDING
STA. 15+89.7
228.4' RT
STA. 16+23.7
228.4' RT
STA. 14+15.4
0.0 RT/LT
CURB WALL SEE STRUCTURAL SHEETS FOR DETAIL
PROPOSED LEASE LINE
RETAINING WALL SEE STRUCTURAL SHEETS FOR DETAIL
EXISTING BUILDING N.I.C.
PROPOSED LEASE LINE
116TH. ST.

60 0 60 120
HORIZONTAL SCALE IN FEET

KNIGHT
Engineers & Architects
Knight E/A, Inc.
221 North LaSalle Street
Suite 300
Chicago, IL 60601
Phone: (312) 577-3300
knightea.com

LUKASZ P. SLOZ
062-068653
LICENSED PROFESSIONAL ENGINEER
OF
ILLINOIS
10-08-2020
LICENSE EXPIRES 11-30-2021

PROJECT:
GENERAL III
11554 S AVENUE O
CHICAGO, IL 60617

4	10-08-2020	ISSUED FOR CONSTRUCTION
3	6-11-2020	ISSUE FOR REVISION TO PERMIT
2	4-1-2020	ISSUE FOR REVISION TO PERMIT
1	01-10-2020	ISSUE FOR BID

DUST BOSS LOCATIONS

PROJECT #: 7563
DATE: 10-08-2020

C-1.4

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Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment GG

Litter Monitoring Plan

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Litter Control Plan

Once the shredding system at the Facility is operational, Southside Recycling will implement the Litter Monitoring Plan.

Litter inspections will be conducted by the Environmental Manager, or designated personnel.

Inspections will be performed along the public way in areas primarily east of the campus property boundary since there are no nearby residential areas west of the Facility and the Calumet River is immediately west of the facility.

Inspections will be performed on a weekly basis to determine whether any litter or debris attributable to the Facility can be visually identified on ground surfaces.

If no litter or debris attributable to the Facility is identified during the first 4 weekly inspections, visual inspections will be performed on a monthly basis for 6 consecutive months.

If no litter or debris attributable to the Facility is identified during the 6 monthly inspections, visual inspections will be performed on a quarterly basis.

If, during any inspection, any litter or debris attributable to the Facility is identified, the Facility will revert to the previous inspection schedule (weekly or daily) until the inspections reveal no litter or debris for the required period of time (i.e. 4 consecutive weeks, 6 consecutive months).

Ongoing inspections will be performed no less frequently than once per quarter.

Any litter or debris attributable to the Facility that is identified during an inspection will be promptly removed and potential solutions will be investigated.

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Large Recycling Facility Permit Application
Southside Recycling
11554 S. Avenue O - Chicago, Illinois

January 2021

Addendum 1 – Attachment HH

Odor Monitoring Plan

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Odor Monitoring Plan

Once the shredding system at the Facility is operational, Southside Recycling will implement the Odor Monitoring Plan.

Odor inspections will be conducted by the Environmental Manager, or designated personnel, that are qualified to perform odor inspections.

Inspections will be performed using a Scentometer or an equivalent odor detection device (i.e. Nasal Ranger).

Readings from the odor detection device will be compared to standards set forth in 35 Illinois Administrative Code Part 245.

Inspections will be performed at campus property boundaries based on the prevailing wind direction at the time of the inspection.

Since there are no nearby residential areas west of the Facility, inspections will not be performed on days that the prevailing wind direction is out of the east (traveling east to west).

Inspections will be performed, while the shredding system is operating, each day for the first 15 days of operation that the prevailing wind direction is generally out of the west (traveling west to east).

Inspections will be performed to determine whether odors attributable to the Facility are out of compliance with state standards.

If no odors attributable to the Facility are out of compliance with state standards during any of the 15 daily inspections, odor inspections will be performed on a weekly basis for 4 consecutive weeks

If no odors attributable to the Facility are out of compliance with state standards for 4 consecutive weeks, odor inspections will be performed on a monthly basis.

If no odors attributable to the Facility are out of compliance with state standards for 3 consecutive months, odor inspections will be performed on a quarterly basis.

If during any inspection odors attributable to the Facility are out of compliance with state standards, the Facility will revert to the previous inspection schedule (weekly, daily or monthly) until the inspections reveal no odors attributable to the Facility that are out of compliance for the required period of time (i.e. 15 consecutive days, 4 consecutive weeks, 3 consecutive months).

Ongoing inspections will be performed no less frequently than once per quarter.

Any odors attributable to the Facility that are detected out of compliance with state standards will be investigated by Facility operations/management personnel.

The results of the investigations will be used to help determine the source of the odor, if possible, and to assist the Facility determine whether certain measures could be implemented to mitigate the odor.

Records of odor inspections will be maintained at the Facility.