

# NCRB APPLICATION RUNWAY SAFE LLC

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# Project Checklist

Attach required forms for each procurement type and detailed scope of services and/or specifications and forward original documents to the Chief Procurement Officer; City Hall, Room 806.

Date: 2/27/2015

Department Name: **Aviation**

Requisition No: 97562      Specification No: 130764

PO No:      Modification No:

Contract Liaison: **David Bowman**

Telephone: 773 686-7089

Email:

Project / Program Manager: **Erin O'Donnell**

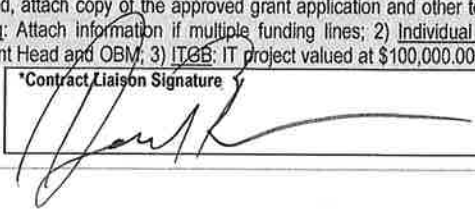
Telephone: 773 838-0608

Email:

For blanket agreements, original or lead department must consult with other potential departments who may want to participate on the blanket agreement. If grant funded, attach copy of the approved grant application and other terms and conditions of the funding source. **Note:** 1) **Funding:** Attach information if multiple funding lines; 2) **Individual Contract Services:** Include approval form signed by Department Head and OBM; 3) **ITGB:** IT project valued at \$100,000.00 or more, attach approval transmittal sheet.

*\*By signing this form, I attest that all information provided is true and accurate.*

*\*Contract Liaison Signature*



**Project Title:** Foam Glass Material Arresting System for O'Hare and Midway International Airports

**Project Description:** Foam Glass Material Arresting System for O'Hare and Midway International Airports

**Funding:** \* AND O&M FUNDING UP TO \$3,300,000

Corporate     Bond     Enterprise     Grant     Other:  
 IDOT/Transit     IDOT/Highway     FHWA     FTA     FAA

LINE	FY	FUND	DEPT	ORGN	APPR	ACTV	PROJECT	RPTG	ESTDOLLAR AMOUNT *
	2000	582	85	2015	8000	0540			\$7,500,000
	2003	759	85	2010	8000	0540	M8000010E		\$7,200,000

Check One:

**New Contract Request**

*\*By signing below, I attest the estimates provided for this contract are true and accurate.*

Project / Program Manager Signature: *Erin O'Donnell 1/8*

Commissioner/Authorized Designee Signature: *Michael Schmidt*

**Purchase Order Information**

Contract Term (No. of Months): 96

Extension Options (Rate of Recurrence): 181 Days

Estimated Spend/Value: \$ 18,000,000.00

Grant Commitment / Expiration Date:

Pre-Bid/Submittal Conference:  Yes  No

Mandatory     Site Visit

**Purchase Order Type:**

Blanket/Purchase Order (DUR)  
 Master Consultant Agreement (Task Order)  
 Standard/One-Time Purchase

**Procurement Method:**

Bid     RFP     RFQ     RFI  
 Small Order

**Special Approvals Required:**

Emergency  
 Non-Competitive Review Board (NCRB)  
 Request for Individual Contract Services  
 Information Technology Governance Board (ITGB)

**Contract Type:**

Architect Engineering     Commodity     Construction     JOC     SBI  
 Professional Services     Revenue Generating     Vehicle & Heavy Equipment  
 Work Service     Joint Procurement     Reference Contract

**Modification or Amendment**

**Modification Information:**

PO Start Date: \_\_\_\_\_

PO End Date: \_\_\_\_\_

Amount (Increase/Reduction): \_\_\_\_\_

**MBE/WBE/DBE Analysis:** (Attach MBE/WBE/DBE Goal Setting Memo)

Full Compliance     Contract Specific Goals  
 No Stated Goals     Waiver Request

**Modification/Amendment Type:**

Time Extension     Scope Change/Price Increase /Additional Line Item(s)  
 Vendor Limit Increase     Requisition Encumbrance Adjustment  
 Other (specify): \_\_\_\_\_

**Risk Management / EDS**

Insurance Requirements (included)  Yes  No

EDS Certification of Filing (included)  Yes  No

**Vendor Info:**

Name: **Runway Safe LLC**

Contact: **Kirk Marchand**

Address: **14144 Trautwein Road, Austin, TX 78737**

E-mail: **kmarchand@protection-consultants.com**

Phone: **512 380-1988**



CHICAGO DEPARTMENT OF AVIATION  
CITY OF CHICAGO

To: Jamie L. Rhee  
Chief Procurement Officer

Attention: Richard Butler  
First Deputy Procurement Officer

Elizabeth Granados-Perez  
Deputy Procurement Officer

From: Michael D. Boland *MDB 3/3/15*  
Acting Commissioner *φ*

Subject: **Request for New Non-Competitive Procurement Contract  
Procurement of the Foam Silica Material, Technical Support Services  
and Warranty from Runway Safe LLC**

The Chicago Department of Aviation (CDA) requests approval and assistance in awarding an eight (8) year non-competitive procurement contract to Runway Safe LLC.

The Federal Aviation Administration ("FAA") regulates United States airports for compliance with Runway Safety Areas ("RSA"). An RSA provides an airport with safety enhancements in the event that an aircraft overruns a runway. Congress mandated that the FAA and all FAR Part 139 certified airports have their RSA in compliance with federal regulations no later than December 31, 2015. The Department of Aviation analyzed RSA compliance at Midway and determined that the only solution for RSA compliance at Midway was the installation of an Engineered Material Arresting System (EMAS). An EMAS system provides a mechanism to achieve an acceptable level of protection as there is not sufficient land to have a non-EMAS protected RSA. The FAA certifies and regulates the manufacturers of EMAS systems.

In 2006 and 2007, the block system produced by Engineered arresting Systems (ESCO) was the only EMAS system accepted by FAA as meeting the applicable Advisory Circular. The four beds at Midway were installed at a total cost of \$24,182,364. This included \$13,707,000 for the EMAS material and technical support and \$10,475,364 for the installation. In addition, there were 2 beds at O'Hare installed on the 4R and 22L Runways at a total cost of \$22,863,180. This included \$11,096,514 for the EMAS material and technical support and \$11,766,666 for the installation.



Beyond the installation costs, CDA has spent \$1,362,292 since 2009, on an inspection and maintenance program through the block system manufacturer. The aggregate cost for the block EMAS system to date is \$48,678,865. It should be noted that in all of the EMAS placements at O'Hare and Midway to date the procurement of the system itself and the technical oversight for its installation as well as ongoing maintenance, repair and warranty has been provided via non-competitively procured contracts with ESCO (PO numbers 12560, 15283 and 20062). The installation of those systems, just as is contemplated in this request, are competitively procured.

Between 2010 and 2011, Midway had five instances that resulted in damage to EMAS beds requiring replacement of blocks. Four of these instances occurred on the 31C EMAS bed and one on the 13C bed. All occurrences resulted in tops being blown off, exposing and scattering the EMAS material. In one instance, entire blocks, including the bottom tray, were expelled from the bed. The block system manufacturer, accompanied by representatives from the FAA, performed investigative work, examining materials blown out of the bed as well as remaining blocks within the beds. Results of this investigative work showed that the scrim material that surrounds the blocks and secures the tops of the EMAS blocks on was tearing. These tears were said to be the result of the edge of the top vibrating under jet blast and cutting into the material. As a result of these findings, a settlement agreement was signed and the block system manufacturer replaced a large section of the 31C bed in 2011 with new blocks with reinforced scrim materials. Due to a confidentiality provision in the settlement, this agreement is not attached to this memo.

As part of this settlement, the block system manufacturer was to ensure that the EMAS beds complied with the applicable FAA standards and that they did not interrupt operations at Midway. A key component of EMAS compliance is the FAA Advisory Circular requirement of a 20 year life span. The 31C bed at Midway, which was installed in 2007, effectively had a life expectancy of less than five years when a major portion of the bed was replaced in 2011.

Since the time of the settlement, further deterioration of the EMAS at Midway has been noted during monthly inspections. In 2013, there were three more instances that resulted in damage to the beds requiring replacement of blocks. Again, all occurrences resulted in tops being blown off. Additionally, further deterioration noted during monthly inspections resulted in the replacement of an additional 100 EMAS blocks in 2014 at a total cost of \$271,029. It is anticipated that further block replacement will be required as continued deterioration occurs.

The EMAS bed at O'Hare on Runway 4R/22L also experienced a catastrophic failure in 2013 when several hundred blocks blew out of the bed during the departure of a 747-400 aircraft. The bed was installed in 2008 and is expected to have a 20 year life span. The block system product has failed in an inexplicably short amount of time compared to the proscribed life span.

Midway has engaged in continuous communication with both Regional and National FAA offices regarding these ongoing issues with EMAS. During this continuing communication, the FAA notified Midway of their certification of a new type of EMAS system, a constructed in place, monolithic, foamed silica system. Furthermore, the FAA encouraged Midway to contact the manufacturer of the foamed silica system, Runway Safe LLC, to begin discussions on this alternate system for the airport.

Runway Safe's EMAS system is a monolithic, constructed in place, foamed silica bed which is made from recycled glass and is contained within a high-strength plastic mesh system. This mesh system is anchored vertically in rows at the end of the runway pavement to allow the placement of the foamed silica to be placed between the rows of plastic mesh. Finally, a light weight layer of cementitious material is applied over the foamed silica bed and treated with a top coat of sealant.

In an effort to mitigate the issues that the Airports have been experiencing with the existing block EMAS system, Midway, in conjunction with the FAA's approval, installed the first foamed silica system supplied by Runway Safe LLC at the end of Runway 22L under the RWY 13C/31C Rehabilitation project in 2014. Since installed, the new foamed silica EMAS system has not impacted the continuous operations of the Runway 22L at Midway. Through ongoing regularly scheduled inspections of the RWY 22L arrestor bed, there have been no maintenance issues or deficiencies reported to date.

## **RECOMMENDATION**

The block EMAS system continues to burden O'Hare and Midway with a product that does not meet the applicable standards and results in increased maintenance costs and additional operational impacts. In particular, the runway usage at Midway is based heavily on wind and weather conditions. The intersecting layout of Midway's runways means that in many instances, only one runway meets the operational needs of the air carriers. Each occurrence where EMAS blocks are damaged creates the potential for foreign object debris (FOD) a substance, debris or article alien to aircraft which can potentially cause damage to aircraft, require NOTAMS to be issued, and potentially require the closure of a airfield pavement. These occurrences may force Midway's air carriers to reduce flight loads, divert flights or even close the airport entirely. Each of these results in additional costs to the air carrier and the City.

The new foam silica EMAS system is comprised of more durable materials that are not susceptible to the elements and airport environment, the foam silica is stored on site easily, remaining components can be sourced from local suppliers reducing repair times, and the EMAS system can be tailored to specific jet blast patterns experienced at each runway. Runway Safe LLC is the sole foam silica EMAS supplier in the world and sole owners of the intellectual property for the foam silica EMAS. Currently, there are no other companies in the industry that can provide the foam glass material approved by the FAA, or have the expertise necessary to install and maintain this system without

the support of Runway Safe. The objective of this contract is to procure Runway Safe's foamed silica material and support services from Runway Safe for the replacement of the EMAS beds at O'Hare and Midway airports.

In addition, this contract will enable the purchase of the foam silica material and support in the event of occurrence not covered under the warranty. In conjunction with this contract, there will be separate, competitively bid construction contracts for the installation of the foamed silica material as well as the procurement and installation of the non-proprietary materials required to complete the recycled glass EMAS systems at O'Hare and Midway airports. The foamed silica material, unless and until the intellectual property is shared or sold to others for manufacturing, will not be able to be competitively bid.

CDA respectfully requests that Runway Safe LLC be awarded the non-competitive procurement for this material and service.

By selecting RUNWAY SAFE LLC, CDA anticipates the following operational, financial and safety benefits:

1. Reduced Impacts to Airport Operations and Decreased Maintenance Costs
  - a. Current EMAS damage resulting in runway closures has a great impact to air carriers operating at Midway. The RUNWAY SAFE LLC EMAS system, if damaged, can be quickly repaired and the runway returned to operation.
  - b. The RUNWAY SAFE LLC EMAS system is comprised of more durable materials that are not susceptible to the elements and airport environment, thus requiring fewer repairs.
  - c. Surplus materials for the RUNWAY SAFE LLC EMAS system components can be stored on site, or are readily available from local suppliers, reducing repair times and decreasing cost due to local sourcing.
2. Resistance to Jet Blast
  - a. The RUNWAY SAFE LLC EMAS system can be tailored to meet the unique jet blast patterns experienced at Midway due to the minimal set back of the EMAS beds.
3. Installation Cost
  - a. The RUNWAY SAFE LLC EMAS system is comprised of more traditional construction materials installed using traditional construction methods. This results in a quicker installation and ultimately decreased manpower and equipment costs.

If you have any questions or need additional information regarding this request, please contact David Bowman at (773) 686-7089.

Thank you for your consideration and cooperation.

Funding: 15 610 85 4305 0163 0163 \$1,800,000.  
15 740 85 4005 0161 0161 \$1,500,000  
00 582 85 2015 8000 0540 \$7,500,000  
03 759 85 2010 8000 0540 M8000001E \$7,200,000

Estimated Cost: \$18,000,000

Duration: 8 Years

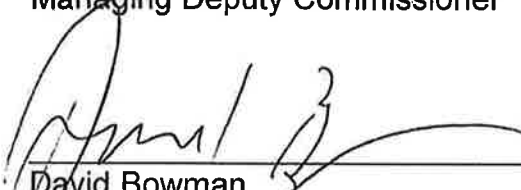
Managing Deputy: Jonathan Leach Phone: 773 686-3587  
Erin O'Donnell Phone: 773 838-0610

The following CDA employees participated in drafting the Specifications and/or negotiating with the Contractor:




Erin O' Donnell  
Managing Deputy Commissioner

Date 3.3.2015

  
David Bowman  
Supervisor of Contracts

Date 3/3/2015

  
Jessica Sampson  
General Counsel

Date 3/3/15

## **Item #1**

# **Non-Competitive Bid Review Application**



DEPARTMENT OF PROCUREMENT SERVICES  
NON-COMPETITIVE REVIEW BOARD (NCRB) APPLICATION

Complete this cover form and the **Non-Competitive Procurement Application Worksheet** in detail. Refer to the page entitled "Instructions for Non-Competitive Procurement Application" for completing this application in accordance with its policy regarding NCRB. Complete "other" subject area if additional information is needed. Subject areas must be fully completed and responses merely referencing attachments will not be accepted and will be immediately rejected.

Department	Originator Name	Telephone	Date	Signature of Application Author
Chicago Department of Aviation Contract Liaison	Erin O'Donnell	773-838-0588	2/23/2015	
David Bowman	Email Contract Liaison david.bowman@cityofchicago.org	Telephone 773-686-7089		

List Name of NCRB Attendees/Department  
Erin O'Donnell  
Jonathan Leach  
Frank Grimaldi  
David Bowman

Request NCRB review be conducted for the product(s) and/or service(s) described herein.

Company: Runway Safe LLC

Contact Person:	Phone:	Email:
Kirk A. Marchand	512-380-1988 x 1	kmarchand@protection-consultants.com

Project Description: Supply of the Foam Glass Material and Ancillary Services in Support of the Installation of the Engineered Arresting System at Chicago Midway and O'Hare International Airport

This is a request for:

<input checked="" type="checkbox"/> New Contract	<input type="checkbox"/> Amendment / Modification
<u>Contract Type</u>	<u>Type of Modification</u>
<input checked="" type="checkbox"/> Blanket Agreement Term: <u>96</u> (# of mo)	<input type="checkbox"/> Time Extension <input type="checkbox"/> Vendor Limit Increase <input type="checkbox"/> Scope Change
<input type="checkbox"/> Standard Agreement	Contract Number: _____
	Specification Number: _____
	Modification Number: _____

<b>Department Request Approval</b>  DEPARTMENT HEAD OR DESIGNEE Michael Boland PRINT NAME	4/9/15 DATE	<b>Recommended Approval</b>  BOARD CHAIRPERSON Rich Butler PRINT NAME	APR 23 2015 DATE
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(FOR NCRB USE ONLY)

Recommend Approval/Date: 4-22-15

Return to Department/Date: \_\_\_\_\_

Rejected/Date: \_\_\_\_\_

*SP*  
*4/22/15*

Approved  Rejected

CHIEF PROCUREMENT OFFICER

4/23/15  
DATE



**DEPARTMENT OF PROCUREMENT SERVICES  
NON-COMPETITIVE REVIEW BOARD (NCRB) APPLICATION  
JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT WORKSHEET**

All applicable information on this worksheet must be addressed using each question found on the "Instructions for Non-Competitive Procurement Application" in this application.

**Justification for Non-Competitive Procurement Worksheet**

**PROCUREMENT HISTORY**

1. Describe the requirement and how it evolved from initial planning to its present status.

The Federal Aviation Administration ("FAA") regulates US airports for compliance with Runway Safety Areas ("RSA"). An RSA provides an airport with safety enhancements in the event that an aircraft overruns a runway. Congress mandated that the FAA and all FAR Part 139 certified airports have their RSA in compliance with federal regulations. The Department of Aviation analyzed RSA compliance at Midway and the only solution for RSA compliance at Midway was the installation of Engineered Material Arresting System (EMAS) is a way to accomplish an acceptable level of protection. The FAA certifies and regulates the manufacturers of EMAS systems.

2. Is this a first time requirement or a continuation of previous procurement from the same source? If so, explain the procurement history.

This is the first time requirement for the request to non-competitively procure the foam silica product from Runway Safe LLC.

3. Explain attempts made to competitively bid the requirement (attach copy of sources contacted).

There have been no attempts to competitively bid the acquisition of foam silica EMAS systems.. The FAA certifies and regulates the manufacturers of EMAS system. Runway Safe LLC is the sole, FAA certified, Runway Safe foam silica EMAS supplier in the world and sole owners of the intellectual property for the Runway Safe foam silica EMAS.

4. Describe in detail all research done to find other sources; list other cities, companies in the industry, professional organizations contacted. List periodicals and other publications used as references.

Runway Safe LLC is the sole foam silica EMAS supplier in the world and sole owners of the intellectual property for the foam silica EMAS approved by the FAA. No other companies exist.

5. Explain future procurement objectives. Is this a one-time request or will future requests be made for doing business with the same source?

This request is to supply the material, installation oversight and five (5) warranty for the product provided and installed. At the completion of the eight (8) year contract, a mechanism for maintaining the beds for the remainder of their life-span will need to be explored. At that time, it may or may not be a sole source.

6. Explain whether or not future competitive bidding is possible. If not, explain in detail.

There have been no attempts to competitively bid the acquisition of foam silica EMAS systems. The FAA certifies and regulates the manufacturers of EMAS system. Runway Safe LLC is the sole, FAA certified, foam silica EMAS supplier in the world and sole owners of the intellectual property for the foam silica EMAS.

Unless another product is manufactured and subsequently approved by the FAA, there are no other companies that exist to provide a foam silica product for EMAS.



**DEPARTMENT OF PROCUREMENT SERVICES  
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JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT WORKSHEET**

ESTIMATED COST

1. What is the estimated cost for this requirement or for each contract, if multiple awards are contemplated? What is the funding source?

The negotiated cost for the work associated with the manufacturing, shipping, installation oversight, maintenance and warranty of the foam silica EMAS systems is \$18,000,000. O'Hare's two EMAS beds cost \$7,500,000 and Midway's three beds cost \$7,200,000. Please note that due to the larger aircraft at O'Hare, the size of the O'Hare beds is significantly larger than Midway.

The remaining \$3,300,000 will be utilized for pre-positioned materials used in repairs that are not covered under the Contract Warranty, the technical oversight for the repairs /replacement not covered in Contract Warranty, and the travel associated with those technical support functions in accordance with the City of Chicago Travel Guidelines.

The funding source would be through the Capital Improvement Program at each airport.

2. What is the estimated cost by fiscal year?

Fiscal breakdown is anticipated as follows:

2015 – Midway - \$5,500,000

2016 – Midway - \$1,700,000

2017 – O'Hare - \$7,500,000

2015 – 2022 – O'Hare and Midway - \$3,300,000 – Non-Warranty maintenance and repairs

3. Explain the basis for estimating the cost and what assumptions were made and/or data used (i.e., budgeted amount, previous contract price, current catalog or cost proposal from firms solicited, engineering or in-house estimate, etc.)

Runway Safe provided the CDA a proposal dated December 3, 2014 for \$9,500,000. This was evaluated against the Time and Material work performed for the installation of Runway 22L EMAS bed in 2014. Once this cost was compiled, the CDA met with the Contractor to negotiate the cost associated with the remaining EMAS beds. The Department proactively negotiated a lower cost proposal which includes the cost for the material for each EMAS lower than the first installation, installation support and a 5 Year Maintenance and Warranty. This cost is reflected in the proposal submitted February 27, 2015.

4. Explain whether the proposed Contractor or the City has a substantial dollar investment in original design, tooling or other factors which would be duplicated at City expense if another source was considered. Describe cost savings or other measurable benefits to the City which may be achieved.

Via this contract, the Department will realize significant savings from original proposal submitted by the contractor which includes:

- \$2,300,000 savings on the installation of the three remaining beds at Midway
- Attic stock equal to the size of a replacement bed at Midway
- 5-year maintenance and warranty contract (excludes any repairs or replacements required due to an incursion by aircraft or vehicle with the bed)
- There is no cost escalation for the installation of the O'Hare beds. Even though the O'Hare beds are larger, the contractor will honor the reduced pricing established with the Midway beds.
- The Department will realize savings with ongoing maintenance cost of the EMAS beds.
- In the event of an incursion with the bed, the operational impacts of runway closures associated with the repairs





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will be greatly reduced with the Runway Safe bed.

In addition, under the 13C/31C Rehabilitation project in 2014, the development of the master technical specification for all beds and design for the foam silica EMAS systems at Midway Airport were completed. The investment has already been made to replace the existing EMAS beds with the foam silica EMAS systems at Midway.

Furthermore, the CDA continues to spend over a quarter of a million dollars annually repairing a non-warranted system which no improvements have been made, and continues to create difficulties in maintaining compliance with FAA requirements.

When the replacement of blocks is required on the existing system, it can take up 45 days to manufacture and ship the material for installation. Due to the extended lead time associated with manufacturing and shipping the blocks, the FAA AC was adjusted to require the EMAS to be repaired to a usable condition within 45 days.

The foam silica EMAS system is comprised of not only the foam silica, which under this contract attic stock is provided, but locally available goods that would allow repairs to occur within 24 hours of them being required.

The Midway airports daily configuration for departures and arrivals is based heavily on wind and weather conditions. The intersecting layout of Midway's runways means that, in many instances, only one runway meets the operational needs of the air carriers. Each occurrence where EMAS blocks are damaged, and result in the closure of a runway, has the potential to force Midway's air carriers to reduce flight loads, divert flights or even close the airport entirely to major air carriers. Each of these results in additional costs to the air carriers. The existing timeframe to manufacture new blocks, in the event of a major blowout, could cause a runway shutdown for up to 45 days, at a loss of revenue for both the air carriers and the City. As stated previously, the foam silica EMAS system is comprised of not only the foam silica, which under this contract attic stock is provided, but locally available goods that would allow repairs to occur within 24 hours of them being required.

5. Explain what negotiation of price has occurred or will occur. Detail why the estimated cost is deemed reasonable.

During the installation of the RWY 22L EMAS bed in 2014 a detailed force account was maintained which resulted in the accurate accounting of the direct cost of installation. Upon final audit of the force account, the CDA negotiated a price below the audited RWY 22L EMAS installation cost, to be used on future EMAS bed installations at both MDW and ORD. This negotiated cost includes installation, support and a 5-year maintenance and warranty coverage.

Understanding that this price was not only below the cost equivalent to the first bed that was installed but includes the 5 year maintenance and warranty for all the beds installed at both O'Hare and Midway Airport, the CDA feels that all negotiations were successful.

In addition Runway safe has provided a cost savings as described above in question 4.

**SCHEDULE REQUIREMENTS**

1. Explain how the schedule was developed and at what point the specific dates were known.

At Midway, the Department intends to install the Runway 31C and 13C beds in 2015. In 2016, we will install the Runway 4R bed in conjunction with the Runway Rehabilitation project. In 2017, the Department will install two beds at O'Hare. This implementation schedule has been developed to minimize impacts to airport operations and our airport stakeholders.

2. Is lack of drawings and/or specifications a constraining factor to competitive bidding? If so, why is the proposed Contractor the only person or firm able to perform under these circumstances? Why are the drawings and specifications lacking? What is the lead time required to get drawings and specifications suitable for competition? If lack of drawings and specifications is not a constraining factor to competitive bidding, explain why only one person or firm can meet the required schedule.

No. Lack of drawings is not a factor in this request. The only portion that is not competitively bid is the supply of the foam silica material. The procurement of the installation of the beds will be competitively procured and will include the required design drawings. In addition, Runway Safe LLC is the sole foam silica EMAS supplier in the world and



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JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT WORKSHEET**

sole owners of the intellectual property for the foam silica EMAS approved by the FAA.

3. Outline the required schedule by delivery or completion dates and explain the reasons why the schedule is critical.

The schedule is critical as the block EMAS system continues to burden O'Hare and Midway with a product that does not meet the life span requirements of the FAA Advisory Circular and results in increased maintenance costs and additional operational impacts. In particular, the runway usage at Midway is based heavily on wind and weather conditions. The Midway airports daily configuration for departures and arrivals is based heavily on wind and weather conditions. The intersecting layout of Midway's runways means that, in many instances, only one runway meets the operational needs of the air carriers. Each occurrence where EMAS blocks are damaged, and result in the closure of a runway, has the potential to force Midway's air carriers to reduce flight loads, divert flights or even close the airport entirely to major air carriers. Each of these results in additional costs to the air carriers.

The schedule for the remaining three arrestor bed replacements is to complete the 13C and 31C beds in 2015 and the 4R bed in 2016. A standalone construction contract will be competitively bid for the replacement of the 13C and 31C beds. This will be advertised in the spring of 2015, with award pending approval of this request, with an anticipated completion of construction by fall of 2015. The remaining 4R EMAS bed at would be included in the competitively bid Runway 4R Rehabilitation Project scheduled to be completed during the 2016 Construction Season. By following this schedule, the construction of the remaining three arrestor beds will result in fewer impacts to airport operations.

It is anticipated that the replacement of the Runway 4R and 22L EMAS beds at O'Hare will occur during the 2017 construction season. This will allow for ample time to competitively bid the design and subsequent construction of these EMAS beds. In addition to competitive bidding of the design and installation of these beds, the 2017 schedule allows adequate time for the manufacturer, Runway Safe, to produce the quantity of recycled materials required for installation.

4. Describe in detail what impact delays for competitive bidding would have on City operations, programs, costs and budgeted funds.

There have been no attempts to competitively bid the acquisition of foam silica EMAS systems. The FAA certifies and regulates the manufacturers of EMAS system. Runway Safe LLC is the sole, FAA certified, Runway Safe foam silica EMAS supplier in the world and sole owners of the intellectual property for the Runway Safe foam silica EMAS. While the FAA has certified two EMAS system manufacturers, the Department has determined that the other EMAS system type – block EMAS system – is not a feasible for either Midway or O'Hare due to significant performance issues and bed failures with the block EMAS systems that are currently installed at Midway and O'Hare. The block EMAS system continues to burden O'Hare and Midway with a product that does not meet the life span requirements of the FAA Advisory Circular and results in increased maintenance costs and additional operational impacts.

In addition, the City continues to spend over a quarter of a million dollars annually repairing a non-warrantied system which no improvements have been made, and continues to create difficulties in maintaining compliance with FAA requirements.

**EXCLUSIVE OR UNIQUE CAPABILITY**

1. If contemplating hiring a person or firm as a Professional Service Consultant, explain in detail what professional skills, expertise, qualifications, and/or other factors make this person or firm exclusively or uniquely qualified for the project. Attach a copy of the cost proposal, scope of services, and Temporary Consulting Services Form.

Runway Safe LLC is currently the sole foam silica EMAS supplier in the world and sole owners of the intellectual property for the foam silica EMAS that can provide the FAA approved material and support for the foam silica arrestor bed system.

2. Does the proposed firm have personnel considered unquestionably predominant in the particular field?



**DEPARTMENT OF PROCUREMENT SERVICES  
NON-COMPETITIVE REVIEW BOARD (NCRB) APPLICATION  
JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT WORKSHEET**

Runway Safe LLC has designed, developed, tested, and subsequently gained FAA approval of the only foam silica EMAS system.

As stated previously, Runway Safe provides the only FAA approved foam silica EMAS. The primary construction material is lightweight aggregate foam made from recycled glass. The design of this crushable foam glass layered with a durable polymer concrete cover makes the foam silica EMAS bed more resistant to the harsh elements of a runway's environment. Runway Safe's unique design results in a more durable product that offers reduced maintenance costs and a longer life of the arresting system.

3. What prior experiences of a highly specialized nature does the person or firm exclusively possess that is vital to the job, project or program?

Runway Safe LLC has designed, developed, tested, and subsequently gained FAA approval of the only foam silica EMAS system.

Midway, in conjunction with the FAA's approval, installed the first monolithic, constructed in place, foamed silica bed which is made from recycled glass and is contained within a high-strength plastic mesh system supplied by Runway Safe LLC at the end of Runway 22L in 2014.

4. What technical facilities or test equipment does the person or firm exclusively possess of a highly specialized nature which is vital to the job?

Runway Safe LLC is currently the sole foam silica EMAS supplier in the world and sole owners of the intellectual property for the foam silica EMAS. Currently, there are no other companies in the industry that can provide the FAA approved material for the foam silica arrestor bed system or have the expertise necessary to install and maintain this system without the support of Runway Safe.

In addition, Runway Safe is the only FAA approved company that can certify that the beds were installed in accordance with the requirements of the FAA Circular.

5. What other capabilities and/or capacity does the proposed firm possess which is necessary for the specific job, project or program which makes them the only source who can perform the work within the required time schedule without unreasonable costs to the City?

Runway Safe LLC is currently the sole foam silica EMAS supplier in the world and sole owners of the intellectual property for the foam silica EMAS. Currently, there are no other companies in the industry that can provide the FAA approved material for the foam silica arrestor bed system or have the expertise necessary to install and maintain this system without the support of Runway Safe.

In addition, Runway Safe is the only FAA approved company that can certify that the beds were installed in accordance with the requirements of the FAA Advisory Circular.

6. If procuring products or equipment, describe the intended use and explain any exclusive or unique capabilities, features and/or functions the items have which no other brands or models, possess. Is compatibility with existing equipment critical from an operational standpoint? If so, provide detailed explanation?

Runway Safe LLC is currently the sole foam silica EMAS supplier in the world and sole owners of the intellectual property for the foam silica EMAS. Compatibility of this proposed product is not an issue

7. Is competition precluded because of the existence of patent rights, copyrights, trade secrets, technical data, or other proprietary data (attach documentation verifying such)?

Runway Safe LLC is the sole foam silica EMAS supplier in the world and sole owners of the intellectual property for



**DEPARTMENT OF PROCUREMENT SERVICES  
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the foam silica EMAS approved by the FAA.

8. If procuring replacement parts and/or maintenance services, explain whether or not replacement parts and/or services can be obtained from any other sources? If not, is the proposed firm the only authorized or exclusive dealer/distributor and/or service center? If so, attach letter from manufacturer on company letterhead.

No because Runway Safe LLC is the sole foam silica EMAS supplier in the world and sole owners of the intellectual property for the foam silica EMAS approved by the FAA.

OTHER

1. Explain other related considerations and attach all applicable supporting documents

The block EMAS beds were installed in 2006 and 2007 to ensure Midway's compliance with FAA regulations for Runway Safety Areas. . At that time, the block EMAS system product was the only EMAS system approved by FAA as meeting the applicable Advisory Circular. The four original block EMAS beds at Midway were installed at a total cost of \$24,182,364. This included \$13,707,000 for the EMAS material and technical support and \$10,475,364 for the installation. In addition, there were 2 block EMAS beds at O'Hare installed on Runway 4R and 22L at a total cost of \$22,863,180. This included \$11,096,514 for the EMAS material and technical support and \$11,766,666 for the installation.

In addition to the installation cost, CDA has spent \$1,362,292 since 2009, on an inspection and maintenance program through the block system manufacturer. In aggregate the total cost for the block EMAS system is \$48,678,865.

Between 2010 and 2011, Midway had five instances that resulted in damage to EMAS beds requiring replacement of blocks. Four of these instances occurred on the 31C EMAS bed and one on the 13C bed. All occurrences resulted in tops being blown off, exposing and scattering the EMAS material. In one instance, entire blocks, including the bottom tray, were expelled from the bed. The block system manufacturer, accompanied by representatives from the FAA, performed investigative work, examining materials blown out of the bed as well as remaining blocks in the beds. Results of this investigative work showed that the scrim material that surrounds the blocks and holds the tops on was tearing. These tears were said to be the result of the edge of the top vibrating under jet blast and cutting into the material. As a result of these findings, a settlement agreement was signed and the block system manufacturer replaced a large section of the 31C bed in 2011 with new blocks with reinforced scrim materials. Due to a confidentiality provision in the settlement, it is not attached to this memo.

As part of this settlement, the block system manufacturer was to ensure the EMAS beds complied with the applicable FAA standards and that they did not interrupt operations at Midway. A key component in question throughout this with the block EMAS system is compliance with the FAA Advisory Circular requirement for a 20 year life span. The 31C bed at Midway, which was installed in 2007, effectively had a life expectancy of less than five years when a major portion of the bed was replaced in 2011.

Since the time of the settlement, further deterioration of the EMAS has been noted during monthly inspections. In 2013, there were three more instances that resulted in damage to the beds requiring replacement of blocks. Again, all occurrences resulted in tops being blown off. During this time Midway has been in continual communication with both Regional and National FAA offices regarding these on-going occurrences. Through this continuing communication, the FAA notified Midway of the certification of a constructed in place monolithic foamed silica system by the FAA. Furthermore, the FAA encouraged Midway to contact the manufacturer of the foamed silica system to begin discussions on this alternate system. Deterioration of the block EMAS beds at Midway continues with the Department investing nearly \$300,000 in 2014 for the replacement of an additional 100 EMAS blocks. It is anticipated that further block replacement will be required as deterioration occurs.

In addition to the block EMAS bed failures at Midway, the EMAS bed at O'Hare on Runway 4R/22L also experienced a catastrophic failure in 2013 when several hundred blocks literally blew out of the bed during the departure of a 747-400. The bed was installed in 2008 and was projected to have a 20 year life span. The block system product has failed in an inexplicable short amount of time compared to the proscribed life span.

The block EMAS system continues to burden O'Hare and Midway with a product that does not meet the applicable standards and results in increased maintenance costs and additional operational impacts. In particular, the runway



**DEPARTMENT OF PROCUREMENT SERVICES  
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usage at Midway is based heavily on wind and weather conditions. The intersecting layout of Midway's runways means that in many instances, only one runway meets the operational needs of the air carriers. Each occurrence where EMAS blocks are damaged, and result in the closure of a runway, has the potential to force Midway's air carriers to reduce flight loads, divert flights or even close the airport entirely. Each of these results in additional costs to the air carrier.

In an effort to mitigate the issues that the Airports have been experiencing with the existing block EMAS system, Midway, in conjunction with the FAA's approval, installed the first foamed silica system supplied by Runway Safe LLC at the end of Runway 22L in 2014.

Runway Safe's EMAS system is a monolithic, constructed in place, foamed silica bed which is made from recycled glass and is contained within a high-strength plastic mesh system. This mesh system is anchored vertically in rows at the end of the runway pavement to allow the placement of the foamed silica to be placed between the rows of plastic mesh. Finally, a light weight layer of cementitious material is applied over the foamed silica bed and treated with a top coat of sealant.

**LIST OF ATTACHMENTS:**

1. FAA Fact Sheet
2. ESCO EMAS History Powerpoint Presentation
3. Runway Safe LLC - Documentation
4. Foam Silica EMAS Presentation



## DEPARTMENT OF PROCUREMENT SERVICES NON-COMPETITIVE REVIEW BOARD (NCRB) APPLICATION INSTRUCTIONS FOR NON-COMPETITIVE PROCUREMENT APPLICATION

### INSTRUCTIONS FOR PREPARATION OF NON-COMPETITIVE PROCUREMENT APPLICATION

If a City Department has determined that the purchase of supplies, equipment, work and/or services cannot be done on a competitive basis, a justification must be prepared on this "Justification for Non-Competitive Procurement Application" in which procurement is requested on a or non-competitive basis in accordance with 65 ILCS 5/8-10-4 of the Illinois Compiled Statutes. Using this Instruction sheet, all applicable information must be addressed on the worksheet. The information provided must be complete and in sufficient detail to allow for a decision to be made by the Non-Competitive Procurement Review Board. For Amendments, Modifications, describe in detail the change in terms of dollars, time period, scope of services, etc., its relationship to the original contract and the specific reasons for the change. Indicate both the original and the adjusted contract amount and/or expiration date with this change.

Attach a DPS Checklist and any other required documentation; the Board will not consider justification with incomplete information documentation or omissions.

#### PROCUREMENT HISTORY

1. Describe the requirement and how it evolved from initial planning to its present status.
2. Is this a first time requirement or a continuation of previous procurement from the same source? If so, explain the procurement history.
3. Explain attempts made to competitively bid the requirement (attach copy of sources contacted).
4. Describe in detail all research done to find other sources; list other cities, companies in the industry, professional organizations contacted. List periodicals and other publications used as references.
5. Explain future procurement objectives. Is this a one-time request or will future requests be made for doing business with the same source?
6. Explain whether or not future competitive bidding is possible. If not, explain in detail.

#### ESTIMATED COST

1. What is the estimated cost for this requirement or for each contract, if multiple awards are contemplated? What is the funding source?
2. What is the estimated cost by fiscal year?
3. Explain the basis for estimating the cost and what assumptions were made and/or data used (i.e., budgeted amount, previous contract price, current catalog or cost proposal from firms solicited, engineering or in-house estimate, etc.)
4. Explain whether the proposed Contractor or the City has a substantial dollar investment in original design, tooling or other factors which would be duplicated at City expense if another source was considered. Describe cost savings or other measurable benefits to the City which may be achieved.
5. Explain what negotiation of price has occurred or will occur. Detail why the estimated cost is deemed reasonable.

#### SCHEDULE REQUIREMENTS

1. Explain how the schedule was developed and at what point the specific dates were known.
2. Is lack of drawings and/or specifications a constraining factor to competitive bidding? If so, why is the proposed Contractor the only person or firm able to perform under these circumstances? Why are the drawings and specifications lacking? What is the lead time required to get drawings and specifications suitable for competition? If lack of drawings and specifications is not a constraining factor to competitive bidding, explain why only one person or firm can meet the required schedule.
3. Outline the required schedule by delivery or completion dates and explain the reasons why the schedule is critical.
4. Describe in detail what impact delays for competitive bidding would have on City operations, programs, costs and budgeted funds.

#### EXCLUSIVE OR UNIQUE CAPABILITY

1. If contemplating hiring a person or firm as a Professional Service Consultant, explain in detail what professional skills, expertise, qualifications, and/or other factors make this person or firm exclusively or uniquely qualified for the project. Attach a copy of the cost proposal, scope of services, and Temporary Consulting Services Form.
2. Does the proposed firm have personnel considered unquestionably predominant in the particular field?
3. What prior experiences of a highly specialized nature does the person or firm exclusively possess that is vital to the job, project or program?
4. What technical facilities or test equipment does the person or firm exclusively possess of a highly specialized nature which is vital to the job?
5. What other capabilities and/or capacity does the proposed firm possess which is necessary for the specific job, project or program which makes them the only source who can perform the work within the required time schedule without unreasonable costs to the City?
6. If procuring products or equipment, describe the intended use and explain any exclusive or unique capabilities, features and/or functions the items have which no other brands or models possess. Is compatibility with existing equipment critical from an operational standpoint? If so, provide detailed explanation?
7. Is competition precluded because of the existence of patent rights, copyrights, trade secrets, technical data, or other proprietary data (attach documentation verifying such)?
8. If procuring replacement parts and/or maintenance services, explain whether or not replacement parts and/or services can be obtained from any other sources? If not, is the proposed firm the only authorized or exclusive dealer/distributor and/or service center? If so, attach letter from manufacturer on company letterhead.

#### MBE/WBE COMPLIANCE PLAN

- \* All submissions must contain detailed information about how the proposed firm will comply with the requirements of the City's Minority and Women Owned Business program. All submissions must include a completed C-1 and D-1 form, which is available on the Procurement Services page on the City's intranet site. The City Department must submit a Compliance Plan, including details about direct and indirect compliance.

#### OTHER

1. Explain other related considerations and attach all applicable supporting documents, i.e., an approved "ITGB Form" or "Request For Individual Hire Form".

#### REVIEW AND APPROVAL

This application must be signed by both Originator of the request and signed by the Department Head. After review and final disposition from the Board, this application will be signed by the Board Chairman. After review and final disposition from the Board, this form will be presented to the Chief Procurement Officer recommending approval.

# **Attachment 1**

## **FAA Fact Sheet**

**Federal Aviation Administration**

# Fact Sheet – Engineered Material Arresting System (EMAS)

## For Immediate Release

December 12, 2014

Contact: Marcia Alexander-Adams

Phone: 202-267-3488

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## Background

The Federal Aviation Administration (FAA) is actively working to improve runway safety areas (RSAs) at commercial service airports by the end of 2015. The RSA is typically 500 feet wide and extends 1,000 feet beyond each end of the runway. It provides a graded area in the event that an aircraft overruns, undershoots, or veers off the side of the runway. Many airports were built before the current 1,000-foot RSA standard was adopted approximately 20 years ago. In some cases, it is not practicable to achieve the full standard RSA because there may be a lack of available land. There also may be obstacles such as bodies of water, highways, railroads, and populated areas or severe drop-off of terrain.

The FAA began conducting research in the 1990s to determine how to improve safety at airports where the full RSA cannot be obtained. Working in concert with the University of Dayton, the Port Authority of New York and New Jersey, and the Engineered Arresting Systems Corporation (ESCO) of Logan Township, NJ, a new technology emerged to safely arrest overrunning aircraft. EMAS uses crushable material placed at the end of a runway to stop an aircraft that overruns the runway. The tires of the aircraft sink into the lightweight material and the aircraft is decelerated as it rolls through the material.

## Benefits of the EMAS Technology

The EMAS technology improves safety benefits in cases where land is not available, or not possible to have the standard 1,000-foot overrun. A standard EMAS installation can stop an aircraft from overrunning the runway at approximately 80 miles per hour. An EMAS arrestor bed can be installed to help slow or stop an aircraft that overruns the runway, even if less than a standard RSA length is available.

## EMAS Manufacturers



As of October 2014, there are two manufacturers of EMAS products that meet the FAA requirements of advisory circular 150-5220-22A, *“Engineered Materials Arresting Systems for Aircraft Overruns.”* The FAA must review and approve each EMAS installation .

EMASMAX® is the latest, most durable version of ESCO's EMAS, developed with and technically accepted by the FAA. EMASMAX arrestor beds are composed of blocks of lightweight, crushable cellular cement material designed to safely stop airplanes that overshoot runways.

Runway Safe EMAS is a foamed silica bed which is made from recycled glass and is contained within a high-strength plastic mesh system anchored to the pavement at the end of the runway. The foamed silica is poured into lanes bounded by the mesh and covered with a poured cement layer and treated with a top coat of sealant.

Both EMAS products are located at the end of the runway and are typically the full width of the runway. The length depends on the airport configuration and the aircraft fleet using the airport.

## Current FAA Initiatives

The Office of Airports prepared an RSA improvement plan for the runways at approximately 575 commercial airports in 2005. This plan allows the agency to track the progress and to direct federal funds for making all practicable improvements, including the use of EMAS technology. Of the approximately 1,000 RSAs at these airports, an estimated 67 percent have been improved to full standards, and an estimated 96 percent have been improved to the extent practicable, not including the relocation of FAA-owned navigational equipment.

Many of the EMAS beds installed prior to 2006 need periodic re-painting to maintain the integrity and functionality of the bed. ESCO has developed improved plastic seal coating for their EMAS beds. This new coating should eliminate the need for the periodic re-painting.

## EMAS Arrestments

To date, there have been nine incidents where ESCO's EMAS has safely stopped nine overrunning aircraft with a total of 243 crew and passengers aboard those flights.

### EMAS Arrestments

Date	Crew and Passengers	Incident
May 1999	30	A Saab 340 commuter aircraft overran the runway at JFK
May 2003	3	A Gemini Cargo MD-11 overran the runway at JFK
January 2005	3	A Boeing 747 overran the runway at JFK

July 2006	5	A Mystere Falcon 900 overran the runway at Greenville Downtown Airport in South Carolina
July 2008	145	An Airbus A320 overran the runway at ORD
January 2010	34	A Bombardier CRJ-200 regional jet overran the runway at Yeager Airport in Charleston, WVA
October 2010	10	A G-4 Gulfstream overran the runway at Teterboro Airport in Teterboro, NJ
November 2011	5	A Cessna Citation II overran the runway at Key West International Airport in Key West, FL
October 2013	8	A Cessna 680 Citation overran the runway at Palm Beach International in West Palm Beach, FL

## EMAS Installations with ESCO EMAS

Currently, ESCO's EMAS is installed at 82 runway ends at 53 airports in the United States, with plans to install 12 EMAS systems at 9 additional U.S. airports.

### EMAS Installations

Airport	Location	# of Systems	Installation Date(s)
JFK International	Jamaica, NY	2	1996(1999)/2007 (2014)
Minneapolis St. Paul	Minneapolis, MN	1	1999(2008)
Little Rock	Little Rock, AR	2	2000/2003
Rochester International	Rochester, NY	1	2001
Burbank	Burbank, CA	1	2002*
Baton Rouge Metropolitan	Baton Rouge, LA	1	2002
Greater Binghamton	Binghamton, NY	2	2002 (2012)/2009***
Greenville Downtown	Greenville, SC	1	2003**/2010***
Barnstable Municipal	Hyannis, MA	1	2003
Roanoke Regional	Roanoke, VA	1	2004
Fort Lauderdale International	Fort Lauderdale, FL	4	2004, 2014
Dutchess County	Poughkeepsie, NY	1	2004**
LaGuardia	Flushing, NY	2	2005 (2014)
Boston Logan	Boston, MA	2	2005/2006 (2012)

			(2014)
Laredo International	Laredo, TX	1	2006/2012***
San Diego International	San Diego, CA	1	2006
Teterboro	Teterboro, NJ	3	2006+/2011/2013
Chicago Midway	Chicago, IL	3	2006/2007****
Merle K (Mudhole) Smith	Cordova, AK	1	2007
Charleston Yeager	Charleston, WV	1	2007
Manchester	Manchester, NH	1	2007
Wilkes-Barre/Scranton Intl.	Wilkes-Barre, PA	2	2008
San Luis Obispo	San Luis Obispo, CA	2	2008
Chicago-O'Hare	Chicago, IL	2	2008
Newark Liberty International	Newark, NJ	1	2008
Charlotte Douglas International	Charlotte, NC	1	2008
St. Paul Downtown	St. Paul, MN	2	2008+
Worcester Regional	Worcester, MA	2	2008/2009**
Reading, Regional	Reading, PA	1	2009**
Kansas City Downtown	Kansas City, MO	2	2009+/2010
Smith Reynolds	Winston-Salem, NC	1	2010
New Castle County	Wilmington, DE	1	2010
Key West International	Key West, FL	1	2010
Arcata-Eureka	Arcata, CA	1	2010
Telluride Regional	Telluride, CO	2	2010
Palm Beach	Palm Beach, FL	1	2011
Republic	Farmingdale, NY	2	2011/2013
Martin County	Stuart, FL	2	2011
Lafayette	Lafayette, LA	2	2011/2013
Cleveland Hopkins	Cleveland, OH	2	2011
Groton	Groton-New	2	2011
	London, CT		
Augusta State	Augusta, ME	2	2011

Elmira-Corning	Elmira, NY	1	2012
Trenton-Mercer	Trenton, NJ	4	2012/2013
New Bern	New Bern, NC	1	2012
Memphis	Memphis, TN	1	2013
Burke Lakefront	Cleveland, OH	1	2013
San Francisco	San Francisco, CA	4	2014
T.F. Green	Providence, RI	1	2014
Addison	Addison, TX	1	2014
Chicago Executive	Wheeling, IL	1	2014
Reagan National	Washington, DC	1	2014
<b>( ) Bed replaced</b>			
<b>* Widened in 2008</b>			
<b>** General aviation airport</b>			
<b>*** retrofitted bed</b>			
<b>+ Reliever airport</b>			

## Additional ESCO projects currently under contract

Airport	Location	# of Systems	Expected Installation Date
Newark	Newark, NJ	1	fall 2015
Key West	Key West, FL	1	spring 2015
Kodiak	Kodiak, AK	2	summer 2015
T.F. Green	Providence, RI	1	summer 2015
Reagan National	Washington, DC	2	2015
Rutland	Rutland, VT	1	fall 2015
Monterey Regional	Monterey, CA	2	spring/summer 2015
Nome Airport	Nome, AK	1	summer 2015
Oakland International	Oakland, CA	1	summer 2015

### EMAS Installations Using Runway Safe EMAS

Currently, Runway Safe EMAS is installed at 1 runway end at 1 airport in the U.S., with plans to install 3 EMAS systems at 1 U.S. airport.

<b>Airport</b>	<b>Location</b>	<b># of Systems</b>	<b>Installation Date</b>
Chicago Midway	Chicago, IL	1	fall 2014

**Additional Runway Safe projects currently under contract**

<b>Airport</b>	<b>Location</b>	<b># of Systems</b>	<b>Expected Installation Date</b>
Chicago Midway	Chicago, IL	3	2015

###

This page was originally published at: [https://www.faa.gov/news/fact\\_sheets/news\\_story.cfm?newsId=13754](https://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=13754)

## **Attachment 2**

### **ESCO EMAS History Presentation**



Rahm Emanuel  
Mayor



Best Airport in North America  
Chicago O'Hare  
International Airport  
Eighth Consecutive Year  
2011



# ESCO EMAS

## Midway International Airport



CHICAGO DEPARTMENT OF AVIATION

# EMAS INSTALLATION

Location

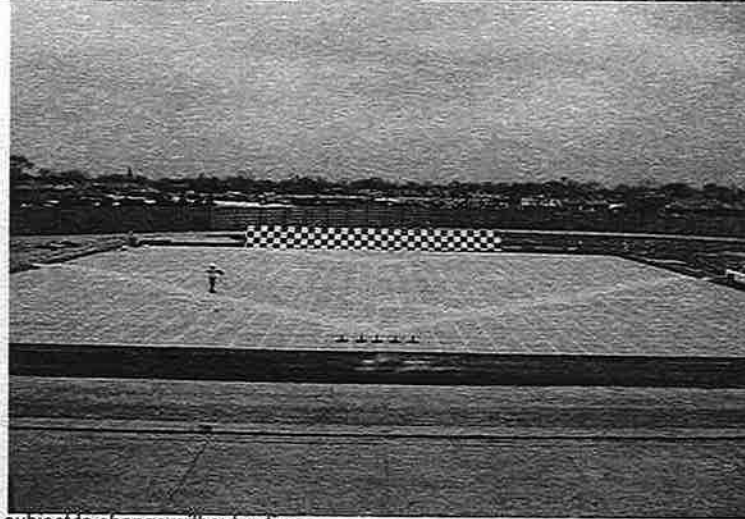
MDW 13C & 4R

Total Price

\$5,843,908



Installation of  
EMAS on 13C and  
4R were  
completed in 2006  
and 2007



CONNECT 

*Disclaimer – Any and all information contained herein is subject to change without notice*



# EMAS INSTALLATION

Location

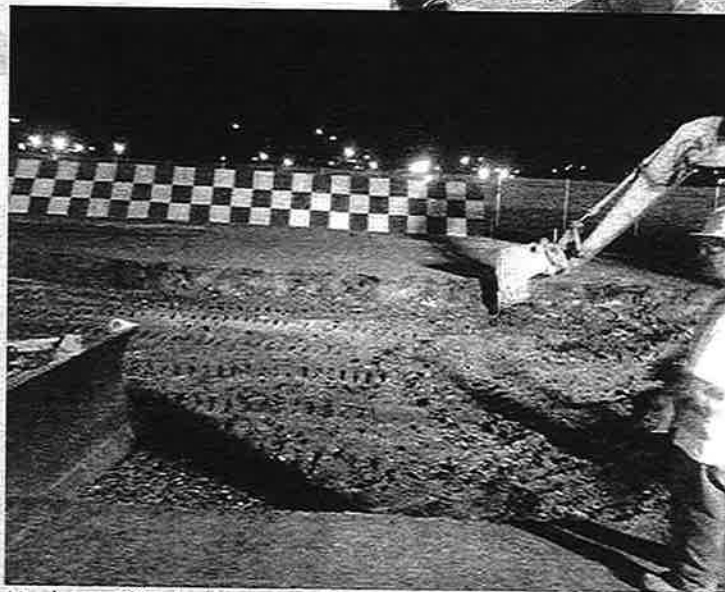
MDW 22L & 13C

Total Price

\$4,631,456



Installation 31C and  
22L completed in  
2007



CONNECT 

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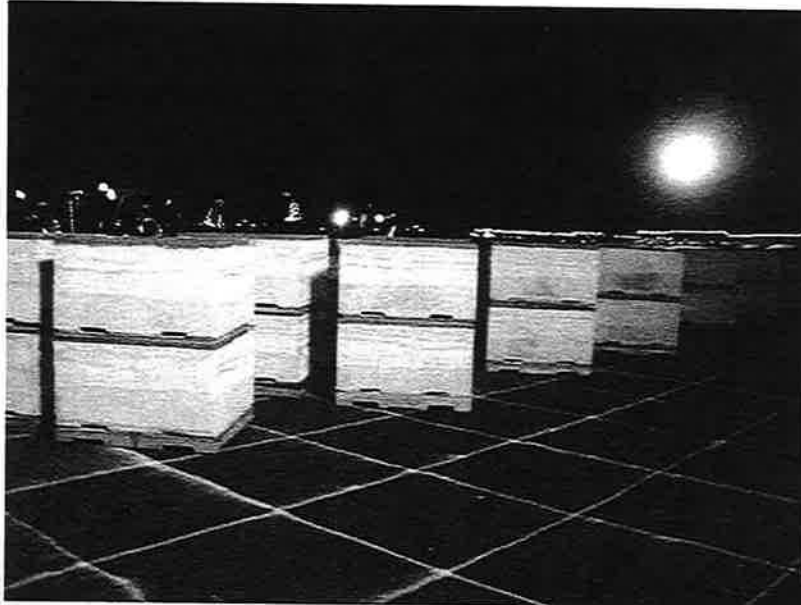
# EMAS INSTALLATION

Location

ORD 4R & 22L

Total Price

\$22,863,180



Installation 4R  
completed in 2007  
and 22L completed  
in 2008. 22L  
Extension  
Completed 2010



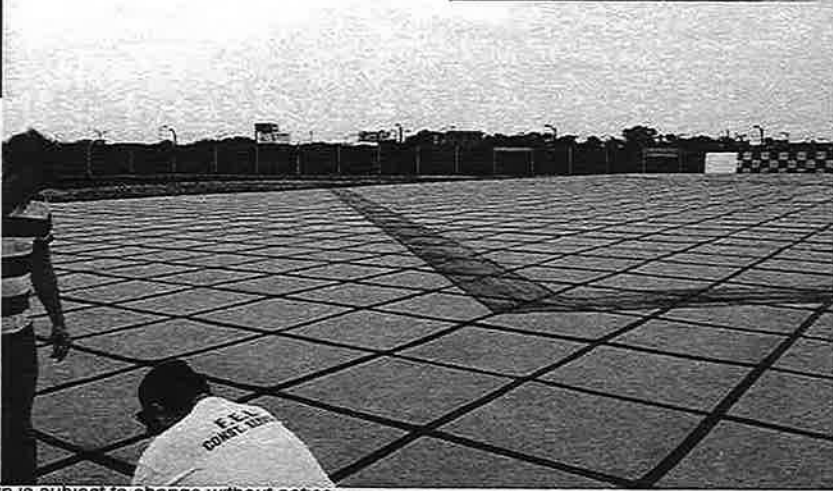
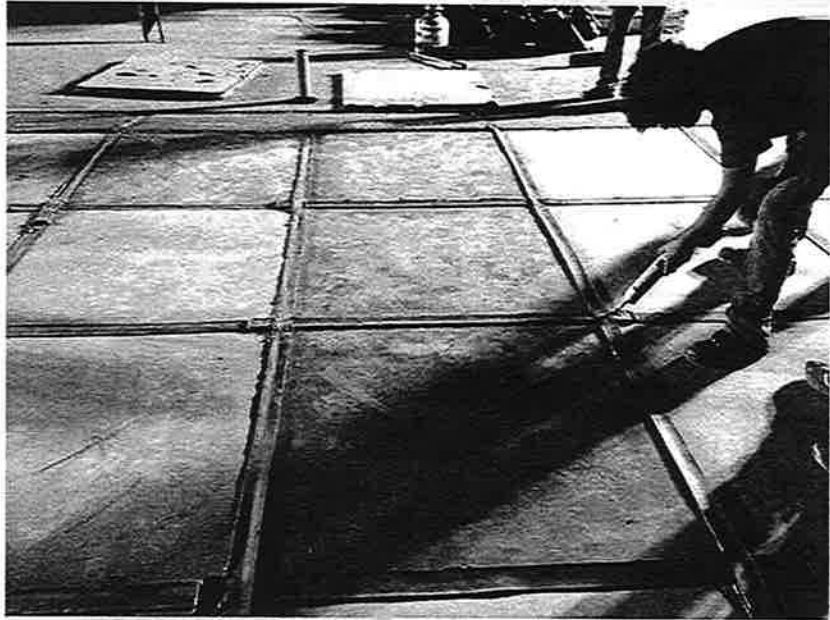
CONNECT 

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# EMAS MAINTENANCE

Location
Midway

Total Price
\$226,272/yr



Disclaimer – Any and all information contained herein is subject to change without notice

# JUNE 2008- Replacement of 9 Blocks

Location	Total Price
RWY 4R	\$70,000



Damage due to general aviation aircraft entering bed after wrong turn.



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# JUNE 21, 2010- 4 Block Replacement

Location	Total Price
RWY 31C	\$20,023



Repair required due to blow-out of EMAS.

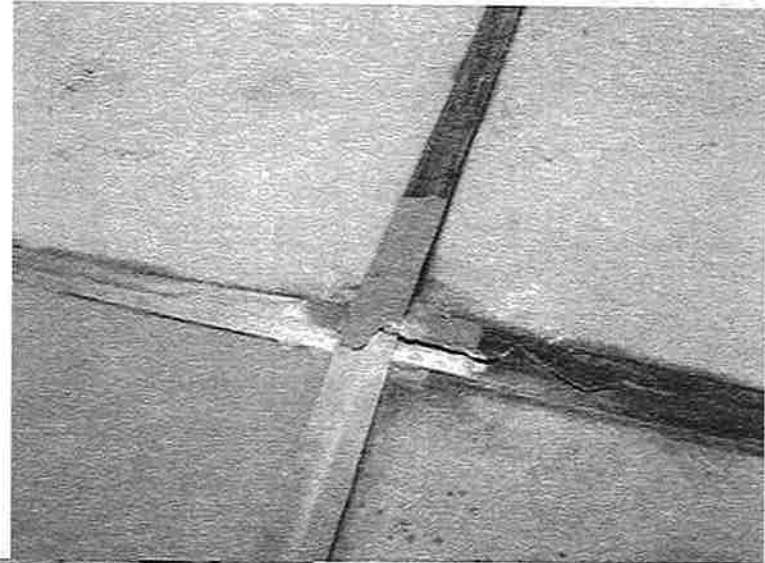
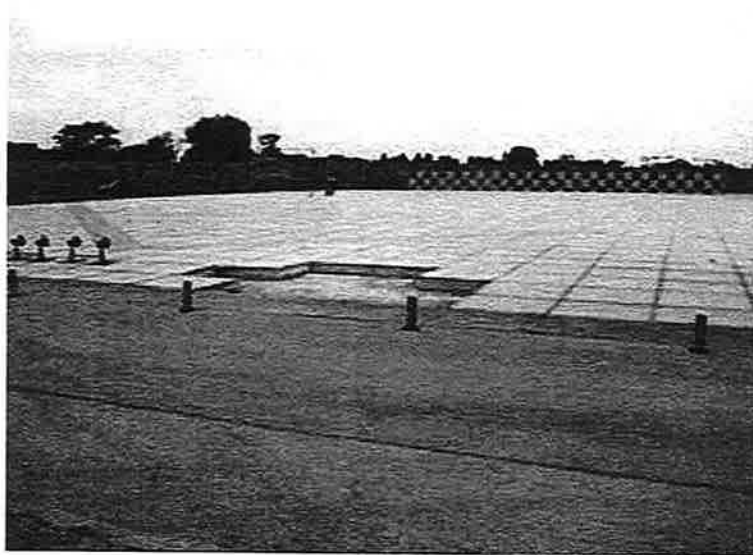


*Disclaimer – Any and all information contained herein is subject to change without notice*

# JULY 29, 2010- 9 Block Blow Out

Location
RWY 13C

Total Price
\$35,223



Repair required  
due to blow-out  
of EMAS.



*Disclaimer – Any and all information contained herein is subject to change without notice*

# AUG 25, 2010- 3 Block Replacement

Location

RWY 31C

Total Price

MISSING



Repair required  
due to blow-out  
of EMAS.



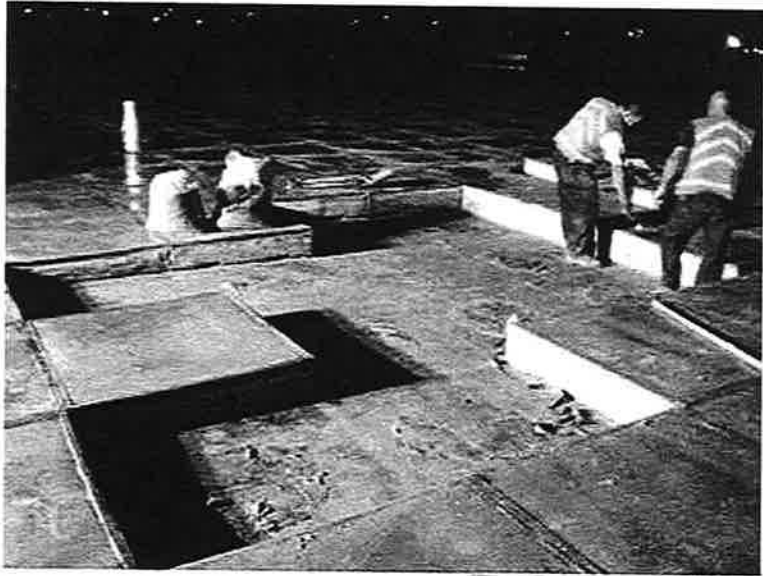
CONNECT 

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# SEPT 7, 2010- 11 Block Replacement

<i>Location</i>
<b>RWY 31C</b>

<i>Total Price</i>
<b>\$50,741</b>



Repair  
required due  
to blow-out of  
EMAS.



**CONNECT** 

*Disclaimer – Any and all information contained herein is subject to change without notice*



# DEC 17, 2010- 2 Block Replacement

Location
RWY 31C

Total Price
\$12,450



Repair required  
due to wildlife  
and impact  
from lawn  
mowing  
equipment



*Disclaimer - Any and all information contained herein is subject to change without notice*

# MAY 4, 2011 - 3 Block Replacement

Location	Total Price
31C	\$12,000 Estimated



Repair required  
due to blow-out  
of EMAS.



CONNECT 

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# SEPT. 2011 - 735 Block Replacement

Location	Total Price
RWY 31C	Cost Absorbed By ESCO



Replacement of large portion of EMAS bed as a result of a settlement agreement with ESCO



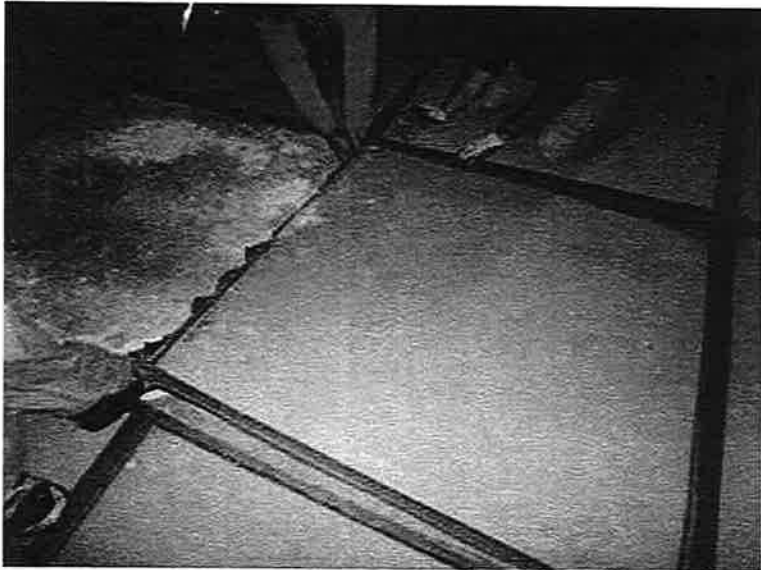
CONNECT 

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# JUNE 19, 2013- 3 Block Blow Out

Location
RWY 4R

Total Price
\$12,000 Estimated



Repair required  
due to blow-out  
of EMAS.

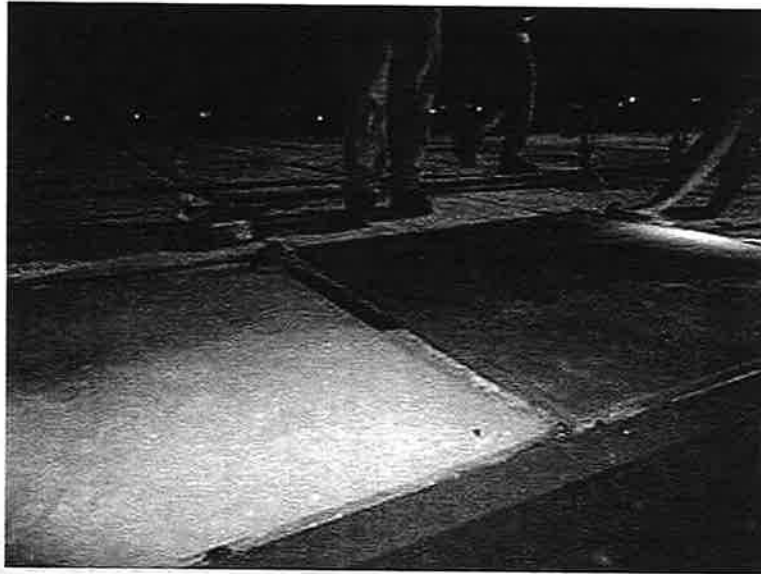


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# JUNE 21, 2013- 1 Block Blow Out

Location	Total Price
RWY 13C	\$4,000 Estimated



Repair required due to blow-out of EMAS.



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# JULY 22, 2013- 3 Block Blow Out

Location
RWY 13C

Total Price
\$11,278



Repair required  
due to blow-out  
of EMAS.



*Disclaimer - Any and all information contained herein is subject to change without notice*

# Spring 2013- 22L Block Blow Out

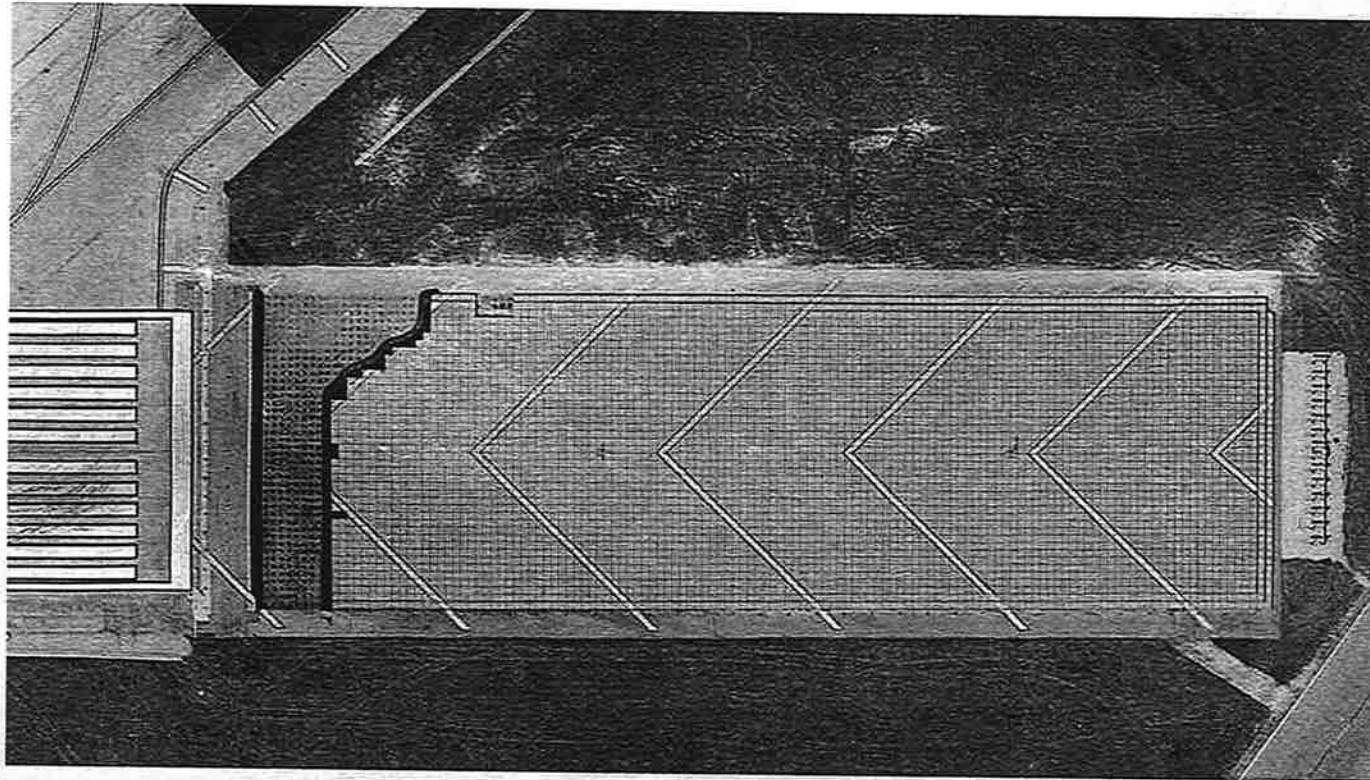
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Location

RWY 22L ORD

Total Price

Cost Absorbed by ESCO



Blow out of approximately one fifth of the 22L EMAS as a result of a 747 departure



*Disclaimer – Any and all information contained herein is subject to change without notice*

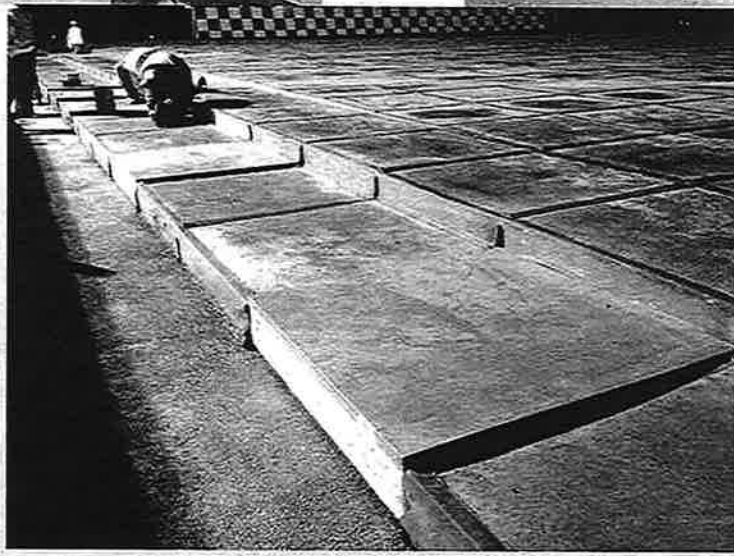
# Summer 2014- 100 Block Replacement

Location
RWY 13C, 31C & 4R

Total Price
\$271,029



Replacement of deteriorated blocks to mitigate potential for blow-out of EMAS.



*Disclaimer – Any and all information contained herein is subject to change without notice*



## **Attachment 3**

### **Runway Safe LLC – Documentation**



RUNWAY SAFE US • 14144 Trautwein Road • Austin Texas 78737 • USA

April 7, 2015

Chicago Department of Aviation  
Midway International Airport

ATTENTION: Erin O'Donnell, [erin@cityofchicago.org](mailto:erin@cityofchicago.org)  
SUBJECT: UPDATED QUOTE for Runway Safe EMAS materials for beds 2-4 at Chicago Midway Airport (MDW) and O'Hare (ORD) Airports

Dear Erin,

Per our recent discussions, we are happy to provide an updated quote for Runway Safe EMAS beds 2-4 at Midway and O'Hare. The details of our quote are as follow:

*Total Price for beds 2-4 at MDW...\$7,200,000 USD*

*Terms...\$2,500,000 USD pre-payment at contract signing; \$1,500,000 USD upon completion and acceptance of the 1<sup>st</sup> of 3 beds, \$1,500,000 USD upon completion and acceptance of the 2<sup>nd</sup> of 3 beds, and \$1,700,000 USD upon completion and acceptance of the last of 3 beds. This price is apportioned by the projected constructed area of the beds at MDW. 13C and 31C will be approximately 37,000 sf each, or \$2,257,627 each, while 4R will be approximately 44,000 sf or \$2,684,746.*

*Total Price for two (2) beds at ORD...\$7,500,000 USD*

*Terms... Payment of 40% (\$3,000,000 USD) of the total value of the ORD EMAS beds upon Notice to Proceed from the City; 30% (\$2,250,000 USD) of the total value of the ORD EMAS beds upon completion and acceptance of the 1st of 2 beds; Remaining 30% (\$2,250,000 USD) of total value of the ORD EMAS beds upon completion and acceptance of the 2nd of 2 beds. This price assumes that each bed at O'Hare is identical in constructed size. Each bed will be \$3,750,000.*

The quoted price includes the following services and warranty:

*Materials and Testing Services—silica foam materials satisfying FAA requirements for all beds and will supply testing and/or qualification as required of all materials installed*

*Design and specification services and FAA performance reports—as required prior to bed installation by the FAA (Protection Engineering Consultants, the developer of the system, to be engaged in all submittals)*

*Construction Services and Oversight—engineering oversight during construction/installation*

*5-year limited warranty on 4 beds at MDW (including the already constructed 22L at MDW) and 2 beds at O'Hare—warranty includes monthly inspections and serviceability repairs or material replacement as required (labor and materials)*

The costs for the services provided are included in the system price. No additional professional services will be billed to the City of Chicago except as described under the Additional Materials and Services section below.



RUNWAY SAFE US • [www.runwaysafe.com](http://www.runwaysafe.com)

Qualifications/Justifications—

Runway Safe LLC is the sole supplier and technical expert for silica foam (foam glass) meeting the required project construction specifications. The unique specification of the materials and our expertise in assembling the EMAS bed are derived from material development and testing done in support of a request to the FAA for system acceptance per the requirements of FAA AC No: 150/5220-22B. ATTACHMENT A to this letter includes the original acceptance granted to Norsk Glassgjenvinning (NGG). The intellectual property associated with this acceptance (the US and European patents) is licensed by Runway Safe AB, with a sublicense to Runway Safe LLC. Also included in ATTACHMENT A is the FAA acceptance of the first Midway Runway Safe EMAS on runway end 22L.

The quoted price offers a significant discount to Chicago Midway International Airport. Our original bid including all Runway Safe costs was \$9,500,000. When actual costs for bed 1 are added to this, the market price for 4 beds is \$12,601,163. When the present quotation of \$7,200,000 is added to bed 1 costs, the total price to Midway, including the warranty and services described above, is \$10,301,163 for four beds, a \$2,300,000 discount over market price, a savings equal to the approximate Runway Safe costs for one bed.

The quoted price does not include material handling, storage, construction/installation or supplemental materials (struts/anchors, geogrid, CLSM or MMA).

The requested prepayment will facilitate the allocation of production runs and shipment of the long lead time silica foam.

Supplemental materials are not included to allow the City of Chicago to procure those using best price/best value procurement. Runway Safe will work closely with the City of Chicago in specifying and accepting those materials.

Pre-positioned repair material including silica foam has been provided as a part of the bed 1 installation cost (the second invoice payable to Runway Safe in the amount of \$830,944). This material has been provided in an amount adequate to accomplish repairs in the event of an aircraft incursion or accidental vehicle incursion. The amount of silica foam material provided (including slight overages provided during bed 2-4 construction) will equal one full replacement bed of material.

The 5-year limited warranties on all EMAS beds (including the 22L bed at Midway) is effective the date the contract for these services and materials is effective.

Additional Materials and Services—

The 5-year warranty offered above does not apply to damage or loss of function in the EMAS bed due to aircraft overrun or any one event or combination of events as described in project warranty exclusions (a copy of the warranty information is attached to this letter as ATTACHMENT B). In the event of an overrun or any event or combination of the events referenced above, Runway Safe technical staff will be immediately available to support repairs needed to place the EMAS bed back in service. Pre-positioned repair material described above will be used for any repairs required. Technical services and replacement silica foam will be provided at the following cost by Runway Safe:

*Replacement material for pre-positioned materials used in repairs* – certified replacement silica foam materials (materials including necessary testing and inspection) will be provided for a delivered price of \$450/m<sup>3</sup>.

*Technical services provided in support of the repair and/or replacement* – \$3,000 per day on site for a minimum of 2 technical experts as supported by travel reimbursement (described below). This technical

Chicago Department of Aviation  
Midway International Airport  
ATTN: Erin O'Donnell  
April 7, 2015  
Page 3

service daily rate is offered for the first 2 years after the bed is placed into service and may be renegotiated every 2 years thereafter over the life of the bed.

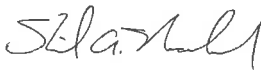
*Travel required to support technical services* – reimbursed per City of Chicago travel and per diem regulations/restrictions

We look forward to continuing our partnership with the City of Chicago and the Chicago Department of Aviation on the deployment of the Runway Safe systems. We look forward to years of close coordination and service as we mutually seek maintain safe and financially efficient airport operations at Midway.

Please let us know of your questions regarding this quotation.

Respectfully submitted:

Runway Safe LLC



Digitally signed by Kirk A  
Marchand:AO109690000135ABC96E6E0000417B  
DN: c=US, o=U.S. Government, ou=ECA,  
ou=IdenTrust, ou=PROTECTION ENGINEERING  
CONSULTANTS, cn=Kirk A  
Marchand:AO109690000135ABC96E6E0000417B  
Date: 2015.04.07 15:22:13 -05'00'

Kirk A. Marchand, P.E., CEO

**ATTACHMENT A:**

**FAA Acceptance for the Runway Safe Development and the Midway Installation**



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Office of Airport Safety and  
Standards

800 Independence Ave., SW  
Washington, DC 20591

APR 02 2012

Kjell Hakon Helgesen  
CEO  
Norsk Glassgjenvinning  
Haslevangen 14  
P. O. Box 102 Okern  
N-0509 Oslo, Norway

**RE: Review of Glasopor EMAS Development: Design & Performance Report for  
FAA Review and Acceptance of Technical Sufficiency**

Dear Mr. Helgesen:

We have reviewed the Norsk Glassgjenvinning (NGG) report titled "Glasopor EMAS Development: Design & Performance Report for FAA Review & Acceptance," dated June 8, 2011 and submitted by Matt Barsotti of Protection Engineering Consultants (PEC). We have also reviewed the three addendum reports submitted by PEC. These addenda are based on comments and questions we submitted regarding the engineered materials arresting system (EMAS) design and performance information stated in the report. These addenda are as follows:

Addendum Report 1 – October 3, 2011  
Addendum Report 2 – October 17, 2011  
Addendum Report 3 – November 3, 2011

The intent of this report, and its sequential addendums, was to seek the FAA's determination that your proposed EMAS product is in accordance with Advisory Circular (AC) 150/5220-22A, Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns.

The Airport Engineering Division (AAS-100), in consultation with the FAA's William J. Hughes Technical Center has determined, based on the information provided in this report, as updated by its supporting addenda that the design and performance of the NGG Glasopor EMAS complies with the required standards of AC 150/5220-22A under the following condition:

- The cover layer consists of cementitious controlled low strength material (CSLM) as opposed to polypropylene plastic. The FAA may accept plastic lids for technical sufficiency in the future if further testing proves that the design and performance complies with the AC under this configuration.

Thank you for submitting this report and expressing your interest in providing a product that meets FAA standards. This determination of technical sufficiency is not a determination that this product will be eligible for FAA Airport Improvement Program (AIP) grant funding. Products funded through AIP must satisfy a number of federal procurement and contracting standards, including compliance with the Buy American preferences in title 49 United States Code, section, 50101.

If you have any questions, please contact Michael Meyers at (202) 267-8785 or by email [michael.a.meyers@faa.gov](mailto:michael.a.meyers@faa.gov), or Ryan King at (609) 485-8816 or by email [ryan.king@faa.gov](mailto:ryan.king@faa.gov).

Sincerely,



John R. Dermody, P.E.  
Manager, Airport Engineering  
Division, AAS-100

cc: Matt Barsotti, M.S. P.E.C.  
Kirk Marchand, P.E.  
Jon Narmo, NGG

Chicago Department of Aviation  
Midway International Airport  
ATTN: Erin O'Donnell  
April 7, 2015  
Page 6



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

September 9, 2014

Erin O'Donnell  
Managing Deputy Commissioner, Midway  
5700 South Cicero Avenue  
Chicago, IL 60638

Dear Ms. O'Donnell:

We have received the design report for a Runway Safe replacement of the Engineered Materials Arresting System (EMAS) at Chicago-Midway Airport (MDW) for the Runway 4R departure end dated August 26, 2014. The Runway Safe arresting system (formerly known as Glaspor EMAS) was previously accepted by the FAA on April 2, 2012, as meeting the required standards described in FAA Advisory Circular 150/5220-22B titled "*Engineered Materials Arresting Systems for Aircraft Overruns*".

The FAA conditionally supports the Chicago Department of Aviation's request to replace the existing EMAS system with the Runway Safe system. The conditions are that the system installed at MDW is consistent with what the FAA previously accepted on April 2, 2012 and is contingent on a successful construction and monitoring of the planned "mock-up" bed to be installed in advance of the actual installation on the airport. Any changes to the design or performance must be reviewed and accepted by the FAA.

Sincerely,

A handwritten signature in black ink, appearing to read "Birke M. Rhodes".

Birke M. Rhodes  
Manager, Safety and Standards Branch

**ATTACHMENT B:**

**Inspections, Maintenance and Warranty Agreement**

Runway Safe shall warrant the installation of the EMAS systems described in the Technical Specification for Five (5) years (60 months) from the Completion Date of each installation. The Completion Date of each installation shall be established by a final acceptance document signed by the City no later than 30 days after the Contractor formally notifies the City that the installation is ready for acceptance. The Warranty will be expressly conditioned on the City satisfying all of the following requirements:

- 1) Installation: The EMAS must be constructed under the supervision of Runway Safe and by an Installation Contractor performing in strict compliance with the Construction Specifications, project drawings and material submittals (including replacement materials in the event of rejections). There must be no deviations from the Construction Specifications or project drawings without approval of Runway Safe as countersigned by the City. Runway Safe will be granted access during all stages of construction for review and approval of all materials, methods and constructions.
- 2) Access and Right of Inspection: Runway Safe will be granted reasonable access to the EMAS after the Completion Date for the purpose of conducting formal quarterly inspections and informal monthly inspections no more frequent than monthly. Reasonable access shall include, without limitation, access during daylight hours for careful visual assessment.
- 3) Notification: If the City believes that it has a claim arising from the failure of the EMAS to conform with this warranty, the City must notify Runway Safe within ten (10) days after discovering conditions giving rise to the claim, and in any case before the expiration of the warranty term.
- 4) Access and Right of Repair: Runway Safe will be granted reasonable access to the EMAS after the Completion Date for the purpose of repairing or replacing non-conforming materials. Reasonable access shall include, without limitation, access during nighttime or extended nighttime hours for repair and/or construction.

If the warranty set forth is breached, Runway Safe will, at its sole option, either 1) correct the non-conformity at its own cost within a reasonable period of time after receiving the notice of the breach, or 2) replace the non-conforming section of the EMAS at its own cost within a reasonable time after receiving notice of the breach.

Runway Safe shall not be liable for any damage to the EMAS or other property attributable to any of the following (or combination thereof):

- 1) Standing water around or over the EMAS bed,
- 2) Vehicular traffic (to include all airport maintenance vehicles),
- 3) Aircraft traffic in contact with the EMAS bed,
- 4) Acts of nature, including, but not limited to lightning, flood, winds in excess of 120-mph, earthquake, hurricane, tornado, hail storm or impact of large foreign objects,
- 5) Repairs or alterations of the EMAS, unless performed by personnel trained and qualified by the Contractor,
- 6) Excessive buildup of debris in and around the EMAS bed,
- 7) Spilled liquids or immersion in liquids (including large amounts of fuel from over-flying aircraft),
- 8) Use of the EMAS for purposes other than those for which it is customarily used,
- 9) Exposure to chemicals other than deicers and aircraft exhaust,
- 10) Jetblast in excess of 150-mph,
- 11) Damage or defect due to faulty or improper workmanship, including installation of the product by the Installation contractor that is shown to be (through construction documentation or subsequent evaluation) faulty because of non-conformance with the Construction Specifications or installation drawings, and/or
- 12) Damage to the EMAS bed related to or caused by base surface failure.



### Exhibit 3

#### Warranty

The Contractor shall warrant the installation of the EMAS systems described in the Technical Specification for Five (5) years (60 months) from the Completion Date of each installation. The Completion Date of each installation shall be established by a final acceptance document signed by the City no later than 30 days after the Contractor formally notifies the City that the installation is ready for acceptance. The Warranty will be expressly conditioned on the City satisfying all of the following requirements:

- 1) Installation: The EMAS must be constructed by a Contractor approved Installation Contractor performing in strict compliance with the Construction Specifications, project drawings and material submittals (including replacement materials in the event of rejections). There must be no deviations from the Construction Specifications or project drawings without approval of the Contractor as countersigned by the City. The Contractor will be granted access during all stages of construction for review and approval of all materials, methods and constructions.
- 2) Access and Right of Inspection: The Contractor will be granted reasonable access to the EMAS after the Completion Date for the purpose of conducting formal quarterly inspections and informal monthly inspections no more frequent than monthly. Reasonable access shall include, without limitation, access during daylight hours for careful visual assessment.
- 3) Notification: If the City believes that it has a claim arising from the failure of the EMAS to conform with this warranty, the City must notify the Contractor within ten (10) days after discovering conditions giving rise to the claim, and in any case before the expiration of the warranty term.
- 4) Access and Right of Repair: The Contractor will be granted reasonable access to the EMAS after the Completion Date for the purpose of repairing or replacing non-conforming materials. Reasonable access shall include, without limitation, access during nighttime or extended nighttime hours for repair and/or construction.

If the warranty set forth is breached, the Contractor will, at its sole option, either 1) correct the non-conformity at its own cost within a reasonable period of time after receiving the notice of the breach, or 2) replace the non-conforming section of the EMAS at its own cost within a reasonable time after receiving notice of the breach.

Additionally covered by this warranty is the previously installed 22L EMAS bed installed in October 2014 at Chicago Midway International Airport. All terms listed above shall apply. The warranty on the 22L EMAS will begin at the execution of this contract and will terminate five (5) years from that date.

The contractor shall not be liable for any damage to the EMAS or other property attributable to any of the following (or combination thereof):

- 1) Standing water around or over the EMAS bed,
- 2) Vehicular traffic (to include all airport maintenance vehicles),
- 3) Aircraft traffic in contact with the EMAS bed,
- 4) Acts of nature, including, but not limited to lightning, flood, winds in excess of 120-mph, earthquake, hurricane, tornado, hail storm or impact of large foreign objects,

- 5) Repairs or alterations of the EMAS, unless performed by personnel trained and qualified by the Contractor,
- 6) Excessive buildup of debris in and around the EMAS bed,
- 7) Spilled liquids or immersion in liquids (including large amounts of fuel from over-flying aircraft),
- 8) Use of the EMAS for purposes other than those for which it is customarily used,
- 9) Exposure to chemicals other than deicers and aircraft exhaust,
- 10) Jetblast in excess of 150-mph,
- 11) Damage or defect due to faulty or improper workmanship, including installation of the product by the Installation contractor that is shown to be (through construction documentation or subsequent evaluation) faulty because of non-conformance with the Construction Specifications or installation drawings, and/or
- 12) Damage to the EMAS bed related to or caused by base surface failure.

# **Attachment 4**

## **Foam Silica EMAS Presentation**



Rahm Emanuel  
Mayor



Rosemarie S. Andolino  
Commissioner



American Association of  
Airport Executives (AAAE)



Rahm Emanuel  
Mayor



Rosemarie S. Andolino  
Commissioner



American Association of  
Airport Executives (AAAE)

## Case Studies: Innovative Recycling

*Moderator:* Erin O'Donnell, Managing Deputy Commissioner,  
Chicago Department of Aviation, Midway International Airport

### *Panelists:*

Marc Klein, CARE Plus

Kirk Marchand, Runway Safe

Ed Glueckler, Aircraft Fleet Recycling Association

Rachel Barry, Southwest Airlines

November 3, 2014

**RUNWAY  
SAFE**

CHICAGO  
**CDA**  
DEPARTMENT OF AVIATION



**THE WORLD'S ONLY GREEN EMAS**

**SUSTAINABLY DESIGNED. ENGINEERED TO PROTECT.**

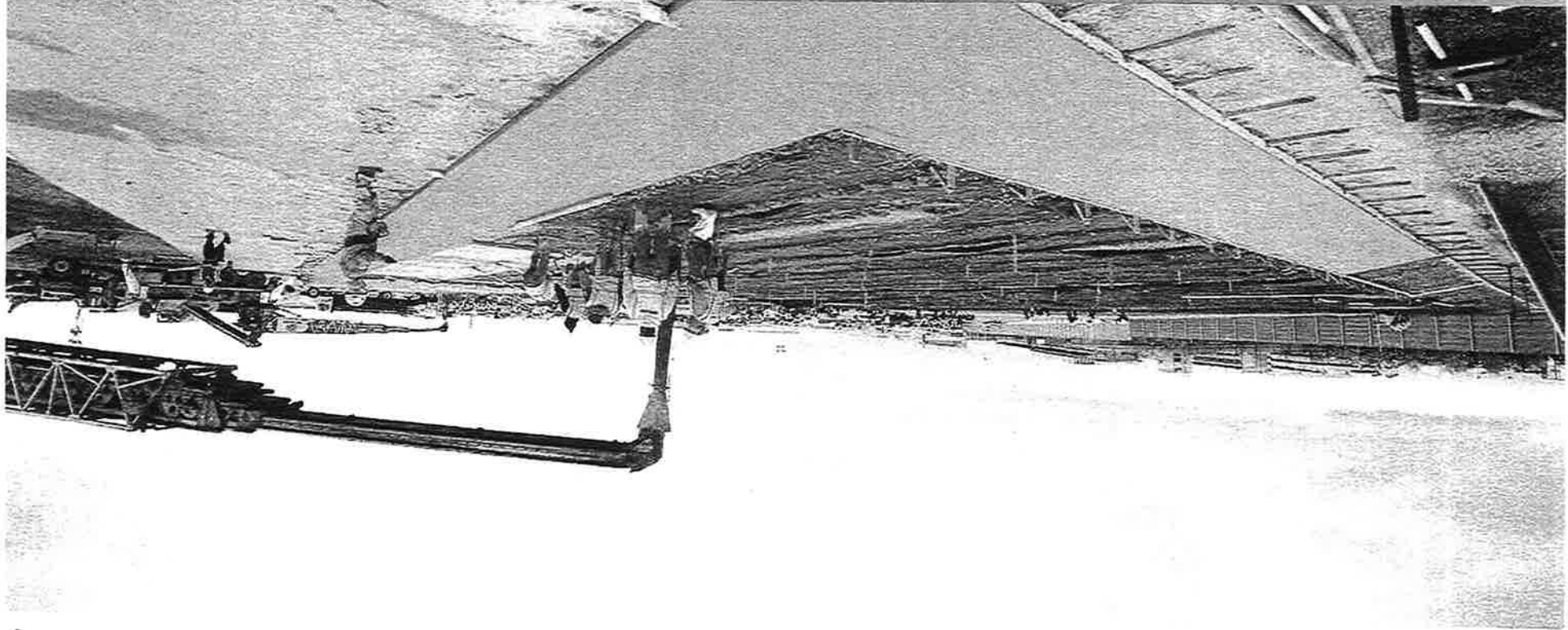
Presented By

Kirk Marchand, President Runway Safe, LLC

Marc Klein, Site Manager CARE Plus, LLC

CHICAGO MIDWAY INTERNATIONAL AIRPORT

# WORLD'S FIRST RUNWAY SAFE EMAS



CHICAGO  
**CDA**  
DEPARTMENT OF AVIATION

**RUNWAY**  
SAFE



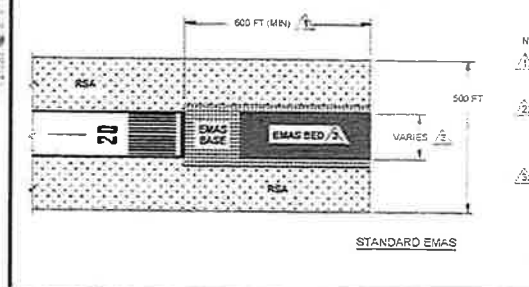
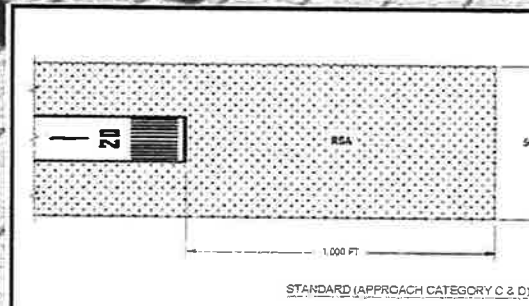
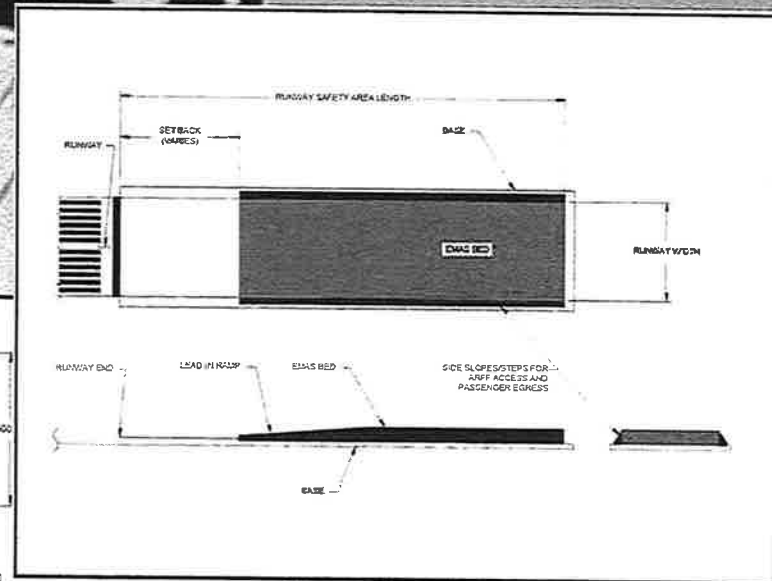
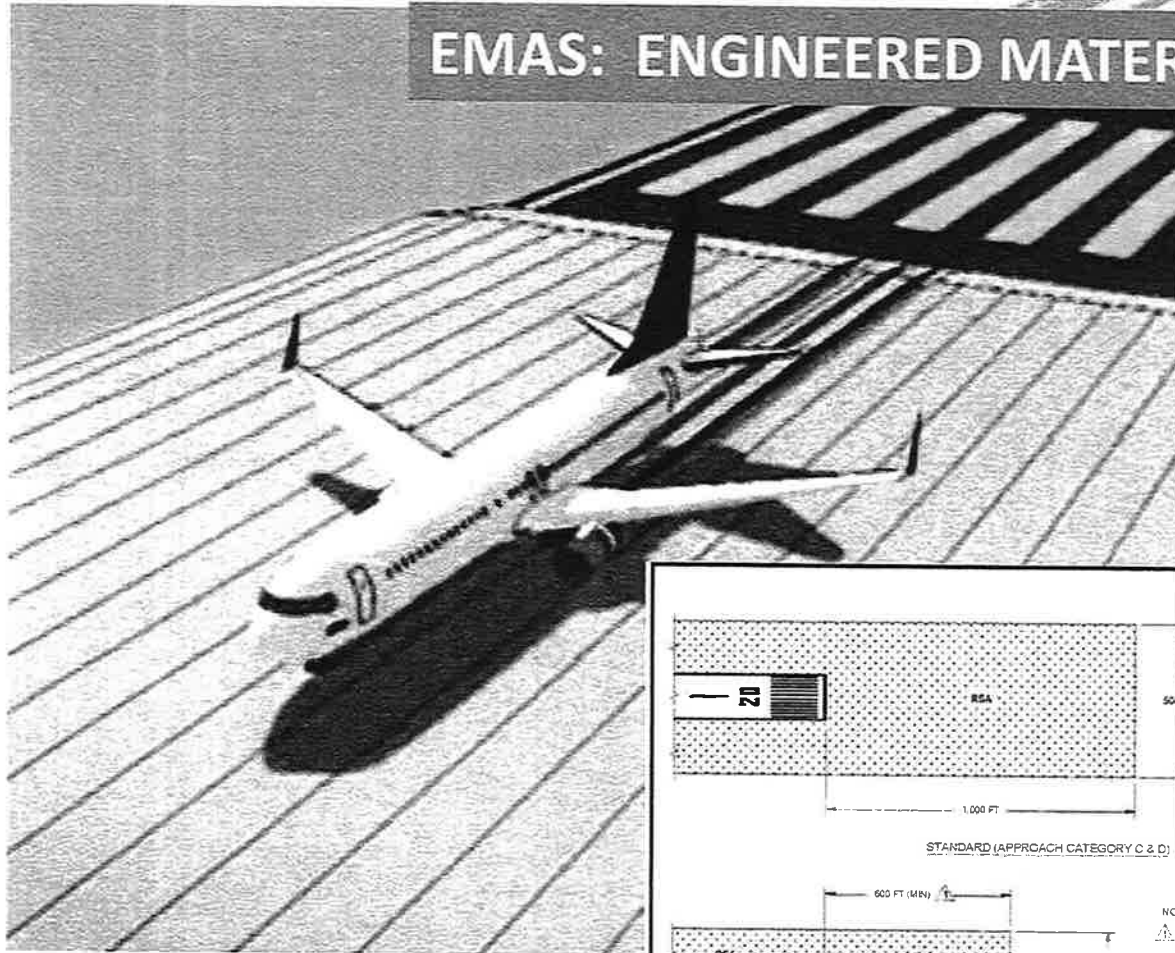
**RUNWAY**  
**SAFE**

**WHAT IS EMAS?**



# RUNWAY SAFE

## EMAS: ENGINEERED MATERIAL ARRESTING SYSTEM



**NOTES:**

- 1. 600 FEET MINIMUM REDUCTION APPLIES ONLY TO RUNWAY ENDS WITH VERTICAL GUIDANCE FOR APPROACHES.
- 2. THE WIDTH OF THE EMAS BED IS THE WIDTH OF THE RUNWAY PLUS ANY SLOPED AREA ALONG THE SIDES REQUIRED FOR SAFE INGRESS/EGRESS AND MOVEMENT OF ARFF EQUIPMENT OPERATING DURING AN EMERGENCY.
- 3. THE EMAS BED IS DESIGNED TO STOP AIRCRAFT THAT EXITS THE END OF THE RUNWAY TRAVELING AT 70 KNOTS.



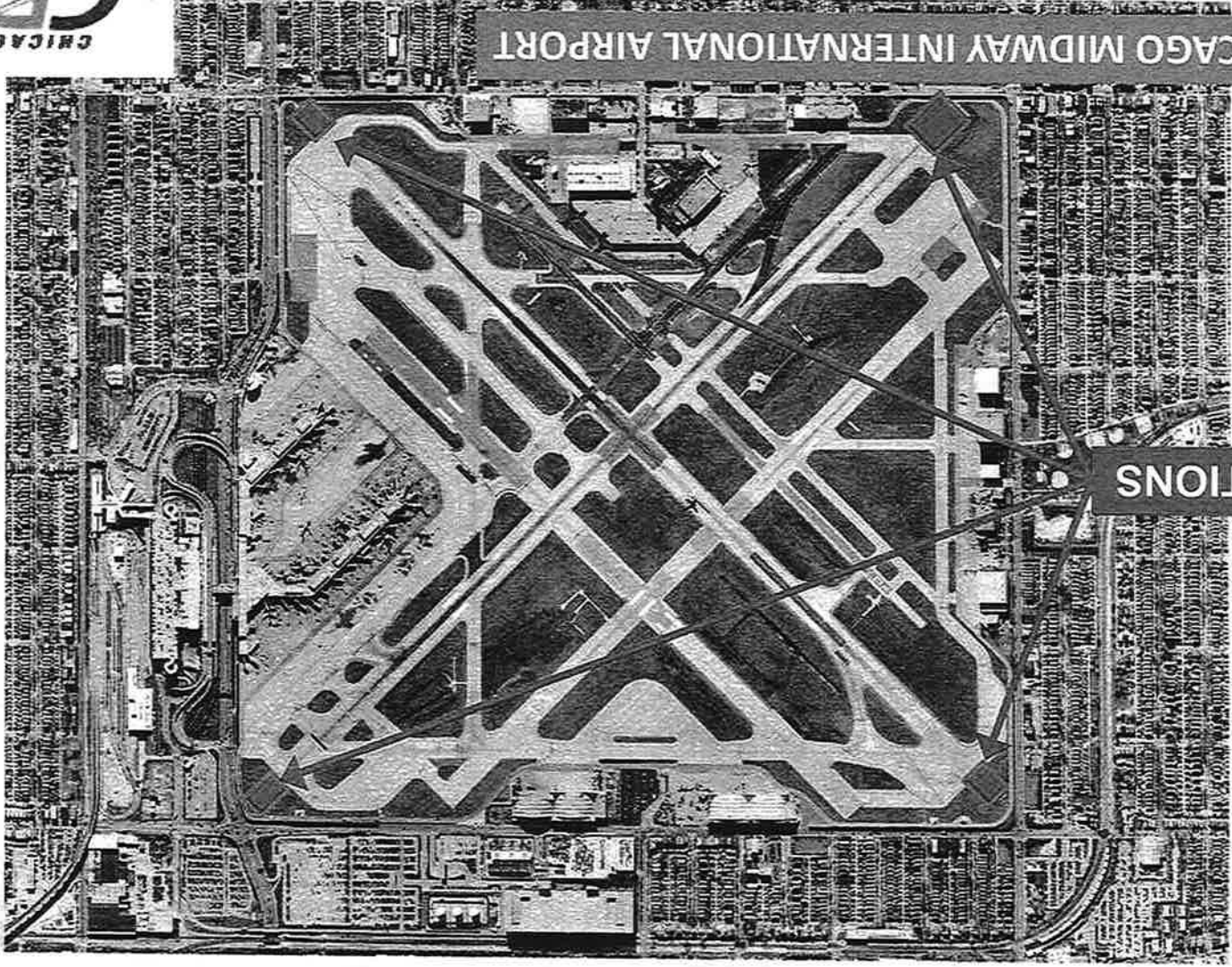
**RUNWAY**  
**SAFE**

# BACKGROUND

CHICAGO MIDWAY INTERNATIONAL AIRPORT EMAS



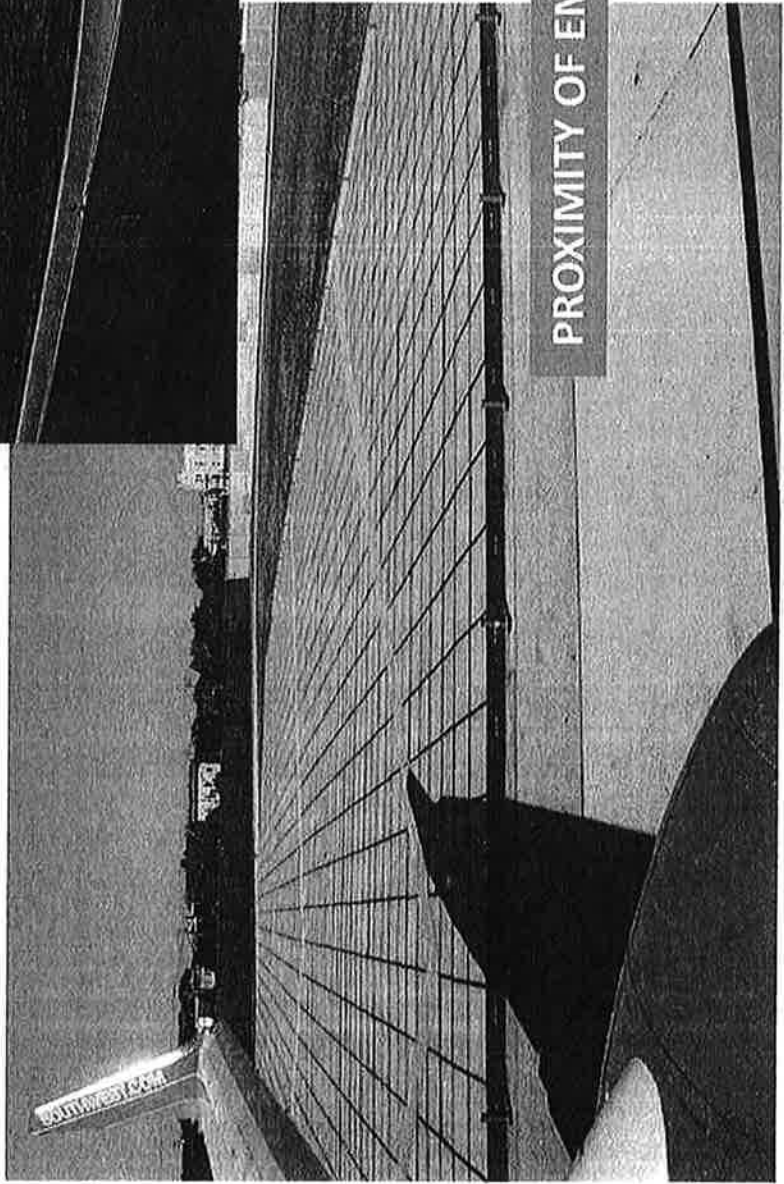
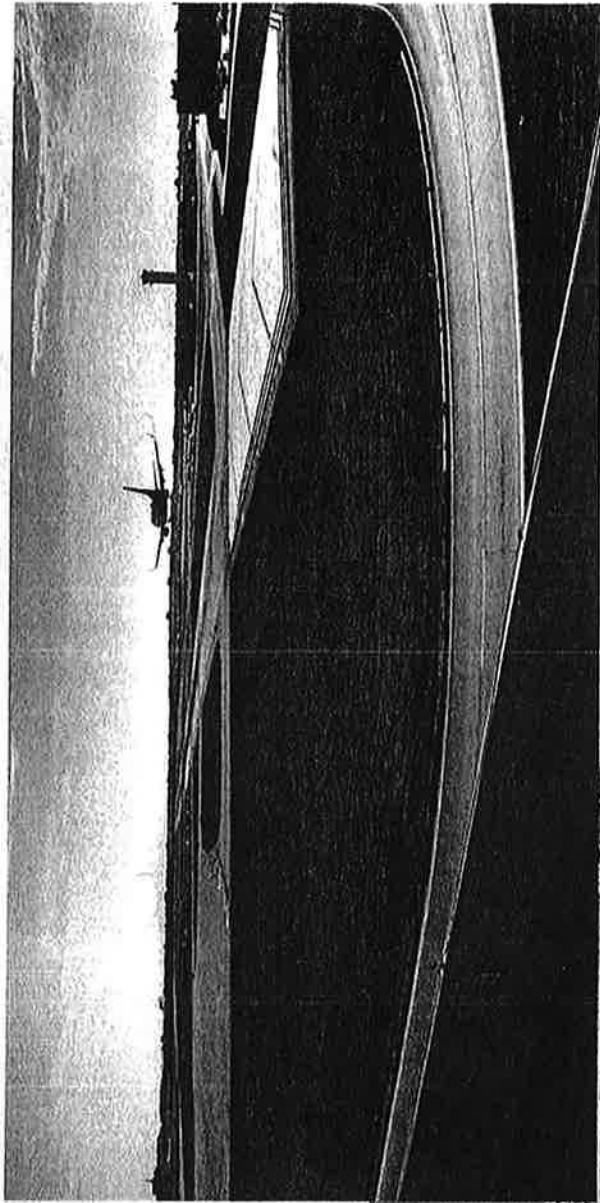
CHICAGO MIDWAY INTERNATIONAL AIRPORT



EMAS LOCATIONS

**RUNWAY**  
SAFE

**RUNWAY**  
**SAFE**



PROXIMITY OF EMAS TO RUNWAY





**RUNWAY**  
**SAFE**

## RUNWAY SAFE EMAS

WHAT IS IT AND WHAT ARE THE BENIFITS

**RUNWAY  
SAFE**

## RUNWAY SAFE EMAS COMPONENTS

MMA POLYMER TOPCOAT

CLSM SLAB

FOAM GLASS

PAVEMENT

**RUNWAY SAFE EMAS KEY BENEFITS**

**SUSTAINABILITY**



**EASE OF INSTALLATION**

**DURABILITY AND LOW COST**



**FAA COMPLIANT**





**RUNWAY**  
**SAFE**

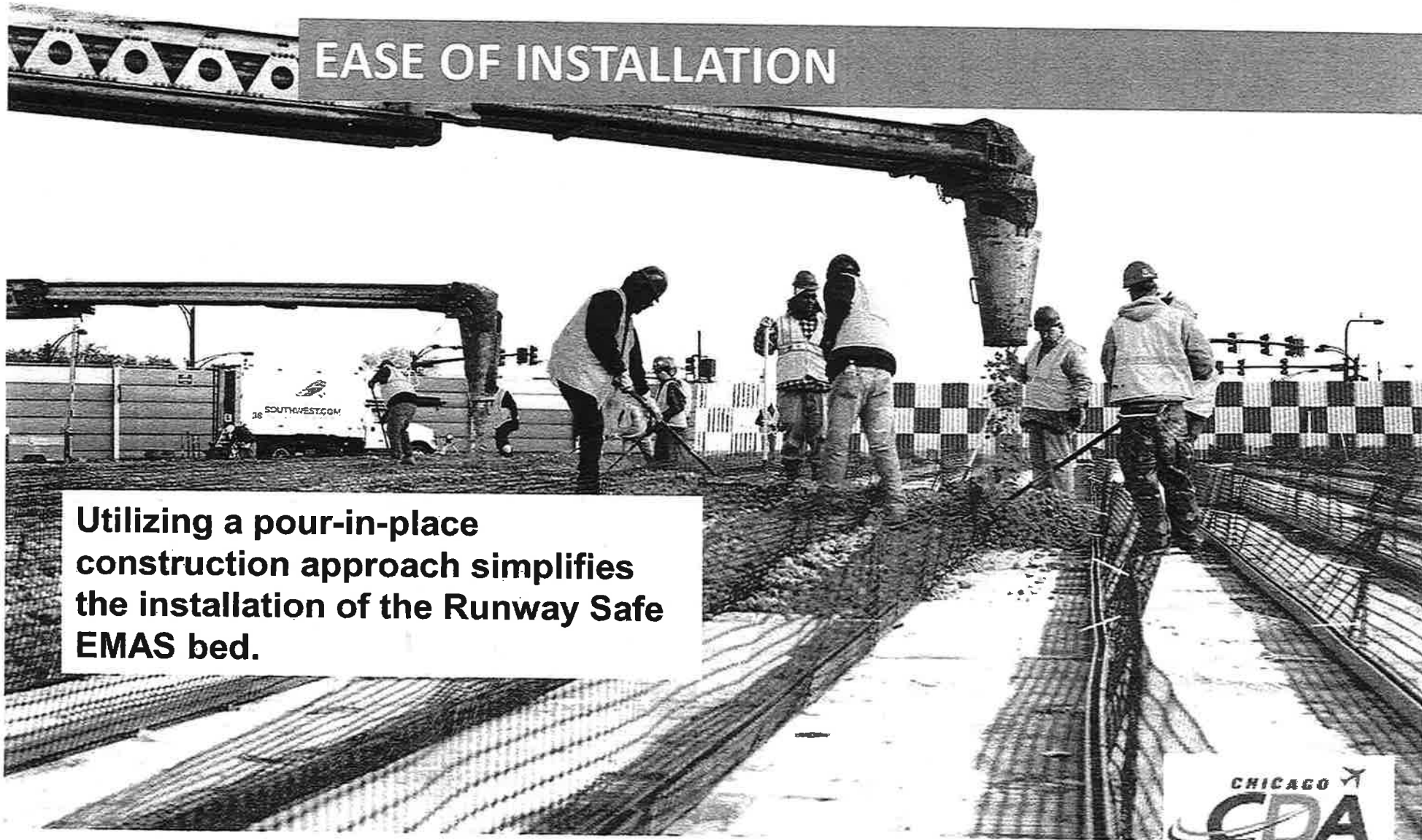
**SUSTAINABILITY**

**MADE FROM RECYCLED GLASS**

The primary construction material is a lightweight aggregate foam made from recycled glass. Rather than using cement or polymer based foams, this product makes use of recycling streams that otherwise often go underutilized.

**RUNWAY  
SAFE**

**EASE OF INSTALLATION**




**Utilizing a pour-in-place construction approach simplifies the installation of the Runway Safe EMAS bed.**





**RUNWAY**  
**SAFE**

## DURABILITY AND LOW COST



The patented design of crushable foam glass layered with a durable polymer concrete cover makes the Runway Safe EMAS bed more resistant to the harsh elements of a runway's environment. Runway Safe's unique design results in a more durable product that offers reduced maintenance costs and a longer life of the arresting system.

# RUNWAY SAFE

## FAA COMPLIANT



U.S. Department  
of Transportation  
Federal Aviation  
Administration

### Advisory Circular

Subject: Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns Date: 9/27/2012 AC No: 150/5220-22A  
Initiated by: AAS-100 Change

**1. PURPOSE:** This advisory circular (AC) contains standards for the planning, design, construction, and maintenance of Engineered Materials Arresting Systems (EMAS) safety areas (EMAS). Engineered high energy absorbing structures of which will reliably and predictably arrest an aircraft.

**2. CANCELLATION:** This 150/5220-22A, Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns, September 26, 2009.

**3. BACKGROUND:** Aircraft occasionally overrun the end of runways with devastating results. An aircraft can overrun beyond the end of a runway during takeoff or when landing overruns over a 12-year period estimate that approximately 50% of aircraft overrun at 30 yards or less past between the extended runway end of the runway and (See Appendix A).

To minimize the hazards of aircraft overruns, the FAA has determined that the installation of a safety area beyond the runway end is a critical safety area design consideration. To meet safety area standards, under existing runway end safety areas, the FAA has determined that the installation of a safety area beyond the runway end is a critical safety area design consideration. To meet safety area standards, under existing runway end safety areas, the FAA has determined that the installation of a safety area beyond the runway end is a critical safety area design consideration.



U.S. Department  
of Transportation  
Federal Aviation  
Administration

Office of Airport Safety and  
Standards

800 Independence Ave., SW  
Washington, DC 20591

APR 6 3 2012

Kjell Hakon Helgesen  
CEO  
Nor&K Glassgjenvinning  
Hastevangens 14  
P. O. Box 102 Oslon  
N-0509 Oslo, Norway

RE: Review of Glaspor EMAS Development: Design & Performance Report for FAA Review and Acceptance of Technical Sufficiency

Dear Mr. Helgesen:

We have reviewed the Nor&K Glassgjenvinning (NGG) report titled "Glaspor EMAS Development: Design & Performance Report for FAA Review & Acceptance," dated June 8, 2011 and submitted by Matt Hansen of Production Engineering Consultants (PEC). We have also reviewed the three addendum reports submitted by PEC. These addendums are based on comments and questions we submitted regarding the engineered materials arresting system (EMAS) design and performance information stated in the report. These addendums are as follows:

Addendum Report 1 – October 3, 2011  
Addendum Report 2 – October 17, 2011  
Addendum Report 3 – November 3, 2011

The Airport Engineering Division (AAS-100), in consultation with the FAA's William J. Hughes Technical Center has determined, based on the information provided in this report, as updated by its supporting addenda that the design and performance of the NGG Glaspor EMAS complies with the required standards of AC 150/5220-22A under the following condition:

supported to polypropylene plastic. The FAA may accept plastic lids for technical sufficiency in the future if further testing proves that the design and performance complies with the AC under this configuration.

CHICAGO  
**CDA**  
DEPARTMENT OF AIRPORTS

**RUNWAY**  
**SAFE**

**QUESTIONS**

VISIT [WWW.RUNWAYSAFE.COM](http://WWW.RUNWAYSAFE.COM) FOR MORE INFORMATION

CHICAGO  
**CDA**  
DEPARTMENT OF AVIATION

**Exhibit 1**  
**Scope of Services**



## **Exhibit 1**

### **Scope of Services and Warranty Information for the Supply of the Foam Glass Material for Arrestor Bed and Ancillary Services in Support of the Installation of Runway Safe Engineered Materials Arresting Systems (EMAS) at Chicago Midway and O'Hare Airports**

The contractor shall furnish materials, technical services, manuals, training, inspection and warranty services for the installation of three (3) EMAS to be installed at Midway International Airport, two (2) EMAS to be installed at Chicago O'Hare International Airport (collectively, "the Services") and the warranty for the already installed 22L EMAS bed at Midway Airport. All Services shall be in accordance with the General and Special Conditions, Technical Specification as well as this Scope of Services. The EMAS will be constructed by a separate Installation Contractor.

#### **MATERIALS, EQUIPMENT AND SERVICES**

The contractor shall furnish the Services as necessary and incidental to the successful installation of each EMAS at the airports.

a. **EMAS Materials and Related Storage**

The contractor shall provide the foam glass base material in accordance with the "Technical Specifications" attached hereto as Exhibit 1a. All material shall be foam glass manufactured and shipped in a form acceptable per FAA Runway Safe acceptance documents. The material will be provided upon receipt of prepayments made in accordance with the Schedule of Compensation in Exhibit 2 corresponding to the Midway and O'Hare projects.

b. **Shipping**

The foam glass base material will be shipped to City owned staging areas near Midway and O'Hare. All shipping costs (FOB destination) will be borne by the Contractor. Unloading at the City owned staging areas will be performed by the Installation Contractor.

c. **Inspection and Installation Support**

Contractor will provide technical support and installation advisors to assist the City and the Installation Contractor in the installation and inspection of the EMAS as more fully set forth in the Technical Specifications. The Contractor will provide the City a copy of an updated copy of the EMAS Replacement Inspection and Maintenance Plan DRAFT (Exhibit 1c) previously provided to the City. This updated plan will be used by the Contractor as they take over regular inspections and required maintenance and repair as described with exceptions as the Warranty (Exhibit 3).

d. **Material Storage**

The foam glass material will be stored temporarily at the Installation Contractor staging areas provided by the City within a three (3) mile radius from Midway International Airport and

O'Hare International Airport. The Installation Contractor's staging areas, to be secured by the City and at the Commissioner's sole discretion.

e. **Material Acceptance**

The Contractor will certify that delivered foam glass satisfies the Technical Specification through review of manufacturer supplied certifications or through supplemental material testing as required. Any material deemed unacceptable through manufacturer certification review will be replaced by the Contractor within a reasonable amount of time at no cost to the City. The Contractor will also review and accept or reject supplemental materials required by the Technical Specification as purchased, transported, and stored by the Installation Contractor. Replacement of the rejected Supplemental Materials will be performed by the Installation Contractor at no cost to the City or to the Contractor.

*Andrew J. [Signature]*  
*[Signature]*

**Exhibit 1A**  
**Technical Specifications**

## EXHIBIT 1A: Technical Specifications

The Contractor must furnish and deliver foam glass materials and services resulting in a complete Engineered Material Arresting System (EMAS) in conformance with FAA Advisory Circular AC 150/5220-22B and acceptable to the FAA and the Commissioner, Department of Aviation. The estimated bed sizes and quantities of foam glass material are as follows:

### I. EMAS Designations, Estimated Sizes and Estimated Foam Glass Quantities

#### Midway Runway 4R End:

Bed Size 345-ft long x 170-ft wide, 35-ft setback from runway end

Foam Glass Qty 3320 m<sup>3</sup>

#### Midway Runway 13C End:

Bed Size 210-ft long x 170-ft wide, 35-ft setback from runway end

Foam Glass Qty 2020 m<sup>3</sup>

#### Midway Runway 31C End:

Bed Size 226-ft long x 170-ft wide, 35-ft setback from runway end

Foam Glass Qty 2170 m<sup>3</sup>

#### O'Hare Runway 22L End:

Bed Size 450-ft long x 170-ft wide, 35-ft setback from runway end

Foam Glass Qty 5980 m<sup>3</sup>

#### O'Hare Runway 4R End:

Bed Size 250-ft long x 170-ft wide, 35-ft setback from runway end

Foam Glass Qty 3320 m<sup>3</sup>

All EMAS foam glass material and related installed materials (supplemental materials) as manufactured by the Contractor or as accepted by the Contractor as provided by the Installation Contractor must meet all of the specified requirements set forth in FAA Advisory Circular No. AC 150/5220-22A and must comply with the following:

- 1) Use of FAA validated design method
- 2) Design aircraft and stopping capability as defined by Performance Reports submitted to and reviewed by the FAA Region and Airport Safety Engineering Office as provided by the Contractor
- 3) Designed to accept ARFF equipment movement and to provide a safe means of ingress and egress in emergency situations
- 4) Designed for a 20-yr service life
- 5) Designed for repair with on-site approved materials and local labor

### II. Related Construction Materials and Construction Specifications

The contractor will provide technical support and quality control inspections during EMAS construction by the Installation Contractor per the requirements of the Construction Specifications (Exhibit 1b).



III. Technical Support

The Contractor will provide a minimum of two (2) technical representatives to act as installation advisors for each EMAS installation and construction period. These two (2) representatives will be onsite during all phases and hours of construction. They will also be available for Installation Contractor training and mockup activities. The technical representatives will provide no direct supervision of the Installation Contractor, but will advise the City of any circumstances, practices or faulty construction approaches that would jeopardize the attainment of a quality and acceptable EMAS installation.

IV. Inspections and Maintenance

During the five (5) year (60 month) warranty period (described in Exhibit 3), the Contractor will provide formal inspections no less than quarterly per the requirements of the EMAS Replacement Inspection and Maintenance Plan DRAFT (Exhibit 1c). The Contractor will perform maintenance and repair to bring the EMAS back to serviceable condition per the requirements of the FAA Circular and the EMAS Replacement Inspection and Maintenance Plan DRAFT. In no case will the Contractor be required to perform inspections or maintenance associated with the warranty exclusions (Exhibit 3).

The contractor Runway Safe shall not be liable for any damage to the EMAS or other property attributable to any of the following (or combination thereof):

- 1) Standing water around or over the EMAS bed,
- 2) Vehicular traffic (to include all airport maintenance vehicles),
- 3) Aircraft traffic in contact with the EMAS bed,
- 4) Acts of nature, including, but not limited to lightning, flood, winds in excess of 120-mph, earthquake, hurricane, tornado, hail storm or impact of large foreign objects,
- 5) Repairs or alterations of the EMAS, unless performed by personnel trained and qualified by the Contractor,
- 6) Excessive buildup of debris in and around the EMAS bed,
- 7) Spilled liquids or immersion in liquids (including large amounts of fuel from over-flying aircraft),
- 8) Use of the EMAS for purposes other than those for which it is customarily used,
- 9) Exposure to chemicals other than deicers and aircraft exhaust,
- 10) Jetblast in excess of 150-mph,

- 11) Damage or defect due to faulty or improper workmanship, including installation of the product by the Installation contractor that is shown to be (through construction documentation or subsequent evaluation) faulty because of non-conformance with the Construction Specifications or installation drawings, and/or Damage to the EMAS bed related to or caused by base surface failure.

**Exhibit 1B**  
**Construction Specification**

**ENGINEERED MATERIALS ARRESTOR SYSTEM (EMAS)**  
**INSTALLATION**  
**SECTION Z-100**

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. This item shall consist of the removal of existing EMAS beds, preparing the existing EMAS support pad and replacement of existing EMAS beds with new EMAS beds in accordance with these specifications and the Manufactures' requirements.
  
- B. The items shall include all labor for removal of the existing EMAS beds and all associated electrical, lighting, communication, drainage, and related systems; equipment for the removal and preparation for EMAS replacement; hauling and off-site disposal of demolition materials from existing EMAS beds; furnishing all materials and equipment required for the installation of the proposed EMAS beds. The work under this item includes, but is not limited to: preparation of the existing EMAS support pad to the satisfaction of the Commissioner and design requirements; installation of the proposed EMAS passive arrestor bed comprised of a recycled, energy-absorbing loose fill material placed and compacted in bays that are separated by a geogrid system; a protective cover layer comprised of a pour-in-place cementitious cover slab with a weather-proof top coat, and a sub-structure for anchoring the bed to the underlying EMAS support pad to the satisfaction of the Commissioner and in accordance with FAA requirements in Advisory Circular 150/5220-22B, Engineered Materials Arresting Systems (EMAS) for Aircraft Overrun.

1.2 RELATED WORK

Section 01111 – Construction Air Quality – Diesel Vehicle Emissions Control  
Section 01524 – Construction Waste Management  
Section 02710 – Dust Control  
M-103 – Airport Safety and Security  
P-156 – Temporary Air and Water Pollution, Soil Erosion, and Sediment Control  
P-620 – Pavement Marking

### 1.3 REFERENCES

- A. FAA requirements in Advisory Circular 150/5220-22B
- B. Technical Report: Design Report for A Runway Safe Replacement EMAS at Chicago-Midway Airport in Chicago, Illinois – Runway 4R Departure End (22L Numbered End) dated August 26, 2014 and Supplemental Design Information for MDW 22L dated October 22, 2014.

### 1.4 SUBMITTALS

#### A. SHOP DRAWINGS or PRODUCT DATA

The Contractor must submit the design documents for materials from the Manufacturer for review within 15 days from Notice to Proceed. This submittal should include all the pertinent information as it relates to the construction of the EMAS, including, but not limited to:

1. SILICA FOAM
2. CONTROLLED LOW-STRENGTH MATERIAL (CLSM)
3. METHYL METHACRYLATE (MMA) POLYMER CONCRETE
4. GEOGRID
5. FILTER FABRIC
6. UNISTRUTS
7. ASPHALT ANCHORS
8. ASPHALT ANCHOR GROUT
9. PLASTIC REBAR SUPPORTS
10. PVC PIPE DRAINS

#### B. DEMOLITION DATA

The Contractor must submit the demolition plan including disposal information and anticipated durations to complete the removals for the existing beds prior to the start of work.

#### C. INSTALLATION DRAWINGS

The Contractor must submit the schedule of install for each EMAS bed to meet the Contract limitations and in accordance with the Manufacturer's recommendations for review within 15 days from Notice to Proceed.

#### D. CLEANING AND MAINTENANCE

The Contractor is to provide a Manufacturers approved cleaning and maintenance plan in a form of Record Documents to be handed over to the Commissioner for use. This plan should include the record shop drawings that

indicate the actual installation sequence and the as-builts drawings for the new EMAS system.

E. CERTIFICATION OF EMAS

The Contractor shall provide, upon completion of the installation, written certification that the EMAS System meets the requirements of the contract Plans, and this specification.

1.5 QUALITY ASSURANCE

- A. Silica foam shall be sampled a minimum of 4-times in the end and side ramps and 4-times in the entry ramp and plateau. Samples shall be a minimum of 2-ft<sup>3</sup>. Silica foam shall be tested for bulk density per ASTM C29. Samples shall be further tested for material specific strength for which there is no known test standard
- B. CLSM shall be sampled a minimum of once in the side and rear ramps and once in the entry ramp and plateau. Samples shall consist of 3-1/2 inch cylinder for compression and beams for 3-point load testing. Testing shall be in accordance with ASTM C172 for sampling, C31 or C192 for casting and storing, C1064 for temperature measurement, C231 or 173 for air content, C39 for testing, and C617 or C1231 for capping of specimens.
- C. Consolidated silica foam shall be tested with a DCP with a 3.5-inch disc every 40-ft along length and width of entry ramp and plateau. Results will be compared to accepted results from previous testing.

1.6 DELIVERY STORAGE AND HANDLING

- A. All materials should be handled, delivered and stored in accordance with the Manufacturer's recommendations.

1.7 WARRANTIES AND GUARANTEES

- A. The Contractor must repair or replace defective materials and workmanship during the Contract Period and for (2) years from the date of substantial completion of the project.

1.8 EXTRA MATERIALS AND SPARE PARTS

- A. The Contractor will be responsible appropriately storing all extra materials and extra spare parts as required (netting of silica foam; inside storage of anchors, unistrut, and geogrid; and controlled climate storage of the Transpo T-18 and T-28) for any required maintenance of the EMAS system.

## 1.9 OTHER REQUIREMENTS

- A. Field Measurements – Before proceeding with the installation of the proposed EMAS, the Contractor must verify all dimensions and take such measurements as required. The Contractor shall survey the existing EMAS support pad, once existing EMAS system is removed, to establish the grade and slope of the pad, and layout of geogrid and strut locations prior to the new EMAS installation. Survey data will be furnished to the Commissioner.
- B. Coordination – Coordinate work in this section with the Commissioner and adjacent work of other trades.
- C. Existing Utilities – Composite Utility plans are provided for the Contractors aid, but shall not be construed as being correct or complete. The Contractor is responsible for verification of type and location of underground utilities as necessary to avoid damage thereto.

## 1.10 CONTRACT DRAWINGS

- A. The Contract Drawings are diagrammatic and intended for reference only. The exact conditions and dimensions shall be determined while in the field to secure the best conditions and results at the site to perform the work.

## PART 2 EQUIPMENT AND MATERIALS

### 2.1 GENERAL

- A. The equipment and materials to be used for the EMAS construction shall be provided by the Contractor. Equipment and tools necessary for handling materials and performing all parts of the work will be accepted by the Commissioner as to design, capacity, and mechanical condition. The equipment must be at the job site sufficiently before the start of construction operations for examination and acceptance.
- B. The Contractor must provide sawing equipment adequate in number of units and power to complete the sawing to the required dimensions and at the required rate. The Contractor must provide at least one standby saw in good working order. An ample supply of saw blades must be maintained at the site of the work at all times during sawing operations. The Contractor must provide adequate artificial lighting facilities for night sawing. All of this equipment must be on the job both before and at all times during saw cutting operations.



## 2.2 SILICA FOAM

- A. Silica foam material shall be provided by Runway Safe of Sweden, Riddargatan 30, S-114-57 Stockholm, Sweden. POC is Anders Lundmark at +46 (0705) 929682 or [anders.lundmark@runwaysafe.se](mailto:anders.lundmark@runwaysafe.se). This specific silica foam has been accepted by the FAA and no substitutions are allowed. Silica foam shall be shipped from Sweden to the US in covered ISO containers and transferred by rail to Chicago. ISO containers shall be trucked to the staging area at 72<sup>nd</sup> and Cicero where they will be unloaded by crane. Contractor shall be responsible for transporting the silica foam from the staging area to Midway International Airport and for installation into the EMAS bed.

## 2.3 CONTROLLED LOW STRENGTH MATERIAL (CLSM)

- A. CLSM shall be provided by Prairie Concrete and shall be mix design P-6131921. Any modification to this mix design shall not be allowed.

## 2.4 METHYL METHACRYLATE (MMA) POLYMER CONCRETE

- A. For entry ramp and plateau of the EMAS system, Transpo T-18 shall be used. Only this material has been approved by the FAA and substitutions with similar materials shall not be allowed.
- B. For side and back ramps and vertical surfaces, Transpo T-28 shall be used.

## 2.5 GEOGRID

- A. Geogrid shall have a minimal ultimate tensile strength of 2,050-lbs per ft in the cross main direction.

## 2.6 FILTER FABRIC

- A. Filter fabric shall be a minimum 3 oz non-woven polypropylene material.

## 2.7 UNISTRUTS

- A. Unistruts shall be slotted and have a minimum simple beam uniform load capacity of 1,600-lbs for a 48-inch support spacing with a deflection equal to or less than 0.24-inches when using an allowable stress of 25,000-psi. Unistrut shall be pre galvanized and meet the requirements of ASTM A653 with a minimum yield strength of 33,000-psi. Additionally the unistrut shall be equal to or less than 3-inches in height in the vertical installed position.

## 2.8 ASPHALT ANCHORS & EPOXY

Asphalt anchors shall be a minimum of 6-inches in length, nominally 5/8-inch in diameter and supplied with appropriate bolts, washers, and lock washers. The anchor shall be pull rated for 1,500-lbs and have a shear capacity of 1000-lbs. Asphalt anchors shall be installed in minimum 7/8-in diameter holes and grouted in place per manufacturer's recommendations.

## 2.9 PVC PIPE DRAINS

- A. Drain pipe shall be 3-inch diameter schedule 40 PVC meeting the requirements of ASTM D1785 and D2665.

## PART 3 CONSTRUCTION

### 3.1 GENERAL

- A. The Contractor shall construct the new EMAS bed at locations shown on the plans and described in this specification according to the schedule approved by the Commissioner. The Manufacturer has developed a passive aircraft arrestor system utilizing their silica foam product and a cover layer for the system as an integral and functional component for jet blast protection as well as for tuning the overrun dynamics. It is the responsibility of the Contractor to obtain the design and installation directions of this EMAS from the Manufacturer.
- B. All labor, material and equipment required to complete the installation of this EMAS will be recommended by the Manufacturer and must be provided by the Contractor. The installation of this EMAS must be at the supervision of the Manufacturer and the Commissioner.

### 3.2 REMOVAL OF EXISTING EMAS BED

- A. The removal of the existing EMAS bed will include the removal of the existing EMAS blocks & adhesive, debris deflector, delineators, and related items shown on the Plans. Available Record Drawings of the existing EMAS bed are furnished for information only. The Contractor shall verify all dimensions as needed. The existing EMAS bed is comprised of light-weight crushable blocks, approximately H4.05 ft. x W4.05 ft. and varying in height from 6 to 20 inches, attached to the bituminous support pad with adhesive. Equipment and methods for removing the existing EMAS blocks and adhesive will be such as to prevent damage to the support pad and nearby utilities. Operations resulting in damage to the existing support pad and grade beam shall be repaired to the satisfaction of the Commissioner at the Contractor's expense. All items related to the removal of the

existing EMAS bed will become the property of the Contractor and shall be disposed of as directed by the Commissioner outside of the Airport limits.

### 3.3 INSTALLATION OF NEW EMAS BED

#### A. EXISTING SUPPORT PAD PREPARATION

The existing EMAS support pad must be cleaned by sweeping, scraping, or by other methods as required to remove dust, debris, and existing adhesive materials without damage to the support pad, prior to the installation of the new EMAS bed.

#### B. LAYOUT

Layout of the bed shall be per the issued for construction drawings.

#### C. SAW CUTS

Saw cuts shall be a minimum of ½-inch wide by 2-inches deep

#### D. ASPHALT ANCHORS

Asphalt anchors shall be installed be a nominal 4-ft on center for the length of the EMAS bed. Anchors shall be installed per manufacturers recommendations.

#### E. UNISTRUTS

Unistrut shall be located and anchored per the issued for construction drawings.

#### F. PVC PIPE DRAINS

PVC Schedule 40 drains with caps shall be located per the issued for construction drawings. Caps shall be secured to the pipes with at least one self tapping screw.

#### G. GEOGRID

Geogrid shall be pre-attached to the unistrut with zip ties. Prior to attachment it shall be folded to heights given in the issued for construction drawings. After installation of filter fabric it shall be cut at 6-inch spacing and folded in alternate directions. Tabs shall be secured with zip ties (excess cut off) and further supported by 1-inch high plastic rebar chairs. Height of tabs above filter fabric shall be no less than ½-inch nor more than 1-1/2-inches.

#### H. SILICA FOAM

Silica foam shall be conveyed to locations between geogrid and filled to heights shown in the issued for construction drawings. The geogrid shall be vertically supported during the course of fill operations. Silica foam shall be raked to achieve required fill heights. After fill operations, the silica foam shall be compacted to specified heights as shown in the issued for construction drawings. Compacted heights shall be verified by laser leveling. Low spots in the bed shall be filled with finer silica foam material to bring it to required height. Tracked bobcats used for compaction shall have a nominal 5-psi track pressure.

#### I. CLSM

CLSM shall have a finished thickness of 2 to 2.5-inches. After set, CLSM thickness shall be mapped and verified with a 1GHz ground penetrating radar not less than every 10-feet along the width and length of the entry ramp and plateau of the bed. Should thickness less than or greater than those specified occur, additional mapping in those areas will be required and a decision as to removal and replacement made at that time.

#### J. MMA OVERLAY

The Transpo T18 and T28 material shall be installed per the manufactures recommendations. Final thickness of the material shall be 0.28-inches.

### 3.3 PAVEMENT MARKING

- A. This work consists of painting markings and stripes on the new EMAS bed, existing support pad, adjacent runway and apron in accordance with the latest edition of the FAA Advisory Circular 150/5340-1K and at locations shown on the Plans or as directed by the Commissioner.
- B. The Contractor shall take all necessary precautions and care to avoid damaging the newly installed EMAS bed. Any damage shall be inspected by the Manufacturer and repaired to the satisfaction of the Commissioner at the Contractor's expense.
- C. See specifications section P-620 for other requirements.

### 3.4 DELINEATORS

- A. The Contractor shall install FAA approved frangible and reflective delineators and bases (CDA Furnished) at locations and spacing around the new EMAS bed as directed by the Commissioner.

### 3.5 CLEANING AND RESTORATION OF SITE

- A. The Contractor shall restore all areas disturbed by operations related to the removal of the existing EMAS bed and installation of the new EMAS bed, to their original condition or as directed by the Commissioner.
- B. See specifications sections T-901, T-904, T-905 for other requirements.

### PART 4 METHOD OF MEASUREMENT

#### 4.1 EMAS

- A. The Contractor may submit a proposal for review by the Commissioner, prior to work commencing, and in accordance with Article X" Change in the Work" of the Part 2, General Conditions. If an agreement on cost cannot be reached prior to completion of 50% of the work, costs must be tracked on a Time and Material basis.
- B. The Time and Material proposal will be submitted for review in accordance with Article X" Change in the Work" for audit and supported by the completed "CDA Work Reports".
- C. Any remaining balance from the allowance will be returned to the City in the form of an appropriate credit upon completion of the project.

### PART 5 BASIS OF PAYMENT

#### 5.1 PAYMENT

- A. Payment will be made under the following item:
  - a. ITEM Z-100 – ENGINEERED MATERIALS ARRESTOR SYSTEM (EMAS), per Each

**END OF SECTION Z-100**

**Exhibit 1C**

**Inspection and Maintenance Plan and  
Requirements**

## **EXHIBIT 1C**

### **Requirements of the Inspection and Maintenance Plan**

Below is the list of Items that will be required in each Inspection and Maintenance Plan. See attached Example for reference.

1. INSPECTION REQUIREMENTS
2. MAINTENANCE AND REPAIR PROCEDURES
3. SPECIAL PROCEDURES
4. WARRANTY INFORMATION
5. DESIGN DETAILS AND SPECIFICATIONS
6. INSPECTION FORMS AND MAINTENANCE TO DATE
7. JET BLAST INSTRUMENTATION DETAILS
8. FAA ACCEPTANCE AND SUPPORT LETTERS



**A REPORT FOR:**

**AN INSPECTION AND MAINTENANCE  
PROGRAM FOR:**

**RUNWAY 4R DEPARTURE END  
(22L NUMBERED END) REPLACEMENT EMAS  
AT CHICAGO-MIDWAY AIRPORT IN  
CHICAGO, ILLINOIS**

**PREPARED FOR:**

Chicago Department of Aviation

**PREPARED BY:**

Protection Engineering Consultants  
PO Box 781607  
San Antonio, TX 78278-1607

On behalf of:

Runway Safe LLC  
14144 Trautwein Road  
Austin, TX 78737

Project 14-082

December 11, 2014

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## 1 GENERAL INFORMATION

The Chicago Midway International Airport (MDW) is located in southeast Chicago, Illinois and is the second largest airport in the state of Illinois. The airport is owned by the City of Chicago and operated by their Department of Aviation. The Runway Safe replacement EMAS discussed in this report was provided for this site to improve the existing Runway Safety Area (RSA) at the northeast corner of the airport.

The following report summarizes the inspection and maintenance plan and procedures for the *Runway Safe Engineered Material Arresting System* (RS-EMAS) at the departure end of runway 4R (22L numbered end) at the northeast corner of the site. This plan and procedures have been prepared in accordance with the requirements of the FAA Advisory Circular 150/5220-22B, "Engineered Material Arresting Systems (EMAS) for Aircraft Overruns", dated 9/27/12.

### 1.1 Description of the EMAS

The 4R (22L numbered end) Runway Safe EMAS was constructed and installed over a 2-week period beginning October 29<sup>th</sup>, 2014. Design drawings and specifications for the EMAS are provided in APPENDIX A of this plan. The Runway Safe EMAS is a monolithic bed of silica foam, capped with CLSM (controlled low strength material) pavement, and a MMA topcoat. The pavement cap is anchored to existing grade in the RSA with asphalt anchors, galvanized struts and geogrid plastic membrane (embedded in the capping pavement). The bed has side drains (normally capped) for inspection and moisture removal.

The EMAS location is shown in Figures 1-1 and 1-2.

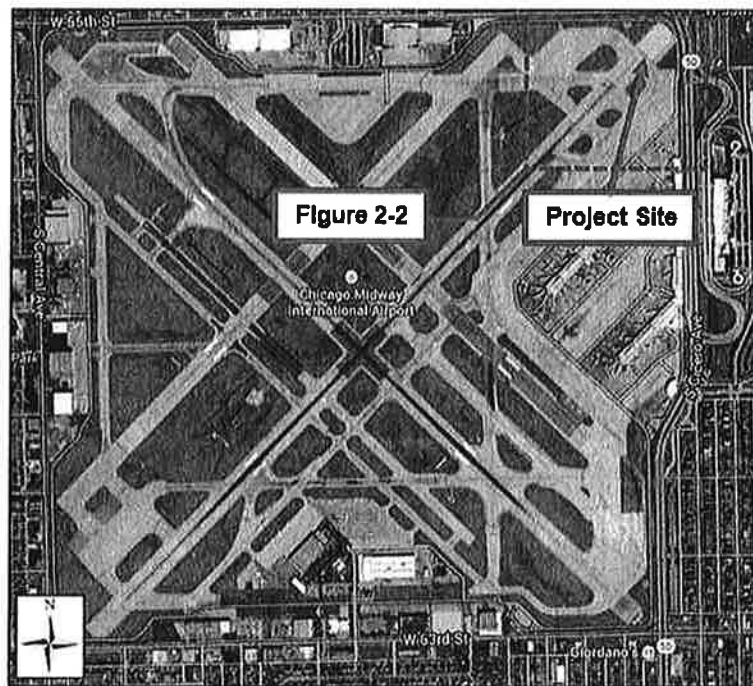
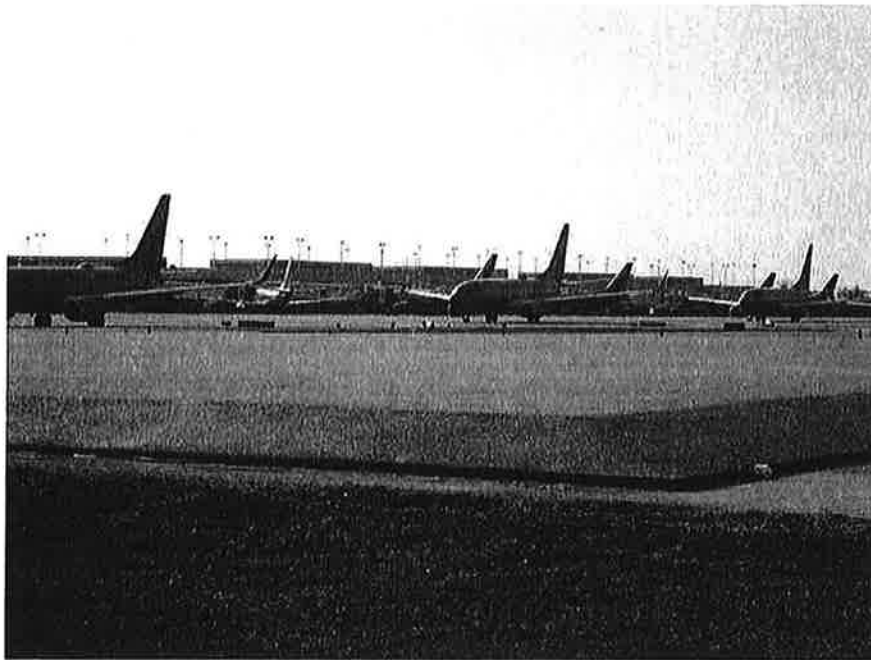


Figure 1-1. EMAS Location (22L Numbered End)



**Figure 1-2. EMAS Location (22L Numbered End)**

Figure 1-3 shows the completed Runway Safe installation.



**Figure 1-3. Completed EMAS with MMA and Chevrons**

## 1.2 Material and System Description

The *Runway Safe EMAS* was developed out of initial work sponsored by the Airport Cooperative Research Program (ACRP) Transportation Research Board of the National Academies that concluded in 2009. The arrestor system was further developed through research performed by PEC in support of a project jointly funded by *Norsk Glassgjenvinning* (NGG) and the *Norwegian Aviation Authority* (Avinor). These research efforts were summarized in a U.S. Department of Transportation (DOT) Federal Aviation Administration (FAA) approval report titled *Glasopor EMAS Development: Design & Performance Report for FAA Review and Acceptance* dated June 8, 2011 with Addenda 1, 2 and 3. Finally, in a letter dated April 2, 2012, the *FAA Airport Engineering Division* (AAS-100) officially accepted the *Runway Safe EMAS* as meeting the requirements in *Advisory Circular (AC) 150/5220-22A, Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns*. Furthermore, the FAA supported the construction of the Runway Safe system for the 22L replacement as documented in their letter dated 9 September 2014. The FAA acceptance and support letters are included in APPENDIX D of this document.

*Runway Safe EMAS* is now being offered for sale and installation by *Runway Safe LLC*, an Austin, TX based US company.

## 1.3 Contact Information

### *Runway Safe US Contact:*

Kirk A. Marchand, P.E.  
Managing Principal, Protection Engineering Consultants  
Chief Executive Officer, Runway Safe LLC (US)  
14144 Trautwein Rd., Austin, TX 78737  
512-380-1988x1/512-787-2682 (cell)  
[kmarchand@protection-consultants.com](mailto:kmarchand@protection-consultants.com)

### *Runway Safe AB Contact:*

Jon A. Narmo  
Chief Technical Officer, Runway Safe AB (Sweden)  
Riddargatan 30, S-114 57 Stockholm, Sweden  
+47 23 17 39 80  
[Jon.narmo@runwaysafe.se](mailto:Jon.narmo@runwaysafe.se)

## 2 INSPECTION REQUIREMENTS

Until such a time that the Runway Safe 4R/22L EMAS is covered under Runway Safe warranty (currently being negotiated), it is the responsibility of the Chicago Department of Aviation to coordinate and execute inspections. The Runway Safe EMAS is a new system first installed at Chicago Midway. Expected serviceability and performance under environmental and service (jetblast) conditions is expected to be good. However, unexpected conditions may arise that require attention and/or repairs. Thus, the inspection plan must evolve over time, with higher initial inspection frequency and rigor than may be required as the bed ages. The following paragraphs should be viewed as minimum requirements. The airport operator (Chicago MDW)

and eventually Runway Safe should modify these requirements as conditions and bed serviceability dictate.

## **2.1 Type and Frequency of Inspections and Checklists**

Two types of inspections should be performed; visual inspections and surveys.

*Visual inspections*—The Runway Safe EMAS should initially be inspected no less than twice monthly. The inspection should consist of the following steps:

1. A complete walk down of the bed, including entry ramp, side and rear ramps
2. Documentation of any cracks, delamination, discoloration or changes from the previous inspection. Crack maps (see APPENDIX B) should be prepared. Any anomalies should be documented with digital photography.
3. Any foreign object debris should be picked up and noted on the inspection report.
4. Side drains should be opened and notation should be made of any water or ice. Caps should be replaced after inspection.
5. The instrumentation system (jetblast pressure and acceleration) should be inspected per layout drawings for any damage (NOTE: instrumentation to be installed in early 2015)

*Surveys*—The Runway Safe EMAS should be re-surveyed quarterly. This survey will identify any global movement or settling of the silica foam or top slab. The survey should plot points previously established during the installation process to determine if any measureable movement has occurred.

The general format of inspection forms and documentation is illustrated through the documents provided in APPENDIX B of this plan. Inspection reports should be prepared and submitted to:

Chicago Department of Aviation/CARE Plus:

Marc Klein  
Site Manager, CARE Plus  
5752 South Central, Chicago, IL 60638  
(630) 816-6495  
[mklein@careplusllc.org](mailto:mklein@careplusllc.org)

Runway Safe:

Kirk A. Marchand, P.E.  
Managing Principal, Protection Engineering Consultants  
Chief Executive Officer, Runway Safe LLC (US)  
14144 Trautwein Rd., Austin, TX 78737  
512-380-1988x1/512-787-2682 (cell)  
[kmarchand@protection-consultants.com](mailto:kmarchand@protection-consultants.com)



Runway Safe AB (Sweden):

Jon A. Narmo  
Chief Technical Officer, Runway Safe AB (Sweden)  
Riddargatan 30, S-114 57 Stockholm, Sweden  
+47 23 17 39 80  
[Jon.narmo@runwaysafe.se](mailto:Jon.narmo@runwaysafe.se)

## **2.2 Training and Approved Personnel**

Prior to maintenance agreement contracting (a part of an as-of-yet un-negotiated warranty), the following companies and personnel are authorized and trained/qualified to perform both visual and survey inspections:

CARE Plus LLC  
ATTN: David Kudrna, Resident Engineer  
612-220-9896  
[dkudrna@careplusllc.org](mailto:dkudrna@careplusllc.org)

K-Five Construction  
ATTN: Patrick Burke  
(630) 768-8672  
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ATTN: Nick Bukiet  
(847) 385-4101  
[nick@tetrisconst.com](mailto:nick@tetrisconst.com)

## **2.3 List of Typical Problems and Possible Solutions**

To date, cracking in the MMA topcoat has been observed, documented and repaired. While this cracking is likely a result of premature MMA application prior to full CLSM cure out, it is indicative of the limited visual damage expected in the Runway Safe EMAS bed. Delay of MMA application until full CLSM cure as well as improved details of future installations (expansion joints, etc.) will address the cracking observed.

Section 3 below and APPENDIX B address specific repair procedures for MMA/CLSM cracking.

## **2.4 Testing and Evaluation Procedures**

Three types of testing will be performed over the life of the Runway Safe EMAS bed to evaluate serviceability and to indirectly quantify expected arresting performance. Dynamic jetblast and acceleration measurement, as required in-situ and/or bed cover and silica foam sampling and remote FAA Tech Center serviceability testing will all be performed.

*Jetblast instrumentation* – APPENDIX C presents jetblast and acceleration instrumentation plans prepared and developed to date. The jetblast and acceleration instrumentation will provide data on repeated departure aircraft jetblast loads through measurement with dynamic vacuum gages and digital recording instrumentation. Included in each of the sensing pods are accelerometers. Acceleration data will provide a quantitative/qualitative measurement over time of any structural degradation occurring in the bed. All data will be digitally recorded and remotely sampled and analyzed after uploaded via cellular connection to a website.

*In situ and/or laboratory testing*—when suggested by visual inspection, surveys or by changes in acceleration of the bed during jetblast monitoring, in situ consolidation tests or laboratory strength tests may be performed. In both cases, destructive methods will be required to remove a portion of the CLSM cover near the rear of the bed (where jetblast is least) to access silica foam and cover anchorage.

*FAA Tech Center serviceability testing*—two test series are tentatively planned with the FAA Tech center, pending cooperative agreement establishment and signature. First, rescue slide durability tests will be performed by deploying a rescue slide onto Runway Safe silica foam, CLSM and MMA materials. This test will confirm abrasion assumptions made during bed design. Second, limited bed jetblast tests will be performed with the FAA Tech center test aircraft to confirm uplift design assumptions. This data will be compared to proprietary Runway Safe jetblast measured data from 4R/22L at Midway. It should be noted that both of these test series will be performed using both the Runway Safe system and the competing Zodiac/Esco system, pending Esco agreement for participation.

### **3 MAINTENANCE AND REPAIR PROCEDURES**

Maintenance procedures developed to date consist of crack filling and repair procedures. Materials and tools for that procedure are described below and in APPENDIX B. Repair procedures are a subset of construction procedures already developed and used as a part of the 4R/22L Midway installation.

#### **3.1 Approved Materials and Tools for Maintenance**

*Crack filling for cracks < 3/16-in*—Small cracks less than 3/16-in in width should be filled by hand with the following materials:

- Castek/Transpo T-78 crack filler with blasting sand. See Appendix B for technical application details.

*Crack filling for cracks  $\geq$  3/16-in*—Large cracks greater than 1/8-in in width should be filled using a hot-patch approach and the following materials:

- Crack filler Melter
- Crack filler – an ASTM D6690 (formerly D3405) type crack filler with at least 18% rubber
- Galvanized-steel hotpour containers
- **OPTIONAL** – Crackbender (Northern Tools #402301)
- V-shaped crack filling squeegee & extra blades (Sealmaster T1430 & T1440)

- Tar or roofing brush (Menards 1531086)
- Propane fired weed burner for heating/remelting containers
- 5-gallon plastic buckets for holding & applying stone
- PPE – Long insulated gloves (welding), eye protection, & long sleeves

### **3.2 Repair Procedures**

Repairs to the EMAS will be required upon aircraft incursion and may be required upon accidental ground vehicle incursion or impact. Repairs to the bed will be accomplished in the following steps (it should be noted that repair procedures are to be demonstrated on the Chicago Midway 4R/22L mockups in early 2015):

1. Inspection and identification of damage to be repaired; to be performed by Runway Safe per the provisions of their warranty and/or pre-warranty provisions as stated in Section 5 below
2. Removal of damaged MMA, CLSM, geogrid and strut/anchors. Concrete saws will be used to cut the MMA and CLSM material to expose the silica foam over the extents identified by Runway Safe in step 1 above. Silica foam will be removed by hand tools or by small excavating equipment attached to low ground pressure vehicles (5-psi tracked bobcats or similar).
3. Damaged geogrid, struts and asphalt anchors will be replaced as required by inspection and recommendations by Runway Safe (step 1 above).
4. Silica foam (pre-positioned on site at the Midway staging area) will be used to fill to an unconsolidated fill height (1.15x the consolidated fill height). Gasoline powered vibratory tampers or hand tampers will be used to consolidate the silica foam to 85% of the loose fill depth. DCP verification of consolidation (see APPENDIX A construction specifications) will be performed.
5. CLSM top pavement will be batch plant supplied for top pavement patching. Sampling and laboratory testing of samples will be performed per construction specifications (APPENDIX A).
6. MMA top coat will be applied after full patch cure (and as specified by Runway Safe in step 1 above).
7. The runway will be immediately available for departures towards the 22L end. Opening for departures from the 22L end will be determined based on strength requirements in the construction specifications (APPENDIX A).

## **4 SPECIAL PROCEDURES**

*Snow removal and general vehicle access*—snow removal equipment is generally not used at Midway on the EMAS beds. Should snow removal be required, tracked snow removal equipment with track ground pressure of <5 psi should be used for removal. No other motorized tired or tracked vehicles should enter or drive up on the bed.

## **5 WARRANTY INFORMATION**

A 5-year warranty is being negotiated as a part of installation contracts for additional EMAS beds at Chicago Midway. It is anticipated that this warranty will include services and materials necessary for inspections and maintenance and on-call support for incursion repair planning and mobilization. Actual costs for repairs (engineering, materials and contractor support) due to aircraft incursion or accidental damage from ground vehicles will not be included in the warranty.

Until such a time as the warranty and installation contract(s) are in place, but for no longer than 1-year from the date of installation, Runway Safe will support Chicago Midway with technical support for inspections, maintenance and repairs and incursion repair planning. Until the warranty is in place, stored materials provided as a part of the 4R/22L installation and taken possession of and owned by Chicago Midway will be used for repairs. Any additional materials required will be at Chicago Midway expense.

**APPENDIX A: DESIGN DETAILS AND SPECIFICATIONS**

**ENGINEERED MATERIALS ARRESTOR SYSTEM (EMAS)**  
**INSTALLATION**  
**SECTION Z-100**

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. This item shall consist of the removal of four (4) total existing EMAS beds as listed below, preparing the existing EMAS support pad and replacement of existing EMAS beds with four (4) new EMAS beds in accordance with these specifications and the Manufactures' requirements at the locations noted in the plans.
  
- B. The items shall include all labor for removal of the existing EMAS beds and all associated electrical, lighting, communication, drainage, and related systems; equipment for the removal and preparation for EMAS replacement; hauling and off-site disposal of demolition materials from existing EMAS beds; furnishing all materials and equipment required for the installation of the proposed EMAS beds. The work under this item includes, but is not limited to: preparation of the existing EMAS support pad to the satisfaction of the Commissioner and design requirements; installation of the proposed EMAS passive arrestor bed comprised of a recycled, energy-absorbing loose fill material placed and compacted in bays that are separated by a geogrid system; a protective cover layer comprised of a pour-in-place cementitious cover slab with a weather-proof top coat, and a sub-structure for anchoring the bed to the underlying EMAS support pad to the satisfaction of the Commissioner and in accordance with FAA requirements in Advisory Circular 150/5220-22B, Engineered Materials Arresting Systems (EMAS) for Aircraft Overrun.
  
- C. Existing EMAS bed locations to be removed and replaced.
  - 1. Runway 4R Departure End (22L Numbered End)
  - 2. Runway 22L Departure End (4R Numbered End)
  - 3. Runway 13C Departure End (31C Numbered End)
  - 4. Runway 31C Departure End (13C Numbered End)

1.02 RELATED WORK

Section 01111 – Construction Air Quality – Diesel Vehicle Emissions Control  
Section 01524 – Construction Waste Management  
Section 02710 – Dust Control  
M-103 – Airport Safety and Security  
P-156 – Temporary Air and Water Pollution, Soil Erosion, and Sediment Control  
P-620 – Pavement Marking

### 1.03 REFERENCES

- A. FAA requirements in Advisory Circular 150/5220-22B
- B. Technical Report: Design Report for A Runway Safe Replacement EMAS at Chicago-Midway Airport in Chicago, Illinois – Runway 4R Departure End (22L Numbered End) dated August 26, 2014 and Supplemental Design Information for MDW 22L dated October 22, 2014.

### 1.04 SUBMITTALS

#### A. SHOP DRAWINGS or PRODUCT DATA

The Contractor must submit the design documents for materials from the Manufacturer for review within 15 days from Notice to Proceed. This submittal should include all the pertinent information as it relates to the construction of the EMAS, including, but not limited to:

1. SILICA FOAM
2. CONTROLLED LOW-STRENGTH MATERIAL (CLSM)
3. METHYL METHACRYLATE (MMA) POLYMER CONCRETE
4. GEOGRID
5. FILTER FABRIC
6. UNISTRUTS
7. ASPHALT ANCHORS
8. ASPHALT ANCHOR GROUT
9. PLASTIC REBAR SUPPORTS
10. PVC PIPE DRAINS

#### B. DEMOLITION DATA

The Contractor must submit the demolition plan including disposal information and anticipated durations to complete the removals for the existing beds prior to the start of work.

#### C. INSTALLATION DRAWINGS

The Contractor must submit the schedule of install for each EMAS bed to meet the Contract limitations and in accordance with the Manufacturer's recommendations for review within 15 days from Notice to Proceed.

#### D. CLEANING AND MAINTENANCE

The Contractor is to provide a Manufacturers approved cleaning and maintenance plan in a form of Record Documents to be handed over to the Commissioner for use. This plan should include the record shop drawings that



indicate the actual installation sequence and the as-builts drawings for the new EMAS system.

#### E. CERTIFICATION OF EMAS

The Contractor shall provide, upon completion of the installation, written certification that the EMAS System meets the requirements of the contract Plans, and this specification.

### 1.05 QUALITY ASSURANCE

- A. Silica foam shall be sampled a minimum of 4-times in the end and side ramps and 4-times in the entry ramp and plateau. Samples shall be a minimum of 2-ft<sup>3</sup>. Silica foam shall be tested for bulk density per ASTM C29. Samples shall be further tested for material specific strength for which there is no known test standard
- B. CLSM shall be sampled a minimum of once in the side and rear ramps and once in the entry ramp and plateau. Samples shall consist of 3-1/2 inch cylinder for compression and beams for 3-point load testing. Testing shall be in accordance with ASTM C172 for sampling, C31 or C192 for casting and storing, C1064 for temperature measurement, C231 or 173 for air content, C39 for testing, and C617 or C1231 for capping of specimens.
- C. Consolidated silica foam shall be tested with a DCP with a 3.5-inch disc every 40-ft along length and width of entry ramp and plateau. Results will be compared to accepted results from previous testing.

### 1.06 DELIVERY STORAGE AND HANDLING

- A. All materials should be handled, delivered and stored in accordance with the Manufacturer's recommendations.

### 1.07 WARRANTIES AND GUARANTEES

- A. The Contractor must repair or replace defective materials and workmanship during the Contract Period and for (2) years from the date of substantial completion of the project.

### 1.08 EXTRA MATERIALS AND SPARE PARTS

- A. The Contractor will be responsible appropriately storing all extra materials and extra spare parts as required (netting of silica foam; inside storage of anchors, unistrut, and geogrid; and controlled climate storage of the Transpo T-18 and T-28) for any required maintenance of the EMAS system.

## 1.09 OTHER REQUIREMENTS

- A. Field Measurements – Before proceeding with the installation of the proposed EMAS, the Contractor must verify all dimensions and take such measurements as required. The Contractor shall survey the existing EMAS support pad, once existing EMAS system is removed, to establish the grade and slope of the pad, and layout of geogrid and strut locations prior to the new EMAS installation. Survey data will be furnished to the Commissioner.
- B. Coordination – Coordinate work in this section with the Commissioner and adjacent work of other trades.
- C. Existing Utilities – Composite Utility plans are provided for the Contractors aid, but shall not be construed as being correct or complete. The Contractor is responsible for verification of type and location of underground utilities as necessary to avoid damage thereto.

## 1.10 CONTRACT DRAWINGS

- A. The Contract Drawings are diagrammatic and intended for reference only. The exact conditions and dimensions shall be determined while in the field to secure the best conditions and results at the site to perform the work.

## PART 2 EQUIPMENT AND MATERIALS

### 2.01 GENERAL

- A. The equipment and materials to be used for the EMAS construction shall be provided by the Contractor. Equipment and tools necessary for handling materials and performing all parts of the work will be accepted by the Commissioner as to design, capacity, and mechanical condition. The equipment must be at the job site sufficiently before the start of construction operations for examination and acceptance.
- B. The Contractor must provide sawing equipment adequate in number of units and power to complete the sawing to the required dimensions and at the required rate. The Contractor must provide at least one standby saw in good working order. An ample supply of saw blades must be maintained at the site of the work at all times during sawing operations. The Contractor must provide adequate artificial lighting facilities for night sawing. All of this equipment must be on the job both before and at all times during saw cutting operations.

## 2.02 SILICA FOAM

- A. Silica foam material shall be provided by Runway Safe of Sweden, Riddargatan 30, S-114-57 Stockholm, Sweden. POC is Anders Lundmark at +46 (0705) 929682 or [anders.lundmark@runwaysafe.se](mailto:anders.lundmark@runwaysafe.se). This specific silica foam has been accepted by the FAA and no substitutions are allowed. Silica foam shall be shipped from Sweden to the US in covered ISO containers and transferred by rail to Chicago. ISO containers shall be trucked to the staging area at 72<sup>nd</sup> and Cicero where they will be unloaded by crane. Contractor shall be responsible for transporting the silica foam from the staging area to Midway International Airport and for installation into the EMAS bed.

## 2.03 CONTROLLED LOW STRENGTH MATERIAL (CLSM)

- A. CLSM shall be provided by Prairie Concrete and shall be mix design P-6131921. Any modification to this mix design shall not be allowed.

## 2.04 METHYL METHACRYLATE (MMA) POLYMER CONCRETE

- A. For entry ramp and plateau of the EMAS system, Transpo T-18 shall be used. Only this material has been approved by the FAA and substitutions with similar materials shall not be allowed.
- B. For side and back ramps and vertical surfaces, Transpo T-28 shall be used.

## 2.05 GEOGRID

- A. Geogrid shall have a minimal ultimate tensile strength of 2,050-lbs per ft in the cross main direction.

## 2.06 FILTER FABRIC

- A. Filter fabric shall be a minimum 3 oz non-woven polypropylene material.

## 2.07 UNISTRUTS

- A. Unistruts shall be slotted and have a minimum simple beam uniform load capacity of 1,600-lbs for a 48-inch support spacing with a deflection equal to or less than 0.24-inches when using an allowable stress of 25,000-psi. Unistrut shall be pre galvanized and meet the requirements of ASTM A653 with a minimum yield strength of 33,000-psi. Additionally the unistrut shall be equal to or less than 3-inches in height in the vertical installed position.

## 2.08 ASPHALT ANCHORS & EPOXY

Asphalt anchors shall be a minimum of 6-inches in length, nominally 5/8-inch in diameter and supplied with appropriate bolts, washers, and lock washers. The anchor shall be pull rated for 1,500-lbs and have a shear capacity of 1000-lbs. Asphalt anchors shall be installed in minimum 7/8-in diameter holes and grouted in place per manufacturer's recommendations.

## 2.09 PVC PIPE DRAINS

- A. Drain pipe shall be 3-inch diameter schedule 40 PVC meeting the requirements of ASTM D1785 and D2665.

## PART 3 CONSTRUCTION

### 3.01 GENERAL

- A. The Contractor shall construct the new EMAS bed at locations shown on the plans and described in this specification according to the schedule approved by the Commissioner. The Manufacturer has developed a passive aircraft arrestor system utilizing their silica foam product and a cover layer for the system as an integral and functional component for jet blast protection as well as for tuning the overrun dynamics. It is the responsibility of the Contractor to obtain the design and installation directions of this EMAS from the Manufacturer.
- B. All labor, material and equipment required to complete the installation of this EMAS will be recommended by the Manufacturer and must be provided by the Contractor. Replacements shall occur in conjunction with the 56 hour closures of the runways per the contract phasing. The installation of this EMAS must be at the supervision of the Manufacturer and the Commissioner.

### 3.02 REMOVAL OF EXISTING EMAS BED

- A. The removal of the existing EMAS bed will include the removal of the existing EMAS blocks & adhesive, debris deflector, delineators, and related items shown on the Plans. Available Record Drawings of the existing EMAS bed are furnished for information only. The Contractor shall verify all dimensions as needed. The existing EMAS bed is comprised of light-weight crushable blocks, approximately H4.05 ft. x W4.05 ft. and varying in height from 6 to 20 inches, attached to the bituminous support pad with adhesive. Equipment and methods for removing the existing EMAS blocks and adhesive will be such as to prevent damage to the support pad and nearby utilities. Operations resulting in damage to the existing support pad and grade beam shall be repaired to the satisfaction of the Commissioner at the Contractor's expense. All items related to the removal of the

existing EMAS bed will become the property of the Contractor and shall be disposed of as directed by the Commissioner outside of the Airport limits.

### 3.03 INSTALLATION OF NEW EMAS BED

#### A. EXISTING SUPPORT PAD PREPARATION

The existing EMAS support pad must be cleaned by sweeping, scraping, or by other methods as required to remove dust, debris, and existing adhesive materials without damage to the support pad, prior to the installation of the new EMAS bed.

#### B. LAYOUT

Layout of the bed shall be per the issued for construction drawings.

#### C. SAW CUTS

Saw cuts shall be a minimum of 1/2-inch wide by 2-inches deep

#### D. ASPHALT ANCHORS

Asphalt anchors shall be installed be a nominal 4-ft on center for the length of the EMAS bed. Anchors shall be installed per manufacturers recommendations.

#### E. UNISTRUTS

Unistrut shall be located and anchored per the issued for construction drawings.

#### F. PVC PIPE DRAINS

PVC Schedule 40 drains with caps shall be located per the issued for construction drawings. Caps shall be secured to the pipes with at least one self tapping screw.

#### G. GEOGRID

Geogrid shall be pre-attached to the unistrut with zip ties. Prior to attachment it shall be folded to heights given in the issued for construction drawings. After installation of filter fabric it shall be cut at 6-inch spacing and folded in alternate directions. Tabs shall be secured with zip ties (excess cut off) and further supported by 1-inch high plastic rebar chairs. Height of tabs above filter fabric shall be no less than 1/2-inch nor more than 1-1/2-inches.

#### H. SILICA FOAM

Silica foam shall be conveyed to locations between geogrid and filled to heights shown in the issued for construction drawings. The geogrid shall be vertically supported during the course of fill operations. Silica foam shall be raked to achieve required fill heights. After fill operations, the silica foam shall be compacted to specified heights as shown in the issued for construction drawings. Compacted heights shall be verified by laser leveling. Low spots in the bed shall be filled with finer silica foam material to bring it to required height. Tracked bobcats used for compaction shall have a nominal 5-psi track pressure.

#### I. CLSM

CLSM shall have a finished thickness of 2 to 2.5-inches. After set, CLSM thickness shall be mapped and verified with a 1GHz ground penetrating radar not less than every 10-feet along the width and length of the entry ramp and plateau of the bed. Should thickness less than or greater than those specified occur, additional mapping in those areas will be required and a decision as to removal and replacement made at that time.

#### J. MMA OVERLAY

The Transpo T18 and T28 material shall be installed per the manufactures recommendations. Final thickness of the material shall be 0.28-inches.

### 3.03 PAVEMENT MARKING

- A. This work consists of painting markings and stripes on the new EMAS bed, existing support pad, adjacent runway and apron in accordance with the latest edition of the FAA Advisory Circular 150/5340-1K and at locations shown on the Plans or as directed by the Commissioner.
- B. The Contractor shall take all necessary precautions and care to avoid damaging the newly installed EMAS bed. Any damage shall be inspected by the Manufacturer and repaired to the satisfaction of the Commissioner at the Contractor's expense.
- C. See specifications section P-620 for other requirements.

### 3.04 DELINEATORS

- A. The Contractor shall install FAA approved frangible and reflective delineators and bases (CDA Furnished) at locations and spacing around the new EMAS bed as directed by the Commissioner.

### 3.05 CLEANING AND RESTORATION OF SITE

- A. The Contractor shall restore all areas disturbed by operations related to the removal of the existing EMAS bed and installation of the new EMAS bed, to their original condition or as directed by the Commissioner.
- B. See specifications sections T-901, T-904, T-905 for other requirements.

### PART 4 METHOD OF MEASUREMENT

#### 4.01 EMAS

- A. The Contractor may submit a proposal for review by the Commissioner, prior to work commencing, and in accordance with Article X" Change in the Work" of the Part 2, General Conditions. If an agreement on cost cannot be reached prior to completion of 50% of the work, costs must be tracked on a Time and Material basis.
- B. The Time and Material proposal will be submitted for review in accordance with Article X" Change in the Work" for audit and supported by the completed "CDA Work Reports".
- C. Any remaining balance from the allowance will be returned to the City in the form of an appropriate credit upon completion of the project.

### PART 5 BASIS OF PAYMENT

#### 5.01 PAYMENT

- A. Payment will be made under the following item:
  - a. ITEM Z-100 – ENGINEERED MATERIALS ARRESTOR SYSTEM (EMAS) - 13C, 31C, 4R, 22L, per ALLOWANCE

### **END OF SECTION Z-100**





APPROVED AS WORKING PLAN  
BY:

NO. 114	DESIGNED FOR CONSTRUCTION
REV. DATE	
PROJECT NAME	

MIDWAY INTERNATIONAL AIRPORT

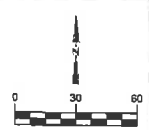
MIDWAY RUNWAY 13C-31C  
REHABILITATION

SHEET TITLE  
**RUNWAY 22L EMAS  
EXISTING SURFACE  
ELEVATIONS**

DESIGNED: CC DRAWING: KLS CHECKED: KMT

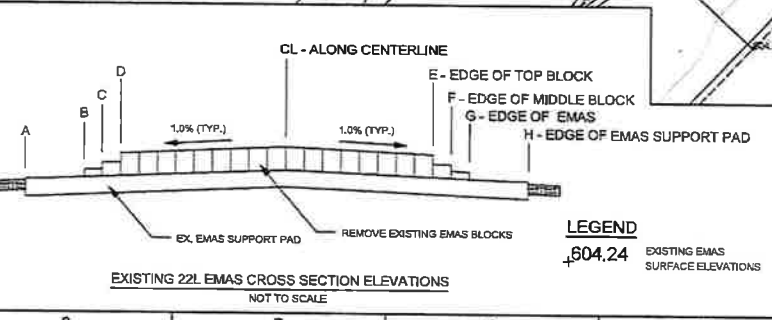
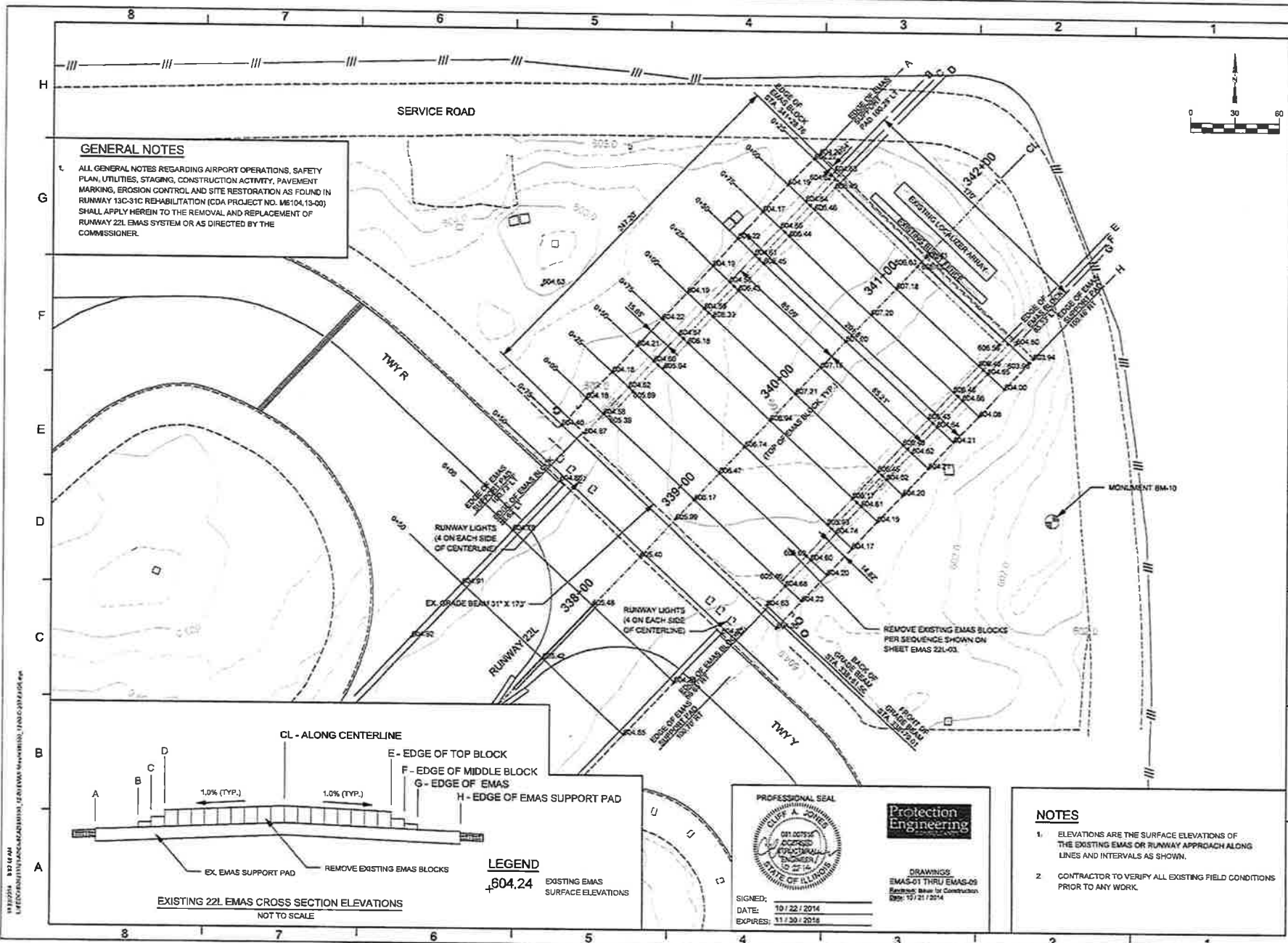
PROJECT NO: M5104.13-00  
DATE: 10/2/14

SHEET NO: **EMAS-01**



**GENERAL NOTES**

1. ALL GENERAL NOTES REGARDING AIRPORT OPERATIONS, SAFETY PLAN, UTILITIES, STAGING, CONSTRUCTION ACTIVITY, PAVEMENT MARKING, EROSION CONTROL AND SITE RESTORATION AS FOUND IN RUNWAY 13C-31C REHABILITATION (CDA PROJECT NO. M5104.13-00) SHALL APPLY HEREIN TO THE REMOVAL AND REPLACEMENT OF RUNWAY 22L EMAS SYSTEM OR AS DIRECTED BY THE COMMISSIONER.



**LEGEND**

±604.24 EXISTING EMAS SURFACE ELEVATIONS

PROFESSIONAL SEAL

CLIFF A. JOHNS  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL  
STATE OF ILLINOIS

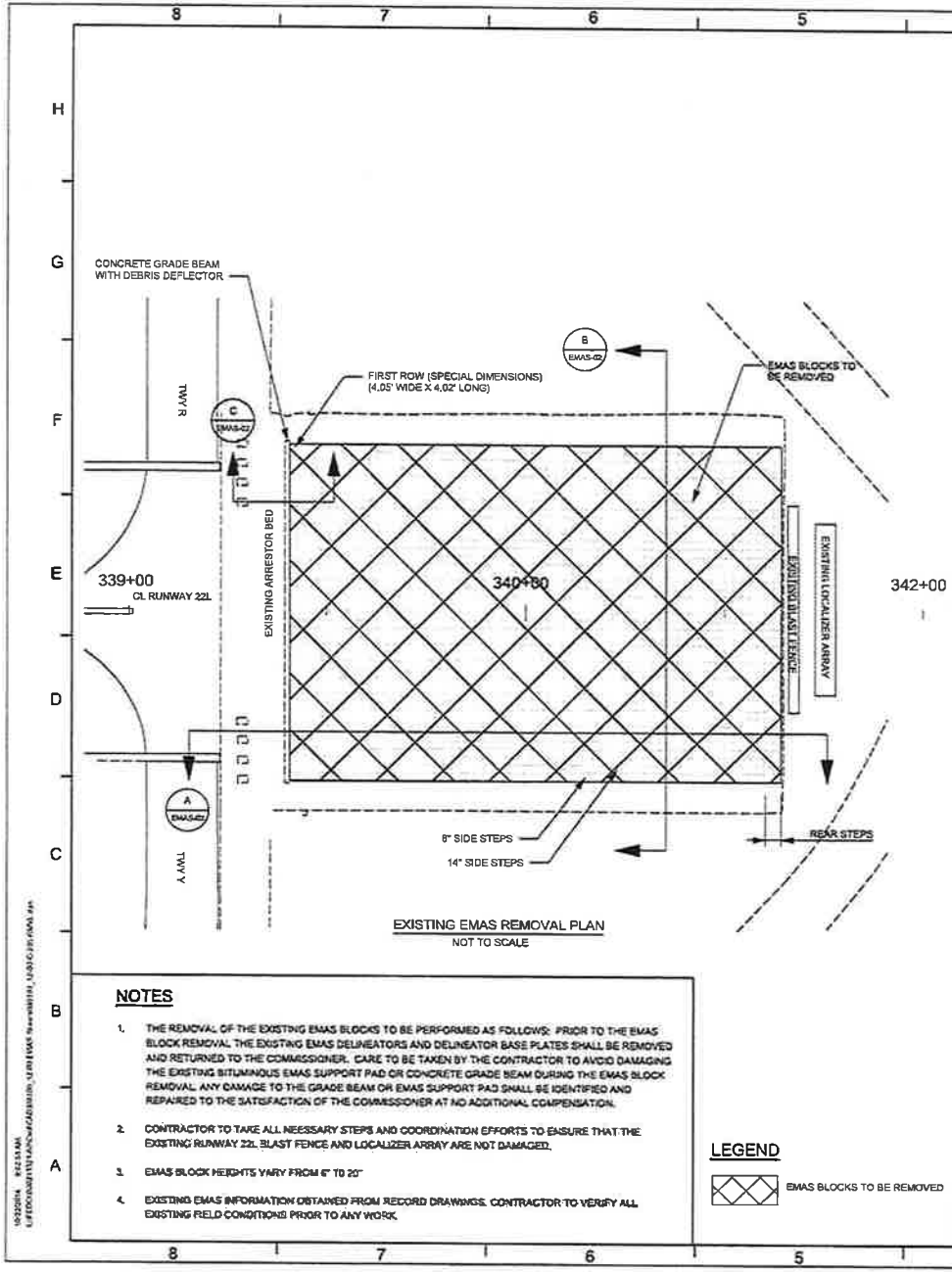
SIGNED: \_\_\_\_\_  
DATE: 10/22/2014  
EXPIRES: 11/30/2016

**Protection Engineering**

DRAWINGS:  
EMAS-01 THRU EMAS-09  
Revised: 10/21/2014

**NOTES**

- ELEVATIONS ARE THE SURFACE ELEVATIONS OF THE EXISTING EMAS OR RUNWAY APPROACH ALONG LINES AND INTERVALS AS SHOWN.
- CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS PRIOR TO ANY WORK.

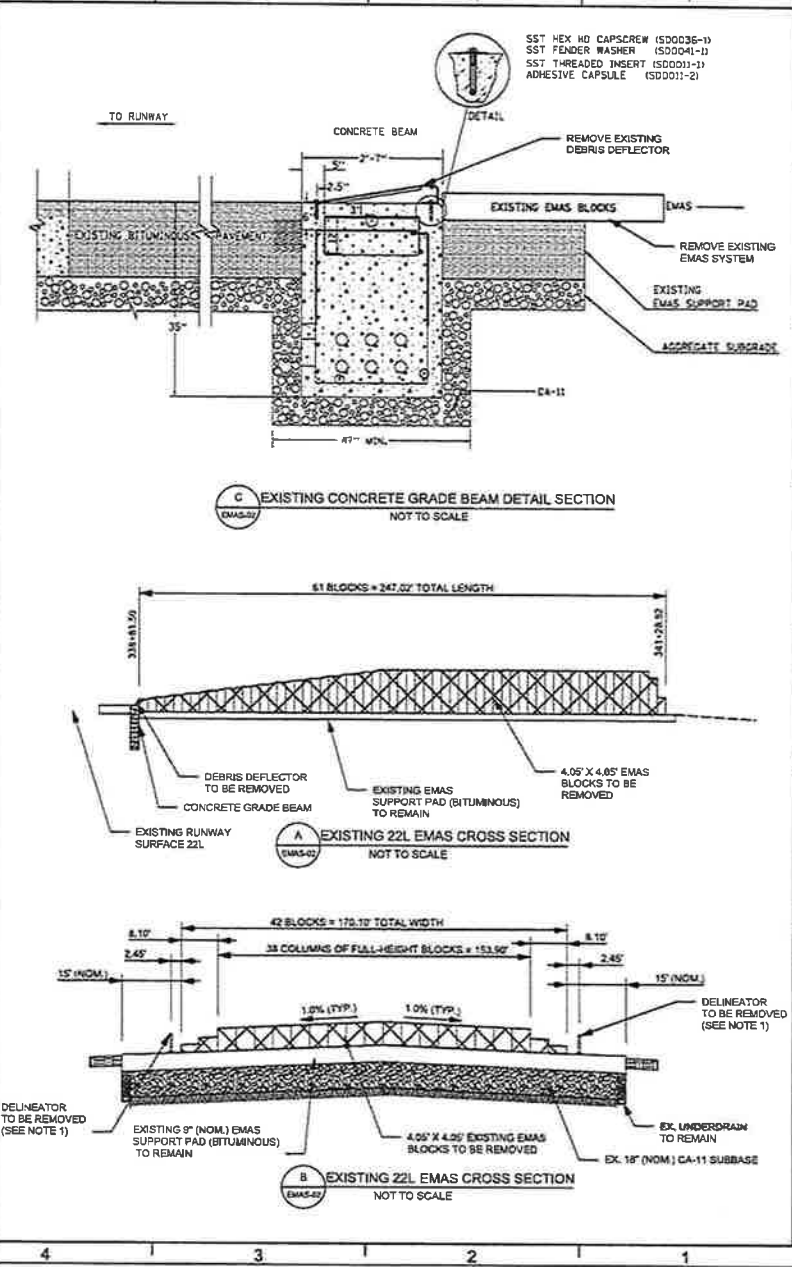


**NOTES**

- THE REMOVAL OF THE EXISTING EMAS BLOCKS TO BE PERFORMED AS FOLLOWS: PRIOR TO THE EMAS BLOCK REMOVAL THE EXISTING EMAS DELINEATORS AND DELINEATOR BASE PLATES SHALL BE REMOVED AND RETURNED TO THE COMMISSIONER. CARE TO BE TAKEN BY THE CONTRACTOR TO AVOID DAMAGING THE EXISTING BITUMINOUS EMAS SUPPORT PAD OR CONCRETE GRADE BEAM DURING THE EMAS BLOCK REMOVAL. ANY DAMAGE TO THE GRADE BEAM OR EMAS SUPPORT PAD SHALL BE IDENTIFIED AND REPAIRED TO THE SATISFACTION OF THE COMMISSIONER AT NO ADDITIONAL COMPENSATION.
- CONTRACTOR TO TAKE ALL NECESSARY STEPS AND COORDINATION EFFORTS TO ENSURE THAT THE EXISTING RUNWAY 22L, BLAST FENCE AND LOCALIZER ARRAY ARE NOT DAMAGED.
- EMAS BLOCK HEIGHTS VARY FROM 6" TO 20"
- EXISTING EMAS INFORMATION OBTAINED FROM RECORD DRAWINGS. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS PRIOR TO ANY WORK.

**LEGEND**

EMAS BLOCKS TO BE REMOVED



**CHICAGO CDA**  
DEPARTMENT OF AVIATION

MIDWAY INTERNATIONAL AIRPORT  
CITY OF CHICAGO  
CHICAGO DEPARTMENT OF AVIATION

RAHM EMANUEL  
Mayor  
ROSEMARIE G. ANDOLINO  
Commissioner

**exp.**  
exp U.S. Services Inc.  
Chicago, IL  
BUILDINGS-EARTH & ENVIRONMENT-ENERGY  
INDUSTRIAL INFRASTRUCTURE-SUSTAINABILITY

**Protection Engineering**  
CONSULTANTS

APPROVED AS WORKING PLAN  
BY: \_\_\_\_\_ DATE: \_\_\_\_\_

ISSUED FOR CONSTRUCTION  
REV. DATE PROJECT NAME

MIDWAY INTERNATIONAL AIRPORT  
MIDWAY RUNWAY 13C-31C  
REHABILITATION

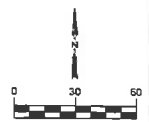
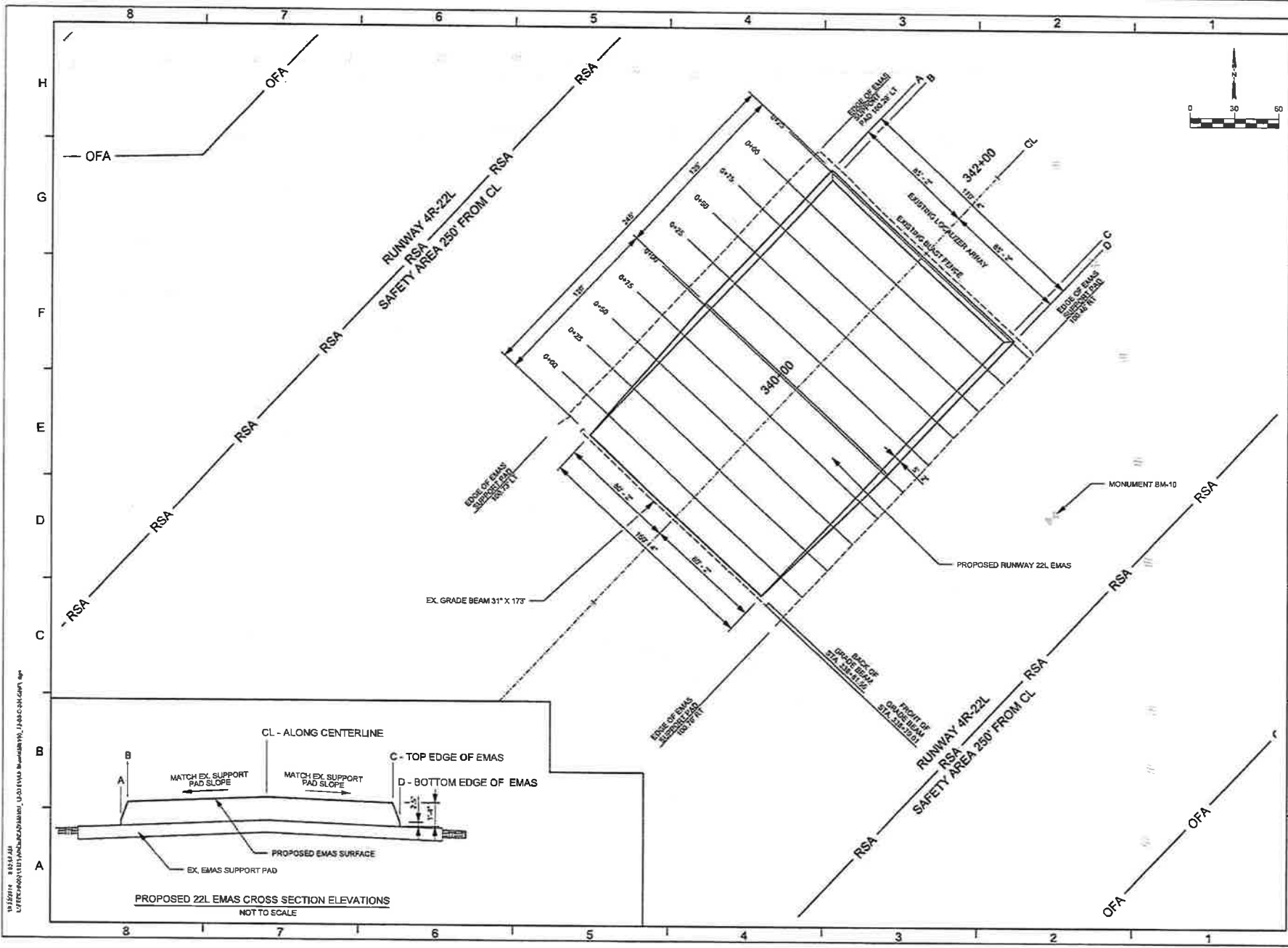
SHEET TITLE  
**RUNWAY 22L EMAS  
REMOVAL PLAN AND DETAILS**

DESIGNED: JMM. CHECKED: JMM.  
DC: RLB. IDW.

PROJECT NO: M6104.13-00  
DATE: 10/21/14

SHEET NO. 10 OF 20

**EMAS-02**

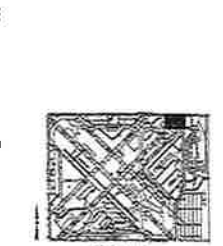


**CHICAGO CDA**  
 DEPARTMENT OF AVIATION  
 MIDWAY INTERNATIONAL AIRPORT  
 CITY OF CHICAGO  
 CHICAGO DEPARTMENT OF AVIATION

RAHM EMANUEL  
 MAYOR  
 ROSEMARIE S. ANDOLINO  
 COMMISSIONER



exp U.S. Services Inc.  
 Chicago, IL  
 BUILDINGS-EARTH & ENVIRONMENT-ENERGY  
 INDUSTRIAL-INFRASTRUCTURE-SUSTAINABILITY



APPROVED AS SHOWN PLAN  
 EX.

NO.	DATE	REVISION

MIDWAY INTERNATIONAL AIRPORT  
 MIDWAY RUNWAY 13C-31C  
 REHABILITATION

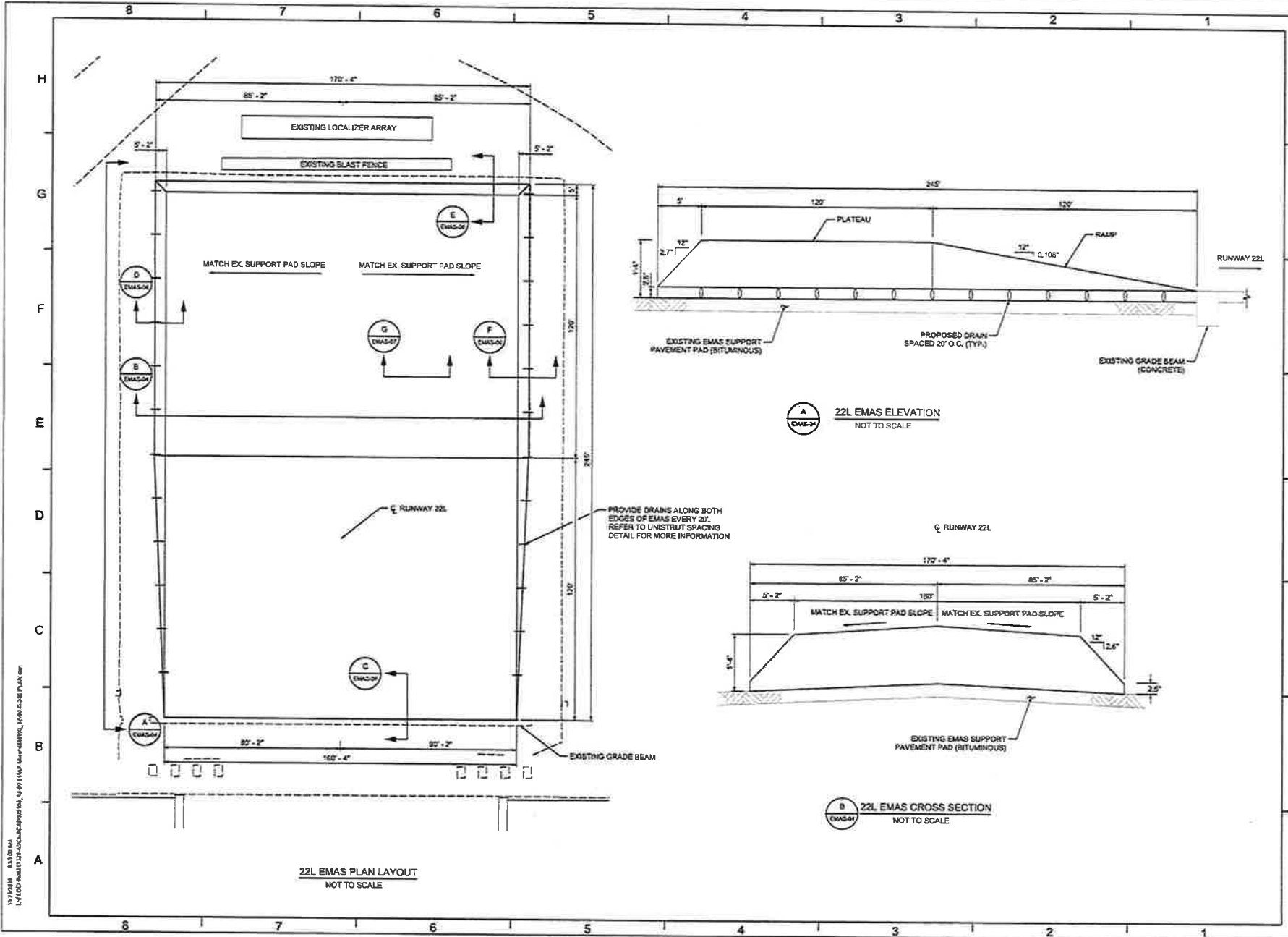
SHEET TITLE  
**RUNWAY 22L EMAS  
 PROPOSED SITE PLAN  
 AND ELEVATIONS**

DESIGNED: EC DRAWN: ELS CHECKED: KWP

PROJECT NO: AM104-13-00  
 DATE: 10/21/14

SHEET NO: **EMAS-03**

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**MIDWAY INTERNATIONAL AIRPORT**  
CITY OF CHICAGO  
CHICAGO DEPARTMENT OF AVIATION

**RAHM EMANUEL**  
MAYOR  
**ROSEMARIE S. ANDOUNI**  
COMMISSIONER



**exp U.S. Services Inc.**  
Chicago, IL  
BUILDINGS-GARTH & ENVIRONMENT-ENERGY  
INDUSTRIAL-INFRASTRUCTURE-SUSTAINABILITY



APPROVED AS WORKING PLAN
BY:
10/21/14 ISSUED FOR CONSTRUCTION
REV. DATE
PROJECT NAME

**MIDWAY INTERNATIONAL AIRPORT**  
MIDWAY RUNWAY 13C-31C  
REHABILITATION

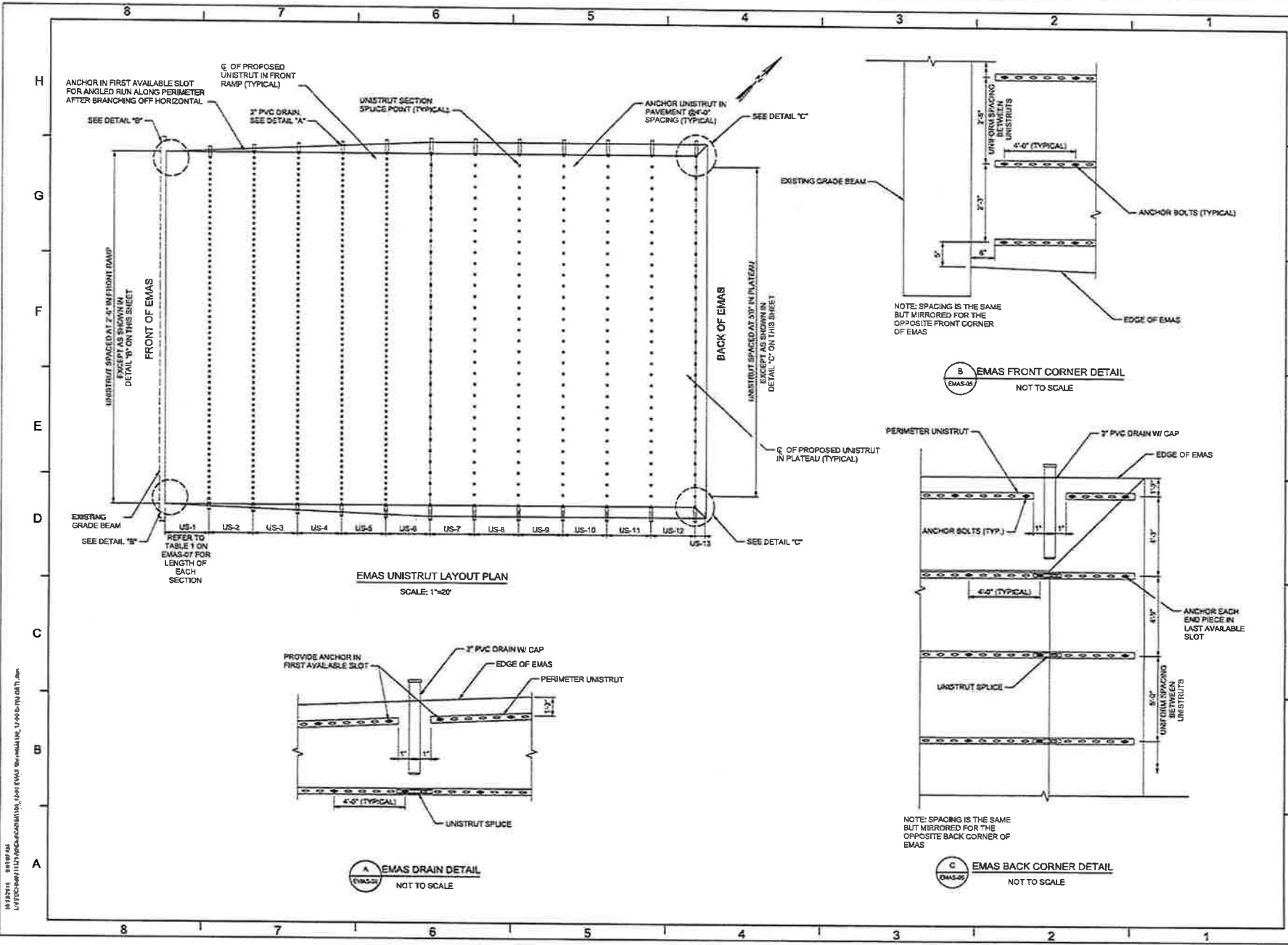
**SHEET TITLE**  
RUNWAY 22L EMAS  
PROPOSED LAYOUT

DESIGNED:	DRAWN:	CHECKED:
EC	RJS	KJP

**PROJECT NO.:** M6104.13-00  
**DATE:** 10/21/14

<b>SHEET NO.:</b> EMAS-04	REVISION:
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PROJECT NAME: MIDWAY INTERNATIONAL AIRPORT  
MIDWAY RUNWAY 12C-31C  
REHABILITATION

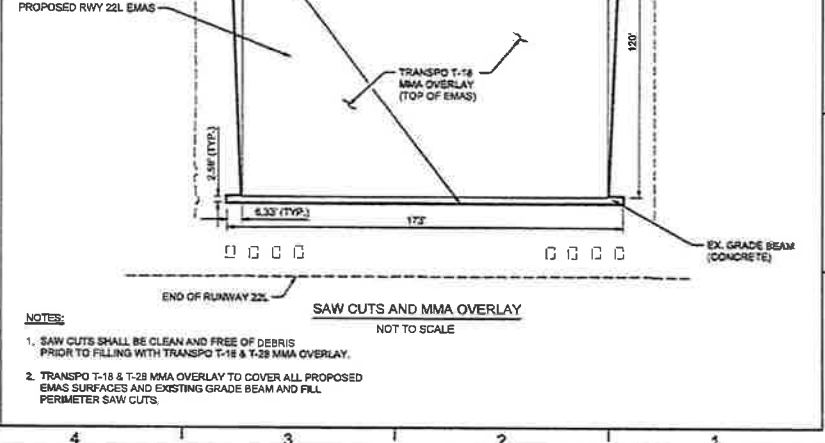
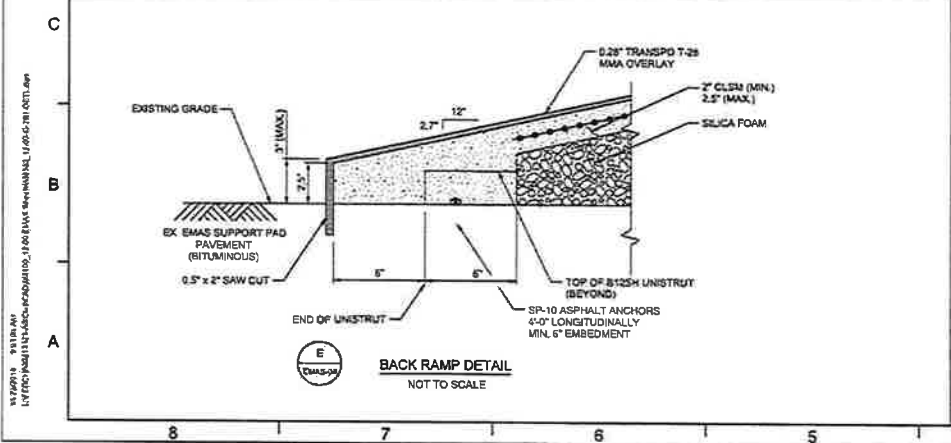
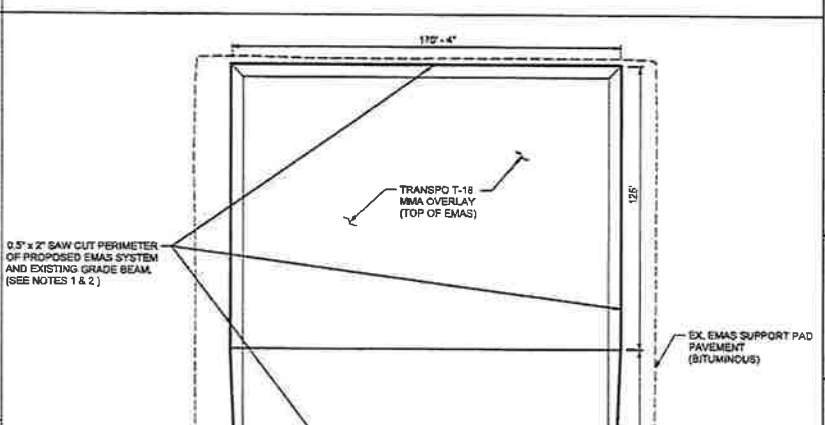
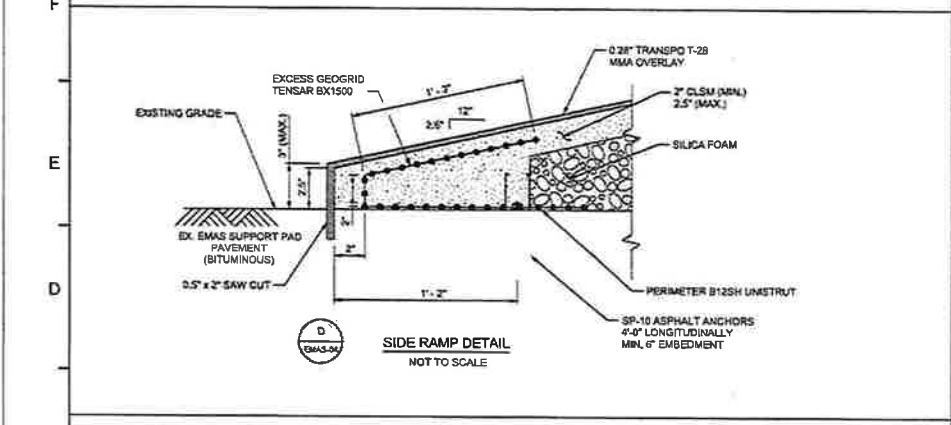
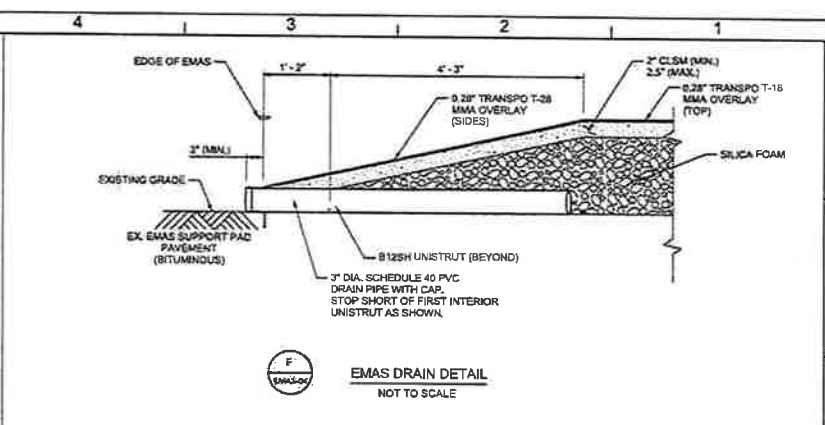
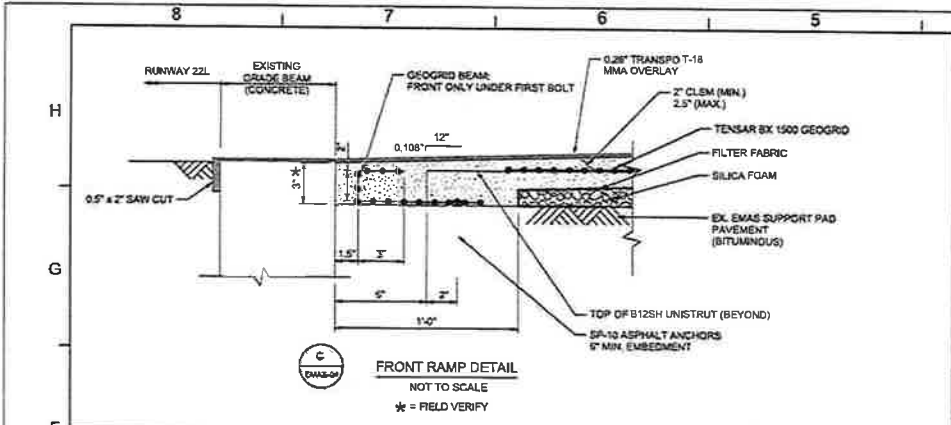
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DETAILS 1

DRAWN:	THICKENED:	CHECKED:
EC	RLS	JM

PROJECT NO: M6104.13-00  
DATE: 10/2/14

DESIGNED:	REVISION
EMAS-05	

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DATE	BY	CHECKED
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PROJECT NAME		
MIDWAY INTERNATIONAL AIRPORT		
MIDWAY RUNWAY 13C-31C REHABILITATION		
SHEET TITLE		
RUNWAY 22L EMAS DETAILS 2		
DESIGNED	DRAWN	CHECKED
EC	RJS	MSF
PROJECT NO: M6104.13-00		
DATE: 10/21/14		
SHEET NO:		REVISED
EMAS-06		

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APPROVED AS WORKING PLAN  
 BY:

DESIGNER: [ ]  
 CHECKER: [ ]  
 DATE: [ ]  
 PROJECT NAME:

MIDWAY INTERNATIONAL AIRPORT

MIDWAY RUNWAY 13C-31C  
 REHABILITATION

SHEET TITLE:  
**RUNWAY 22L EMAS  
 DETAILS 3**

DESIGNED BY: [ ]  
 EC: [ ]  
 DRAWN BY: [ ]  
 JC: [ ]  
 DATE: 10/21/14

PROJECT NO.: M6104-13-00

SHEET NO.: **EMAS-07**

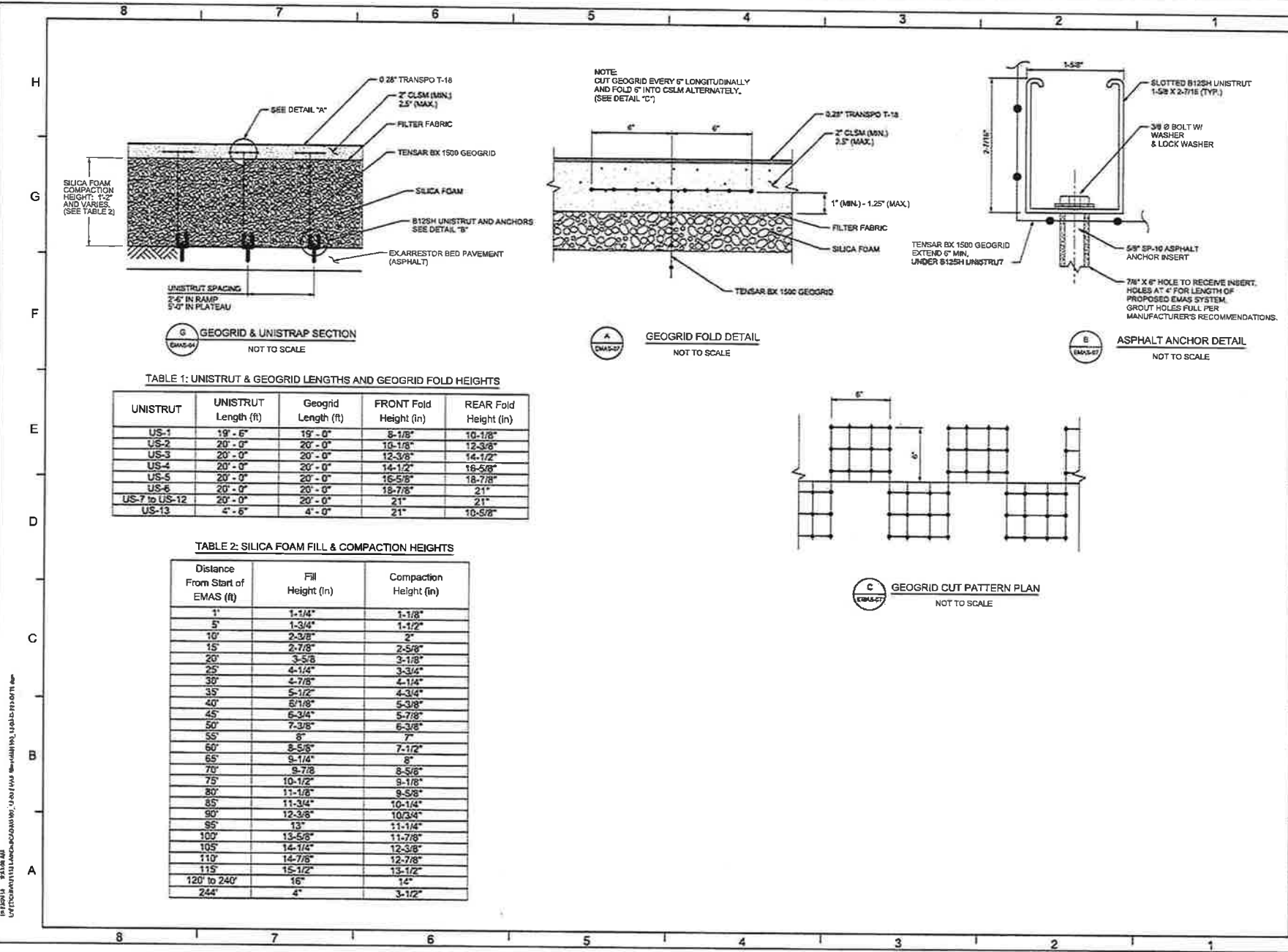


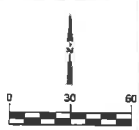
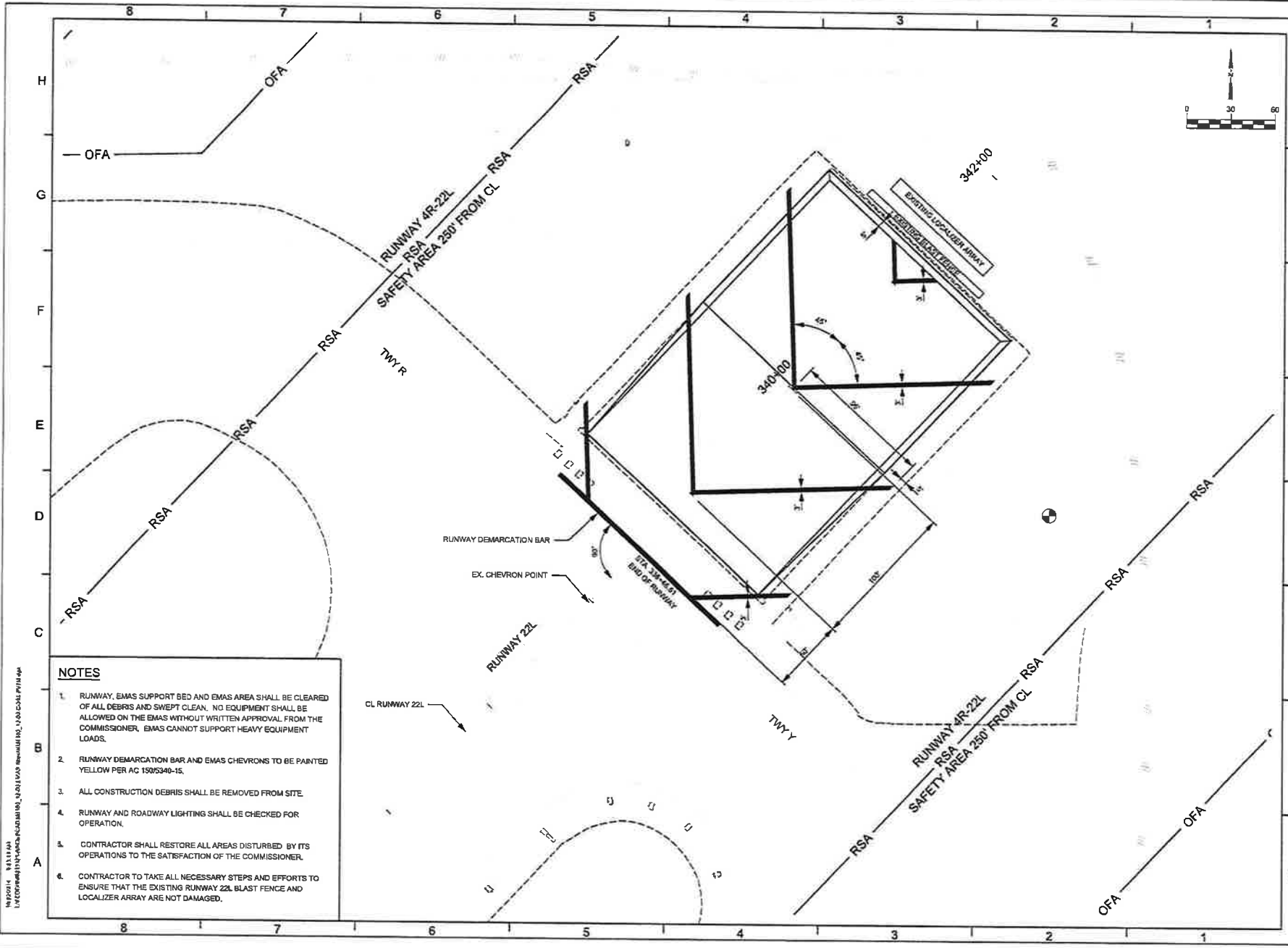
TABLE 1: UNISTRUT & GEOGRID LENGTHS AND GEOGRID FOLD HEIGHTS

UNISTRUT	UNISTRUT Length (ft)	Geogrid Length (ft)	FRONT Fold Height (in)	REAR Fold Height (in)
US-1	19' - 6"	19' - 0"	8'-1/8"	10'-1/8"
US-2	20' - 0"	20' - 0"	10'-1/8"	12'-3/8"
US-3	20' - 0"	20' - 0"	12'-3/8"	14'-1/2"
US-4	20' - 0"	20' - 0"	14'-1/2"	18'-5/8"
US-5	20' - 0"	20' - 0"	16'-5/8"	18'-7/8"
US-6	20' - 0"	20' - 0"	18'-7/8"	21'
US-7 to US-12	20' - 0"	20' - 0"	21"	21"
US-13	4' - 6"	4' - 0"	21"	10'-5/8"

TABLE 2: SILICA FOAM FILL & COMPACTION HEIGHTS

Distance From Start of EMAS (ft)	Fill Height (in)	Compaction Height (in)
1'	1-1/4"	1-1/8"
5'	1-3/4"	1-1/2"
10'	2-3/8"	2"
15'	2-7/8"	2-5/8"
20'	3-5/8"	3-1/8"
25'	4-1/4"	3-3/4"
30'	4-7/8"	4-1/4"
35'	5-1/2"	4-3/4"
40'	6-1/8"	5-3/8"
45'	6-3/4"	5-7/8"
50'	7-3/8"	6-3/8"
55'	8"	7"
60'	8-5/8"	7-1/2"
65'	9-1/4"	8"
70'	9-7/8"	8-5/8"
75'	10-1/2"	9-1/8"
80'	11-1/8"	9-5/8"
85'	11-3/4"	10-1/4"
90'	12-3/8"	10-3/4"
95'	13"	11-1/4"
100'	13-5/8"	11-7/8"
105'	14-1/4"	12-3/8"
110'	14-7/8"	12-7/8"
115'	15-1/2"	13-1/2"
120' to 240'	16"	14"
244'	4"	3-1/2"



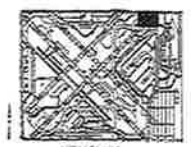


**CHICAGO**  
**CDA**  
 DEPARTMENT OF AVIATION  
 MIDWAY INTERNATIONAL AIRPORT  
 CITY OF CHICAGO  
 CHICAGO DEPARTMENT OF AVIATION

RAHM EMANUEL  
 Mayor  
 ROSEMARIE S. ANDRONG  
 Commissioner

**exp.**  
 exp U.S. Services Inc.  
 Chicago, IL  
 BUILDINGS-EARTH & ENVIRONMENT-ENERGY  
 INDUSTRIAL-INFRASTRUCTURE-SUSTAINABILITY

**Protection**  
**Engineering**  
 CONSULTANTS

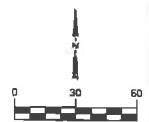
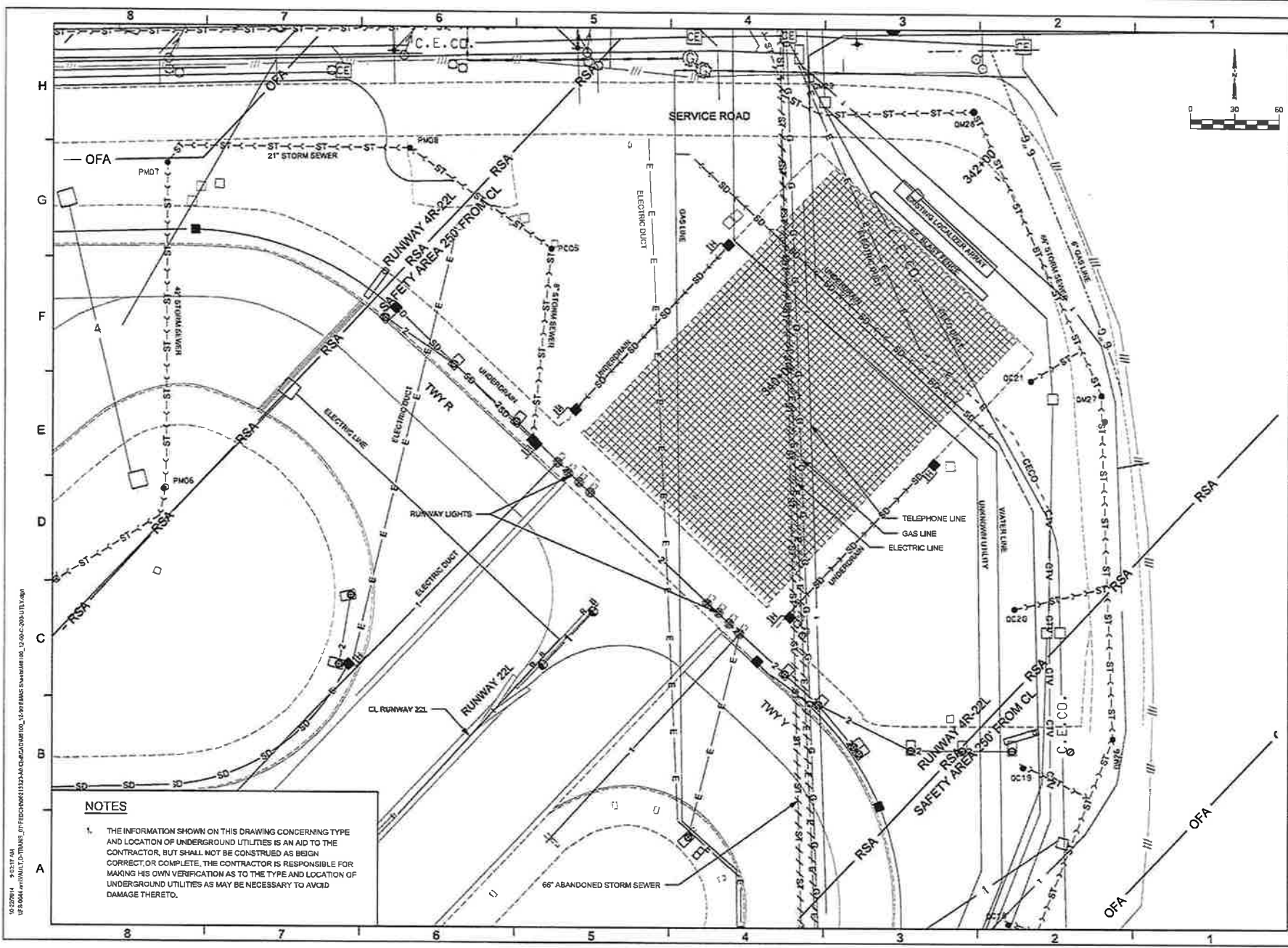


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BY:	
DATE:	
PROJECT NAME:	
MIDWAY INTERNATIONAL AIRPORT	
MIDWAY RUNWAY 13C-31C	
REHABILITATION	
SHEET TITLE:	
RUNWAY 22L EMAS	
PAVEMENT MARKING &	
RESTORATION PLAN	
DESIGNED:	CHECKED:
EC	RS
DRAWN:	BY:
RS	RS

- NOTES**
1. RUNWAY, EMAS SUPPORT BED AND EMAS AREA SHALL BE CLEARED OF ALL DEBRIS AND SWEEPED CLEAN. NO EQUIPMENT SHALL BE ALLOWED ON THE EMAS WITHOUT WRITTEN APPROVAL FROM THE COMMISSIONER. EMAS CANNOT SUPPORT HEAVY EQUIPMENT LOADS.
  2. RUNWAY DEMARCATION BAR AND EMAS CHEVRONS TO BE PAINTED YELLOW PER AC 150/5340-15.
  3. ALL CONSTRUCTION DEBRIS SHALL BE REMOVED FROM SITE.
  4. RUNWAY AND ROADWAY LIGHTING SHALL BE CHECKED FOR OPERATION.
  5. CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY ITS OPERATIONS TO THE SATISFACTION OF THE COMMISSIONER.
  6. CONTRACTOR TO TAKE ALL NECESSARY STEPS AND EFFORTS TO ENSURE THAT THE EXISTING RUNWAY 22L BLAST FENCE AND LOCALIZER ARRAY ARE NOT DAMAGED.

NEWELL, NATHAN  
 LICENSED PROFESSIONAL ENGINEER, STATE OF ILLINOIS, LICENSE NO. 081-000000000

PROJECT NO.: M6104.13-00  
 DATE: 10/21/14  
 SHEET NO.:  
**EMAS-08**

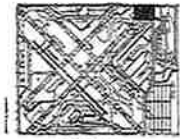


**CHICAGO CDA**  
 DEPARTMENT OF AVIATION  
 MIDWAY INTERNATIONAL AIRPORT  
 CITY OF CHICAGO  
 CHICAGO DEPARTMENT OF AVIATION

RAHM EMANUEL  
 MAYOR  
 ROSEMARIE S. ANDRONE  
 COMMISSIONER

**exp.**  
 exp U.S. Services Inc.  
 CHICAGO, IL  
 BUILDINGS-EARTH & ENVIRONMENT-ENERGY  
 INDUSTRIAL-INFRASTRUCTURE-SUSTAINABILITY

**Protection Engineering**  
 CONSULTANTS



APPROVED AS WORKING PLAN  
 BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 PROJECT NAME: \_\_\_\_\_

MIDWAY INTERNATIONAL AIRPORT  
 REHABILITATION

SHEET TITLE:  
**RUNWAY 22L EMAS  
 EXISTING COMPOSITE  
 UTILITIES**

DESIGNED	DRAWN	CHECKED
EC	AJS	KM

PROJECT NO: M6104-13-00  
 DATE: 10/2/14  
 SHEET NO: \_\_\_\_\_

**EMAS-09**

**NOTES**

1. THE INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS AN AID TO THE CONTRACTOR, BUT SHALL NOT BE CONSTRUED AS BEING CORRECT OR COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN VERIFICATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.

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**APPENDIX B: INSPECTION FORMS AND MAINTENANCE TO DATE**

# QAMT

## DAILY FIELD REPORT



Rosemarie S. Andolino  
Commissioner  
Department of Aviation

NOTE: The responsibilities and authority of OMP QAMT Field Personnel include neither the responsibilities nor the authority of the "Competent Person" for the project site as defined by OSHA Regulations: 29CFR 1926 Subpart P.

Page 1 of 1

Project: Midway Runway 13C-31C Rehabilitation  
 Project No: M6104.13-00  
 Location: Chicago, IL

Report No: 11.25.14.AWW  
 Contractor: K-Five Construction Corporation  
 Client: City of Chicago

Project Quality Control Personnel	QC on site at start of shift?
NAME: <u>Sharad Patel</u>	Yes
FIRM: <u>K-Five Construction Corporation</u>	
NAME: _____	
FIRM: <u>K-Five Construction Corporation</u>	
NAME: _____	
FIRM: _____	

Day: Tuesday  
 Date: November 25, 2014  
 Weather: Mostly Cloudy Mid 20's

<b>TOTAL CHARGEABLE HOURS</b> 2 Hrs. Min. / 8 Hrs. Min.	<b>11</b>
--	-----------

Summary of technical and/or engineering services performed, including field test data, location, elevation and depth are estimated.	Attachments Included	Quality Deficiency
I observed TETRIS and Quality Saw & Seal hot pouring Crafcoc Inc. Roadsaver 201-PN over the previously poured T-18 with polymer concrete and the new found cracks to seal the cracks on the RWY 22L EMAS bed. Just after pouring the Roadsaver 201-PN along the cracks Flint Rock chips were sprinkled over the still hot tar material. It was not possible to tell whether the sealer flowed into the cracks or just covered the top of them. After the material cooled, where applicable the Chevrons were touched up with yellow MMA. 36 blocks of Roadsaver 201-PN were used. Attached is a scanned copy of the product specification label.	Yes	No
I sketched the cracks on a drawing, measured their lengths with a wheel, and wrote them in next to each sketched crack. (Attached) The total length of cracks sealed was 1225 feet. Each drain cap was removed for a visual observation and replaced. Each pipe had no more than an ounce of frozen water along the bottom of them. Since most of the cracks were previously somewhat filled with MMA measuring their width or depth was not possible.		
Pictures were taken of the work done and condition before and after with a tablet provided by CARE Plus and saved to the "Y"-drive. Some of them show the condition of the MMA filled cracks and the new cracks before placement of the sealer used tonight. A pencil was used for size comparison in a few to show heaving along the cracks which varies from 0" high to approximately 3/4" high or more.		
TETRIS and Quality Saw & Seal arrived on the EMAS bed at 10:31 PM and began working right away. Work was finished at 4:45 AM.		

Field Test Data is Estimated - Pending Final Laboratory Test Results

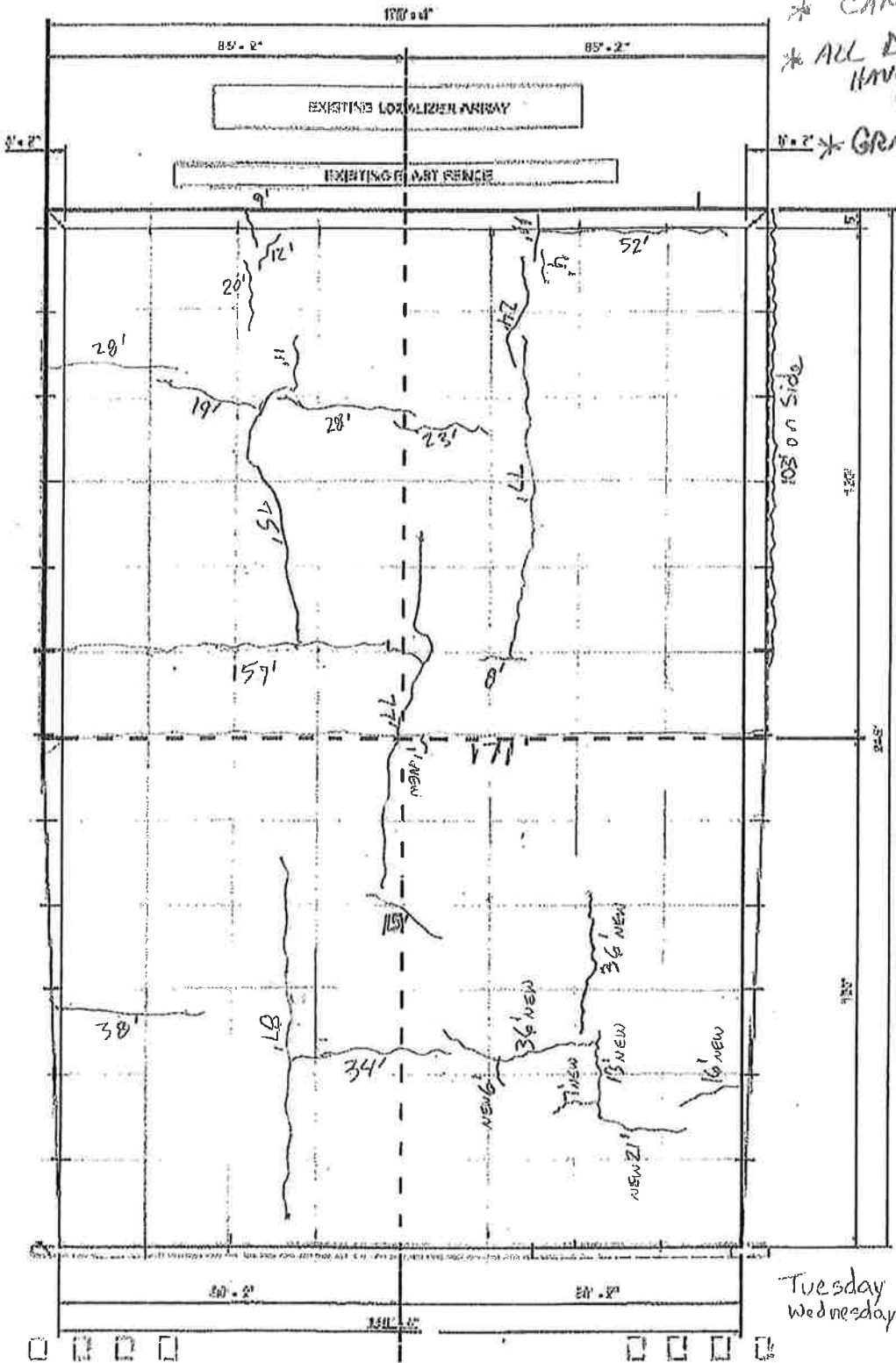
Reviewed By: \_\_\_\_\_  
 Title: \_\_\_\_\_

Report By: Acy W. Wartsbaugh II  
 Title: QAMT Field Technician

- Between both the entry ramp and the plateau, there is approximately 1122 LF of cracking, including the 171 LF crack where the plateau and entry ramp meet
- Of the 1122 LF of cracking, approximately 386 LF was at a width of about ¼” to ½”
- Due to the MMA application last week, it wasn’t possible to measure depths of cracks
- There is 33 LF of vertical cracking on the side ramps
- There is 171 LF of horizontal cracking along the footer of the side ramps
- None of the cracking on the side ramps seems to be wider than 1/8”
- The grade beam has 0 issues
- Between the entry ramp, plateau & side ramps there is a total of 1326 LF of cracking
- Of that 1326 LF of cracking, 1225 LF was sealed with hot pour and covered with aggregate
- The drainage pipes all have minimal moisture in side which is currently frozen

**Process:** The laborers were carrying 5 gallon buckets of the hot pour sealant across the EMAS bed and dumping it along the cracks. There were more laborers spreading the aggregate immediately atop the hot pour sealant. The 1<sup>st</sup> crack sealed and stoned tonight was the main crack across the EMAS bed where the entry ramp meets the plateau (171 LF). That crack took approximately 28 minutes to seal and stone. From 11:15 PM to 4:45 AM (5.5 hours), Tetris was able to seal and stone 1225 LF of cracking. The only problem was being able to batch enough hot pour to keep the sealing process continuous. Near the end of the night when they began sealing the horizontal joints along the side ramp footers, the laborers just poured the sealant along the edge which allowed for the sealant to flow downwards sealing the cracks. Stone was applied shortly afterwards. All photos from the repair have been uploaded to the Y: Drive and can be found in the EMAS folder located within the job photos.

\*  $\frac{1}{4}'' = \frac{1}{2}''$  WIDTH  
 \* CANNOT MEASURE DEPTH  
 \* ALL DRAINAGE PIPES HAVE MINIMAL FROZEN CONDENSATION  
 \* GRADE BEAM IS FINE



- 9
- 12
- 20
- 11
- 28
- 19
- 28
- 75
- 157
- 77
- 15
- 38
- 87
- 34
- 11
- 4
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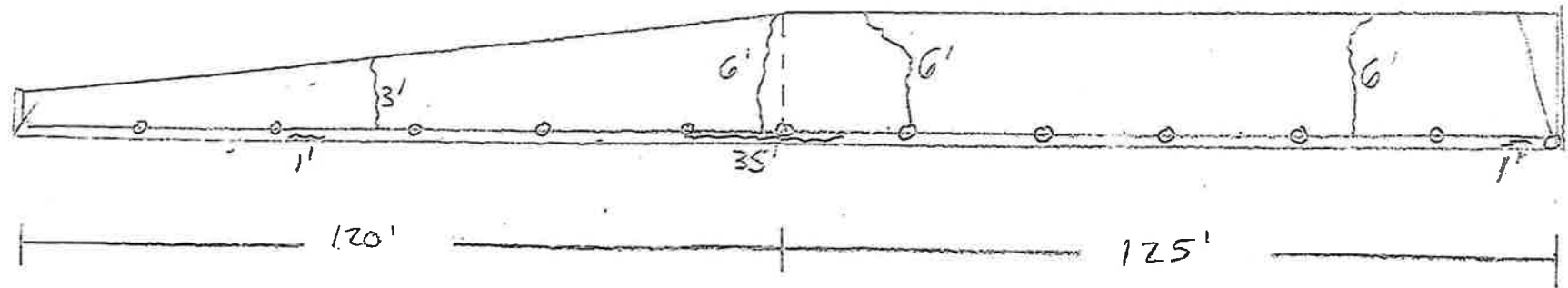
1122 Total Feet  
 103  
 1225  
 N

Tuesday 11-25-14 to  
 Wednesday 11-26-14

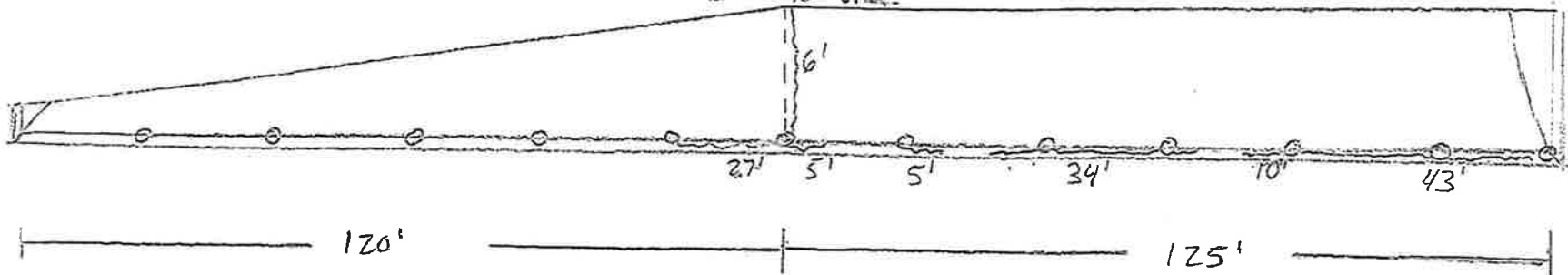
Acy W. Wartsbaugh, II Mrs. ACCOM  
 Martin Madden CARE Plus

RWY 22L EMAS BED  
 CRACK SKETCH

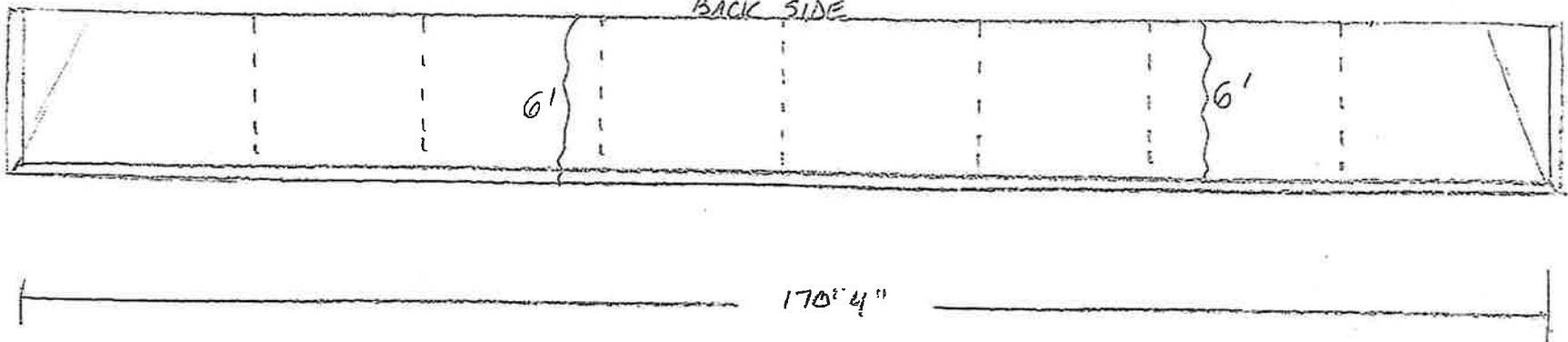
SOUTHWEST HANGAR SIDE



TERMINAL SIDE



BACK SIDE



- \* 33 LF ON RAMPS
- \* 171 LF ALONG FOOTER
- \* NOTHING WRONG WITH GRADE BEAM
- \* CANNOT MEASURE DEPTHS
- \* ALL DRAINAGE PIPES HAVE MINIMAL FROZEN CONDENSATION



## Technical Data Sheet

### MMA Polymer Crack Sealer T-78

T-78 MMA Crack Sealer is a very low viscosity, low surface tension, rapid curing methacrylate reactive resin system that is highly effective for sealing and filling cracks and pores in concrete structures.

#### Application Procedure

**Surface Preparation:** It is strongly recommended that all concrete surfaces that are to receive T-78 be thoroughly clean and sound. Remove all surface dirt, grease, paint, rust, and other contaminants by sandblasting, shot-blasting or mechanical abrasion. The concrete surface should be visibly dry and the moisture content in the concrete should be tested according to ASTM D4263. The temperature of the deck and air should be between 40°F – 104°F (4°C-40°C). For colder temperatures contact a Transpro representative.

**Mixing:** T-78 must be mixed with the appropriate amount of powder hardener just prior to application. Air/substrate temperature determines the amount of powder hardener used. Table 1 lists the appropriate amount of powder hardener to be added to one gallon of T-78 resin. Using clean, dry plastic buckets and scoops; add powder hardener to T-78 and mix until dissolved (approximately one minute). A drill-mounted paddle mixer should be used for larger batches. Mixed T-78 must be used immediately.

**Table 1: Mixing Instructions for T-78 and Powder Hardener**

Temp °F (°C)	Weight %	Vol. oz	Packets
40 (5)	5	10.5	5
50 (10)	4	8.5	4
60 (16)	3	6.5	3
70 (21)	2	4.5	2
90 (32)	1	2	1

**Application:** T-78 is applied in a gravity-fed process. The rate of application of T-78 resin should be approximately 100-150ft<sup>2</sup>/gal (2.5-3.75m<sup>2</sup>/L). However, this will vary depending on the surface porosity, size, and quantity of cracks present in the area being treated.

Spray equipment, if used, should be airless, generating sufficient pressure to atomize mixed resins. If hand applied, the concrete surface should be flooded with the resin, allowing sufficient time for penetration into the surface and complete filling of all cracks. Excess material should be redistributed using squeegees or brooms within 5 minutes after application. The quantity of T-78 resin mixed at one time should be limited to 5gal (19L) for manual application.

**Broadcasting of Aggregate:** Broadcast sand should be applied to the entire treated area prior to cure, typically at 1-2lb/yd<sup>2</sup> (0.4-0.8kg/m<sup>2</sup>). The sand used should be 12x16 mesh, #2 or #3 blasting sand, and should have a maximum moisture content no greater than 0.5%. It should be placed within minutes of the resin application and before any setting of the resin occurs. Traffic can be restored once the concrete surface is cured tack-free. Note; if line striping is to be applied after the application of T-78 the cured material on the concrete surface may need to be removed before application of the striping material, or striping can be applied prior to the T-78 application.

**Table 2: Pot life and Cure Times\* for T-78 depending on temperature**

Temperature °F(°C)	Cure Time* (min) T-78	Pot life (min) T-78
40 (4)	35 – 40 (with 10 % Additive CW)	10 – 15
50 (10)	30 – 35 (with 10% Additive CW)	7 – 9
60 (16)	45 – 50	15 – 20
70 (21)	45 – 50	15 – 20
90 (32)	30 – 35	5 – 10

\*Cure times are approximate and will vary with ambient and deck temperature, humidity, and sunlight.

**Table 3: Properties of T-78\***

Property	Unit of Measure	Test
Appearance	Bluish Liquid	
Viscosity	<5-10 cps (mPa-sec)	Brookfield
Density	8.08lb/gal (0.95kg/L)	ASTM D2849
Pot Life @ 70°F	15 – 20 min	AASHTO T237
Tack Free Time @ 70°F (21°C)	30 – 40 min	AASHTO T237
Flash Point	>50°F (>10°C)	ASTM D1310
Solids Content	100%	ASTM D1644
Tensile Strength	8100 psi (56.4 MPa)	ASTM D638 Type I
Tensile Elongation	5%	ASTM D638 Type I
Compressive Strength (24 hr)	12800 psi (88.2 MPa)	ASTM C579 Method B

\*To be used as general guidelines only

## Packaging

T-78 comes in 5 and 55 gal containers. The powder hardener is provided in separate labeled containers or in pre-measured quantities.

## Storage

T-78 should be stored in tightly sealed containers in a dry and out of direct sunlight location. Maximum storage temperature is 68°F (20°C). Store materials in original containers.

## Caution

T-78 is a flammable liquid in the uncured state. Read and understand product labels and MSDS prior to use. T-78 may produce minor skin irritations to persons prone to such reactions. It is recommended that all persons involved in mixing and application wear protective clothing such as goggles, rubber boots, rubber gloves.

## Warranty

The following warranty is made in lieu of all other warranties, either expressed or implied. This product is manufactured of selected raw materials by skilled technicians. Neither seller nor manufacturer has any knowledge or control concerning the purchaser's use of product and no warranty is made as to the results of any use. The only obligation of either seller or manufacturer shall be to replace any quantity of this product that proves to be defective. Neither seller nor manufacturer assumes any liability for injury, loss or damage resulting from use of this product.

20 Jones Street, New Rochelle, NY 10801

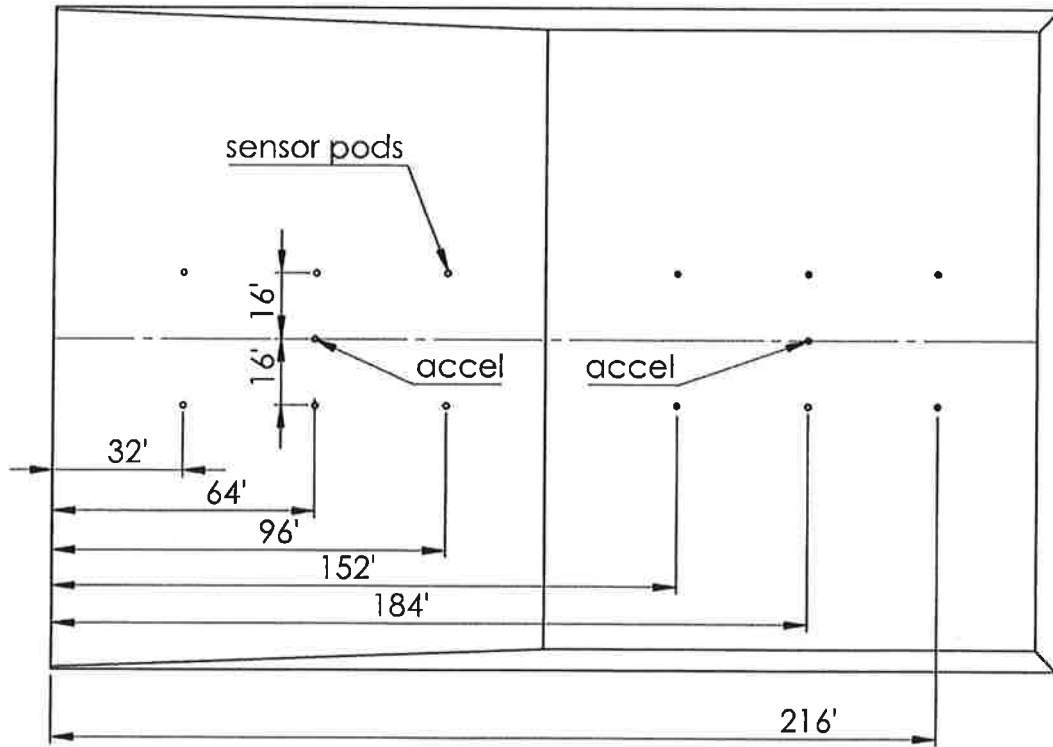
02/13

Tel: 914-636-1000  
Web: <http://www.transpo.com>

Fax: 914-636-1282  
E-mail: [infor@transpo.com](mailto:infor@transpo.com)

**APPENDIX C: JET BLAST INSTRUMENTATION DETAILS AS OF 12-11-14**

NOTE: These are preliminary details provided prior to instrumentation deployment. An instrumentation deployment plan will be presented to the airport when prepared on or about January of 2015.



UNLESS OTHERWISE SPECIFIED:  
 DIMENSIONS ARE IN MILLIMETERS  
 SURFACE FINISH:  
 TOLERANCES:  
 LINEAR:  
 ANGULAR:

FINISH:

DEBUR AND  
 BREAK SHARP  
 EDGES

DO NOT SCALE DRAWING

REVISION

NAME	SIGNATURE	DATE
DRAWN		
CHK'D		
APP'V'D		
MFG		
G.A.		

TITLE:

MATERIAL:

DWG NO.

**EMAS sensor grid**

A4

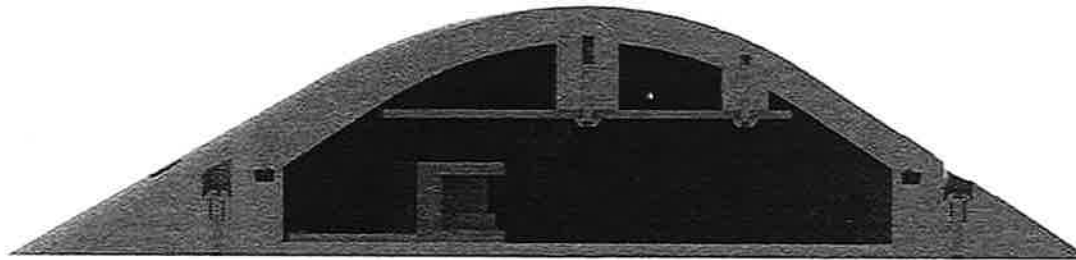
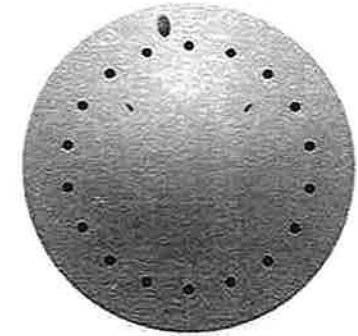
WEIGHT:

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SHEET 1 OF 1

# EMAS Sensor Design

- 90% Solution
- 2 board design
- Accelerometer  $\pm 50g$
- 2 Pressure Sensors -50 kPa (-200 inches of H<sub>2</sub>O)
- Options? Color, labeling, etc.
- Documentation



# Pressure Sensor

- Freescale Model # MPXV5050VC6T1
- Vacuum type gauge
- Min -50 kPa
- Max 0 kPa
- 5 volt 10 mAdc
- 90 mV/kPa
- Operating temperature -40 to 125 C

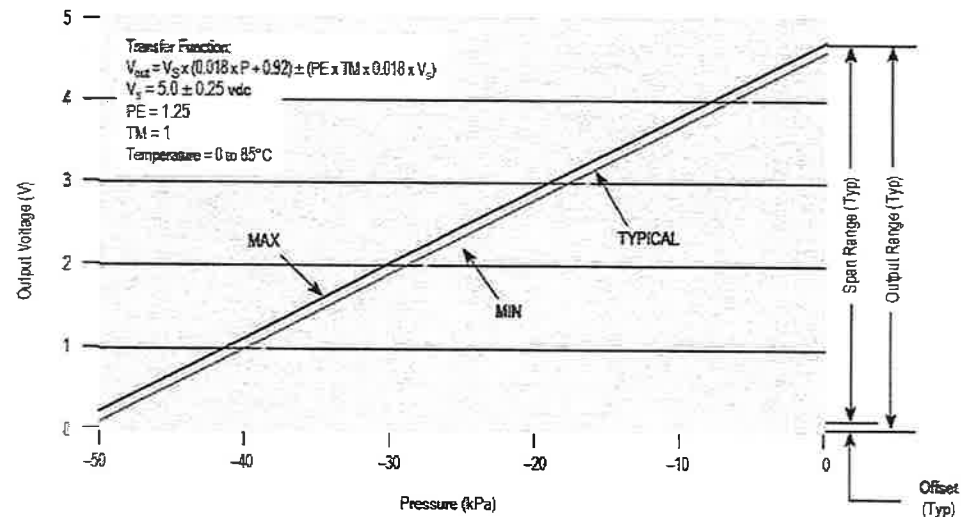
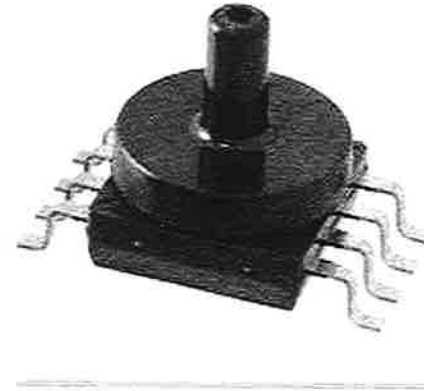


Figure 4. Output vs. Absolute Pressure

# Accelerometer

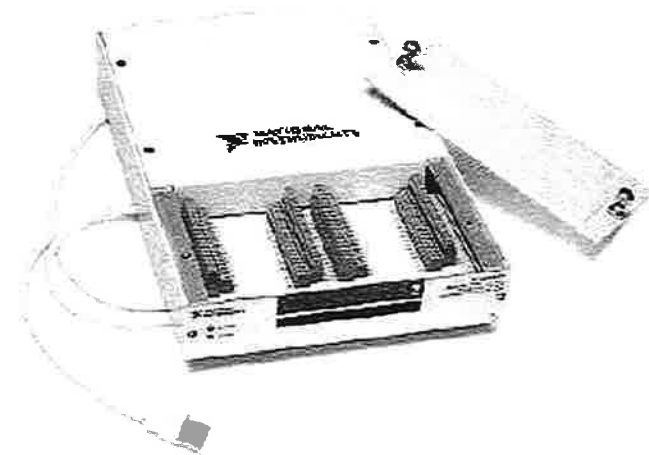
- Measurement Specialists Part # 832M1-0050
- +/- 50 g
- 3.5 - 5.5 volt @ 22  $\mu$ A<sub>dc</sub>
- 25 mV/g
- Operating temperature -40 to 125 C





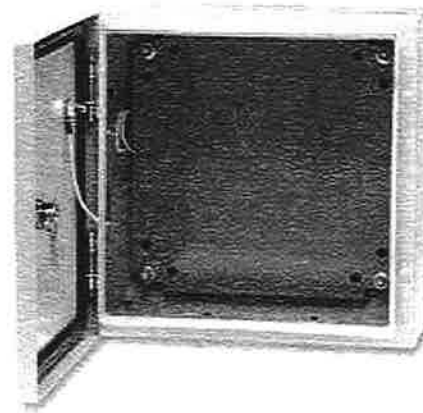
# Data Acquisition

- National Instruments Part # USB-6255
- 80 analog channels (using 56)
- Rate 1.25 MS/s capable
- 0 to 45 degrees C operating temp

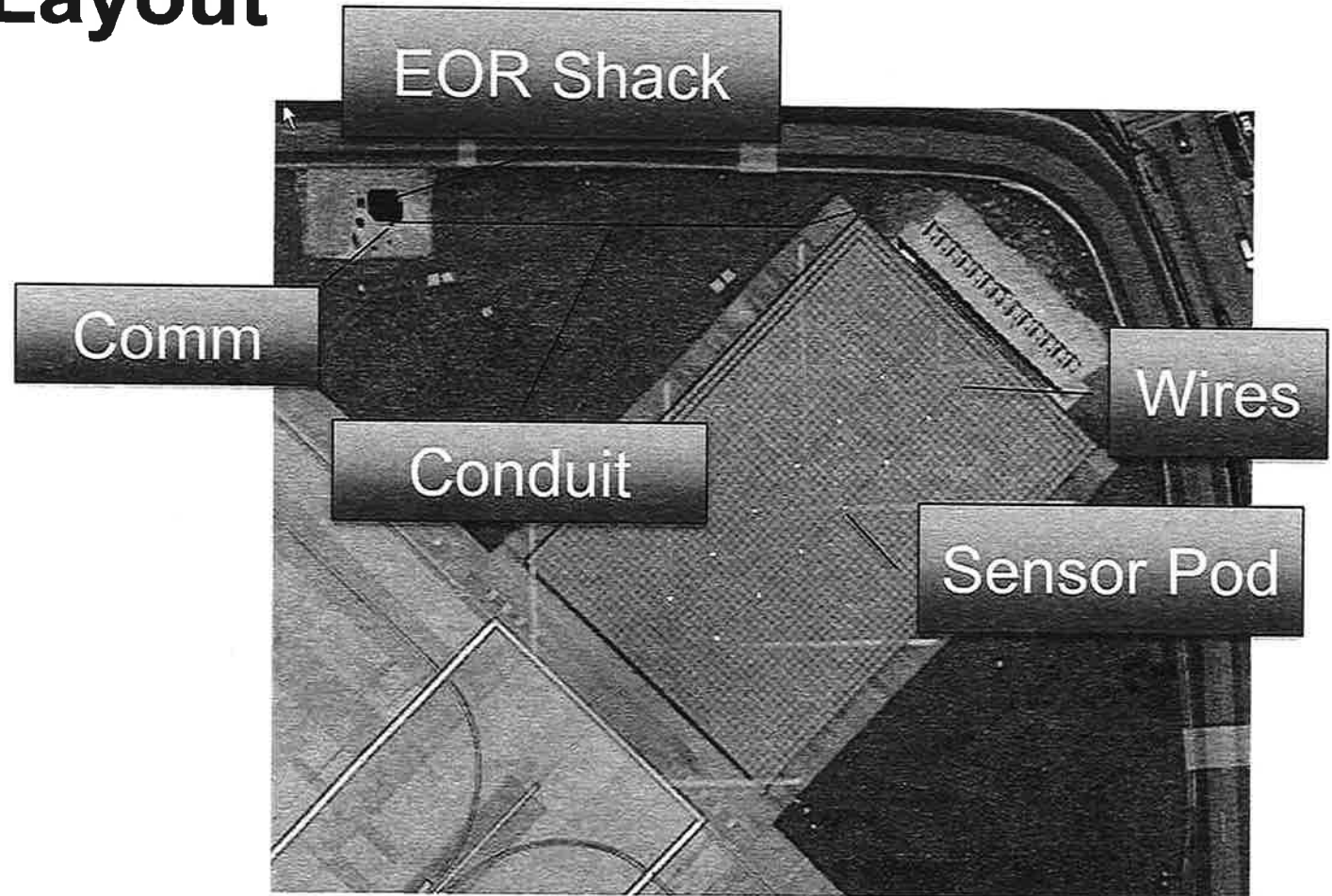


# Additional Spec Requirements

- IP 65 Enclosure
- Wire
- Conduit
- Grounding System



# System Layout



**APPENDIX D: FAA ACCEPTANCE AND SUPPORT LETTERS**



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Office of Airport Safety and  
Standards

800 Independence Ave., SW  
Washington, DC 20591

**APR 02 2012**

Kjell Hakon Helgesen  
CEO  
Norsk Glassgjenvinning  
Haslevangen 14  
P. O. Box 102 Okern  
N-0509 Oslo, Norway

**RE: Review of Glasopor EMAS Development: Design & Performance Report for  
FAA Review and Acceptance of Technical Sufficiency**

Dear Mr. Helgesen:

We have reviewed the Norsk GlassGjenvinning (NGG) report titled "Glasopor EMAS Development: Design & Performance Report for FAA Review & Acceptance," dated June 8, 2011 and submitted by Matt Barsotti of Protection Engineering Consultants (PEC). We have also reviewed the three addendum reports submitted by PEC. These addenda are based on comments and questions we submitted regarding the engineered materials arresting system (EMAS) design and performance information stated in the report. These addenda are as follows:

Addendum Report 1 – October 3, 2011  
Addendum Report 2 – October 17, 2011  
Addendum Report 3 – November 3, 2011

The intent of this report, and its sequential addendums, was to seek the FAA's determination that your proposed EMAS product is in accordance with Advisory Circular (AC) 150/5220-22A, Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns.

The Airport Engineering Division (AAS-100), in consultation with the FAA's William J. Hughes Technical Center has determined, based on the information provided in this report, as updated by its supporting addenda that the design and performance of the NGG Glasopor EMAS complies with the required standards of AC 150/5220-22A under the following condition:

- The cover layer consists of cementitious controlled low strength material (CSLM) as opposed to polypropylene plastic. The FAA may accept plastic lids for technical sufficiency in the future if further testing proves that the design and performance complies with the AC under this configuration.

Thank you for submitting this report and expressing your interest in providing a product that meets FAA standards. This determination of technical sufficiency is not a determination that this product will be eligible for FAA Airport Improvement Program (AIP) grant funding. Products funded through AIP must satisfy a number of federal procurement and contracting standards, including compliance with the Buy American preferences in title 49 United States Code, section, 50101.

If you have any questions, please contact Michael Meyers at (202) 267-8785 or by email [michael.a.meyers@faa.gov](mailto:michael.a.meyers@faa.gov), or Ryan King at (609) 485-8816 or by email [ryan.king@faa.gov](mailto:ryan.king@faa.gov).

Sincerely,



John R. Dermody, P.E.  
Manager, Airport Engineering  
Division, AAS-100

cc: Matt Barsotti, M.S. P.E.C.  
Kirk Marchand, P.E.  
Jon Narmo, NGG



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

September 9, 2014

Erin O'Donnell  
Managing Deputy Commissioner, Midway  
5700 South Cicero Avenue  
Chicago, IL 60638

Dear Ms. O'Donnell:

We have received the design report for a Runway Safe replacement of the Engineered Materials Arresting System (EMAS) at Chicago-Midway Airport (MDW) for the Runway 4R departure end dated August 26, 2014. The Runway Safe arresting system (formerly known as Glesopor EMAS) was previously accepted by the FAA on April 2, 2012, as meeting the required standards described in FAA Advisory Circular 150/5220-22B titled "*Engineered Materials Arresting Systems for Aircraft Overruns*".

The FAA conditionally supports the Chicago Department of Aviation's request to replace the existing EMAS system with the Runway Safe system. The conditions are that the system installed at MDW is consistent with what the FAA previously accepted on April 2, 2012 and is contingent on a successful construction and monitoring of the planned "mock-up" bed to be installed in advance of the actual installation on the airport. Any changes to the design or performance must be reviewed and accepted by the FAA.

Sincerely,

A handwritten signature in black ink, appearing to read "Birke M. Rhodes".

**Birke M. Rhodes**  
Manager, Safety and Standards Branch



**Exhibit 1D**

**FAA Advisory Circular 150/5220B**



U.S. Department  
of Transportation

**Federal Aviation  
Administration**

# Advisory Circular

**Subject:** Engineered Materials Arresting Systems  
(EMAS) for Aircraft Overruns

**Date:** 9/27/2012

**AC No:** 150/5220-22B

**Initiated by:** AAS-100

**Change:**

**1. PURPOSE.** This advisory circular (AC) contains standards for the planning, design, installation, and maintenance of Engineered Materials Arresting Systems (EMAS) in runway safety areas (RSA). Engineered Materials means high energy absorbing materials of selected strength, which will reliably and predictably deform under the weight of an aircraft.

**2. CANCELLATION.** This AC cancels AC 150/5220-22A, Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns, dated September 30, 2005.

**3. BACKGROUND.** Aircraft can and do occasionally overrun the ends of runways, sometimes with devastating results. An overrun occurs when an aircraft passes beyond the end of a runway during an aborted takeoff or while landing. Data on aircraft overruns over a 12-year period (1975 to 1987) indicate that approximately 90% of all overruns occur at exit speeds of 70 knots or less and most come to rest between the extended runway edges within 1000 feet of the runway end (References 3 and 4, Appendix 4).

To minimize the hazards of overruns, the Federal Aviation Administration (FAA) incorporated the concept of a safety area beyond the runway end into airport design standards. To meet the standards, the safety area must be capable, under dry conditions, of supporting the occasional passage of aircraft that overrun the runway without causing structural damage to the aircraft or injury to its occupants. The safety area also provides greater accessibility for emergency equipment after an overrun incident. There are many runways, particularly those constructed prior to the adoption of the safety area standards, where natural obstacles, local development, and/or environmental constraints, make the construction of a standard safety area impracticable. There have been accidents at some of these airports where the ability to stop an

overrunning aircraft within the runway safety area would have prevented major damage to aircraft and/or injuries to passengers.

Recognizing the difficulties associated with achieving a standard safety area at all airports, the FAA undertook research programs on the use of various materials for aircraft arresting systems. These research programs, as well as, evaluation of actual aircraft overruns into an EMAS have demonstrated its effectiveness in arresting aircraft overruns.

**4. APPLICATION.** RSA standards cannot be modified or waived. The standards remain in effect regardless of the presence of natural or man-made objects or surface conditions that might create a hazard to aircraft that overrun the end of a runway. A continuous evaluation of all practicable alternatives for improving each sub-standard RSA is required. FAA Order 5200.8, Runway Safety Area Program, explains the evaluation process.

FAA Order 5200.9, Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems, is used in connection with FAA Order 5200.8 to determine the best practicable and financially feasible alternative for an RSA improvement.

The FAA does not require an airport operator to reduce the length of a runway or declare its length to be less than the actual pavement length to meet runway safety area standards if there is an adverse operational impact to the airport. An example of an adverse operational impact would be an airport's inability to accommodate its current or planned aircraft fleet. Under these circumstances, installing an EMAS is another way of enhancing safety.

A standard EMAS provides a level of safety that is equivalent to a full RSA built to the dimensional standards in Chapter 3, Runway Design, of the latest version of AC 150/5300-13, Airport Design. It also

provides an acceptable level of safety for undershoots (by providing the minimum 600 feet of runway safety area), in addition to overruns.

The FAA recommends the guidelines and standards in this AC for the design of EMAS. In general, this AC is **not mandatory** and does not constitute a regulation. It is issued for guidance purposes and to outline a method of compliance. However, use of these guidelines is **mandatory** for an airport operator installing an EMAS funded under Federal grant assistance programs or on an airport certificated under Title 14 Code of Federal Regulations (CFR) Part 139, Airport Certification. Mandatory terms such as "must" used herein apply only to those who seek to demonstrate compliance by use of the specific method described by this AC.

If an airport operator elects to follow an alternate method, the alternate method must have been determined by the FAA to be an acceptable means of complying with this AC, the runway safety area standards in the latest version of AC 150/5300-13, and 14 CFR Part 139.

## 5. PRINCIPAL CHANGES.

a. Corrected references to appendices in "BACKGROUND" paragraph.

b. Changed reference of "airport sponsor" to say "airport operator".

c. Clarified that the latest versions of all ACs listed in this AC are to be referenced.

d. Provided further clarification that the planning charts are based on previously simulated information and that final design must be done by the EMAS manufacturer.

e. Deleted the term "poor braking" throughout. Replace with "0.25 braking friction coefficient."

f. Clarified the term "passive system."

g. Clarified service life requirement for newly constructed EMAS beds.

h. Changed the word "should" to "must" in many sections.

i. Clarified the requirements on the minimum width of an EMAS based on the standard runway width for the applicable airplane design group.

j. Clarified the requirements for snow removal compatibility, a snow removal plan and to protect functionality of navigational aids from snow and ice.

k. Clarified the terms of the 45 day repair requirement.

l. Added guidance for requirements prior to and during construction or repair.

m. Clarified the requirements to material characteristics as it pertains to wildlife and added anti-icing fluids, and herbicides.

n. Modified the required design submittal date.

o. Clarified inspection and maintenance requirements.

## 6. RELATED READING MATERIAL.

Appendix 4, Related Reading Material, contains a list of documents with supplemental material relating to EMAS. These documents contain information on materials evaluated, as well as design, construction, and testing procedures utilized. Testing and data generated under these FAA studies may be used as input to an EMAS design without additional justification.

7. **PLANNING CHARTS.** The figures included in Appendix 2, Planning Charts, are for general planning purposes only. They are intended as a preliminary screening tool based on previously simulated information on EMAS beds and are not sufficient for final design. Final design must be done by the EMAS manufacturer and must be customized for each installation. The figures illustrate estimated EMAS stopping distance capabilities for various aircraft types. The design used in each chart is optimized specifically for the aircraft noted on the chart. Charts are based on standard design conditions, i.e. 75-foot set-back, no reverse thrust, and an 0.25 braking friction coefficient.

a. **Example 1.** Assume a runway with a DC-9 (or similar) as the design aircraft. Figure A2-1 shows that an EMAS 400 feet in length (including a 75-foot set-back) is capable of stopping a DC-9 within the confines of the system at runway exit speeds of up to 75 knots.

b. **Example 2.** Assume the same runway, but assume the design aircraft is a DC-10 (or similar). Figure A2-2 shows an EMAS of the same length, but designed for larger aircraft, can stop the DC-10 within the confines of the system at runway exit speeds of up to 62 knots.

**8. PRELIMINARY PLANNING.** Follow the guidance in FAA Orders 5200.8 and 5200.9 to determine practicable, financially feasible alternatives for RSA improvements. Additional cost and performance information for EMAS options to consider in the analysis can be obtained from the EMAS manufacturer.

**9. SYSTEM DESIGN REQUIREMENTS.** For purposes of design, the EMAS can be considered to be fixed by its function and frangible since it is designed to fail at a specified impact load. EMAS is exempt from the requirements of 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace. When EMAS is the selected option to upgrade a runway safety area, it is considered to meet the safety area requirements of 14 CFR Part 139. The following system design requirements must prevail for all EMAS installations:

**a. Concept.** An EMAS is designed to stop an overrunning aircraft by exerting predictable deceleration forces on its landing gear as the EMAS material deforms. It must be designed to minimize the potential for structural damage to aircraft, since such damage could result in injuries to passengers and/or affect the predictability of deceleration forces. An EMAS must be designed for a 20-year service life.

**b. Location.** An EMAS is located beyond the end of the runway and centered on the extended runway centerline. It will usually begin at some setback distance from the end of the runway to avoid damage due to jet blast and undershoots (Figure A1-2, Appendix 1). This distance will vary depending on the available area and the EMAS materials. Where the area available is longer than required for installation of a standard EMAS designed to stop the design aircraft at an exit speed of 70 knots, the EMAS should be placed as far from the runway end as practicable. Such placement decreases the possibility of damage to the system from short overruns or undershoots and results in a more economical system by considering the deceleration capabilities of the existing runway safety area.

An EMAS is not intended to meet the definition of a stopway as provided in the latest version of AC 150/5300-13. The runway safety area and runway object free area lengths begin at a runway end when a stopway is not provided. When a stopway is provided, these lengths begin at the stopway end.

The airport operator, EMAS manufacturer, and the appropriate FAA Regional Airports Division/Airports District Office (ADO) must consult regarding the

EMAS location to determine the appropriate position beyond the end of the runway for the EMAS installation for a specific runway.

**c. Design.** An EMAS design must be supported by a validated design method that can predict the performance of the system. The design (or critical) aircraft is defined as that aircraft using the associated runway that imposes the greatest demand upon the EMAS. This is usually, but not always, the heaviest/largest aircraft that regularly uses the runway. EMAS performance is dependent not only on aircraft weight, but landing gear configuration and tire pressure. In general, use the maximum take-off weight (MTOW) for the design aircraft. However, there may be instances where less than the MTOW will require a longer EMAS. All configurations should be considered in optimizing the EMAS design. To the extent practicable, however, the EMAS design should consider both the aircraft that imposes the greatest demand upon the EMAS and the range of aircraft expected to operate on the runway. In some instances, a composite design aircraft may be preferable to optimizing the EMAS for a single design aircraft. Other factors unique to a particular airport, such as available RSA and air cargo operations, should also be considered in the final design. The airport operator, EMAS manufacturer, and the appropriate FAA Regional Airports Division/ADO must consult regarding the selection of the design aircraft that will optimize the EMAS for a specific airport.

The design method must be derived from field or laboratory tests. Testing may be based either on passage of an actual aircraft or an equivalent single wheel load through a test bed. The design must consider multiple aircraft parameters, including but not limited to allowable aircraft gear loads, gear configuration, tire contact pressure, aircraft center of gravity, and aircraft speed. The model must calculate imposed aircraft gear loads, g-forces on aircraft occupants, deceleration rates, and stopping distances within the arresting system. Any rebound of the crushed material that may lessen its effectiveness must also be considered.

**d. Operation.** The EMAS must be a passive system which requires no external means to initiate/trigger the operation of the EMAS to arrest an aircraft.

**e. Width.** The minimum width of the EMAS must be the width of the runway (plus any sloped area as necessary—see 9.h below). Also, the minimum width of the EMAS (not including the

sloped area) should be based on the standard runway width for the applicable airplane design group per AC 150/5300-13.

**f. Base.** The EMAS must be constructed on a paved base (Figure A1-1) extending from the runway threshold which is capable of supporting the occasional passage of the critical design aircraft using the runway and fully loaded Aircraft Rescue and Fire Fighting (ARFF) vehicles without deformation of the base surface or structural damage to the aircraft or vehicles. It must be designed to perform satisfactorily under all local weather, temperature, and soil conditions. It must provide sufficient support to facilitate removal of the aircraft from the EMAS. Full strength runway pavement is not required. Pavement suitable for shoulders is suitable as an EMAS base. The latest version of AC 150/5320-6, Airport Pavement Design and Evaluation, provides recommendations on pavement for shoulders. State highway specifications may also be used.

**g. Entrance Speed.** To the maximum extent possible, the EMAS must be designed to decelerate the design aircraft expected to use the runway at exit speeds of 70 knots without imposing loads that exceed the aircraft's design limits, causing major structural damage to the aircraft or imposing excessive forces on its occupants. The airport operator must coordinate through the responsible FAA Regional Airports Division/ADO to contact the FAA's Office of Airport Safety and Standards, Airport Engineering Division (AAS-100) at 202-267-7669 for guidance when EMAS design is proposed for aircraft that are not approach category C or D.

When there is insufficient RSA available for a standard EMAS, the EMAS must be designed to achieve the maximum deceleration of the design aircraft within the available runway safety area. However, a 40-knot minimum exit speed must be used for the design of a non-standard EMAS. For design purposes, assume the aircraft has all of its landing gear in full contact with the runway and is traveling within the confines of the runway and parallel to the runway centerline upon overrunning the runway end.

The airport operator, EMAS manufacturer, and the appropriate FAA Regional Airports Division/ADO must consult regarding the selection of the appropriate design entrance speed for the EMAS installation.

Note that current EMAS models are not as accurate for aircraft with a maximum take-off weight of less than 25,000 pounds.

**h. Aircraft Evacuation.** The EMAS must be designed to enable safe ingress and egress as well as movement of ARFF equipment (not necessarily without damage to the EMAS) operating during an emergency. If the EMAS is to be built above existing grade, sloped areas sufficient to allow the entrance of ARFF vehicles from the front and sides must be provided. Provision for access from the back of the EMAS may be provided if desirable. Maximum slopes must be based on the EMAS material and performance characteristics of the airport's ARFF equipment.

**i. Maintenance Access.** The EMAS must be capable of supporting regular pedestrian traffic for the purposes of maintenance of the arresting material and co-located navigation aids without damage to the surface of the EMAS bed. **An EMAS is not intended to support vehicular traffic for maintenance purposes.** Reference Appendix 3, Inspection and Maintenance Program.

**j. Undershoots.** The runway safety area should provide adequate protection for aircraft that touch down prior to the runway threshold (undershoot). Adequate protection is provided by either: (1) providing at least 600 feet (or the length of the standard runway safety area, whichever is less) between the runway threshold and the far end of the EMAS bed if the approach end of the runway has instrument or visual vertical guidance or (2) providing the full length standard runway safety area when no vertical guidance is provided. The EMAS must not cause control problems for aircraft undershoots which touch down in the EMAS bed. Fulfillment of this requirement may be based exclusively on flight simulator tests. The tests will establish the minimum material strength and density that does not cause aircraft control problems during an undershoot. Materials whose density and strength exceeds these minimums will be deemed acceptable.

**k. Navigational Aids.** The EMAS must be constructed to accommodate approach lighting structures and other approved facilities within its boundaries. It, along with any snow or ice that may accumulate prior to its removal in accordance with the inspection and maintenance program, must not cause visual or electronic interference with any air navigational aids. All navigational aids within the EMAS must be frangible as required by the latest version of AC 150/5220-23, Frangible Connections.

To meet the intent of this regulation, approach light standards must be designed to fail at two points. The first point of frangibility must be three inches or less above the top of the EMAS bed. The second point of frangibility must be three inches or less above the expected residual depth of the EMAS bed after passage of the design aircraft. As a part of the EMAS design, the EMAS manufacturer must provide the expected residual depth to allow the determination of this second frangibility point.

**l. Drainage.** The EMAS must be designed to prevent water from accumulating on the surface of the EMAS bed, the runway or the runway safety area. The removal and disposal of water, which may hinder any activity necessary for the safe and efficient operation of the airport, must be in accordance with the latest version of AC 150/5320-5, Surface Drainage Design.

The EMAS design must consider ice accumulation, and in areas that are subject to snow or ice removal requirements, must be designed to be mechanically or manually cleared of ice and snow. Requirements/limitations must be addressed in the approved inspection and maintenance program discussed in paragraph 15 and Appendix 3.

**m. Jet Blast.** The EMAS must be designed and constructed with adequate set back so that it will not be damaged by expected jet blast.

**n. Repair.** The EMAS must be designed for repair to a usable condition (in which the bed is completely repaired) within 45 days of an overrun by the design aircraft at the design entrance speed.

An EMAS bed that is damaged due to an incident (overrun/undershoot, etc.) must be repaired within this 45 day repair period not including any days that present any conditions that delay repair of the bed (i.e. severe weather, operational constraints, etc.). The undamaged areas of the EMAS bed must be protected from further damage until the bed is repaired.

Refer to the latest version of AC 150/5370-2, Operational Safety on Airports During Construction, for acceptable safety and phasing options when repairing an EMAS during operations.

**10. MATERIAL QUALIFICATION.** The material comprising the EMAS must have the following requirements and characteristics:

**a. Material Strength and Deformation Requirements.** Materials must meet a force vs.

deformation profile within limits having been shown to assure uniform characteristics, and therefore, predictable response to an aircraft entering the arresting system.

**b. Material Characteristics.** The materials comprising the EMAS must:

(1) Be water-resistant to the extent that the presence of water does not affect system performance.

(2) Not attract, or be physically vulnerable to vermin, birds, wildlife or other creatures to the greatest extent possible.

(3) Be non-sparking.

(4) Be non-flammable.

(5) Not promote combustion.

(6) Not emit toxic or malodorous fumes in a fire environment after installation.

(7) Not support unintended plant growth with proper application of herbicides.

(8) Exhibit constant strength and density characteristics during all climatic conditions within a temperature range appropriate for the locale.

(9) Be resistant to deterioration due to:

(a) Salt.

(b) Approved aircraft and runway deicing and anti-icing fluids and solids.

(c) Aircraft fuels, hydraulic fluids, and lubricating oils.

(d) UV resistant.

(e) Water.

(f) Freeze/thaw.

(g) Blowing sand and snow.

(h) Paint.

(i) Herbicides.

**11. Material Conformance Requirements.** An EMAS manufacturer must establish a material sampling and testing program including testing frequency to verify that all materials are in

conformance with the initial approved material force versus deformation profile established under paragraph 10.a. Materials failing to meet these requirements must not be used.

The initial sampling and testing program must be submitted to and approved by the FAA, Office of Airport Safety and Standards for each design method found by the FAA to be an acceptable means of complying with this AC. Once approved, the program may be used for subsequent projects.

**12. DESIGN PROPOSAL SUBMITTAL.** The EMAS design must be prepared by the design engineer and the EMAS manufacturer for the airport operator. The airport operator must submit the EMAS design through the responsible FAA Regional Airports Division/ADO, to the FAA, Office of Airport Safety and Standards, for review and approval. The EMAS design must be certified as meeting all the requirements of this AC and the submittal must include all design assumptions and data utilized in its development as well as proposed construction procedures and techniques. The EMAS design must be submitted at least 45 days prior to the bid advertisement date for the project, however interim progress report submissions made in advance are encouraged.

**13. QUALITY ASSURANCE (QA) PROGRAM.** A construction quality assurance program must be implemented for each EMAS project to ensure that installation/construction is in accordance with the approved EMAS design. The construction contractor and EMAS manufacturer prepare the construction QA program for the airport operator. The airport operator must submit the construction QA program to the responsible FAA Airports Region/District Office for approval 14 days prior to the project notice to proceed.

**14. MARKING.** An EMAS must be marked with yellow chevrons as an area unusable for landing, takeoff, and taxiing in accordance with AC 150/5340-1, Standards for Airport Markings (latest version). Paint application must be in accordance with AC 150/5370-10, Standards for Specifying Construction of Airports, P-620, Runway and Taxiway Painting, and the EMAS manufacturers' recommendations for the EMAS system.

**15. INSPECTION AND MAINTENANCE.** The EMAS manufacturer must prepare an inspection and maintenance program for the airport operator for each EMAS installation, prior to completion of the final design. The airport operator must submit the program to the responsible FAA Regional Airports

Division/ADO for approval prior to final project acceptance. The airport operator must implement the approved inspection and maintenance program. The program must include any necessary procedures for inspection, preventive maintenance and unscheduled repairs, particularly to weatherproofing layers. It should also include testing and evaluation procedures and criteria for determining when an installed EMAS has reached the end of its service life. Procedures must be sufficiently detailed to allow maintenance/repair of the EMAS bed with the airport operator's staff. The airport operator may also elect to have the EMAS manufacturer maintain the EMAS bed. The program must include appropriate records to verify that all required inspections and maintenance have been performed by the airport operator and/or EMAS manufacturer. These records must be made available to the FAA upon request. Appendix 3, Inspection and Maintenance Program, outlines the basic requirements of an EMAS inspection and maintenance program.

The airport operator or certificate holder must be notified that the EMAS is designed to fail under load and that precautions should be taken when activities require personnel to be on, or vehicles and personnel to be near, the EMAS.

#### **16. AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF).**

**a. ARFF Vehicle Access During an Emergency.** As required by paragraph 9.h, an EMAS is designed to allow movement of typical ARFF equipment operating during an emergency. However, as the sides of the system are typically steeply sloped or stepped, and the system will be severely rutted after an aircraft arrestment, ARFF vehicles so equipped should be shifted into all-wheel-drive prior to entering and maneuvering upon an EMAS.

**b. Firefighting Tactics.** Any fire present after the arrestment of an aircraft will be three-dimensional due to the rutting and breakup of the EMAS material. A dual-agent attack and/or other tactics appropriate to this type of fire should be employed.

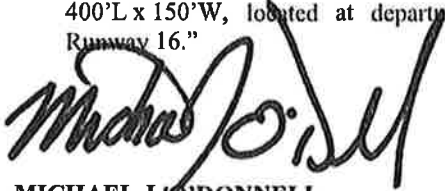
**17. NOTIFICATION.** Upon installation of an EMAS, its length, width, and location must be included as a remark in the Airport/Facility Directory (AFD) and also depicted in the airport diagram. To assure timely publication, the airport operator must forward the required information to the FAA Aeronautical Information Management (AIM) as soon as possible, but not later than the "cut-off" dates listed in the AFD, for publication on the desired

effective date. (The AIM address and cut-off dates are listed on the inside front cover of the AFD.) The airport operator must also notify the appropriate FAA Regional Airports Division/ADO.

When an EMAS is damaged due to an overrun or determined to be less than fully serviceable, a NOTAM must be issued to alert airport users of the reduced performance of the EMAS.

The following is an example of a typical entry:

"Engineered Materials Arresting System,  
400'L x 150'W, located at departure end of  
Runway 16."



**MICHAEL J. O'DONNELL**  
Director of Airport Safety and Standards



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Appendix 1. Standard EMAS and Typical Sections.

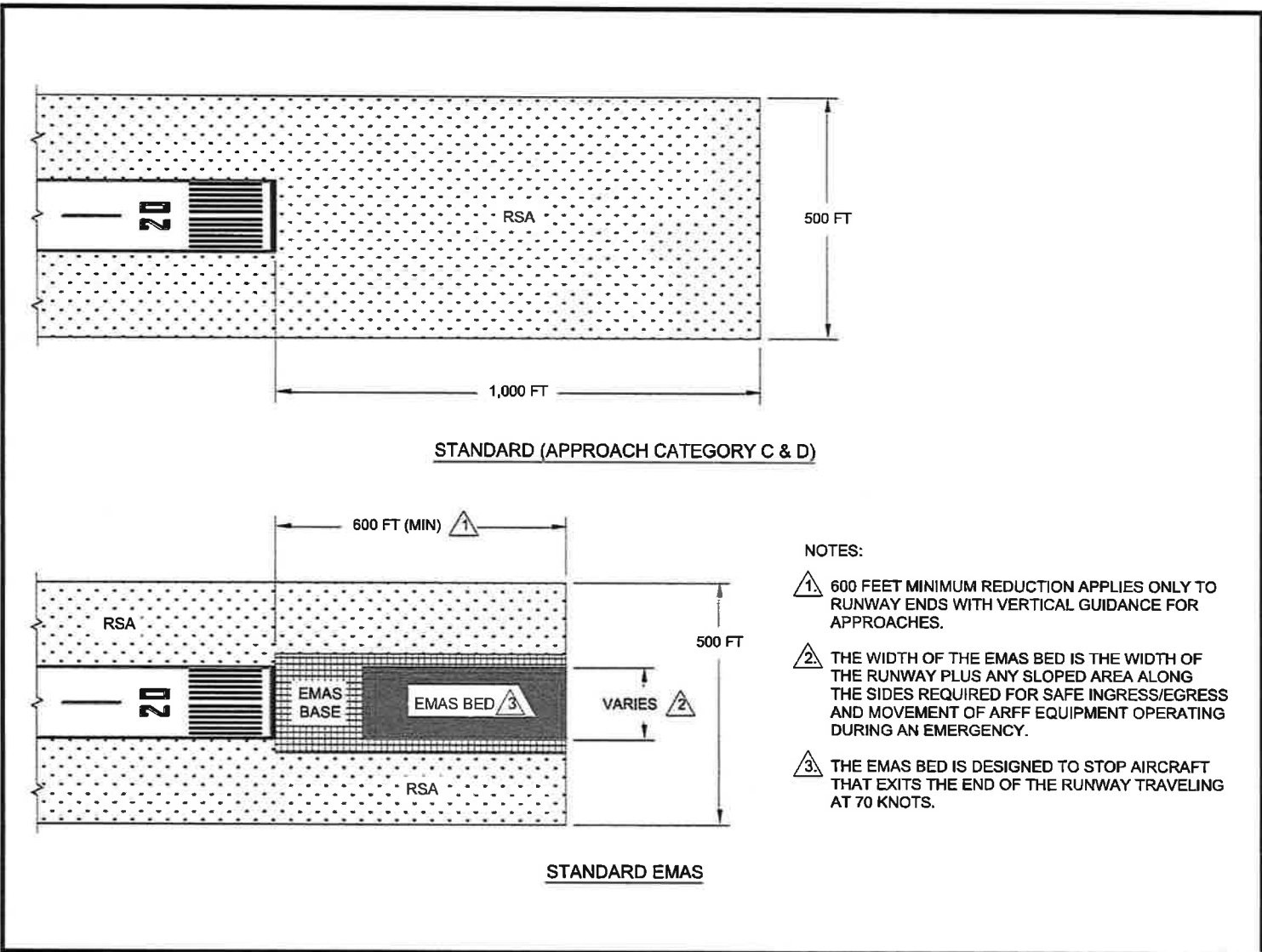


Figure A1-1. Standard EMAS Installation Provides a Level Of Safety That is Equivalent to a Standard Runway Safety Area (RSA).

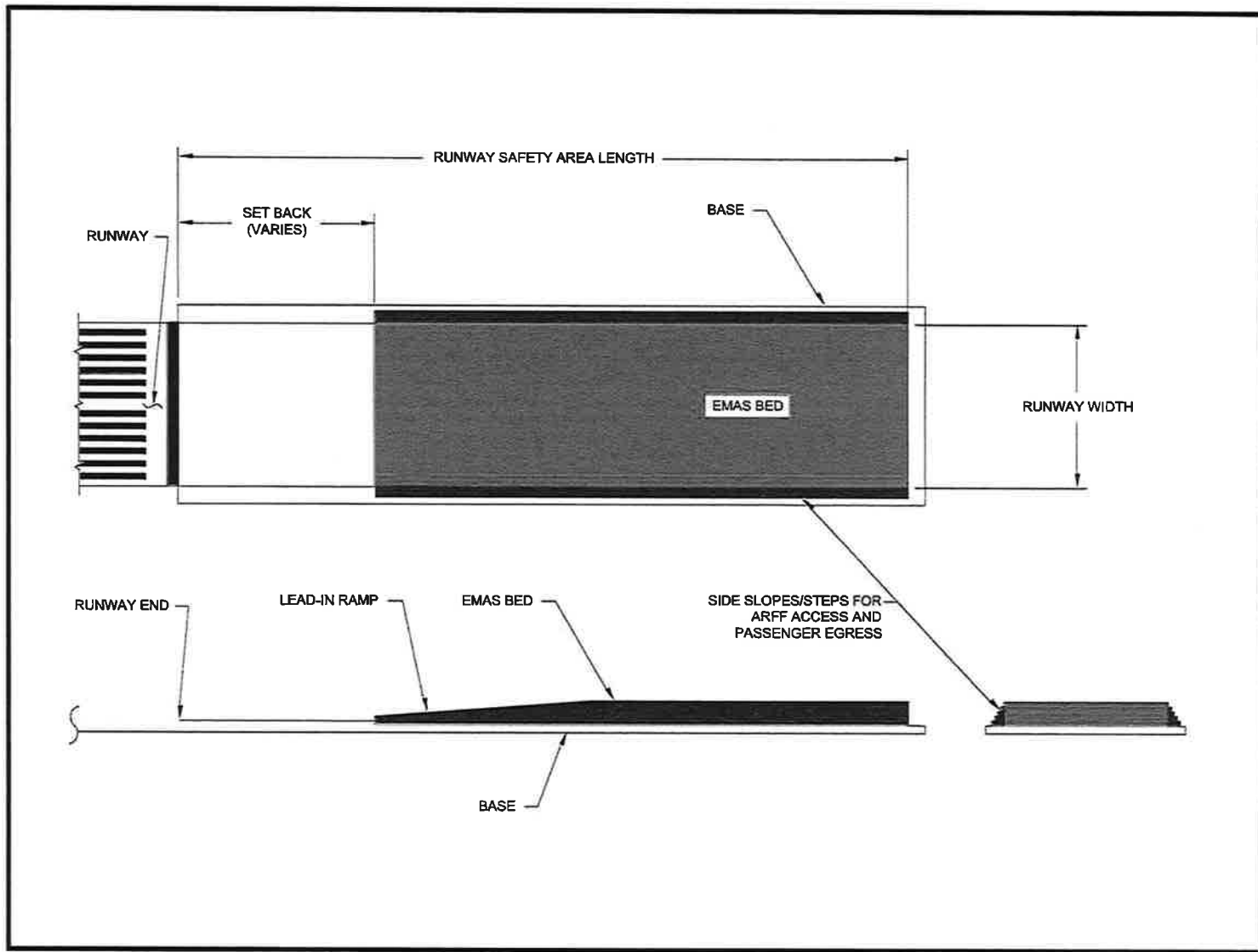
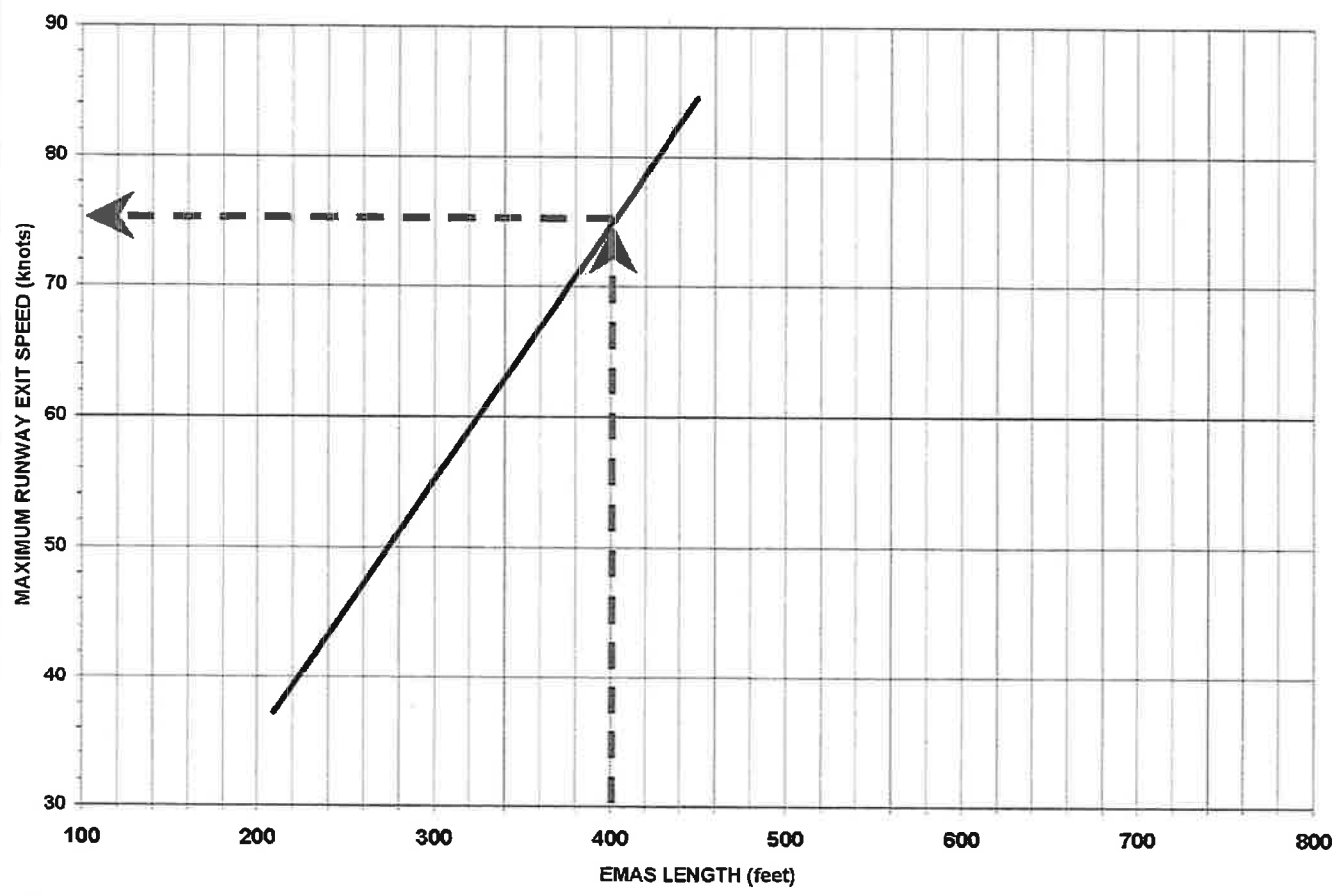


Figure A1-2. EMAS Typical Section.

Appendix 2. Planning Charts.

PLANNING PURPOSES ONLY  
NOT TO BE USED FOR DESIGN - SEE PARAGRAPH 7

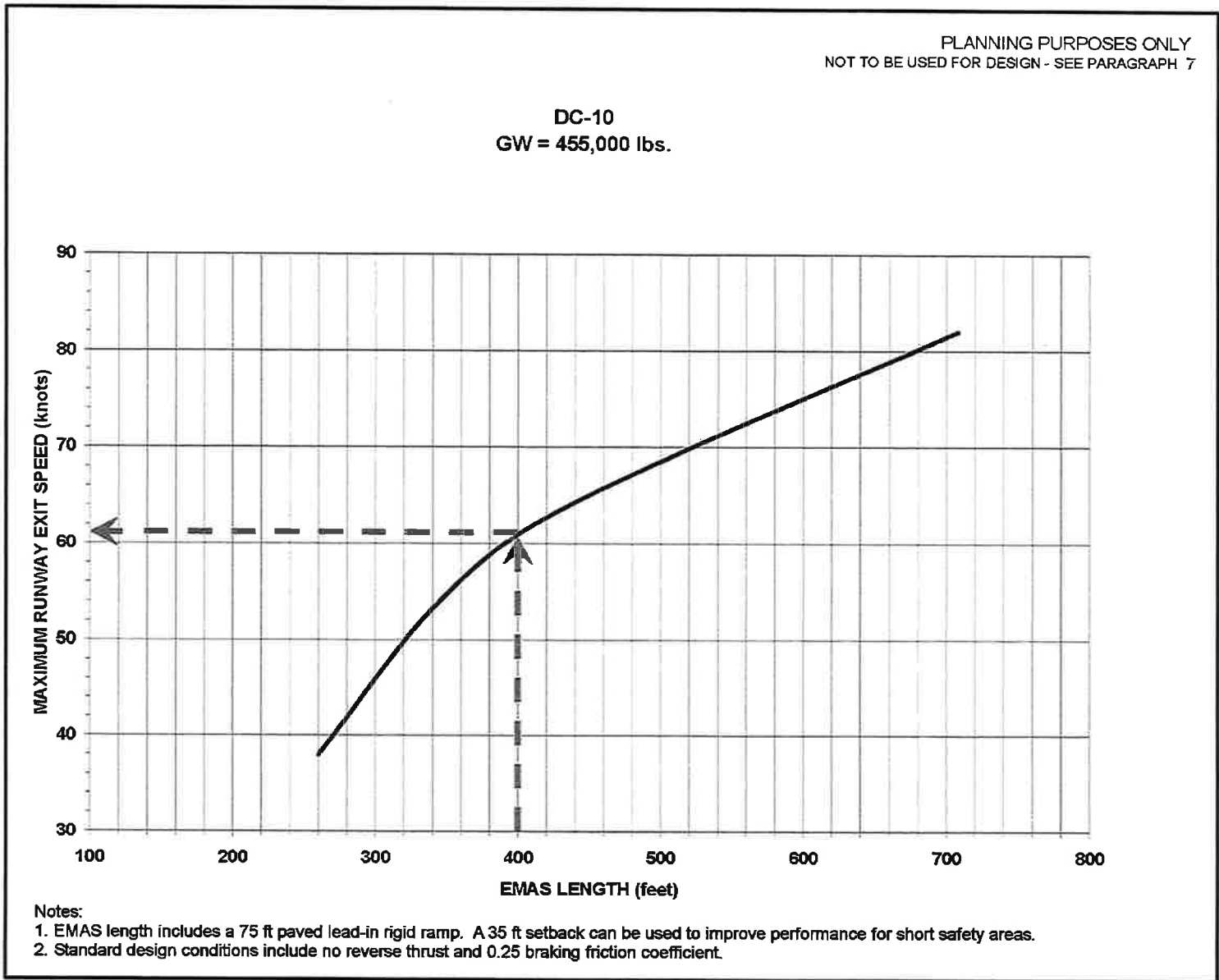
DC-9  
GW = 114,000 lbs



- Notes:
- 1. EMAS length includes a 75 ft paved lead-in rigid ramp. A 35 ft setback can be used to improve performance for short safety areas.
  - 2. Standard design conditions include no reverse thrust and 0.25 braking friction coefficient.

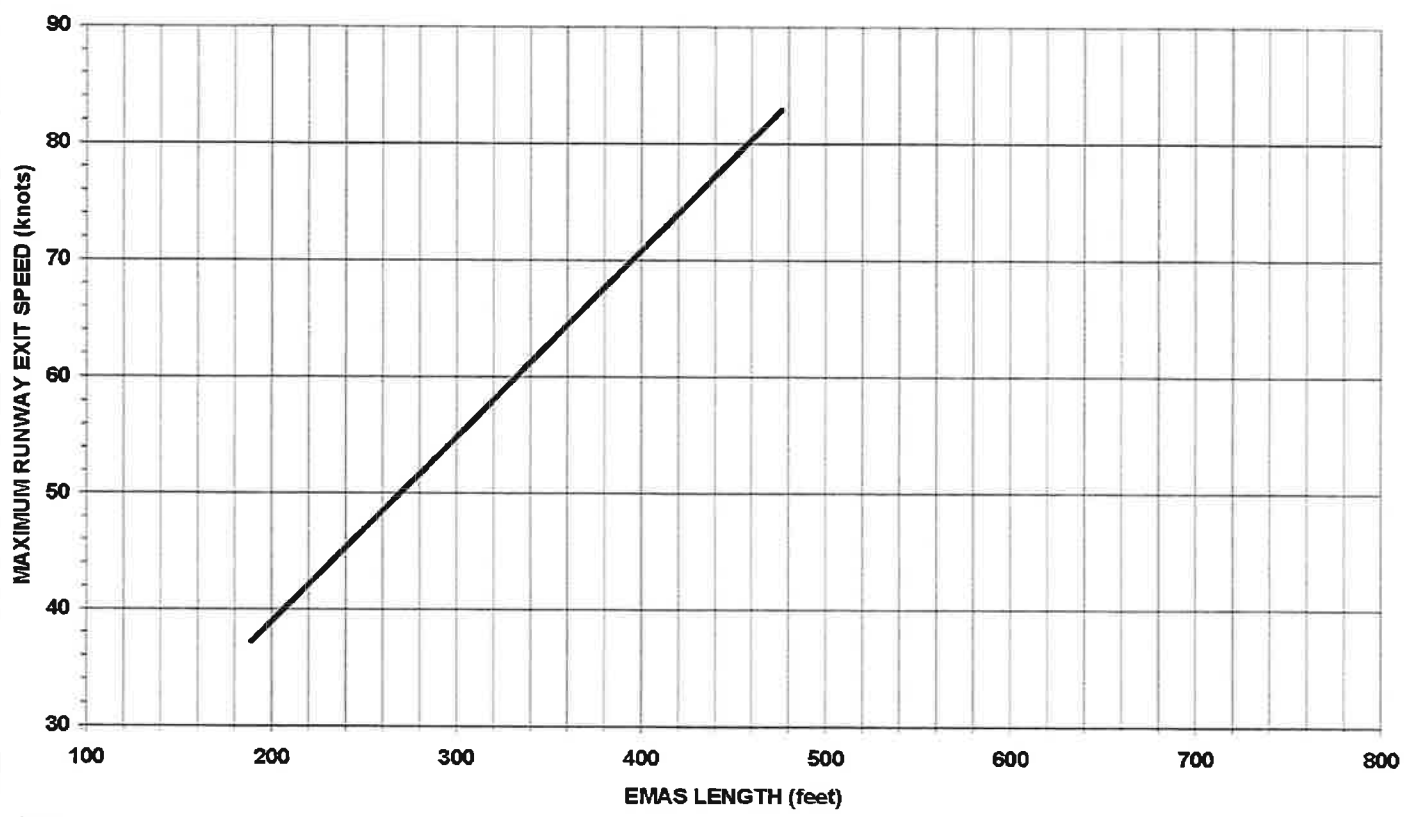
Figure A2-1.

Figure A2-2.



PLANNING PURPOSES ONLY  
NOT TO BE USED FOR DESIGN - SEE PARAGRAPH 7

**B-737-400**  
**GW = 150,000 lbs.**



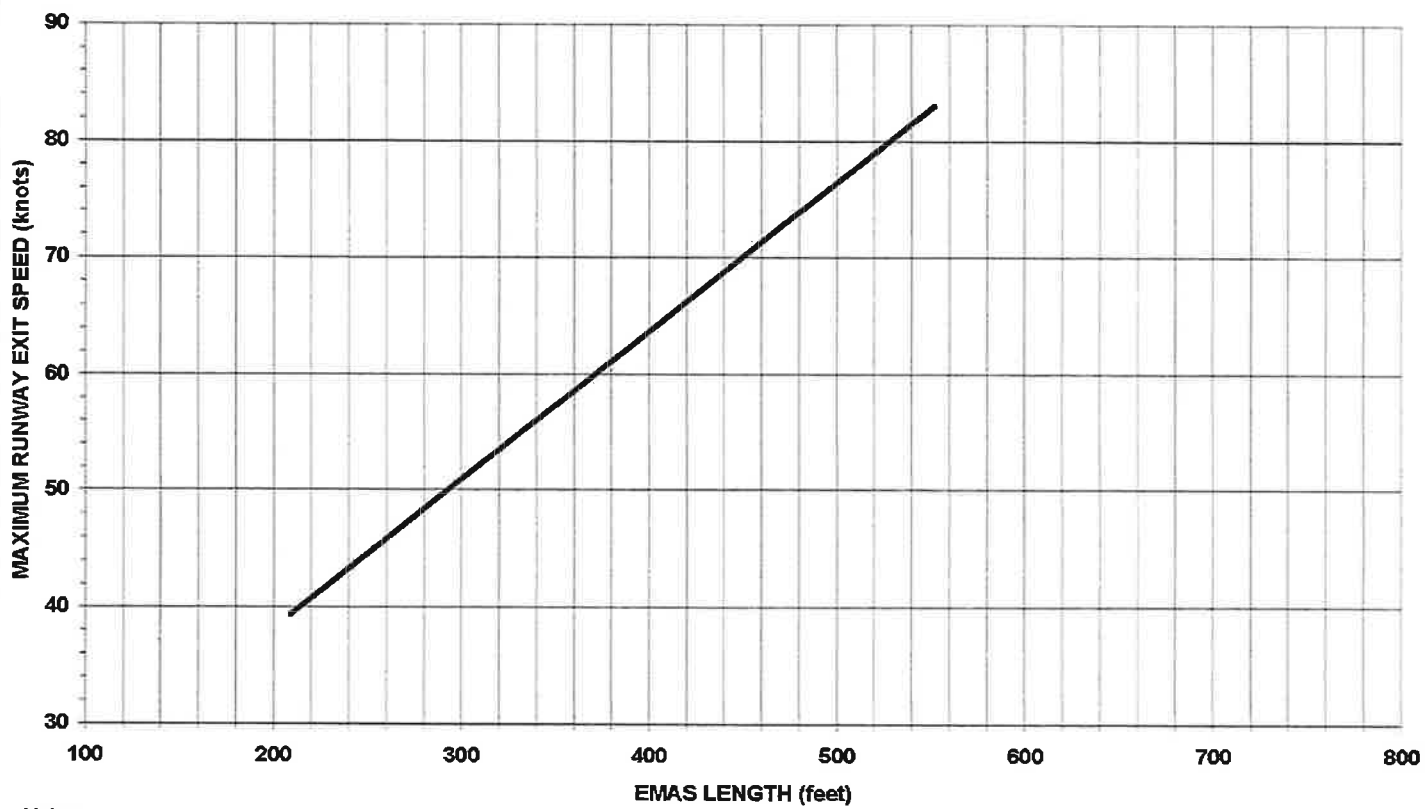
**Notes:**

- 1. EMAS length includes a 75 ft paved lead-in rigid ramp. A 35 ft setback can be used to improve performance for short safety areas.
- 2. Standard design conditions include no reverse thrust and 0.25 braking friction coefficient.

Figure A2-3.

PLANNING PURPOSES ONLY  
NOT TO BE USED FOR DESIGN - SEE PARAGRAPH 7

**B-757**  
**GW = 255,000 lbs.**

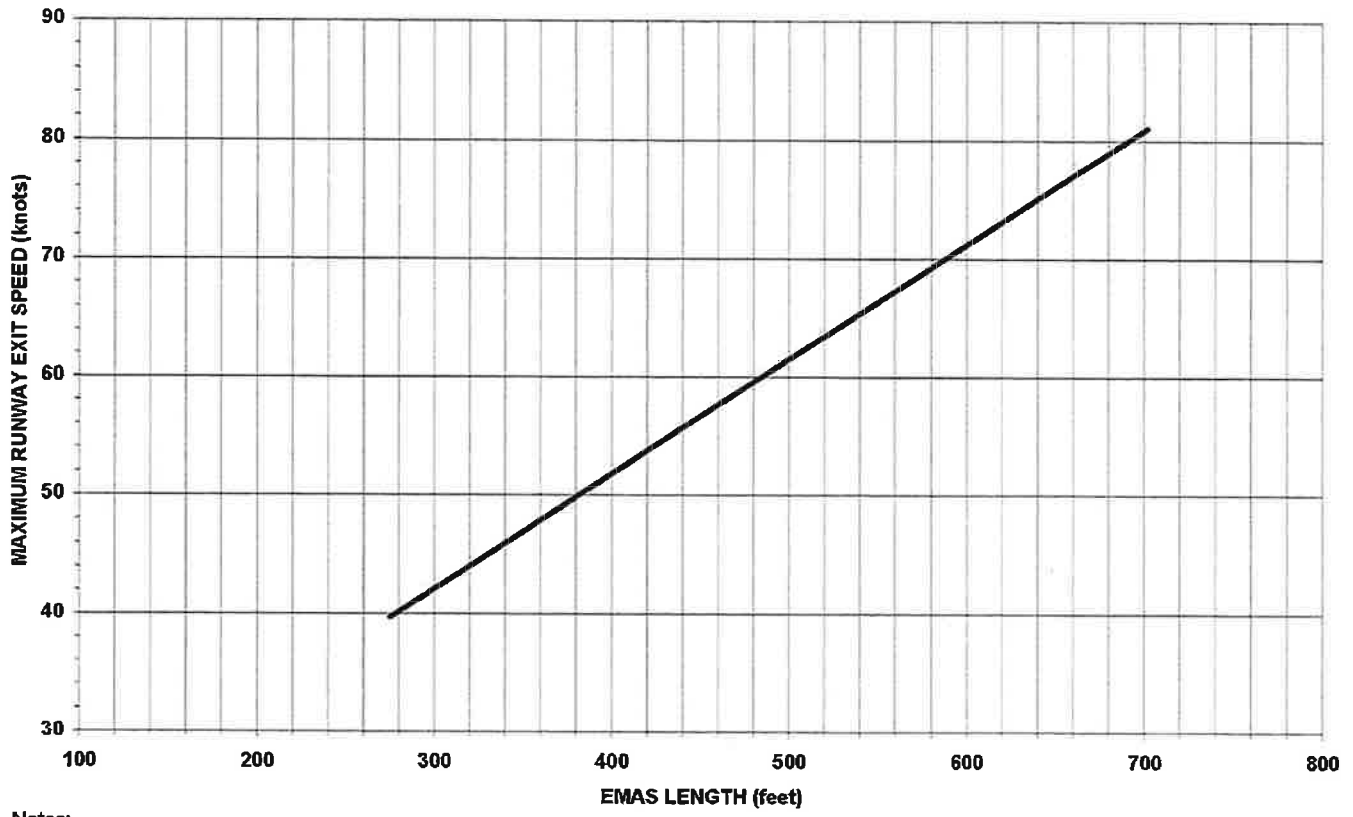


- Notes:
1. EMAS length includes a 75 ft paved lead-in rigid ramp. A 35 ft setback can be used to improve performance for short safety areas.
  2. Standard design conditions include no reverse thrust and 0.25 braking friction coefficient.

Figure A2-4.

PLANNING PURPOSES ONLY  
NOT TO BE USED FOR DESIGN - SEE PARAGRAPH 7

**B-747**  
**GW = 875,000 lbs.**

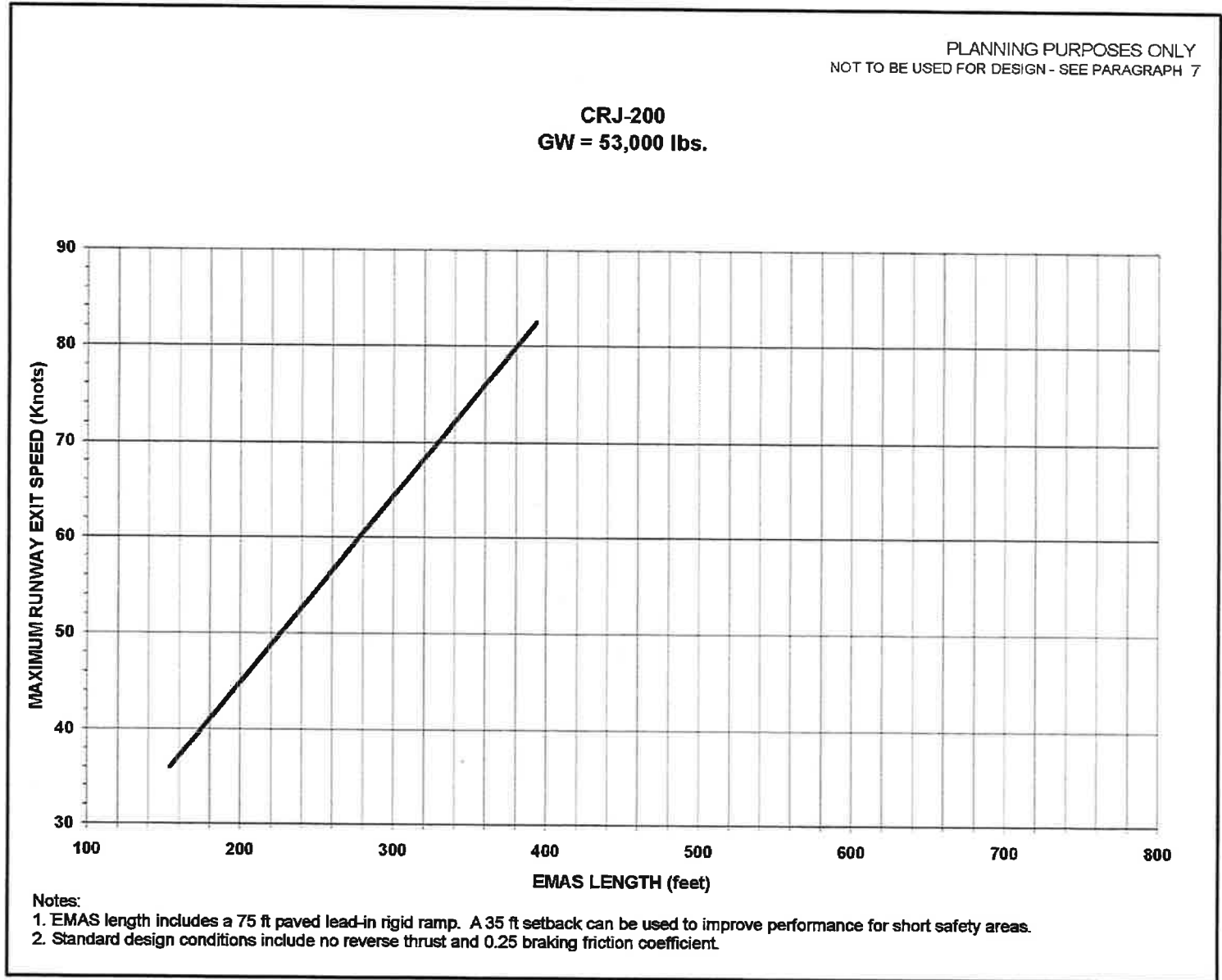


- Notes:
1. EMAS length includes a 75 ft paved lead-in rigid ramp. A 35 ft setback can be used to improve performance for short safety areas.
  2. Standard design conditions include no reverse thrust and 0.25 braking friction coefficient.

Figure A2-5.



Figure A2-6.



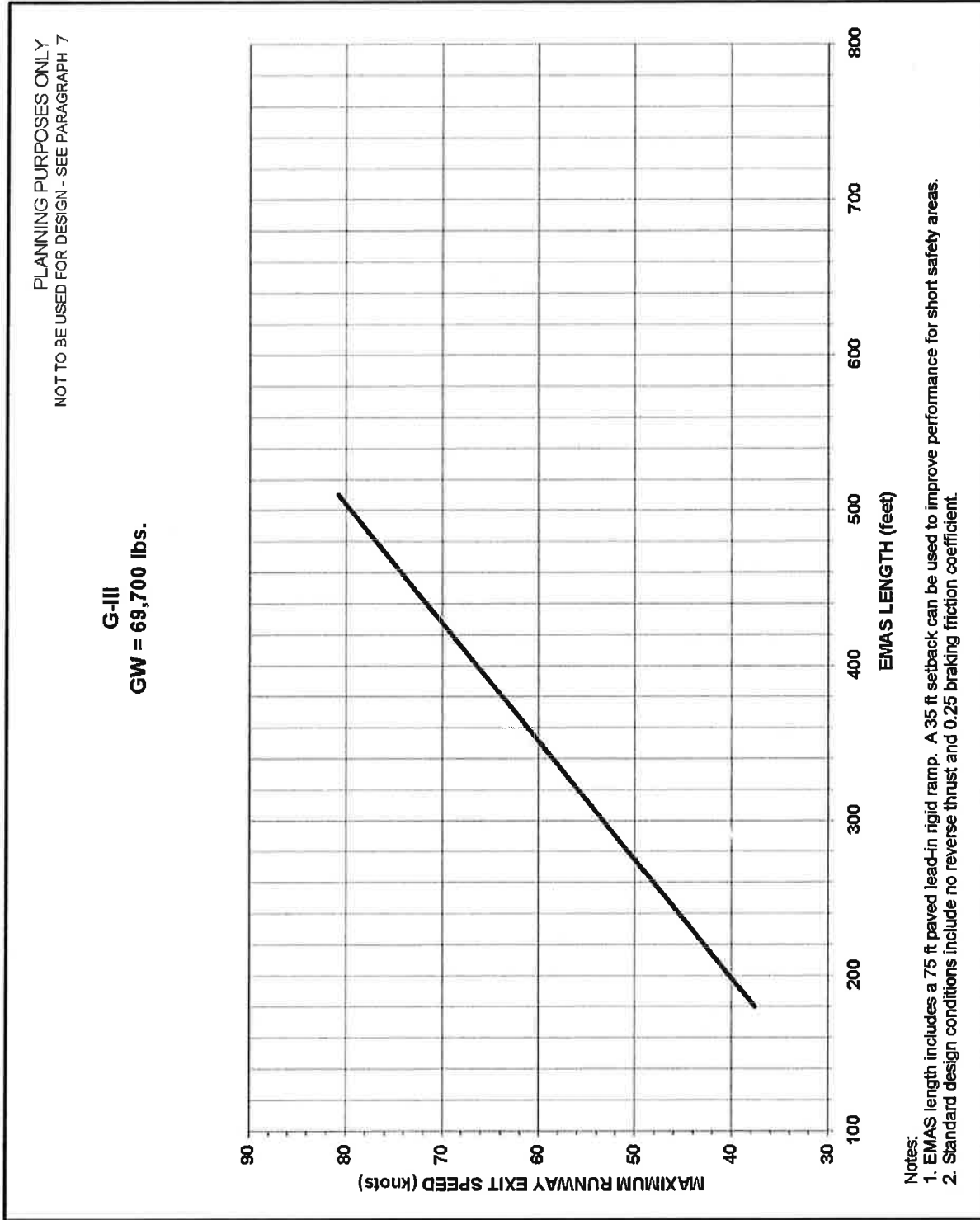


Figure A2-7.

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### Appendix 3. Inspection and Maintenance Program.

An inspection and maintenance program, prepared by the EMAS manufacturer, will be submitted to and approved by the FAA Regional/Airports District Office. The Airport operator must implement the approved inspection and maintenance program. On airports certificated under 14 CFR part 139, the inspection and maintenance program must be incorporated into the airport operator's FAA-approved Airport Certification Manual. Determining the party responsible for carrying out a basic EMAS inspection and maintenance program can be negotiated between the operator and the EMAS manufacturer. At a minimum, the maintenance plan must address the following areas:

1. General information on the EMAS bed including:
  - A description of the EMAS bed
  - Material description
  - Contact information for the EMAS manufacturer
2. Inspection requirements including:
  - Type and frequency of required inspections
  - Training of personnel
  - Checklist(s) and instructions on how to conduct each inspection
  - List of typical problems and possible solutions
  - Testing and evaluation procedures, and criteria for determining when an installed EMAS has reached the end of its useful service life
  - Required documentation for inspections
  - Inspection forms
3. Maintenance and repair procedures including:
  - List of approved materials and tools
  - Description of repair procedures for typical damage to an EMAS bed such as repairing depressions/holes, abrasion damage, replacing a damaged block, repairing coatings, caulking/joint repair, etc
4. Any unique requirements due to location (both geographically and within the airport), such as snow removal requirements and methods, in order to protect the operation of the airfield and its facilities. Identify compatible deicing agents. Specify snow removal equipment that is compatible with the EMAS bed and recommended clearing procedures and/or limitations.
5. Warranty information.

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**Appendix 4. Related Reading Material.**

This appendix contains a listing of documents with supplemental material relating to the subject of EMAS. These documents contain certain information on materials evaluated as well as design, construction, and testing procedures utilized to date. Most publications may be obtained from the National Technical Information Service (NTIS): <http://www.ntis.gov>.

1. DOT/FAA/PM-87/27, Soft Ground Arresting Systems, Final Report, Sept. 1986–Aug. 1987, published Aug. 1987 by R.F. Cook, Universal Energy Systems, Inc., Dayton, OH.
2. DOT/FAA/CT-93/4, Soft Ground Arresting Systems for Commercial Aircraft, Interim Report, Feb. 1993 by Robert Cook.
3. DOT/FAA/CT-93/80, Soft Ground Arresting Systems for Airports, Final Report, Dec. 1993 by Jim White, Satish K. Agrawal, and Robert Cook.
4. DOT/FAA/AOV 90-1, Location of Commercial Aircraft Accidents/Incidents Relative to Runways, July 1990, by R.E. David.
5. UDR-TR-88-07, Evaluation of a Foam Arrestor Bed for Aircraft Safety Overrun Areas, 1988 by Cook, R.F., University of Dayton Research Institute, Dayton, OH.

ACs and Orders are available on the FAA Airports website at <http://www.faa.gov/airports>:

1. AC 150/5300-13, Airport Design.
2. Order 5200.8, Runway Safety Area Program.
3. Order 5200.9, Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems.

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**Exhibit 2**  
**Schedule of Compensation**



## **Exhibit 2**

### **Schedule of Compensation**

#### **I. 2015 – Midway International Airport**

Upon allocation of the material by the Contractor, the Contractor may submit pay application request and associated paperwork for the agreed to amount of \$2,500,000 to provide the delivery of the material. The pay application will be processed in a timely fashion to allow for this payment. The standard duration is ninety (90) days from submission of accurate paperwork.

Upon receipt of final acceptance of the first of three beds installed at Midway Airport and the review and acceptance of the Inspection and Maintenance Manual, the Contractor will submit a pay application. This pay application and associated paperwork will be submitted for the agreed to amount of \$1,500,000. The standard duration is ninety (90) days from submission of accurate paperwork.

Upon receipt of final acceptance of the second of three beds installed at Midway Airport and the review and acceptance of the Inspection and Maintenance Manual, the Contractor will submit a pay application. This pay application and associated paperwork will be submitted for the agreed to amount of \$1,500,000. The standard duration is ninety (90) days from submission of accurate paperwork.

#### **II. 2016 – Midway International Airport**

Upon receipt of final acceptance of the last of three beds installed at Midway Airport and the review and acceptance of the Inspection and Maintenance Manual, the Contractor will submit a pay application. This pay application and associated paperwork will be submitted for the agreed to amount of \$1,700,000. The standard duration is ninety (90) days from submission of accurate paperwork.

#### **III. 2017 – O'Hare International Airport**

Upon Notice to Proceed from the City and allocation of the material by the Contractor, the Contractor may submit pay application request and associated paperwork for 40% of the total value of the material associated with the O'Hare EMAS recycled glass material to provide the delivery of the material. The pay application will be processed in a timely fashion to allow for this payment. The standard duration is ninety (90) days from submission of accurate paperwork.

Upon receipt of final acceptance of the first of two beds installed at O'Hare Airport and the review and acceptance of the Inspection and Maintenance Manual, the Contractor will submit a pay application. This pay application and associated paperwork will be submitted for the agreed to amount of 30% of the total value of the O'Hare EMAS. The standard duration is ninety (90) days from submission of accurate paperwork.

Upon receipt of final acceptance of the last of two beds installed at O'Hare Airport and the review and acceptance of the Inspection and Maintenance Manual, the Contractor will submit a pay application. This pay application and associated paperwork will be submitted for the agreed to amount of 30% of the O'Hare EMAS. The standard duration is ninety (90) days from submission of accurate paperwork.

#### **IV. Additional Materials and Technical Support – O'Hare and Midway Airport**

The City retains the right to order any additional materials or technical support provided herein at the price provided below.

- i. Replacement material for pre-positioned materials used in repairs – certified replacement silica foam materials not covered by the warranty (materials including necessary testing and inspection) will be provided for a delivered price of \$450 per cubic meter.
- ii. Technical services provided in support of the repair and/or replacement not covered by the warranty – \$3,000 per day on site for a minimum of 2 technical experts as supported by travel reimbursement (described below). This technical service daily rate is offered for the first 2 years after the bed is placed into service and may be renegotiated every 2 years thereafter over the life of the bed.

Travel required to support technical services – reimbursed per City of Chicago travel and per diem regulations/restrictions

#### **V. Shipping**

All shipping cost associated with the replacement materials used in repairs as described above are included in the unit cost provided.

**Exhibit 3**  
**Inspections, Maintenance, and**  
**Warranty**

### Exhibit 3

#### Inspections, Maintenance and Warranty

The Contractor shall warrant the installation of the EMAS systems described in the Technical Specification for Five (5) years (60 months) from the Completion Date of each installation. The Completion Date of each installation shall be established by a final acceptance document signed by the City no later than 30 days after the Contractor formally notifies the City that the installation is ready for acceptance. The Warranty will be expressly conditioned on the City satisfying all of the following requirements:

- 1) **Installation:** The EMAS must be constructed by a Contractor approved Installation Contractor performing in strict compliance with the Construction Specifications, project drawings and material submittals (including replacement materials in the event of rejections). There must be no deviations from the Construction Specifications or project drawings without approval of the Contractor as countersigned by the City. The Contractor will be granted access during all stages of construction for review and approval of all materials, methods and constructions.
- 2) **Access and Right of Inspection:** The Contractor will be granted reasonable access to the EMAS after the Completion Date for the purpose of conducting formal quarterly inspections and informal monthly inspections no more frequent than monthly. Reasonable access shall include, without limitation, access during daylight hours for careful visual assessment.
- 3) **Notification:** If the City believes that it has a claim arising from the failure of the EMAS to conform with this warranty, the City must notify the Contractor within ten (10) days after discovering conditions giving rise to the claim, and in any case before the expiration of the warranty term.
- 4) **Access and Right of Repair:** The Contractor will be granted reasonable access to the EMAS after the Completion Date for the purpose of repairing or replacing non-conforming materials. Reasonable access shall include, without limitation, access during nighttime or extended nighttime hours for repair and/or construction.

If the warranty set forth is breached, the Contractor will, at its sole option, either 1) correct the non-conformity at its own cost within a reasonable period of time after receiving the notice of the breach, or 2) replace the non-conforming section of the EMAS at its own cost within a reasonable time after receiving notice of the breach.

The contractor shall not be liable for any damage to the EMAS or other property attributable to any of the following (or combination thereof):

- 1) Standing water around or over the EMAS bed,
- 2) Vehicular traffic (to include all airport maintenance vehicles),
- 3) Aircraft traffic in contact with the EMAS bed,
- 4) Acts of nature, including, but not limited to lightning, flood, winds in excess of 120-mph, earthquake, hurricane, tornado, hail storm or impact of large foreign objects,
- 5) Repairs or alterations of the EMAS, unless performed by personnel trained and qualified by the Contractor,
- 6) Excessive buildup of debris in and around the EMAS bed,
- 7) Spilled liquids or immersion in liquids (including large amounts of fuel from over-flying aircraft),
- 8) Use of the EMAS for purposes other than those for which it is customarily used,

- 9) Exposure to chemicals other than deicers and aircraft exhaust,
- 10) Jetblast in excess of 150-mph,
- 11) Damage or defect due to faulty or improper workmanship, including installation of the product by the Installation contractor that is shown to be (through construction documentation or subsequent evaluation) faulty because of non-conformance with the Construction Specifications or installation drawings, and/or
- 12) Damage to the EMAS bed related to or caused by base surface failure.

**Exhibit 4**  
**Economic Disclosure Statement and**  
**Affidavit**



**CERTIFICATE OF FILING FOR**  
**CITY OF CHICAGO ECONOMIC DISCLOSURE STATEMENT**

EDS Number: 65297

Certificate Printed on: 03/06/2015

Date of This Filing:02/11/2015 02:22 PM

Original Filing Date:02/11/2015 02:22 PM

Disclosing Party: Runway Safe LLC

Filed by: Mr. Kirk Allan Marchand

Title:Chief Executive Officer

Matter: Procurement of the Foam Glass

Material Arresting System for O'Hare and

Midway Airport

Applicant: Runway Safe LLC

Specification #:

Contract #:

The Economic Disclosure Statement referenced above has been electronically filed with the City. Please provide a copy of this Certificate of Filing to your city contact with other required documents pertaining to the Matter. For additional guidance as to when to provide this Certificate and other required documents, please follow instructions provided to you about the Matter or consult with your City contact.

A copy of the EDS may be viewed and printed by visiting <https://webapps1.cityofchicago.org/EDSWeb> and entering the EDS number into the EDS Search. Prior to contract award, the filing is accessible online only to the disclosing party and the City, but is still subject to the Illinois Freedom of Information Act. The filing is visible online to the public after contract award.



**CITY OF CHICAGO**  
**ECONOMIC DISCLOSURE STATEMENT and AFFIDAVIT**  
**Related to Contract/Amendment/Solicitation**  
**EDS # 65297**

**SECTION I -- GENERAL INFORMATION**

**A. Legal name of the Disclosing Party submitting the EDS:**

Runway Safe LLC

**Enter d/b/a if applicable:**

**The Disclosing Party submitting this EDS is:**

the Applicant

**B. Business address of the Disclosing Party:**

14144 Trautwein Road  
Austin, TX 78737  
United States

**C. Telephone:**

512-380-1988

**Fax:**

**Email:**

KMARCHAND@PROTECTION-CONSULTANTS.COM

**D. Name of contact person:**

Mr. Kirk Allan Marchand

**E. Federal Employer Identification No. (if you have one):**



47-1438363

F. Brief description of contract, transaction or other undertaking (referred to below as the "Matter") to which this EDS pertains:

Procurement of the Foam Glass Material Arresting System for O'Hare and Midway Airport

Which City agency or department is requesting this EDS?

DEPT OF PROCUREMENT SERVICES

Specification Number

Contract (PO) Number

Revision Number

Release Number

User Department Project Number

## **SECTION II -- DISCLOSURE OF OWNERSHIP INTERESTS**

### **A. NATURE OF THE DISCLOSING PARTY**

1. Indicate the nature of the Disclosing Party:

Limited liability company

Is the Disclosing Party incorporated or organized in the State of Illinois?

No

State or foreign country of incorporation or organization:

Delaware

Registered to do business in the State of Illinois as a foreign entity?

No

### **B. DISCLOSING PARTY IS A LEGAL ENTITY:**

1.a.2 Does the Disclosing Party have any officers?

Yes

1.a.4 List below the full names and titles of all executive officers of the entity.

**Officer:** Mr. Kirk Allan Marchand  
**Title:** Chief Executive Officer  
**Role:** Officer

**Officer:** Mr. Anders Lundberg  
**Title:** Board Member  
**Role:** Officer

**Officer:** Mr. Anders Lundmark  
**Title:** Board Member  
**Role:** Officer

**Officer:** Mr. Jon Narmo  
**Title:** Board Member  
**Role:** Officer

## **B. CERTIFICATION REGARDING Controlling Interest**

1.b.1 Are there any individuals who control the day-to-day management of the Disclosing Party as a general partner, managing member, manager, or other capacity?

Yes

1.b.2 List all general partners, managing members, managers, and any others who control the day-to-day management of the Disclosing Party. Don't include any legal entities in this answer- these will be named later:

**Name:** Mr. Kirk Allan Marchand  
**Title:** Chief Executive Officer

1.b.3 Are there any legal entities that control the day-to-day management of the Disclosing Party as a general partner, managing member, manager, or other capacity?

Yes

1.b.4 List all legal entities that function as general partners, managing members, managers, and any others who control the day-to-day management of the Disclosing Party. Each legal entity listed below must submit an EDS on its own behalf.

**Name:** Runway Safe Inc  
**Title:** JV Partner in the LLC  
**Business Address:** 940 W Adams St  
Suite 400  
Chicago, IL 60607 United States

**Name:** Protection Engineering Consultants  
**Title:** JV Partner in the LLC  
**Business Address:** 4203 Gardendale  
Suite C112  
San Antonio, TX 78229 United States

## 2. Ownership Information

Please provide ownership information concerning each person or entity having a direct or indirect beneficial interest in excess of 7.5% of the Disclosing Party. Examples of such an interest include shares in a corporation, partnership interest in a partnership or joint venture, interest of a member or manager in a limited liability company, or interest of a beneficiary of a trust, estate, or other similar entity. Note: Pursuant to Section 2-154-030 of the Municipal code of Chicago, the City may require any such additional information from any applicant which is reasonably intended to achieve full disclosure.

- Runway Safe Inc - 90%

### Owner Details

Name	Address
Runway Safe Inc	940 W Adams St Suite 400 Chicago, IL 60607 United States

### **SECTION III -- BUSINESS RELATIONSHIPS WITH CITY ELECTED OFFICIALS**

Has the Disclosing Party had a "business relationship," as defined in Chapter 2-156 of the Municipal Code, with any City elected official in the 12 months before the date this EDS is signed?

No

### **SECTION IV -- DISCLOSURE OF SUBCONTRACTORS AND OTHER RETAINED PARTIES**

The Disclosing Party must disclose the name and business address of each subcontractor, attorney, lobbyist, accountant, consultant and any other person or entity whom the Disclosing Party has retained or expects to retain in connection with the Matter, as well as the nature of the relationship, and the total amount of the fees paid or estimated to be paid. The Disclosing Party is not required to disclose employees who are paid solely through the Disclosing Party's regular payroll.

"Lobbyist" means any person or entity who undertakes to influence any legislative or administrative action on behalf of any person or entity other than: (1) a not-for-profit entity, on an unpaid basis, or (2) himself. "Lobbyist" also means any person or entity any part of whose duties as an employee of another includes undertaking to influence any legislative or administrative action.

If the Disclosing Party is uncertain whether a disclosure is required under this Section, the Disclosing Party must either ask the City whether disclosure is required or make the disclosure.

1. Has the Disclosing Party retained any legal entities in connection with the Matter?

No

3. Has the Disclosing Party retained any persons in connection with the Matter?

No

### **SECTION V -- CERTIFICATIONS**

#### **A. COURT-ORDERED CHILD SUPPORT COMPLIANCE**

Under Municipal Code Section 2-92-415, substantial owners of business entities that contract with the City must remain in compliance with their child support obligations throughout the contract's term.

Has any person who directly or indirectly owns 10% or more of the Disclosing Party been declared in arrearage of any child support obligations by any Illinois court of competent jurisdiction?

No

## B. FURTHER CERTIFICATIONS

1. Pursuant to Municipal Code Chapter 1-23, Article I ("Article I")(which the Applicant should consult for defined terms (e.g., "doing business") and legal requirements), if the Disclosing Party submitting this EDS is the Applicant and is doing business with the City, then the Disclosing Party certifies as follows:

- i. neither the Applicant nor any controlling person is currently indicted or charged with, or has admitted guilt of, or has ever been convicted of, or placed under supervision for, any criminal offense involving actual, attempted, or conspiracy to commit bribery, theft, fraud, forgery, perjury, dishonesty or deceit against an officer or employee of the City or any sister agency; and
- ii. the Applicant understands and acknowledges that compliance with Article I is a continuing requirement for doing business with the City.

NOTE: If Article I applies to the Applicant, the permanent compliance timeframe in Article I supersedes some five-year compliance timeframes in certifications 2 and 3 below.

I certify the above to be true

2. The Disclosing Party and, if the Disclosing Party is a legal entity, all of those persons or entities identified in Section II.B.1. of this EDS:

- a. are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from any transactions by any federal, state or local unit of government;
- b. have not, within a five-year period preceding the date of this EDS, been convicted of a criminal offense, adjudged guilty, or had a civil judgment rendered against them in connection with: obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; a violation of federal or state antitrust statutes; fraud; embezzlement; theft; forgery; bribery; falsification or destruction of records; making false statements; or receiving stolen property;
- c. are not presently indicted for, or criminally or civilly charged by, a governmental entity (federal, state or local) with committing any of the offenses set forth in clause B.2.b. of this Section V;
- d. have not, within a five-year period preceding the date of this EDS, had one or more public transactions (federal, state or local) terminated for cause or default; and

- e. have not, within a five-year period preceding the date of this EDS, been convicted, adjudged guilty, or found liable in a civil proceeding, or in any criminal or civil action, including actions concerning environmental violations, instituted by the City or by the federal government, any state, or any other unit of local government.

I certify the above to be true

3. Neither the Disclosing Party, nor any Contractor, nor any Affiliated Entity of either the Disclosing Party or any Contractor nor any Agents have, during the five years before the date this EDS is signed, or, with respect to a Contractor, an Affiliated Entity, or an Affiliated Entity of a Contractor during the five years before the date of such Contractor's or Affiliated Entity's contract or engagement in connection with the Matter:

- a. bribed or attempted to bribe, or been convicted or adjudged guilty of bribery or attempting to bribe, a public officer or employee of the City, the State of Illinois, or any agency of the federal government or of any state or local government in the United States of America, in that officer's or employee's official capacity;
- b. agreed or colluded with other bidders or prospective bidders, or been a party to any such agreement, or been convicted or adjudged guilty of agreement or collusion among bidders or prospective bidders, in restraint of freedom of competition by agreement to bid a fixed price or otherwise; or
- c. made an admission of such conduct described in a. or b. above that is a matter of record, but have not been prosecuted for such conduct; or
- d. violated the provisions of Municipal Code Section 2-92-610 (Living Wage Ordinance).

I certify the above to be true

4. Neither the Disclosing Party, Affiliated Entity or Contractor, or any of their employees, officials, agents or partners, is barred from contracting with any unit of state or local government as a result of engaging in or being convicted of

- bid-rigging in violation of 720 ILCS 5/33E-3;
- bid-rotating in violation of 720 ILCS 5/33E-4; or
- any similar offense of any state or of the United States of America that contains the same elements as the offense of bid-rigging or bid-rotating.

I certify the above to be true

5. Neither the Disclosing Party nor any Affiliated Entity is listed on any of the following lists maintained by the Office of Foreign Assets Control of the U.S. Department of the Treasury or the Bureau of Industry and Security of the U.S. Department of Commerce or their successors: the Specially Designated Nationals

List, the Denied Persons List, the Unverified List, the Entity List and the Debarred List.

I certify the above to be true

6. The Disclosing Party understands and shall comply with the applicable requirements of Chapters 2-55 (Legislative Inspector General), Chapter 2-56 (Inspector General) and Chapter 2-156 (Governmental Ethics) of the Municipal Code.

I certify the above to be true

7. To the best of the Disclosing Party's knowledge after reasonable inquiry, the following is a complete list of all current employees of the Disclosing Party who were, at any time during the 12-month period preceding the execution date of this EDS, an employee, or elected or appointed official, of the City of Chicago.

None

8. To the best of the Disclosing Party's knowledge after reasonable inquiry, the following is a complete list of all gifts that the Disclosing Party has given or caused to be given, at any time during the 12-month period preceding the execution date of this EDS, to an employee, or elected or appointed official, of the City of Chicago. For purposes of this statement, a "gift" does not include: (i) anything made generally available to City employees or to the general public, or (ii) food or drink provided in the course of official City business and having a retail value of less than \$20 per recipient.

None

#### C. CERTIFICATION OF STATUS AS FINANCIAL INSTITUTION

The Disclosing Party certifies that, as defined in Section 2-32-455(b) of the Municipal Code, the Disclosing Party

is not a "financial institution"

#### D. CERTIFICATION REGARDING INTEREST IN CITY BUSINESS

Any words or terms that are defined in Chapter 2-156 of the Municipal Code have the same meanings when used in this Part D.

1. In accordance with Section 2-156-110 of the Municipal Code: Does any official or employee of the City have a financial interest in his or her own name or in the name of any other person or entity in the Matter?

No

## E. CERTIFICATION REGARDING SLAVERY ERA BUSINESS

If the Disclosing Party cannot make this verification, the Disclosing Party must disclose all required information in the space provided below or in an attachment in the "Additional Info" tab. Failure to comply with these disclosure requirements may make any contract entered into with the City in connection with the Matter voidable by the City.

The Disclosing Party verifies that the Disclosing Party has searched any and all records of the Disclosing Party and any and all predecessor entities regarding records of investments or profits from slavery or slaveholder insurance policies during the slavery era (including insurance policies issued to slaveholders that provided coverage for damage to or injury or death of their slaves), and the Disclosing Party has found no such records.

I can make the above verification

## SECTION VI -- CERTIFICATIONS FOR FEDERALLY-FUNDED MATTERS

Is the Matter federally funded? For the purposes of this Section VI, tax credits allocated by the City and proceeds of debt obligations of the City are not federal funding.

No

## SECTION VII -- ACKNOWLEDGMENTS, CONTRACT INCORPORATION, COMPLIANCE, PENALTIES, DISCLOSURE

The Disclosing Party understands and agrees that:

- A. The certifications, disclosures, and acknowledgments contained in this EDS will become part of any contract or other agreement between the Applicant and the City in connection with the Matter, whether procurement, City assistance, or other City action, and are material inducements to the City's execution of any contract or taking other action with respect to the Matter. The Disclosing Party understands that it must comply with all statutes, ordinances, and regulations on which this EDS is based.
- B. The City's Governmental Ethics and Campaign Financing Ordinances, Chapters 2-156 and 2-164 of the Municipal Code, impose certain duties and obligations on persons or entities seeking City contracts, work, business, or transactions. A training program is available on line at [www.cityofchicago.org/city/en/depts/ethics.html](http://www.cityofchicago.org/city/en/depts/ethics.html), and may also be obtained from the City's Board of Ethics, 740 N. Sedgwick St., Suite 500, Chicago, IL 60610,



(312) 744-9660. The Disclosing Party must comply fully with the applicable ordinances.

I acknowledge and consent to the above

The Disclosing Party understands and agrees that:

- C. If the City determines that any information provided in this EDS is false, incomplete or inaccurate, any contract or other agreement in connection with which it is submitted may be rescinded or be void or voidable, and the City may pursue any remedies under the contract or agreement (if not rescinded or void), at law, or in equity, including terminating the Disclosing Party's participation in the Matter and/or declining to allow the Disclosing Party to participate in other transactions with the City. Remedies at law for a false statement of material fact may include incarceration and an award to the City of treble damages.
- D. It is the City's policy to make this document available to the public on its Internet site and/or upon request. Some or all of the information provided on this EDS and any attachments to this EDS may be made available to the public on the Internet, in response to a Freedom of Information Act request, or otherwise. By completing and signing this EDS, the Disclosing Party waives and releases any possible rights or claims which it may have against the City in connection with the public release of information contained in this EDS and also authorizes the City to verify the accuracy of any information submitted in this EDS.
- E. The information provided in this EDS must be kept current. In the event of changes, the Disclosing Party must supplement this EDS up to the time the City takes action on the Matter. If the Matter is a contract being handled by the City's Department of Procurement Services, the Disclosing Party must update this EDS as the contract requires. NOTE: With respect to Matters subject to Article I of Chapter 1-23 of the Municipal Code (imposing PERMANENT INELIGIBILITY for certain specified offenses), the information provided herein regarding eligibility must be kept current for a longer period, as required by Chapter 1-23 and Section 2-154-020 of the Municipal Code.

I acknowledge and consent to the above

The Disclosing Party represents and warrants that:

F.1. The Disclosing Party is not delinquent in the payment of any tax administered by the Illinois Department of Revenue, nor are the Disclosing Party or its Affiliated Entities delinquent in paying any fine, fee, tax or other charge owed to the City. This includes, but is not limited to, all water charges, sewer charges, license fees, parking tickets, property taxes or sales taxes.

I certify the above to be true

F.2 If the Disclosing Party is the Applicant, the Disclosing Party and its Affiliated Entities will not use, nor permit their subcontractors to use, any facility listed by the U.S. E.P.A. on the federal Excluded Parties List System ("EPLS") maintained by the U.S. General Services Administration.

I certify the above to be true

F.3 If the Disclosing Party is the Applicant, the Disclosing Party will obtain from any contractors/subcontractors hired or to be hired in connection with the Matter certifications equal in form and substance to those in F.1. and F.2. above and will not, without the prior written consent of the City, use any such contractor/subcontractor that does not provide such certifications or that the Disclosing Party has reason to believe has not provided or cannot provide truthful certifications.

I certify the above to be true

## **FAMILIAL RELATIONSHIPS WITH ELECTED CITY OFFICIALS AND DEPARTMENT HEADS**

This question is to be completed only by (a) the Applicant, and (b) any legal entity which has a direct ownership interest in the Applicant exceeding 7.5 percent. It is not to be completed by any legal entity which has only an indirect ownership interest in the Applicant.

Under Municipal Code Section 2-154-015, the Disclosing Party must disclose whether such Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof currently has a "familial relationship" with any elected city official or department head. A "familial relationship" exists if, as of the date this EDS is signed, the Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof is related to the mayor, any alderman, the city clerk, the city treasurer or any city department head as spouse or domestic partner or as any of the following, whether by blood or adoption: parent, child, brother or sister, aunt or uncle, niece or nephew, grandparent, grandchild, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather or stepmother, stepson or stepdaughter, stepbrother or stepsister or half-brother or half-sister.

"Applicable Party" means (1) all corporate officers of the Disclosing Party, if the Disclosing Party is a corporation; all partners of the Disclosing Party, if the Disclosing Party is a general partnership; all general partners and limited partners of the Disclosing Party, if the Disclosing Party is a limited partnership; all managers, managing members and members of the Disclosing Party, if the Disclosing Party is a limited liability company; (2) all principal officers of the Disclosing Party; and (3) any person having more than a 7.5 percent ownership interest in the Disclosing Party. "Principal officers" means the president, chief operating officer, executive director,

chief financial officer, treasurer or secretary of a legal entity or any person exercising similar authority.

Does the Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof currently have a "familial relationship" with an elected city official or department head?

No

## **ADDITIONAL INFO**

Please add any additional explanatory information here. If explanation is longer than 1000 characters, you may add an attachment below. Please note that your EDS, including all attachments, becomes available for public viewing upon contract award. Your attachments will be viewable "as is" without manual redaction by the City. You are responsible for redacting any non-public information from your documents before uploading.

This EDS has been prepared in anticipation of a procurement for EMAS at Midway and O'Hare airports. As such, subcontractor relationships have not yet been established.

List of vendor attachments uploaded by City staff

None.

List of attachments uploaded by vendor

None.

## **CERTIFICATION**

Under penalty of perjury, the person signing below: (1) warrants that he/she is authorized to execute this EDS on behalf of the Disclosing Party, and (2) warrants that all certifications and statements contained in this EDS are true, accurate and complete as of the date furnished to the City.

/s/ 02/11/2015  
Mr. Kirk Allan Marchand  
Chief Executive Officer  
Runway Safe LLC

This is a printed copy of the Economic Disclosure Statement, the original of which is filed electronically with the City of Chicago. Any alterations must be made electronically, alterations on this printed copy are void and of no effect.



**CITY OF CHICAGO  
ECONOMIC DISCLOSURE STATEMENT and AFFIDAVIT  
Related to Contract/Amendment/Solicitation  
EDS # 65900**

**SECTION I -- GENERAL INFORMATION**

**A. Legal name of the Disclosing Party submitting the EDS:**

Protection Engineering Consultants

**Enter d/b/a if applicable:**

PEC

**The Disclosing Party submitting this EDS is:**

the Applicant

**B. Business address of the Disclosing Party:**

4203 Gardendale  
Suite C112  
San Antonio, TX 78229  
United States

**C. Telephone:**

512-380-1988

**Fax:**

210-667-4265

**Email:**

kmarchand@protection-consultants.com

**D. Name of contact person:**

Mr. Kirk Allan Marchand

E. Federal Employer Identification No. (if you have one):

86-1155430

F. Brief description of contract, transaction or other undertaking (referred to below as the "Matter") to which this EDS pertains:

Runway Safe EMAS Installation at MDW and ORD

Which City agency or department is requesting this EDS?

DEPT OF PROCUREMENT SERVICES

Specification Number

Contract (PO) Number

Revision Number

Release Number

User Department Project Number

## **SECTION II -- DISCLOSURE OF OWNERSHIP INTERESTS**

### **A. NATURE OF THE DISCLOSING PARTY**

1. Indicate the nature of the Disclosing Party:

Limited liability company

Is the Disclosing Party incorporated or organized in the State of Illinois?

No

State or foreign country of incorporation or organization:

Texas

Registered to do business in the State of Illinois as a foreign entity?

No

**B. DISCLOSING PARTY IS A LEGAL ENTITY:**

1.a.2 Does the Disclosing Party have any officers?

Yes

1.a.4 List below the full names and titles of all executive officers of the entity.

**Officer:** Mr. Kirk Allan Marchand  
**Title:** Managing Principal  
**Role:** Officer

**Officer:** Dr. David John Stevens  
**Title:** Sr. Principal  
**Role:** Officer

**Officer:** Dr. Charles J Oswald  
**Title:** Sr. Principal  
**Role:** Officer

**Officer:** Mr. Edward Johann Conrath  
**Title:** Sr. Principal  
**Role:** Officer

**B. CERTIFICATION REGARDING Controlling Interest**

1.b.1 Are there any individuals who control the day-to-day management of the Disclosing Party as a general partner, managing member, manager, or other capacity?

Yes

1.b.2 List all general partners, managing members, managers, and any others who control the day-to-day management of the Disclosing Party. Don't include any legal entities in this answer- these will be named later:

**Name:** Mr. Kirk Allan Marchand  
**Title:** Managing Principal

1.b.3 Are there any legal entities that control the day-to-day management of the Disclosing Party as a general partner, managing member, manager, or other capacity?

No

## 2. Ownership Information

Please provide ownership information concerning each person or entity having a direct or indirect beneficial interest in excess of 7.5% of the Disclosing Party. Examples of such an interest include shares in a corporation, partnership interest in a partnership or joint venture, interest of a member or manager in a limited liability company, or interest of a beneficiary of a trust, estate, or other similar entity. Note: Pursuant to Section 2-154-030 of the Municipal code of Chicago, the City may require any such additional information from any applicant which is reasonably intended to achieve full disclosure.

- Mr. Kirk Allan Marchand - 23.9%
- Dr. Charles J Oswald - 28.7%
- Dr. David John Stevens - 25.7%
- Mr. Edward Johann Conrath - 7.7%

### Owner Details

Name	Address
Dr. Charles J Oswald	4203 Gardendale Suite C112 San Antonio, TX 78229 United States
Dr. David John Stevens	4203 Gardendale Suite C112 San Antonio, TX 78229 United States
Mr. Edward Johann Conrath	4203 Gardendale Suite C112 San Antonio, TX 78229 United States
Mr. Kirk Allan Marchand	4203 Gardendale Suite C112 San Antonio, TX 78229

**SECTION III -- BUSINESS RELATIONSHIPS WITH CITY ELECTED OFFICIALS**

Has the Disclosing Party had a "business relationship," as defined in Chapter 2-156 of the Municipal Code, with any City elected official in the 12 months before the date this EDS is signed?

No

**SECTION IV -- DISCLOSURE OF SUBCONTRACTORS AND OTHER RETAINED PARTIES**

The Disclosing Party must disclose the name and business address of each subcontractor, attorney, lobbyist, accountant, consultant and any other person or entity whom the Disclosing Party has retained or expects to retain in connection with the Matter, as well as the nature of the relationship, and the total amount of the fees paid or estimated to be paid. The Disclosing Party is not required to disclose employees who are paid solely through the Disclosing Party's regular payroll.

"Lobbyist" means any person or entity who undertakes to influence any legislative or administrative action on behalf of any person or entity other than: (1) a not-for-profit entity, on an unpaid basis, or (2) himself. "Lobbyist" also means any person or entity any part of whose duties as an employee of another includes undertaking to influence any legislative or administrative action.

If the Disclosing Party is uncertain whether a disclosure is required under this Section, the Disclosing Party must either ask the City whether disclosure is required or make the disclosure.

1. Has the Disclosing Party retained any legal entities in connection with the Matter?

No

3. Has the Disclosing Party retained any persons in connection with the Matter?

No

**SECTION V -- CERTIFICATIONS**

A. COURT-ORDERED CHILD SUPPORT COMPLIANCE



Under Municipal Code Section 2-92-415, substantial owners of business entities that contract with the City must remain in compliance with their child support obligations throughout the contract's term.

Has any person who directly or indirectly owns 10% or more of the Disclosing Party been declared in arrearage of any child support obligations by any Illinois court of competent jurisdiction?

No

## B. FURTHER CERTIFICATIONS

1. Pursuant to Municipal Code Chapter 1-23, Article I ("Article I")(which the Applicant should consult for defined terms (e.g., "doing business") and legal requirements), if the Disclosing Party submitting this EDS is the Applicant and is doing business with the City, then the Disclosing Party certifies as follows:

- i. neither the Applicant nor any controlling person is currently indicted or charged with, or has admitted guilt of, or has ever been convicted of, or placed under supervision for, any criminal offense involving actual, attempted, or conspiracy to commit bribery, theft, fraud, forgery, perjury, dishonesty or deceit against an officer or employee of the City or any sister agency; and
- ii. the Applicant understands and acknowledges that compliance with Article I is a continuing requirement for doing business with the City.

NOTE: If Article I applies to the Applicant, the permanent compliance timeframe in Article I supersedes some five-year compliance timeframes in certifications 2 and 3 below.

I certify the above to be true

2. The Disclosing Party and, if the Disclosing Party is a legal entity, all of those persons or entities identified in Section II.B.1. of this EDS:

- a. are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from any transactions by any federal, state or local unit of government;
- b. have not, within a five-year period preceding the date of this EDS, been convicted of a criminal offense, adjudged guilty, or had a civil judgment rendered against them in connection with: obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; a violation of federal or state antitrust statutes; fraud; embezzlement; theft; forgery; bribery; falsification or destruction of records; making false statements; or receiving stolen property;

- c. are not presently indicted for, or criminally or civilly charged by, a governmental entity (federal, state or local) with committing any of the offenses set forth in clause B.2.b. of this Section V;
- d. have not, within a five-year period preceding the date of this EDS, had one or more public transactions (federal, state or local) terminated for cause or default; and
- e. have not, within a five-year period preceding the date of this EDS, been convicted, adjudged guilty, or found liable in a civil proceeding, or in any criminal or civil action, including actions concerning environmental violations, instituted by the City or by the federal government, any state, or any other unit of local government.

I certify the above to be true

3. Neither the Disclosing Party, nor any Contractor, nor any Affiliated Entity of either the Disclosing Party or any Contractor nor any Agents have, during the five years before the date this EDS is signed, or, with respect to a Contractor, an Affiliated Entity, or an Affiliated Entity of a Contractor during the five years before the date of such Contractor's or Affiliated Entity's contract or engagement in connection with the Matter:

- a. bribed or attempted to bribe, or been convicted or adjudged guilty of bribery or attempting to bribe, a public officer or employee of the City, the State of Illinois, or any agency of the federal government or of any state or local government in the United States of America, in that officer's or employee's official capacity;
- b. agreed or colluded with other bidders or prospective bidders, or been a party to any such agreement, or been convicted or adjudged guilty of agreement or collusion among bidders or prospective bidders, in restraint of freedom of competition by agreement to bid a fixed price or otherwise; or
- c. made an admission of such conduct described in a. or b. above that is a matter of record, but have not been prosecuted for such conduct; or
- d. violated the provisions of Municipal Code Section 2-92-610 (Living Wage Ordinance).

I certify the above to be true

4. Neither the Disclosing Party, Affiliated Entity or Contractor, or any of their employees, officials, agents or partners, is barred from contracting with any unit of state or local government as a result of engaging in or being convicted of

- bid-rigging in violation of 720 ILCS 5/33E-3;
- bid-rotating in violation of 720 ILCS 5/33E-4; or
- any similar offense of any state or of the United States of America that contains the same elements as the offense of bid-rigging or bid-rotating.

I certify the above to be true

5. Neither the Disclosing Party nor any Affiliated Entity is listed on any of the following lists maintained by the Office of Foreign Assets Control of the U.S. Department of the Treasury or the Bureau of Industry and Security of the U.S. Department of Commerce or their successors: the Specially Designated Nationals List, the Denied Persons List, the Unverified List, the Entity List and the Debarred List.

I certify the above to be true

6. The Disclosing Party understands and shall comply with the applicable requirements of Chapters 2-55 (Legislative Inspector General), Chapter 2-56 (Inspector General) and Chapter 2-156 (Governmental Ethics) of the Municipal Code.

I certify the above to be true

7. To the best of the Disclosing Party's knowledge after reasonable inquiry, the following is a complete list of all current employees of the Disclosing Party who were, at any time during the 12-month period preceding the execution date of this EDS, an employee, or elected or appointed official, of the City of Chicago.

None

8. To the best of the Disclosing Party's knowledge after reasonable inquiry, the following is a complete list of all gifts that the Disclosing Party has given or caused to be given, at any time during the 12-month period preceding the execution date of this EDS, to an employee, or elected or appointed official, of the City of Chicago. For purposes of this statement, a "gift" does not include: (i) anything made generally available to City employees or to the general public, or (ii) food or drink provided in the course of official City business and having a retail value of less than \$20 per recipient.

None

#### C. CERTIFICATION OF STATUS AS FINANCIAL INSTITUTION

The Disclosing Party certifies that, as defined in Section 2-32-455(b) of the Municipal Code, the Disclosing Party

is not a "financial institution"

#### D. CERTIFICATION REGARDING INTEREST IN CITY BUSINESS

Any words or terms that are defined in Chapter 2-156 of the Municipal Code have the same meanings when used in this Part D.

1. In accordance with Section 2-156-110 of the Municipal Code: Does any official or employee of the City have a financial interest in his or her own name or in the name of any other person or entity in the Matter?

No

#### E. CERTIFICATION REGARDING SLAVERY ERA BUSINESS

If the Disclosing Party cannot make this verification, the Disclosing Party must disclose all required information in the space provided below or in an attachment in the "Additional Info" tab. Failure to comply with these disclosure requirements may make any contract entered into with the City in connection with the Matter voidable by the City.

The Disclosing Party verifies that the Disclosing Party has searched any and all records of the Disclosing Party and any and all predecessor entities regarding records of investments or profits from slavery or slaveholder insurance policies during the slavery era (including insurance policies issued to slaveholders that provided coverage for damage to or injury or death of their slaves), and the Disclosing Party has found no such records.

I can make the above verification

#### **SECTION VI -- CERTIFICATIONS FOR FEDERALLY-FUNDED MATTERS**

Is the Matter federally funded? For the purposes of this Section VI, tax credits allocated by the City and proceeds of debt obligations of the City are not federal funding.

No

#### **SECTION VII -- ACKNOWLEDGMENTS, CONTRACT INCORPORATION, COMPLIANCE, PENALTIES, DISCLOSURE**

The Disclosing Party understands and agrees that:

- A. The certifications, disclosures, and acknowledgments contained in this EDS will become part of any contract or other agreement between the Applicant and the City in connection with the Matter, whether procurement, City assistance, or other City action, and are material inducements to the City's execution of any contract or taking other action with respect to the Matter. The Disclosing Party understands that it must comply with all statutes, ordinances, and regulations on which this EDS is based.

- B. The City's Governmental Ethics and Campaign Financing Ordinances, Chapters 2-156 and 2-164 of the Municipal Code, impose certain duties and obligations on persons or entities seeking City contracts, work, business, or transactions. A training program is available on line at [www.cityofchicago.org/city/en/depts/ethics.html](http://www.cityofchicago.org/city/en/depts/ethics.html), and may also be obtained from the City's Board of Ethics, 740 N. Sedgwick St., Suite 500, Chicago, IL 60610, (312) 744-9660. The Disclosing Party must comply fully with the applicable ordinances.

I acknowledge and consent to the above

The Disclosing Party understands and agrees that:

- C. If the City determines that any information provided in this EDS is false, incomplete or inaccurate, any contract or other agreement in connection with which it is submitted may be rescinded or be void or voidable, and the City may pursue any remedies under the contract or agreement (if not rescinded or void), at law, or in equity, including terminating the Disclosing Party's participation in the Matter and/or declining to allow the Disclosing Party to participate in other transactions with the City. Remedies at law for a false statement of material fact may include incarceration and an award to the City of treble damages.
- D. It is the City's policy to make this document available to the public on its Internet site and/or upon request. Some or all of the information provided on this EDS and any attachments to this EDS may be made available to the public on the Internet, in response to a Freedom of Information Act request, or otherwise. By completing and signing this EDS, the Disclosing Party waives and releases any possible rights or claims which it may have against the City in connection with the public release of information contained in this EDS and also authorizes the City to verify the accuracy of any information submitted in this EDS.
- E. The information provided in this EDS must be kept current. In the event of changes, the Disclosing Party must supplement this EDS up to the time the City takes action on the Matter. If the Matter is a contract being handled by the City's Department of Procurement Services, the Disclosing Party must update this EDS as the contract requires. NOTE: With respect to Matters subject to Article I of Chapter 1-23 of the Municipal Code (imposing PERMANENT INELIGIBILITY for certain specified offenses), the information provided herein regarding eligibility must be kept current for a longer period, as required by Chapter 1-23 and Section 2-154-020 of the Municipal Code.

I acknowledge and consent to the above

The Disclosing Party represents and warrants that:

F.1. The Disclosing Party is not delinquent in the payment of any tax administered by the Illinois Department of Revenue, nor are the Disclosing Party or its Affiliated Entities delinquent in paying any fine, fee, tax or other charge owed to the City. This includes, but is not limited to, all water charges, sewer charges, license fees, parking tickets, property taxes or sales taxes.

I certify the above to be true

F.2 If the Disclosing Party is the Applicant, the Disclosing Party and its Affiliated Entities will not use, nor permit their subcontractors to use, any facility listed by the U.S. E.P.A. on the federal Excluded Parties List System ("EPLS") maintained by the U.S. General Services Administration.

I certify the above to be true

F.3 If the Disclosing Party is the Applicant, the Disclosing Party will obtain from any contractors/subcontractors hired or to be hired in connection with the Matter certifications equal in form and substance to those in F.1. and F.2. above and will not, without the prior written consent of the City, use any such contractor/subcontractor that does not provide such certifications or that the Disclosing Party has reason to believe has not provided or cannot provide truthful certifications.

I certify the above to be true

## **FAMILIAL RELATIONSHIPS WITH ELECTED CITY OFFICIALS AND DEPARTMENT HEADS**

This question is to be completed only by (a) the Applicant, and (b) any legal entity which has a direct ownership interest in the Applicant exceeding 7.5 percent. It is not to be completed by any legal entity which has only an indirect ownership interest in the Applicant.

Under Municipal Code Section 2-154-015, the Disclosing Party must disclose whether such Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof currently has a "familial relationship" with any elected city official or department head. A "familial relationship" exists if, as of the date this EDS is signed, the Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof is related to the mayor, any alderman, the city clerk, the city treasurer or any city department head as spouse or domestic partner or as any of the following, whether by blood or adoption: parent, child, brother or sister, aunt or uncle, niece or nephew, grandparent, grandchild, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather or stepmother, stepson or stepdaughter, stepbrother or stepsister or half-brother or half-sister.

"Applicable Party" means (1) all corporate officers of the Disclosing Party, if the Disclosing Party is a corporation; all partners of the Disclosing Party, if the Disclosing Party is a general partnership; all general partners and limited partners of the Disclosing Party, if the Disclosing Party is a limited partnership; all managers, managing members and members of the Disclosing Party, if the Disclosing Party is a limited liability company; (2) all principal officers of the Disclosing Party; and (3) any person having more than a 7.5 percent ownership interest in the Disclosing Party. "Principal officers" means the president, chief operating officer, executive director, chief financial officer, treasurer or secretary of a legal entity or any person exercising similar authority.

Does the Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof currently have a "familial relationship" with an elected city official or department head?

No

### **ADDITIONAL INFO**

Please add any additional explanatory information here. If explanation is longer than 1000 characters, you may add an attachment below. Please note that your EDS, including all attachments, becomes available for public viewing upon contract award. Your attachments will be viewable "as is" without manual redaction by the City. You are responsible for redacting any non-public information from your documents before uploading.

List of vendor attachments uploaded by City staff

None.

List of attachments uploaded by vendor

None.

### **CERTIFICATION**

Under penalty of perjury, the person signing below: (1) warrants that he/she is authorized to execute this EDS on behalf of the Disclosing Party, and (2) warrants that all certifications and statements contained in this EDS are true, accurate and complete as of the date furnished to the City.

/s/ 02/27/2015

Mr. Kirk Allan Marchand  
Managing Principal  
Protection Engineering Consultants

This is a printed copy of the Economic Disclosure Statement, the original of which is filed electronically with the City of Chicago. Any alterations must be made electronically, alterations on this printed copy are void and of no effect.





**CITY OF CHICAGO  
ECONOMIC DISCLOSURE STATEMENT and AFFIDAVIT  
EDS Information Update  
EDS # 65991**

**SECTION I -- GENERAL INFORMATION**

**A. Legal name of the Disclosing Party submitting the EDS:**

Runway Safe Inc

Enter d/b/a if applicable:

**The Disclosing Party submitting this EDS is:**

the Applicant

**B. Business address of the Disclosing Party:**

940 W Adams St  
Suite 400  
Chicago, IL 60607  
United States

**C. Telephone:**

312-616-3967

**Fax:**

**Email:**

mdean@bdo.com

**D. Name of contact person:**

Mike Dean

E. Federal Employer Identification No. (if you have one):

36-4794792

## SECTION II -- DISCLOSURE OF OWNERSHIP INTERESTS

### A. NATURE OF THE DISCLOSING PARTY

1. Indicate the nature of the Disclosing Party:

Privately held business corporation

Is the Disclosing Party incorporated or organized in the State of Illinois?

No

State or foreign country of incorporation or organization:

Delaware

Registered to do business in the State of Illinois as a foreign entity?

No

### B. DISCLOSING PARTY IS A LEGAL ENTITY:

1.a.1 Does the Disclosing Party have any directors?

Yes

1.a.3 List below the full names and titles of all executive officers and all directors, if any, of the entity. Do not include any directors who have no power to select the entity's officers.

**Officer/Director:** Mr. Anders Lundmark

**Title:** President

**Role:** Both

**Officer/Director:** Mr. Goran Felldin

**Title:** Director

**Role:** Director

**Officer/Director:** Mr. Anders Lundberg

**Title:** Director

**Role:** Director

## 2. Ownership Information

Please provide ownership information concerning each person or entity having a direct or indirect beneficial interest in excess of 7.5% of the Disclosing Party. Examples of such an interest include shares in a corporation, partnership interest in a partnership or joint venture, interest of a member or manager in a limited liability company, or interest of a beneficiary of a trust, estate, or other similar entity. Note: Pursuant to Section 2-154-030 of the Municipal code of Chicago, the City may require any such additional information from any applicant which is reasonably intended to achieve full disclosure.

- Runway Safe AB - 100%
  - Mr. Anders Lundmark - 50%
  - Mr. Anders wickman - 50%

### Owner Details

Name	Address
Mr. Anders Lundmark	Riddargatan 30 Stockholm, Stockholm s-114 57 Sweden
Mr. Anders wickman	Riddargatan 30 Stockholm, Stockholm s-114 57 Sweden
Runway Safe AB	Riddargatan 30 Stockholm, Stockholm s-114 57 Sweden

## SECTION III -- BUSINESS RELATIONSHIPS WITH CITY ELECTED OFFICIALS

Has the Disclosing Party had a "business relationship," as defined in Chapter 2-156 of the Municipal Code, with any City elected official in the 12 months before the date this EDS is signed?

No

## SECTION V -- CERTIFICATIONS

### A. COURT-ORDERED CHILD SUPPORT COMPLIANCE

Under Municipal Code Section 2-92-415, substantial owners of business entities that contract with the City must remain in compliance with their child support obligations throughout the contract's term.

Has any person who directly or indirectly owns 10% or more of the Disclosing Party been declared in arrearage of any child support obligations by any Illinois court of competent jurisdiction?

No

## B. FURTHER CERTIFICATIONS

1. Pursuant to Municipal Code Chapter 1-23, Article I ("Article I")(which the Applicant should consult for defined terms (e.g., "doing business") and legal requirements), if the Disclosing Party submitting this EDS is the Applicant and is doing business with the City, then the Disclosing Party certifies as follows:

- i. neither the Applicant nor any controlling person is currently indicted or charged with, or has admitted guilt of, or has ever been convicted of, or placed under supervision for, any criminal offense involving actual, attempted, or conspiracy to commit bribery, theft, fraud, forgery, perjury, dishonesty or deceit against an officer or employee of the City or any sister agency; and
- ii. the Applicant understands and acknowledges that compliance with Article I is a continuing requirement for doing business with the City.

NOTE: If Article I applies to the Applicant, the permanent compliance timeframe in Article I supersedes some five-year compliance timeframes in certifications 2 and 3 below.

I certify the above to be true

2. The Disclosing Party and, if the Disclosing Party is a legal entity, all of those persons or entities identified in Section II.B.1. of this EDS:

- a. are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from any transactions by any federal, state or local unit of government;
- b. have not, within a five-year period preceding the date of this EDS, been convicted of a criminal offense, adjudged guilty, or had a civil judgment rendered against them in connection with: obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; a violation of federal or state antitrust statutes; fraud; embezzlement; theft; forgery; bribery; falsification or destruction of records; making false statements; or receiving stolen property;

- c. are not presently indicted for, or criminally or civilly charged by, a governmental entity (federal, state or local) with committing any of the offenses set forth in clause B.2.b. of this Section V;
- d. have not, within a five-year period preceding the date of this EDS, had one or more public transactions (federal, state or local) terminated for cause or default; and
- e. have not, within a five-year period preceding the date of this EDS, been convicted, adjudged guilty, or found liable in a civil proceeding, or in any criminal or civil action, including actions concerning environmental violations, instituted by the City or by the federal government, any state, or any other unit of local government.

I certify the above to be true

3. Neither the Disclosing Party, nor any Contractor, nor any Affiliated Entity of either the Disclosing Party or any Contractor nor any Agents have, during the five years before the date this EDS is signed, or, with respect to a Contractor, an Affiliated Entity, or an Affiliated Entity of a Contractor during the five years before the date of such Contractor's or Affiliated Entity's contract or engagement in connection with the Matter:

- a. bribed or attempted to bribe, or been convicted or adjudged guilty of bribery or attempting to bribe, a public officer or employee of the City, the State of Illinois, or any agency of the federal government or of any state or local government in the United States of America, in that officer's or employee's official capacity;
- b. agreed or colluded with other bidders or prospective bidders, or been a party to any such agreement, or been convicted or adjudged guilty of agreement or collusion among bidders or prospective bidders, in restraint of freedom of competition by agreement to bid a fixed price or otherwise; or
- c. made an admission of such conduct described in a. or b. above that is a matter of record, but have not been prosecuted for such conduct; or
- d. violated the provisions of Municipal Code Section 2-92-610 (Living Wage Ordinance).

I certify the above to be true

4. Neither the Disclosing Party, Affiliated Entity or Contractor, or any of their employees, officials, agents or partners, is barred from contracting with any unit of state or local government as a result of engaging in or being convicted of

- bid-rigging in violation of 720 ILCS 5/33E-3;
- bid-rotating in violation of 720 ILCS 5/33E-4; or
- any similar offense of any state or of the United States of America that contains the same elements as the offense of bid-rigging or bid-rotating.

I certify the above to be true

5. Neither the Disclosing Party nor any Affiliated Entity is listed on any of the following lists maintained by the Office of Foreign Assets Control of the U.S. Department of the Treasury or the Bureau of Industry and Security of the U.S. Department of Commerce or their successors: the Specially Designated Nationals List, the Denied Persons List, the Unverified List, the Entity List and the Debarred List.

I certify the above to be true

6. The Disclosing Party understands and shall comply with the applicable requirements of Chapters 2-55 (Legislative Inspector General), Chapter 2-56 (Inspector General) and Chapter 2-156 (Governmental Ethics) of the Municipal Code.

I certify the above to be true

7. To the best of the Disclosing Party's knowledge after reasonable inquiry, the following is a complete list of all current employees of the Disclosing Party who were, at any time during the 12-month period preceding the execution date of this EDS, an employee, or elected or appointed official, of the City of Chicago.

None

8. To the best of the Disclosing Party's knowledge after reasonable inquiry, the following is a complete list of all gifts that the Disclosing Party has given or caused to be given, at any time during the 12-month period preceding the execution date of this EDS, to an employee, or elected or appointed official, of the City of Chicago. For purposes of this statement, a "gift" does not include: (i) anything made generally available to City employees or to the general public, or (ii) food or drink provided in the course of official City business and having a retail value of less than \$20 per recipient.

None

#### C. CERTIFICATION OF STATUS AS FINANCIAL INSTITUTION

The Disclosing Party certifies that, as defined in Section 2-32-455(b) of the Municipal Code, the Disclosing Party

is not a "financial institution"

#### E. CERTIFICATION REGARDING SLAVERY ERA BUSINESS

If the Disclosing Party cannot make this verification, the Disclosing Party must disclose all required information in the space provided below or in an attachment in the "Additional Info" tab. Failure to comply with these disclosure requirements may

make any contract entered into with the City in connection with the Matter voidable by the City.

The Disclosing Party verifies that the Disclosing Party has searched any and all records of the Disclosing Party and any and all predecessor entities regarding records of investments or profits from slavery or slaveholder insurance policies during the slavery era (including insurance policies issued to slaveholders that provided coverage for damage to or injury or death of their slaves), and the Disclosing Party has found no such records.

I can make the above verification

## **SECTION VII -- ACKNOWLEDGMENTS, CONTRACT INCORPORATION, COMPLIANCE, PENALTIES, DISCLOSURE**

The Disclosing Party understands and agrees that:

- A. The certifications, disclosures, and acknowledgments contained in this EDS will become part of any contract or other agreement between the Applicant and the City in connection with the Matter, whether procurement, City assistance, or other City action, and are material inducements to the City's execution of any contract or taking other action with respect to the Matter. The Disclosing Party understands that it must comply with all statutes, ordinances, and regulations on which this EDS is based.
- B. The City's Governmental Ethics and Campaign Financing Ordinances, Chapters 2-156 and 2-164 of the Municipal Code, impose certain duties and obligations on persons or entities seeking City contracts, work, business, or transactions. A training program is available on line at [www.cityofchicago.org/city/en/depts/ethics.html](http://www.cityofchicago.org/city/en/depts/ethics.html), and may also be obtained from the City's Board of Ethics, 740 N. Sedgwick St., Suite 500, Chicago, IL 60610, (312) 744-9660. The Disclosing Party must comply fully with the applicable ordinances.

I acknowledge and consent to the above

The Disclosing Party understands and agrees that:

- C. If the City determines that any information provided in this EDS is false, incomplete or inaccurate, any contract or other agreement in connection with which it is submitted may be rescinded or be void or voidable, and the City may pursue any remedies under the contract or agreement (if not rescinded or void), at law, or in equity, including terminating the Disclosing Party's participation in the Matter and/or declining to allow the Disclosing Party to participate in other

transactions with the City. Remedies at law for a false statement of material fact may include incarceration and an award to the City of treble damages.

- D. It is the City's policy to make this document available to the public on its Internet site and/or upon request. Some or all of the information provided on this EDS and any attachments to this EDS may be made available to the public on the Internet, in response to a Freedom of Information Act request, or otherwise. By completing and signing this EDS, the Disclosing Party waives and releases any possible rights or claims which it may have against the City in connection with the public release of information contained in this EDS and also authorizes the City to verify the accuracy of any information submitted in this EDS.
- E. The information provided in this EDS must be kept current. In the event of changes, the Disclosing Party must supplement this EDS up to the time the City takes action on the Matter. If the Matter is a contract being handled by the City's Department of Procurement Services, the Disclosing Party must update this EDS as the contract requires. NOTE: With respect to Matters subject to Article I of Chapter 1-23 of the Municipal Code (imposing PERMANENT INELIGIBILITY for certain specified offenses), the information provided herein regarding eligibility must be kept current for a longer period, as required by Chapter 1-23 and Section 2-154-020 of the Municipal Code.

I acknowledge and consent to the above

The Disclosing Party represents and warrants that:

F.1. The Disclosing Party is not delinquent in the payment of any tax administered by the Illinois Department of Revenue, nor are the Disclosing Party or its Affiliated Entities delinquent in paying any fine, fee, tax or other charge owed to the City. This includes, but is not limited to, all water charges, sewer charges, license fees, parking tickets, property taxes or sales taxes.

I certify the above to be true

F.2 If the Disclosing Party is the Applicant, the Disclosing Party and its Affiliated Entities will not use, nor permit their subcontractors to use, any facility listed by the U.S. E.P.A. on the federal Excluded Parties List System ("EPLS") maintained by the U.S. General Services Administration.

I certify the above to be true

F.3 If the Disclosing Party is the Applicant, the Disclosing Party will obtain from any contractors/subcontractors hired or to be hired in connection with the Matter certifications equal in form and substance to those in F.1. and F.2. above and will not, without the prior written consent of the City, use any such contractor/subcontractor that does not provide such certifications or that the



Disclosing Party has reason to believe has not provided or cannot provide truthful certifications.

I certify the above to be true

## **FAMILIAL RELATIONSHIPS WITH ELECTED CITY OFFICIALS AND DEPARTMENT HEADS**

This question is to be completed only by (a) the Applicant, and (b) any legal entity which has a direct ownership interest in the Applicant exceeding 7.5 percent. It is not to be completed by any legal entity which has only an indirect ownership interest in the Applicant.

Under Municipal Code Section 2-154-015, the Disclosing Party must disclose whether such Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof currently has a "familial relationship" with any elected city official or department head. A "familial relationship" exists if, as of the date this EDS is signed, the Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof is related to the mayor, any alderman, the city clerk, the city treasurer or any city department head as spouse or domestic partner or as any of the following, whether by blood or adoption: parent, child, brother or sister, aunt or uncle, niece or nephew, grandparent, grandchild, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather or stepmother, stepson or stepdaughter, stepbrother or stepsister or half-brother or half-sister.

"Applicable Party" means (1) all corporate officers of the Disclosing Party, if the Disclosing Party is a corporation; all partners of the Disclosing Party, if the Disclosing Party is a general partnership; all general partners and limited partners of the Disclosing Party, if the Disclosing Party is a limited partnership; all managers, managing members and members of the Disclosing Party, if the Disclosing Party is a limited liability company; (2) all principal officers of the Disclosing Party; and (3) any person having more than a 7.5 percent ownership interest in the Disclosing Party. "Principal officers" means the president, chief operating officer, executive director, chief financial officer, treasurer or secretary of a legal entity or any person exercising similar authority.

Does the Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof currently have a "familial relationship" with an elected city official or department head?

No

## **ADDITIONAL INFO**

Please add any additional explanatory information here. If explanation is longer than 1000 characters, you may add an attachment below. Please note that your EDS, including all attachments, becomes available for public viewing upon contract award. Your attachments will be viewable "as is" without manual redaction by the City. You are responsible for redacting any non-public information from your documents before uploading.

List of attachments uploaded by vendor

None .

## **CERTIFICATION**

Under penalty of perjury, the person signing below: (1) warrants that he/she is authorized to execute this EDS on behalf of the Disclosing Party, and (2) warrants that all certifications and statements contained in this EDS are true, accurate and complete as of the date furnished to the City.

/s/ 03/02/2015

Mike Dean

Tax Senior Manager

Runway Safe Inc

This is a printed copy of the Economic Disclosure Statement, the original of which is filed electronically with the City of Chicago. Any alterations must be made electronically, alterations on this printed copy are void and of no effect.



**CITY OF CHICAGO  
ECONOMIC DISCLOSURE STATEMENT and AFFIDAVIT  
EDS Information Update  
EDS # 65995**

**SECTION I -- GENERAL INFORMATION**

**A. Legal name of the Disclosing Party submitting the EDS:**

Runway Safe AB

Enter d/b/a if applicable:

**The Disclosing Party submitting this EDS is:**

the Applicant

**B. Business address of the Disclosing Party:**

Riddargatan 30  
Stockholm, Stockholm s-114 57  
Sweden

**C. Telephone:**

312-715-5219

**Fax:**

**Email:**

kim.mahan@quarles.com

**D. Name of contact person:**

Miss Kim Mahan

**E. Federal Employer Identification No. (if you have one):**

## SECTION II -- DISCLOSURE OF OWNERSHIP INTERESTS

### A. NATURE OF THE DISCLOSING PARTY

#### 1. Indicate the nature of the Disclosing Party:

Privately held business corporation

Is the Disclosing Party incorporated or organized in the State of Illinois?

No

State or foreign country of incorporation or organization:

Sweden

Registered to do business in the State of Illinois as a foreign entity?

No

### B. DISCLOSING PARTY IS A LEGAL ENTITY:

#### 1.a.1 Does the Disclosing Party have any directors?

Yes

1.a.3 List below the full names and titles of all executive officers and all directors, if any, of the entity. Do not include any directors who have no power to select the entity's officers.

**Officer/Director:** Mr. Anders Lundmark

**Title:** director

**Role:** Both

**Officer/Director:** Mr. anders wickman

**Title:**

**Role:** Both

### 2. Ownership Information

Please provide ownership information concerning each person or entity having a direct or indirect beneficial interest in excess of 7.5% of the Disclosing Party. Examples of such an interest include shares in a corporation, partnership interest in a partnership or joint venture, interest of a member or manager in a limited liability

company, or interest of a beneficiary of a trust, estate, or other similar entity. Note: Pursuant to Section 2-154-030 of the Municipal code of Chicago, the City may require any such additional information from any applicant which is reasonably intended to achieve full disclosure.

- Anders Wickman - 50%
- Anders Lundmark - 50%

#### Owner Details

Name	Address
Anders Lundmark	Riddargatan 30 Stockholm, Stockholm s-114 57 Sweden
Anders Wickman	Riddargatan 30 Stockholm, Stockholm s-114 57 Sweden

### **SECTION III -- BUSINESS RELATIONSHIPS WITH CITY ELECTED OFFICIALS**

Has the Disclosing Party had a "business relationship," as defined in Chapter 2-156 of the Municipal Code, with any City elected official in the 12 months before the date this EDS is signed?

No

### **SECTION V -- CERTIFICATIONS**

#### **A. COURT-ORDERED CHILD SUPPORT COMPLIANCE**

Under Municipal Code Section 2-92-415, substantial owners of business entities that contract with the City must remain in compliance with their child support obligations throughout the contract's term.

Has any person who directly or indirectly owns 10% or more of the Disclosing Party been declared in arrearage of any child support obligations by any Illinois court of competent jurisdiction?

No

#### **B. FURTHER CERTIFICATIONS**

1. Pursuant to Municipal Code Chapter 1-23, Article I ("Article I")(which the Applicant should consult for defined terms (e.g., "doing business") and legal requirements), if the Disclosing Party submitting this EDS is the Applicant and is doing business with the City, then the Disclosing Party certifies as follows:

- i. neither the Applicant nor any controlling person is currently indicted or charged with, or has admitted guilt of, or has ever been convicted of, or placed under supervision for, any criminal offense involving actual, attempted, or conspiracy to commit bribery, theft, fraud, forgery, perjury, dishonesty or deceit against an officer or employee of the City or any sister agency; and
- ii. the Applicant understands and acknowledges that compliance with Article I is a continuing requirement for doing business with the City.

NOTE: If Article I applies to the Applicant, the permanent compliance timeframe in Article I supersedes some five-year compliance timeframes in certifications 2 and 3 below.

I certify the above to be true

2. The Disclosing Party and, if the Disclosing Party is a legal entity, all of those persons or entities identified in Section II.B.1. of this EDS:

- a. are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from any transactions by any federal, state or local unit of government;
- b. have not, within a five-year period preceding the date of this EDS, been convicted of a criminal offense, adjudged guilty, or had a civil judgment rendered against them in connection with: obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; a violation of federal or state antitrust statutes; fraud; embezzlement; theft; forgery; bribery; falsification or destruction of records; making false statements; or receiving stolen property;
- c. are not presently indicted for, or criminally or civilly charged by, a governmental entity (federal, state or local) with committing any of the offenses set forth in clause B.2.b. of this Section V;
- d. have not, within a five-year period preceding the date of this EDS, had one or more public transactions (federal, state or local) terminated for cause or default; and
- e. have not, within a five-year period preceding the date of this EDS, been convicted, adjudged guilty, or found liable in a civil proceeding, or in any criminal or civil action, including actions concerning environmental violations, instituted by the City or by the federal government, any state, or any other unit of local government.

I certify the above to be true

3. Neither the Disclosing Party, nor any Contractor, nor any Affiliated Entity of either the Disclosing Party or any Contractor nor any Agents have, during the five years before the date this EDS is signed, or, with respect to a Contractor, an Affiliated Entity, or an Affiliated Entity of a Contractor during the five years before the date of such Contractor's or Affiliated Entity's contract or engagement in connection with the Matter:

- a. bribed or attempted to bribe, or been convicted or adjudged guilty of bribery or attempting to bribe, a public officer or employee of the City, the State of Illinois, or any agency of the federal government or of any state or local government in the United States of America, in that officer's or employee's official capacity;
- b. agreed or colluded with other bidders or prospective bidders, or been a party to any such agreement, or been convicted or adjudged guilty of agreement or collusion among bidders or prospective bidders, in restraint of freedom of competition by agreement to bid a fixed price or otherwise; or
- c. made an admission of such conduct described in a. or b. above that is a matter of record, but have not been prosecuted for such conduct; or
- d. violated the provisions of Municipal Code Section 2-92-610 (Living Wage Ordinance).

I certify the above to be true

4. Neither the Disclosing Party, Affiliated Entity or Contractor, or any of their employees, officials, agents or partners, is barred from contracting with any unit of state or local government as a result of engaging in or being convicted of

- bid-rigging in violation of 720 ILCS 5/33E-3;
- bid-rotating in violation of 720 ILCS 5/33E-4; or
- any similar offense of any state or of the United States of America that contains the same elements as the offense of bid-rigging or bid-rotating.

I certify the above to be true

5. Neither the Disclosing Party nor any Affiliated Entity is listed on any of the following lists maintained by the Office of Foreign Assets Control of the U.S. Department of the Treasury or the Bureau of Industry and Security of the U.S. Department of Commerce or their successors: the Specially Designated Nationals List, the Denied Persons List, the Unverified List, the Entity List and the Debarred List.

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6. The Disclosing Party understands and shall comply with the applicable requirements of Chapters 2-55 (Legislative Inspector General), Chapter 2-56 (Inspector General) and Chapter 2-156 (Governmental Ethics) of the Municipal Code.

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7. To the best of the Disclosing Party's knowledge after reasonable inquiry, the following is a complete list of all current employees of the Disclosing Party who were, at any time during the 12-month period preceding the execution date of this EDS, an employee, or elected or appointed official, of the City of Chicago.

None

8. To the best of the Disclosing Party's knowledge after reasonable inquiry, the following is a complete list of all gifts that the Disclosing Party has given or caused to be given, at any time during the 12-month period preceding the execution date of this EDS, to an employee, or elected or appointed official, of the City of Chicago. For purposes of this statement, a "gift" does not include: (i) anything made generally available to City employees or to the general public, or (ii) food or drink provided in the course of official City business and having a retail value of less than \$20 per recipient.

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The Disclosing Party certifies that, as defined in Section 2-32-455(b) of the Municipal Code, the Disclosing Party

is not a "financial institution"

#### E. CERTIFICATION REGARDING SLAVERY ERA BUSINESS

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## **SECTION VII -- ACKNOWLEDGMENTS, CONTRACT INCORPORATION, COMPLIANCE, PENALTIES, DISCLOSURE**

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The Disclosing Party understands and agrees that:

- C. If the City determines that any information provided in this EDS is false, incomplete or inaccurate, any contract or other agreement in connection with which it is submitted may be rescinded or be void or voidable, and the City may pursue any remedies under the contract or agreement (if not rescinded or void), at law, or in equity, including terminating the Disclosing Party's participation in the Matter and/or declining to allow the Disclosing Party to participate in other transactions with the City. Remedies at law for a false statement of material fact may include incarceration and an award to the City of treble damages.
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F.1. The Disclosing Party is not delinquent in the payment of any tax administered by the Illinois Department of Revenue, nor are the Disclosing Party or its Affiliated Entities delinquent in paying any fine, fee, tax or other charge owed to the City. This includes, but is not limited to, all water charges, sewer charges, license fees, parking tickets, property taxes or sales taxes.

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F.2 If the Disclosing Party is the Applicant, the Disclosing Party and its Affiliated Entities will not use, nor permit their subcontractors to use, any facility listed by the U.S. E.P.A. on the federal Excluded Parties List System ("EPLS") maintained by the U.S. General Services Administration.

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F.3 If the Disclosing Party is the Applicant, the Disclosing Party will obtain from any contractors/subcontractors hired or to be hired in connection with the Matter certifications equal in form and substance to those in F.1. and F.2. above and will not, without the prior written consent of the City, use any such contractor/subcontractor that does not provide such certifications or that the Disclosing Party has reason to believe has not provided or cannot provide truthful certifications.

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## **FAMILIAL RELATIONSHIPS WITH ELECTED CITY OFFICIALS AND DEPARTMENT HEADS**

This question is to be completed only by (a) the Applicant, and (b) any legal entity which has a direct ownership interest in the Applicant exceeding 7.5 percent. It is not to be completed by any legal entity which has only an indirect ownership interest in the Applicant.

Under Municipal Code Section 2-154-015, the Disclosing Party must disclose whether such Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof currently has a "familial relationship" with any elected city official or department head. A "familial relationship" exists if, as of the date this EDS is signed, the Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof is related to the mayor, any alderman, the city clerk, the city treasurer or any city department head as spouse or domestic partner or as any of the following, whether by blood or adoption: parent, child, brother or sister, aunt or uncle, niece or nephew, grandparent, grandchild, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather or stepmother, stepson or stepdaughter, stepbrother or stepsister or half-brother or half-sister.

"Applicable Party" means (1) all corporate officers of the Disclosing Party, if the Disclosing Party is a corporation; all partners of the Disclosing Party, if the Disclosing Party is a general partnership; all general partners and limited partners of the Disclosing Party, if the Disclosing Party is a limited partnership; all managers, managing members and members of the Disclosing Party, if the Disclosing Party is a limited liability company; (2) all principal officers of the Disclosing Party; and (3) any person having more than a 7.5 percent ownership interest in the Disclosing Party. "Principal officers" means the president, chief operating officer, executive director, chief financial officer, treasurer or secretary of a legal entity or any person exercising similar authority.

Does the Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof currently have a "familial relationship" with an elected city official or department head?

No

### **ADDITIONAL INFO**

Please add any additional explanatory information here. If explanation is longer than 1000 characters, you may add an attachment below. Please note that your EDS, including all attachments, becomes available for public viewing upon contract award. Your attachments will be viewable "as is" without manual redaction by the City. You are responsible for redacting any non-public information from your documents before uploading.

List of attachments uploaded by vendor

None .

## **CERTIFICATION**

Under penalty of perjury, the person signing below: (1) warrants that he/she is authorized to execute this EDS on behalf of the Disclosing Party, and (2) warrants that all certifications and statements contained in this EDS are true, accurate and complete as of the date furnished to the City.

/s/ 03/02/2015  
Miss Kim Mahan  
associate  
Runway Safe AB

This is a printed copy of the Economic Disclosure Statement, the original of which is filed electronically with the City of Chicago. Any alterations must be made electronically, alterations on this printed copy are void and of no effect.

**Exhibit 5**  
**Insurance Requirements**



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
03/16/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Marsh Sponsored Programs a service of Seabury & Smith, Inc. 701 Market Street, Ste. 1100 St. Louis MO 63101	<b>CONTACT NAME:</b> PHONE (A/C No, Ext): 800-338-1391 FAX (A/C, No): 888-621-3173 E-MAIL ADDRESS: acecclientrequest@marsh.com													
	<table border="1"> <tr> <th>INSURER(S) AFFORDING COVERAGE</th> <th>NAIC #</th> </tr> <tr> <td>INSURER A: Hartford Accident &amp; Indemnity Co</td> <td>22357</td> </tr> <tr> <td>INSURER B :</td> <td></td> </tr> <tr> <td>INSURER C :</td> <td></td> </tr> <tr> <td>INSURER D :</td> <td></td> </tr> <tr> <td>INSURER E :</td> <td></td> </tr> <tr> <td>INSURER F :</td> <td></td> </tr> </table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A: Hartford Accident & Indemnity Co	22357	INSURER B :		INSURER C :		INSURER D :		INSURER E :		INSURER F :
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INSURER F :														
<b>INSURED</b> Protection Engineering Consult Ms. Ellen Marchand P.O. Box 781607 San Antonio, TX 78278-1607														

<b>COVERAGES</b>	<b>CERTIFICATE NUMBER:</b>	<b>REVISION NUMBER:</b>
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THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<b>GENERAL LIABILITY</b> <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC	Y		84SBWBY8681 Prof. Liab. Excl.	04/05/2015	04/05/2016	EACH OCCURRENCE	\$1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	\$1,000,000
							MED EXP (Any one person)	\$10,000
							PERSONAL & ADV INJURY	\$1,000,000
							GENERAL AGGREGATE	\$2,000,000
							PRODUCTS - COMP/OP AGG	\$2,000,000
								\$
A	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	Y		84SBWBY8681	04/05/2015	04/05/2016	COMBINED SINGLE LIMIT (Ea accident)	\$1,000,000
							BODILY INJURY (Per person)	\$
							BODILY INJURY (Per accident)	\$
							PROPERTY DAMAGE (Per accident)	\$
								\$
A	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input type="checkbox"/> EXCESS LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			84SBWBY8681	04/05/2015	04/05/2016	EACH OCCURRENCE	\$10,000,000
							AGGREGATE	\$10,000,000
								\$
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		N/A				WC STATUTORY LIMITS	
							OTHER	
							E.L. EACH ACCIDENT	\$
							E.L. DISEASE - EA EMPLOYEE	\$
							E.L. DISEASE - POLICY LIMIT	\$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Re: Procurement of the Foam Glass Material Arresting System for O'Hare and Midway Airport  
 City of Chicago and Runway Safe LLC are named as additional insured on the above referenced policies on a primary and non-contributory basis when required by written contract. Waiver of subrogation is included in favor of the insured when required by written contract.

<b>CERTIFICATE HOLDER</b>	<b>CANCELLATION</b>
---------------------------	---------------------

City of Chicago, Department of Aviation  
 10510 W. Zemke Road  
 Chicago, IL 60666

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE  
*Jeff Connelly*



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
03/16/2015

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<b>PRODUCER</b> Marsh Sponsored Programs a service of Seabury & Smith, Inc. 701 Market Street, Ste. 1100 St. Louis MO 63101	<b>CONTACT NAME:</b> <b>PHONE (A/C, No, Ext):</b> 800-338-1391 <b>FAX (A/C, No):</b> 888-621-3173 <b>E-MAIL ADDRESS:</b> acecclientrequest@marsh.com	
	<b>INSURER(S) AFFORDING COVERAGE</b>	
<b>INSURED</b> Protection Engineering Consult Ms. Ellen Marchand P.O. Box 781607 San Antonio, TX 78278-1607	<b>INSURER A:</b> Hartford Accident & Indemnity Co <b>NAIC #</b> 22357	
	<b>INSURER B:</b>	
	<b>INSURER C:</b>	
	<b>INSURER D:</b>	
	<b>INSURER E:</b>	
	<b>INSURER F:</b>	

**COVERAGES      CERTIFICATE NUMBER:      REVISION NUMBER:**

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INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<b>GENERAL LIABILITY</b> <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC	Y		84SBWBY8681 Prof. Liab. Excl.	04/05/2015	04/05/2016	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$1,000,000 MED EXP (Any one person) \$10,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COMP/OP AGG \$2,000,000 \$
A	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	Y		84SBWBY8681	04/05/2015	04/05/2016	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> <b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$10,000			84SBWBY8681	04/05/2015	04/05/2016	EACH OCCURRENCE \$10,000,000 AGGREGATE \$10,000,000 \$
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		Y/N N/A				<input type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)  
Re: Procurement of the Foam Glass Material Arresting System for O'Hare and Midway Airport  
City of Chicago and Runway Safe LLC are named as additional insured on the above referenced policies on a primary and non-contributory basis when required by written contract. Waiver of subrogation is included in favor of the insured when required by written contract.

### CERTIFICATE HOLDER

City of Chicago, Department of Aviation  
10510 W. Zemke Road  
Chicago, IL 60666

### CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

*Jeff Connelly*



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

02/27/2015

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<b>PRODUCER</b>  Automatic Data Processing Insurance Agency, Inc. 1 Adp Boulevard Roseland, NJ 07068	<b>CONTACT NAME:</b> _____	
	<b>PHONE (A/C, No, Ext):</b> _____	<b>FAX (A/C, No):</b> _____
<b>E-MAIL ADDRESS:</b> _____		
<b>INSURED</b>  PROTECTION ENGINEERING CONSULTANTS Lc. Po Box 781607 San Antonio, TX 78278		<b>INSURER(S) AFFORDING COVERAGE</b> <b>INSURER A:</b> Travelers Casualty and Surety Company <b>INSURER B:</b> <b>INSURER C:</b> <b>INSURER D:</b> <b>INSURER E:</b> <b>INSURER F:</b>
		<b>NAIC #</b> 19038

**COVERAGES**                      **CERTIFICATE NUMBER: 316983**                      **REVISION NUMBER:**

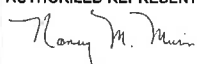
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	<b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER: _____						EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$	
	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$	
	<b>UMBRELLA LIAB</b> <input type="checkbox"/> OCCUR <b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE DED    RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$	
A	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	N	UB8B60099214	06/01/2014	06/01/2015	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

**DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)**

Procurement of the Foam Glass Material Arresting System for O'Hare and Midway Airport

**CERTIFICATE HOLDER**                      **CANCELLATION**

City of Chicago, Department of Aviation 10510 W. Zemke Road Chicago, IL 60666	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.  AUTHORIZED REPRESENTATIVE 
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# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
03/02/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

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<b>PRODUCER</b> Marsh Sponsored Programs a service of Seabury & Smith, Inc. 701 Market Street, Ste. 1100 St. Louis MO 63101		<b>CONTACT NAME:</b> PHONE (A/C, No, Ext): 800-338-1391      FAX (A/C, No): 888-621-3173 E-MAIL ADDRESS: aceclientrequest@marsh.com	
<b>INSURED</b> Runway Safe, LLC 14144 Trautwein Rd Austin TX 78737		<b>INSURER(S) AFFORDING COVERAGE</b> INSURER A: Commerce and Industry Insurance Co      NAIC # 19410 INSURER B: INSURER C: INSURER D: INSURER E: INSURER F:	

**COVERAGES**      **CERTIFICATE NUMBER:**      **REVISION NUMBER:**

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INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<b>GENERAL LIABILITY</b> <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC			AP-16603634-01	03/01/2015	03/01/2016	EACH OCCURRENCE \$10,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$250,000 MED EXP (Any one person) \$10,000 PERSONAL & ADV INJURY \$10,000,000 GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$10,000,000 \$
	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	<b>UMBRELLA LIAB</b> <input type="checkbox"/> OCCUR <b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE DED    RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> Y/N If yes, describe under DESCRIPTION OF OPERATIONS below		N/A				WC STATU-TORY LIMITS    OTH-ER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)  
RE: Procurement of the Foam Glass Material Arresting System for O'Hare and Midway Airport

<b>CERTIFICATE HOLDER</b>  City of Chicago Department of Aviation 10510 W. Zemke Road Chicago, IL 60666	<b>CANCELLATION</b>  SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.  AUTHORIZED REPRESENTATIVE <i>Jeff Connelly</i>
--	--



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
03/02/2015

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<b>INSURED</b> Runway Safe, LLC 14144 Trautwein Rd Austin TX 78737		<b>INSURER(S) AFFORDING COVERAGE</b>	
		<b>INSURER A:</b> Lloyd's of London	<b>NAIC #</b> AA1122000
		<b>INSURER B:</b> Landmark American Insurance Company	33138
		<b>INSURER C:</b>	
		<b>INSURER D:</b>	
		<b>INSURER E:</b>	
		<b>INSURER F:</b>	

**COVERAGES**      **CERTIFICATE NUMBER:**      **REVISION NUMBER:**

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INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	<b>GENERAL LIABILITY</b> <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC						EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COM/OP AGG \$ \$
	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	<b>UMBRELLA LIAB</b> <input type="checkbox"/> OCCUR <b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE DED    RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A WC STATUTORY LIMITS    OTH-ER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
A	Professional Liab - Primary			ANE154065115	03/01/2015	03/01/2016	Each Claim \$1,000,000
B	Professional Liab - Excess			LHZ750002	03/01/2015	03/01/2016	Retention \$20,000 Each Claim \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

<b>CERTIFICATE HOLDER</b>  City of Chicago Department of Aviation 10510 W. Zemke Road Chicago, IL 60666	<b>CANCELLATION</b>  SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.  AUTHORIZED REPRESENTATIVE <i>Jeff Connelly</i>
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## **CONTRACT INSURANCE REQUIREMENTS**

### Chicago Department of Aviation Procurement of the Foam Glass Material Arresting System for O'Hare and Midway Airport

The Contractor must provide and maintain at Contractor's own expense, during the terms of the Contract and during the time period following expiration if Contractor is required to return and perform any additional work, the insurance coverages and requirements specified below, insuring all operations related to the Contract.

#### **A. INSURANCE TO BE PROVIDED**

##### **1) Workers Compensation and Employers Liability**

Workers Compensation Insurance, as prescribed by applicable law covering all employees who are to provide work under this Contract and Employers Liability coverage with limits of not less than \$ \$500,000 each accident, illness or disease.

##### **2) Commercial General Liability (Primary and Umbrella)**

Commercial General Liability Insurance or equivalent with limits of not less than \$10,000,000 for access to airside/runways and \$5,000,000 for airside or landside per occurrence for bodily injury, personal injury, and property damage liability. Coverages must include the following: All premises and operations, products/completed operations (for a minimum of two (2) years following project completion), separation of insureds, defense, and contractual liability (not to include Endorsement CG 21 39 or equivalent).

The City of Chicago is to be named as an additional insured under the contractor's and any subcontractor's policy. Such additional insured coverage shall be provided on ISO form CG 2010 or on a similar additional insured form acceptable to the City. The additional insured coverage must not have any limiting endorsements or language under the policy such as, but not limited to, Contractor's sole negligence or the Additional Insured's vicarious liability. Contractor's liability insurance shall be primary, without right of contribution by any other insurance or self-insurance maintained by or available to the City. Contractor must ensure that the City is an additional insured on insurance required from subcontractors.

Subcontractors performing work for the Contractor must maintain limits of not less than \$10,000,000 for access to airside/runways, \$5,000,000 for airside and \$2,000,000 for landside with the same terms herein.

##### **3) Automobile Liability (Primary and Umbrella)**

When any motor vehicles (owned, non-owned and hired) are used in connection with work to be performed, the Contractor must provide Automobile Liability Insurance with limits of not less than \$10,000,000 for access to airside/runways and \$5,000,000 for airside or landside per occurrence for bodily injury and property damage. The City of Chicago is to be named as an additional insured on a primary, non-contributory basis.

Subcontractors performing work for the Contractor must maintain limits of not less than \$10,000,000 for access to airside/runways, \$5,000,000 for airside and \$2,000,000 for landside with the same terms herein.

4) Errors & Omissions/Professional Liability

When any engineers, program managers, project managers or other professional consultants perform work in connection with this Contract, Professional Liability Insurance covering acts, errors, or omissions must be maintained or caused to be maintained with limits of not less than \$2,000,000. When policies are renewed or replaced, the policy retroactive date must coincide with, or precede, start of work on the Contract. A claims-made policy which is not renewed or replaced must have an extended reporting period of two (2) years.

Subcontractors performing professional Services for Contractor must maintain limits of not less than \$1,000,000 with the same terms in this subsection.

5) Valuable Papers

When any plans, designs, drawings, specifications and documents are produced or used under this Contract, Valuable Papers Insurance must be maintained in an amount to insure against any loss whatsoever, and must have limits sufficient to pay for the re-creation and reconstruction of such records.

6) Property

The Contractor is responsible for all loss or damage to City property at full replacement cost.

The Contractor is responsible for all loss or damage to personal property (including materials, equipment, tools and supplies) owned, rented or used by Contractor.

**B. ADDITIONAL REQUIREMENTS**

The Contractor must furnish the City of Chicago, Department of Aviation, 10510 W. Zemke Road, 60666, original Certificates of Insurance, or such similar evidence, to be in force on the date of this Contract, and Renewal Certificates of Insurance, or such similar evidence, if the coverages have an expiration or renewal date occurring during the term of this Contract. The Contractor must submit evidence of insurance on the City of Chicago Insurance Certificate Form (copy attached) or equivalent prior to Contract award. The receipt of any certificate does not constitute agreement by the City that the insurance requirements in the Contract have been fully met or that the insurance policies indicated on the certificate are in compliance with all Contract requirements. The failure of the City to obtain certificates or other insurance evidence from Contractor is not a waiver by the City of any requirements for the Contractor to obtain and maintain the specified coverages. The Contractor shall advise all insurers of the Contract provisions regarding insurance. Non-conforming insurance does not relieve Contractor of the obligation to provide insurance as specified herein. Nonfulfillment of the insurance conditions may constitute a violation of the Contract, and the City retains the right to stop work until proper evidence of insurance is provided, or the Contract may be terminated.

The Contractor must provide for 60 days prior written notice to be given to the City in the event coverage is substantially changed, canceled, or non-renewed.

Any deductibles or self insured retentions on referenced insurance coverages must be borne by Contractor.

The Contractor hereby waives and agrees to require their insurers to waive their rights of subrogation against the City of Chicago, its employees, elected officials, agents, or representatives.

The coverages and limits furnished by Contractor in no way limit the Contractor's liabilities and responsibilities specified within the Contract or by law.

Any insurance or self insurance programs maintained by the City of Chicago do not contribute with insurance provided by the Contractor under the Contract.

The required insurance to be carried is not limited by any limitations expressed in the indemnification language in this Contract or any limitation placed on the indemnity in this Contract given as a matter of law.

If the Contractor maintain higher limits than the minimums shown above, the City requires and shall be entitled to coverage for the higher limits maintained by the Contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the City.

If Contractor is a joint venture or limited liability company, the insurance policies must name the joint venture or limited liability company as a named insured.

The Contractor must require all subcontractors to provide the insurance required herein, or Contractor may provide the coverages for subcontractors. All subcontractors are subject to the same insurance requirements of Contractor unless otherwise specified in this Contract. Contractors must ensure that the City is an additional insured on Endorsement CG 2010 of the insurance required from subcontractors.

If Contractor or subcontractor desires additional coverages, the party desiring the additional coverages is responsible for the acquisition and cost.

Notwithstanding any provision in the Agreement to the contrary, the City of Chicago Risk Management Department maintains the right to modify, delete, alter or change these requirements.

**Exhibit 6**

**Special Conditions Regarding Minority /  
Women Business Enterprise  
Commitment**



CHICAGO DEPARTMENT OF AVIATION  
CITY OF CHICAGO

MEMORANDUM

To: Jamie L. Rhee  
Chief Procurement Officer

Attention: Monica Jimenez  
Deputy Procurement Officer

Elizabeth Granados-Perez  
Deputy Procurement Officer

From: Michael D. Boland *MDB 3/3/15*  
Acting Commissioner *g*

Subject: CDA Concurrence with the Request for Full Waiver of MBE Goals and Partial Waiver of WBE Goals for the Non-Competitive Procurement of the Foam Glass Material Arresting System for O'Hare and Midway International Airports

The Chicago Department of Aviation (CDA) after reviewing the attached letter from Runway Safe LLC is in concurrence with the request of a full waiver of the MBE goals and a partial waiver of the WBE goals for the above mentioned non-competitive procurement specification. The request from Runway Safe LLC is based on the specialized commodity nature of the foam glass material arresting system. Runway Safe LLC obtains the material from the only FAA approved source, a Norway based manufacturing company that does not qualify for the City of Chicago MBE/WBE program. Therefore, Runway Safe, the owner of the intellectual property for this material, is unable to obtain substantial MBE/WBE participation.

Runway Safe intends on utilizing Flood Testing Laboratories, a City of Chicago Certified WBE firm, for the materials testing services required on this contract. Flood Testing Laboratories' participation is expected to be approximately 2.5% of the total contract value. In addition, Runway Safe will continue to explore opportunities to utilize City of Chicago Certified M/WBE contractors for the design and construction and potential maintenance/warranty service upon completion of the project where possible. The percentage of work associated with these services cannot be forecasted at this time as Runway Safe has not been able to identify any suitable M/WBE subcontractors to participate in a practicable and commercially useful function.

The CDA has conducted a search of the City's online Directory of Certified Firms to identify certified MBE/WBE firms that could participate in a commercially useful manner for the above mentioned contract. CDA specifically searched for firms certified in the areas of Foam Glass Material Arresting System and Engineered Material Arresting System. At present, CDA has not discovered any certified MBE/WBE firms available that could participate on this contract. The search results are attached. The CDA will continue to strongly encourage Runway Safe to actively explore opportunities for M/WBE participation both prior to award and throughout the duration of the contract.

If you have any questions or need additional information regarding this recommendation, please contact David Bowman (773) 686-7089.



### Department Facts

About Us

Home

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Advanced Search

Apply for Certification

Current Bid Opportunities

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Site Map

## Certification and Compliance System (C2)

### MWDBE Directory

Search City of Chicago's MWDBE Directory by entering search terms and clicking Search. You must select at least one certification type.

Department of Procurement Services Division

#### Search by Business Name or DBA

Business Name/DBA

Tip: Try just a few letters of the firm's name

#### Search by Business Description

Business Description

#### Search by Commodity Code

Commodity Code Click to Loading Commodity Code (REGISTRATION WILL BE REQUIRED TO CREATE AND SEARCH SUBJECTS Commodity Codes)

#### Search by Contact Person

Contact Person/Owner

Tip: Use the first letter

Tip: Try just the first few letters

#### Search by Location

### System Links

- » System Login
- » Password Reminder
- » Account Lookup
- » FAQs
- » MWDBE Directory
- » Apply for Certification
- » Upcoming Events
- » Staff Information
- » News & Announcements
- » Contact Us & Support

### REGISTRATION

Department of Procurement Services  
Department of Business Affairs and Consumer Protection  
Department of Aviation

City of Chicago - Certification and Compliance System - Windows Internet Explorer provided by City Of Chicago

City of Chicago - Certification and Compliance System

File Edit View Favorites Tools Help

City of Chicago - Certification and Compliance System

Tip: Use the first letter

Tip: Use the first letter

Department of Business Affairs  
and Contract Administration  
Department of Aviation

Search by Location

City

State

Zip Code

Phone Area Code

Search by Certification Type

Algorit Consorsiozha Charaktarizad Ediktorya  
Enterprises SACDBE

Businesses owned by People with  
Disabilities (DBE)

Disadvantaged Business Enterprises (DBE)

Minority Business Enterprises (MBE)

Women Business Enterprises (WBE)

Search Again

>> 0 Businesses with 0 certifications found <<

Search Results

Click the certification type for contact information and certification details

Your search parameters did not return any matches. Modify the information in the fields above and click Search Again

100%

http://www.cityofchicago.org/ce/certification/

### Department Facts

About Us:

City of Chicago

### City Services

What to

- Apply for
- Current Bid Opportunities
- Bid Tabulations

Advanced Search

- Apply for Certification
- Current Bid Opportunities
- Bid Tabulations

## Certification and Compliance System (C2)

### MWDBE Directory

Search City of Chicago's MWDBE Directory by entering search terms and clicking Search. You must select at least one certification type.

Department of Procurement Services/Procurement Disincentive

#### Search by Business Name or DDA

Business Name/DDA

*Tip: Try just a few letters of the firm's name*

#### Search by Business Description

Business Description |

#### Search by Commodity Code

Commodity Code   
*Click to Learn Commodity Code*  
*Separate words with spaces to enter and search multiple Commodity Codes*

#### Search by Contact Person

Contact Person/Owner	First name <input type="text"/>	Last name <input type="text"/>
	<i>Tip: Use an initial</i>	<i>Tip: Try just the first few letters</i>

#### Search by Location

### System Links

- » System Login
- » Password Reminder
- » Account Lookup
- » FAQs
- » MWDBE Directory
- » Apply for Certification
- » Upcoming Events
- » Staff Information
- » News & Announcements
- » Contact Us & Support

### Related Links

- Department of Procurement Services
- Department of Business Affairs and Consumer Protection
- Department of Mission

City of Chicago - Certification and Compliance System - Windows Internet Explorer, provided by City of Chicago

http://www.cityofchicago.gov/.../certification/

File Edit View Favorites Tools Help

City of Chicago - Certification and Compliance System

Department of Business Affairs and Consumer Protection  
Department of Aviation

**Search by Location**

City: [ ]  
State: [ IL ]  
Zip Code: [ ]  
Phone Area Code: [ ]

**Search by Certification Type**

Certifications

- Airport Concessions/Disadvantaged Business Enterprise (ACDBE)
- Business Enterprises owned by People with Disabilities (BEPD)
- Disadvantaged Business Enterprise (DBE)
- Minority Business Enterprise (MBE)
- Women Business Enterprise (WBE)

>> 0 businesses with 0 certifications found <<

**Search Required**

Click the certification type for contact information and certification details  
Your search parameters did not return any matches. Modify the information in the fields above and click Search Again

Internet 100%

Internet Explorer



RUNWAY SAFE US • 14144 Trautwein Road • Austin Texas 78737 • USA

February 12, 2015

Chicago Department of Aviation  
c/o CAREPlus  
5752 S Central  
Chicago, IL 60638

ATTENTION: CAREPlus LLC, Marc Klein, (630) 816-6495, [mklein@careplusllc.org](mailto:mklein@careplusllc.org)  
SUBJECT: Procurement of the Foam Glass Material Arresting System for O'Hare and Midway Airport:  
Expected Minority Participation

Dear Sirs,

Per our discussions with the Chicago Department of Aviation (CDA), a procurement is anticipated for the subject systems in 2015. A contract is anticipated between Runway Safe LLC of Austin, Texas and the CDA for this procurement. Runway Safe LLC is the US entity and supplier of the EMAS system and operates in association with Runway Safe AB of Linköping, Sweden ([www.runwaysafe.com](http://www.runwaysafe.com)). Runway Safe LLC is the sole Runway Safe EMAS supplier in the world at present and, as such, will perform the primary procurement activities. Runway Safe LLC is a small business per the Small Business Administration size standard Subsector 339 – Miscellaneous Manufacturing definition, but is not SDB (disadvantaged) according to federal standards and is not M/WBE certified per City of Chicago criteria.

As a part of design, construction and potential warranty service support, Runway Safe will strive to subcontract to small business enterprises and M/WBEs. Engineering services for the EMAS design will be provided by Protection Engineering Consultants (PEC) of San Antonio, Texas. PEC is the only source in the world for design and analysis services specifically pertaining to the FAA approved Runway Safe EMAS system. PEC is a small business per the Small Business Administration size standard for NAICS 541330, Engineering Services but is not an M/WBE certified business in Chicago. The contract with the CDA is anticipated to include testing services and warranty service. Testing services will be provided by Flood Laboratories, a WBE in Chicago. Flood Laboratories participation is expected to be approximately 2.5% of the EMAS contract. Warranty service (when required) is expected to be performed by local Chicago contractors.

Please contact me with your questions at 512-380-1988x1 or [kmarchand@protection-consultants.com](mailto:kmarchand@protection-consultants.com).

Respectfully submitted:

Runway Safe LLC

A handwritten signature in black ink, appearing to read "Kirk A. Marchand".

Kirk A. Marchand, P.E., CEO

RUNWAY

RUNWAY SAFE US • 512-380-1988x1 • [kirk.marchand@protection-consultants.com](mailto:kirk.marchand@protection-consultants.com)



**SCHEDULE C**  
**MBE/WBE Letter of Intent to**  
**Perform as a Subcontractor to the Prime Contractor**

<b>FOR                  CONSTRUCTION                  PROJECTS ONLY</b>
---

Project Name: Installation of Runway Safe EMAS at MDW/ORD Specification No.: \_\_\_\_\_

From: Flood Testing Laboratories, Inc.  
 (Name of MBE/WBE Firm)

To: Runway Safe LLC \_\_\_\_\_ and the City of Chicago.  
 (Name of Prime Contractor)

The MBE or WBE status of the undersigned is confirmed by the attached City of Chicago or Cook County Certification Letter. 100% MBE or WBE participation is credited for the use of a MBE or WBE "manufacturer." 60% participation is credited for the use of a MBE or WBE "regular dealer."

The undersigned is prepared to perform the following services in connection with the above named project/contract. If more space is required to fully describe the MBE or WBE proposed scope of work and/or payment schedule, attach additional sheets as necessary:

\_\_\_\_\_  
 \_\_\_\_\_

The above described performance is offered for the following price and described terms of payment:

<b>Pay Item No./Description</b>	<b>Quantity/Unit Price</b>	<b>Total</b>
Material sampling and testing services	lot	\$200,000

Subtotal: \$ 200,000

Total @ 100%: \$ 200,000

Total @ 60%: \$ \_\_\_\_\_

**Partial Pay Items**

For any of the above items that are partial pay items, specifically describe the work and subcontract dollar amount(s):

<b>Pay Item No./Description</b>	<b>Quantity/Unit Price</b>	<b>Total</b>

Subtotal: \$ \_\_\_\_\_

Total @ 100%: \$ \_\_\_\_\_

Total @ 60%: \$ \_\_\_\_\_

**SUB-SUBCONTRACTING LEVELS**

A zero (0) must be shown in each blank if the MBE or WBE will not be subcontracting any of the work listed or attached to this schedule.

0 % of the dollar value of the MBE or WBE subcontract that will be subcontracted to non MBE/WBE contractors.  
0 % of the dollar value of the MBE or WBE subcontract that will be subcontracted to MBE or WBE contractors.

**NOTICE: If any of the MBE or WBE scope of work will be subcontracted, list the name of the vendor and attach a brief explanation, description and pay item number of the work that will be subcontracted. MBE/WBE credit will not be given for work subcontracted to Non-MBE/WBE contractors, except for as allowed in the Special Conditions Regarding Minority Business Enterprise Commitment and Women Business Enterprise Commitment In Construction Contracts.**

The undersigned will enter into a formal written agreement for the above work with you as a Prime Contractor, conditioned upon your execution of a contract with the City of Chicago, within three (3) business days of your receipt of a signed contract from the City of Chicago.

The undersigned has entered into a formal written mentor protégé agreement as a subcontractor/protégé with you as a Prime Contractor/mentor. ( ) Yes ( ) No

**NOTICE: THIS SCHEDULE AND ATTACHMENTS REQUIRE ORIGINAL SIGNATURES.**

*Walter Flood IV* 27 February 2015  
(Signature of President/Owner/CEO or Authorized Agent of MBE/WBE) (Date)

Walter Flood IV, Project Manager, Authorized Agent  
(Name/Title-Please Print)

whflood4@floodlabs.com 773.721.2200  
(Email & Phone Number)



DEPARTMENT OF PROCUREMENT SERVICES

CITY OF CHICAGO

MAY 19 2014

Susanne Flood  
Flood Testing Laboratories, Inc.  
1945 E. 87th Street  
Chicago, IL 60617

Dear Ms. Flood:

We are pleased to inform you that **Flood Testing Laboratories, Inc.** has been recertified as a **Women Business Enterprise ("WBE")** by the City of Chicago ("City"). This WBE certification is valid until **12/01/2015**; however your firm's certification must be revalidated annually. In the past the City has provided you with an annual letter confirming your certification; such letters will no longer be issued. As a consequence, we require you to be even more diligent in filing your **annual No-Change Affidavit 60 days** before your annual anniversary date.

It is now your responsibility to check the City's certification directory and verify your certification status. As a condition of continued certification during the five year period stated above, you must file an annual No-Change Affidavit. Your firm's **annual No-Change Affidavit** is due by **12/01/2014** and **12/01/2015**. Please remember, you have an affirmative duty to file your **No-Change Affidavit 60 days** prior to the date of expiration. Failure to file your annual No-Change Affidavit may result in the suspension or rescission of your certification.

Your firm's five year certification will expire on **12/01/2015**. You have an affirmative duty to file for recertification **60 days** prior to the date of the five year anniversary date. Therefore, you must file for recertification by **10/01/2015**.

It is important to note that you also have an ongoing affirmative duty to notify the City of any changes in ownership or control of your firm, or any other fact affecting your firm's eligibility for certification **within 10 days** of such change. These changes may include but are not limited to a change of address, change of business structure, change in ownership or ownership structure, change of business operations, gross receipts and or personal net worth that exceed the program threshold. Failure to provide the City with timely notice of such changes may result in the suspension or rescission of your certification. In addition, you may be liable for civil penalties under Chapter 1-22, "False Claims", of the Municipal Code of Chicago.



Please note – you shall be deemed to have had your certification lapse and will be ineligible to participate as a WBE if you fail to:

- File your annual No-Change Affidavit within the required time period;
- Provide financial or other records requested pursuant to an audit within the required time period;
- Notify the City of any changes affecting your firm's certification within 10 days of such change; or
- File your recertification within the required time period.

Please be reminded of your contractual obligation to cooperate with the City with respect to any reviews, audits or investigation of its contracts and affirmative action programs. We strongly encourage you to assist us in maintaining the integrity of our programs by reporting instances or suspicions of fraud or abuse to the City's Inspector General at [chicagoinspectorgeneral.org](http://chicagoinspectorgeneral.org), or 866-IG-TIPLINE (866-448-4754).

Be advised that if you or your firm is found to be involved in certification, bidding and/or contractual fraud or abuse, the City will pursue decertification and debarment. In addition to any other penalty imposed by law, any person who knowingly obtains, or knowingly assists another in obtaining a contract with the City by falsely representing the individual or entity, or the individual or entity assisted is guilty of a misdemeanor, punishable by incarceration in the county jail for a period not to exceed six months, or a fine of not less than \$5,000 and not more than \$10,000 or both.

Your firm's name will be listed in the City's Directory of Minority and Women-Owned Business Enterprises in the specialty area(s) of:

**NAICS Code(s):**

**641380 - Laboratory Testing (Except Medical, Veterinary) Services**

Your firm's participation on City contracts will be credited only toward Women Business Enterprise goals in your area(s) specialty. While your participation on City contracts is not limited to your area of specialty, credit toward goals will be given only for work that is self-performed and providing a commercially useful function that is done in the approved specialty category.

Thank you for your interest in the City's Minority and Women-Owned Business Enterprise (MBE/WBE) Program.

Sincerely,



Jamie L. Rhee  
Chief Procurement Officer

JLR/ha



SCHEDULE D: Compliance Plan Regarding MBE And WBE Utilization

**FOR  
CONSTRUCTION  
PROJECTS ONLY**

**SCHEDULE D**  
Compliance Plan Regarding MBE & WBE Utilization  
Affidavit of Prime Contractor

**MUST BE SUBMITTED WITH THE BID. FAILURE TO SUBMIT THE SCHEDULE D WILL CAUSE THE  
BID TO BE REJECTED. DUPLICATE AS NEEDED.**

Project Name: Installation of Runway Safe EMAS at MDW/ORD

Specification No.: \_\_\_\_\_

In connection with the above captioned contract, I HEREBY DECLARE AND AFFIRM that I am the

Chief Executive Officer \_\_\_\_\_ and a duly authorized representative of  
(Title of Affiant)

Runway Safe LLC  
(Name of Prime Contractor)

and that I have personally reviewed the material and facts set forth in the attached Schedule Cs regarding Minority Business Enterprise and Women Business Enterprise (MBE/WBE) to perform as subcontractor, Joint Venture Agreement, and Schedule B (if applicable). All MBEs and WBEs must be certified with the City of Chicago or Cook County in the area(s) of specialty listed.

<u>Name of MBE</u>	<u>Type of Work to be Performed in accordance with Schedule Cs</u>	<u>Total MBE Participation in dollars</u>	<u>MBE Participation in percentage</u>	<u>Mentor Protégé Program Credit Claimed</u>	<u>Total MBE Participation in percentage</u>
Flood Testing Laboratories	Material sampling and testing services	\$ 200,000	2.8 %	%	2.8 %
		\$	%	%	%
		\$	%	%	%
		\$	%	%	%
		\$	%	%	%
		\$	%	%	%
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		\$	%	%	%
		\$	%	%	%



SCHEDULE D: Compliance Plan Regarding MBE And WBE Utilization

I DO SOLEMNLY DECLARE AND AFFIRM UNDER PENALTIES OF PERJURY THAT THE CONTENTS OF THE FOREGOING DOCUMENT ARE TRUE AND CORRECT, AND THAT I AM AUTHORIZED ON BEHALF OF THE PRIME CONTRACTOR TO MAKE THIS AFFIDAVIT.

Runway Safe LLC

(Name of Prime Contractor - Print or Type)

State of: Texas

(Signature)

County of: Bexar

Kirk A. Marchand, P.E., Chief Executive Officer

(Name/Title of Affiant - Print or Type)

27 February, 2015

(Date)

On this 27th day of February, 2015, the above signed officer Kirk A. Marchand

(Name of Affiant)

personally appeared and, known by me to be the person described in the foregoing Affidavit, acknowledged that (s)he executed the same in the capacity stated therein and for the purposes therein contained.

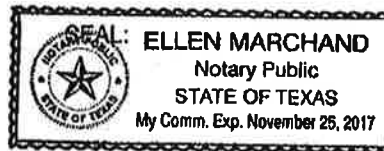
IN WITNESS WHEREOF, I hereunto set my hand and seal.

*Ellen Marchand*

(Notary Public Signature)

Commission Expires:

11/25/2017



## **Exhibit 7**

# **City of Chicago Travel Guidelines**

CITY OF CHICAGO

# TRAVEL GUIDELINES



City of Chicago  
Mayor Rahm Emanuel

JUNE 2013



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# TRAVEL POLICIES

The City of Chicago Travel Policy consists of guidelines and procedures for current and prospective City employees and contractors who travel on behalf and for the benefit of the City. This policy is administered by the Office of Budget and Management (OBM).

## **This policy:**

- Is not intended to cover routine local travel or local travel related to the performance of an employee's regular job duties. Rather, this policy is intended for out-of-town travel or travel to Chicago from another city.
- Applies to all City departments, employees and contractors, regardless of funding sources (i.e. grants).
- Requires employees to secure the most economical means of travel, balancing cost, travel time and work requirements.
- Will be strictly enforced. Prior to travel, deviations from these guidelines must be justified in writing and approved by the Budget Director.

The City is not obligated to reimburse any employee, contractor or representative of the City for travel expenses which were not previously approved by OBM.

When an individual is required to travel on behalf and for the benefit of the City, the employee is expected to exercise good judgment in managing travel costs and make every effort to secure the most economical arrangements available at that time.

Before planning out-of-town travel, every effort should be made to identify local options for comparable conferences, meetings, seminars or training sessions.

# GENERAL APPROVAL

## GENERAL REQUIREMENTS

---

The City recognizes the following activities as appropriate for travel purposes:

- Delivery of legislative testimony.
- As a stipulation or condition of grant funding or otherwise required for state or federal certification.
- Presentation on behalf of the City at a conference or seminar.
- Financial or tax audit.
- Site visits or operational evaluations related to departmental improvement efforts.
- Court proceedings or case preparation.
- Attendance at conferences, meetings, seminars or training sessions for which: the topic is of critical interest to the City; representation at the event is in the best interest of the City, and the topic is related to an employee's professional development.

## LIMITS ON PARTICIPANTS

---

Attendance at conferences, meetings, seminars or training sessions held outside the Chicago metropolitan area is limited to two employees unless otherwise approved by OBM. See page 15 for counties that comprise the Chicago metropolitan area.

## BOARD OF ETHICS PROVISIONS

---

The two relevant provisions of the Governmental Ethics Ordinance are §§ 2-156-142(d) (10) and (12). They provide exceptions to the \$50 gift limitations for the following kinds of travel to be paid by a third party, not pursuant to a contract or grant (note: the \$50 gift limitation applies to anything given or offered beyond reasonable business-related travel, for example, golf expenses or little acrylic paperweights):

## GENERAL APPROVAL CONTINUED

- (10) Any material or travel expense for meetings related to a public or governmental educational purpose, provided that any such travel has been approved in advance by the board [of Ethics], and further provided that such travel is reported to the board [of Ethics] within 10 days of completion thereof.
  
- (12) Reasonable hosting, including travel and expenses, entertainment, meals or refreshments furnished in connection with meetings, public events, appearances or ceremonies related to official city business, if furnished by a sponsor of such meeting or public event, and further provided that such travel and expenses, entertainment, meals or refreshments are reported are to the board [of Ethics] within 10 days of acceptance thereof.

It is the traveler's responsibility to contact the Board of Ethics.

### TRAVEL APPROVAL PROCEDURE

- All travel arrangements are required to be secured through the City's designated travel management agency Corporate Travel Management Group (CorpTrav).
- Booking for airfare should be accessed through the CorpTrav on-line service, GetThere at [wcp.getthere.net/corptravonline](http://wcp.getthere.net/corptravonline). Phone reservations to 877-448-9868 are allowed when travel arrangements require additional services not available in the on-line booking site. An additional fee is charged when reservations are booked through the phone reservation system.
- All travel outside the Chicago metropolitan area requires approval from OBM. See page 15 for counties that comprise the Chicago metropolitan area.
- A completed Travel Request Form (page 18) and supporting documentation must be approved by the appropriate department head and submitted to OBM as far in advanced as possible, but no later than **ten (10) business** days prior to the date of travel.

## GENERAL APPROVAL CONTINUED

- Supporting documentation should include:
  - a cover memo from the department head justifying the benefit to the City that will result in the employee attending the conference, meeting, or training, etc.;
  - an agenda;
  - and the CorpTrav travel cost quote.
- The City is not obligated to reimburse employees for travel expenses that do not comply with the travel guidelines, or those not previously approved by OBM.
- If there is a disputed reimbursement, a representative from the Department of Finance will contact the department to resolve the outstanding matter. If it is not resolved in a timely manner, the undisputed portion will be reimbursed along with an explanation and instructions to resolve the outstanding amount.
- All expenses incurred while traveling will be charged to Account .0245, unless travel is related to a specific funding source or paid by a third party.
- Travel paid by a third party or employee, must adhere to these Travel Guidelines and the City's Ethic's rules.
- No petty cash reimbursements are allowed.
- No cash advances will be provided.

### TRAVEL OUTSIDE THE CONTINENTAL UNITED STATES (U.S.)

- All requests for City travel outside the continental U.S. must be submitted to OBM as far in advanced as possible, but no later than **fifteen (15) business days** prior to travel. OBM will seek approval from the Mayor's Chief of Staff and will notify the department of approval or denial.
- Travelers should convert all foreign expenses to U.S. currency prior to submitting a Travel Expense Report. Official documentation of the exchange rate at the time of travel (i.e. bank receipt) must accompany all original receipts.

# REIMBURSEABLE TRAVEL EXPENSES

## TRANSPORTATION

---

- **City-owned Vehicles**
  - Employees traveling on City business in a City-owned vehicle are entitled to reimbursement for gas, parking and toll expenses but not mileage reimbursement. Original receipts must be provided for all expenses.
  - Employees are responsible for all fines related to parking or moving violations issued while traveling on City business.
- **Personal Vehicles**
  - Employees may use personal automobiles for business travel within a 300-mile radius of Chicago.
  - Employees will be reimbursed at the rate stated in the Annual Appropriation Ordinance mileage reimbursement or applicable Collective Bargaining Agreement, but in no event will the reimbursement exceed the cost of coach airfare.
  - Mileage reimbursement includes full reimbursement for the cost of gas and general maintenance.
  - Parking and toll expenses will be reimbursed separately with original receipts.
  - Employee must carry liability and property damage insurance for business use of his or her vehicle and submit a copy of these insurance policies to the appropriate personnel within his or her department.
  - Employees are responsible for all fines related to parking or moving violations issued while traveling on City business. Absolutely no exceptions will be made.

Refer to the City of Chicago, Department of Fleet and Facility Management vehicle policy for other rules and regulations regarding the use of City-owned and personal vehicles.

- **Car Rental**
  - Car rental will not be approved for travel within the Chicago metropolitan area. City vehicles administered through

## REIMBURSEABLE TRAVEL EXPENSES CONTINUED

the Department of Fleet and Facility Management Flex Fleet or ZIP Car programs should be reserved for such travel.

- Car rental is a reimbursable expense only when there is no other transportation available or the distance between lodging and/or meeting site(s) makes public transportation, taxi or other modes of transportation impractical.
- Car rental will be reimbursed at the compact car rate unless the need for a larger car can be justified.
- Daily rental rates, taxes, surcharges, gas and car rental insurance are all considered reimbursable items.
- Only one car rental will be allowed per trip. This includes trips with multiple travelers unless previously authorized by OBM.
- Employees are responsible for all fines related to parking or moving violations issued while traveling on City business. Absolutely no exceptions will be made.
- Original receipts are required for reimbursement.
- **Common Carrier (Air, Train, Bus)**
  - Reservations and ticket purchases should be made as far in advance as possible to take advantage of any available discount fares.
  - Tickets are to be booked at the most economical fare available that meets the requirement of the traveler's agenda.
  - No traveler may select tickets on a specific carrier or airport for any reason while on City business, unless it is the most economical fare.
  - First-class and business upgrades are prohibited.
  - Electronic tickets are the only acceptable delivery method of tickets unless this option is not available. The City's travel agency will advise.
  - Any charges incurred as a result of changes to an original airline reservation made prior to or during travel are subject to OBM approval.

## REIMBURSEABLE TRAVEL EXPENSES CONTINUED

- **Ground Transportation**  
(Taxis, Public Transportation, Livery Service)
  - Transportation to and from the airport is included in the ground transportation allowance in the reimbursement rate.
  - Shuttle service or public transportation is encouraged.
  - Ground transportation expense guidelines are provided on the Transportation Reimbursement Rate form (page 16).
  - Livery service may be used if the cost is less than the cost of a taxi service or other means of transportation.
  - Gratuity for ground transportation is the sole responsibility of the traveler.
  - Original receipts are required for reimbursement.



## REIMBURSEABLE TRAVEL EXPENSES CONTINUED

### LODGING

---

- The cost of a standard hotel room is reimbursable up to the maximum daily rate for the city group as listed in the "Rates" section of this policy (page 16), exclusive of applicable taxes.
- Employees may stay at higher priced hotels, but will only receive reimbursement up to the maximum daily rate for the applicable city group in the "Rates" section, if a lower priced hotel is available within a reasonable distance.
- The maximum daily rate may be exceeded only if a lower priced room is not available within a reasonable distance, and if approved by OBM.
- Hotel lodging within the Chicago metropolitan area (page 15) is not a reimbursable expense.
- All personal expenses must be paid for separately or deducted from the lodging bill before it is submitted for reimbursement.
- Original receipts are required for reimbursement.

### MEALS

---

- Employees are entitled to a daily per diem allowance, as outlined in the "Rates" (page 16) section of this policy, as reimbursement for all meals inclusive of tax and gratuity. The per diem allowance is the maximum amount allowed for meals.
- Travelers are only allowed 50% of the per diem allowance on the first and last days of travel and only to the extent of their expenditure.
- Fifty percent (50%) of the per diem rate is allowed for travel that does not require an overnight stay.
- The traveler will only be reimbursed during travel for original itemized receipts submitted not to exceed the per diem allowance.
- If meals are included in registration fees, per diem will not be reimbursed for pre-paid meals.



# REIMBURSEABLE TRAVEL EXPENSES CONTINUED

## CONFERENCE REGISTRATION FEES

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- Registration fees should be charged to the department's education and professional development accounts (.0169) unless travel is required under a specific funding source.
- Every effort should be made to take advantage of early registration or group rate discounts.

## ADDITIONAL EXPENSES

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### **Business-Related Expenses**

- Business-related expenses incurred while on City travel may be reimbursed at the discretion of the department head. Following are examples of acceptable reimbursable business expenses:
  - Internet connections
  - Sending or receiving faxes
  - Photocopying
  - Express mail services
- Original receipts must be provided for reimbursement.

### **Laundry**

- Employees traveling on City business for three or more consecutive days are entitled to reimbursement for laundry expenses up to a maximum of \$10 per three-day period beginning with the fourth day.
- Original receipts are required for reimbursement.

### **Telephone Calls**

- If the employee has a City-issued cell phone, that phone should be used for all telephone calls (unless there is no service).
- When possible, employees should avoid surcharges by using cell phones.

## REIMBURSEABLE TRAVEL EXPENSES CONTINUED

- Business calls may be reimbursed at the discretion of the department head.
- Original receipts are required for reimbursement.

### **Incidentals**

- Reimbursement for incidental expenses will be approved at the discretion of the department head.
- Original receipts are required to reimbursement traveler for incidentals not listed above.

### **Travel Expense Advances**

- Cash advances are not allowed.

## TRAVEL BY CITY OF CHICAGO CONSULTANTS

Travel by consultants or contractors engaged by the City should adhere to the City of Chicago Travel Policy. Travel expenses should be included in the contract price and billed as required by the contract.

- Travel by non-employees at the invitation of the City must be approved by the Mayor's Chief of Staff and adhere to the City of Chicago Travel Policy.
- Reimbursement for non-employees will be for actual expenses within the per diem rate schedule (page 16), not a flat per diem.

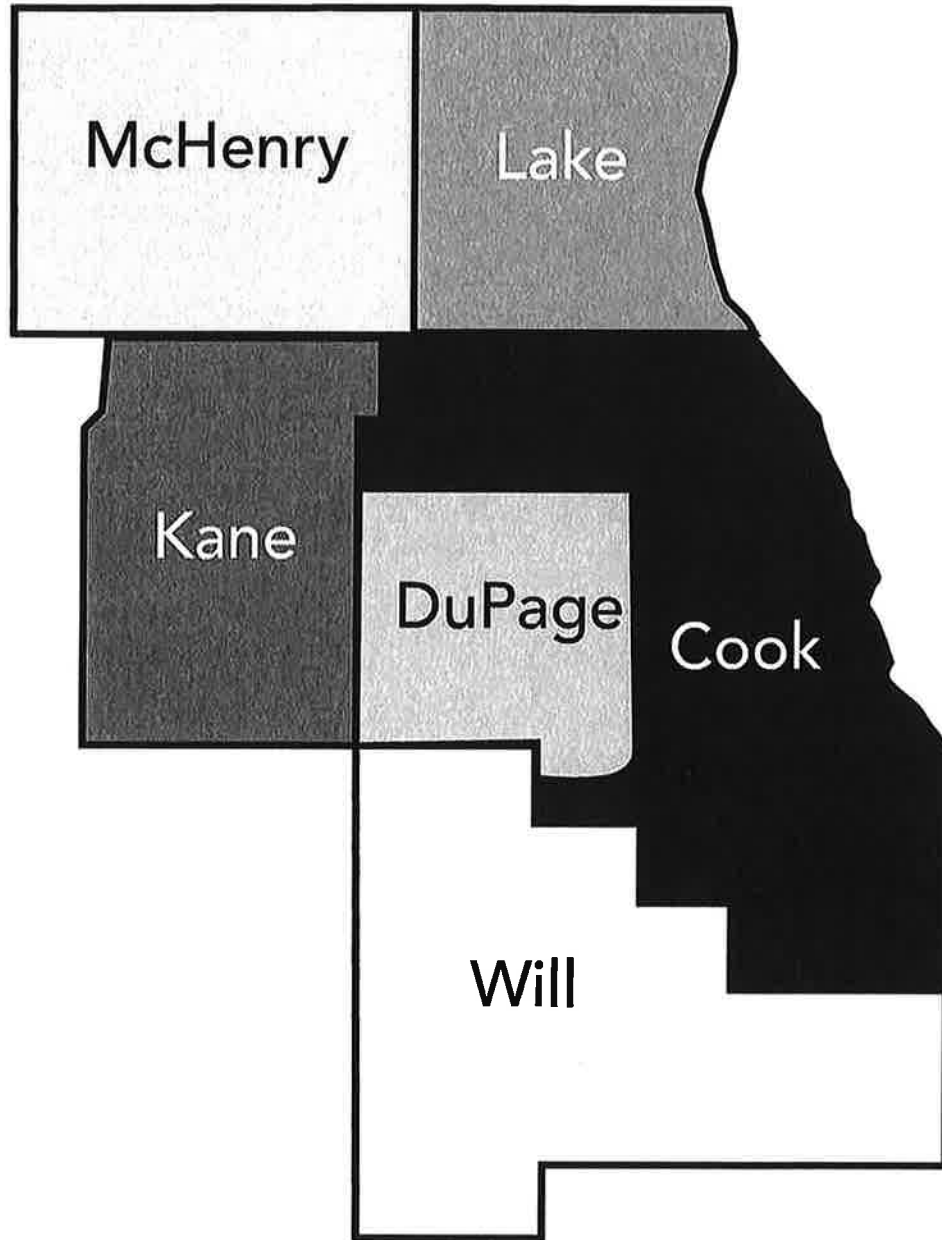
## REIMBURSEABLE TRAVEL EXPENSES CONTINUED

### NON-REIMBURSEABLE TRAVEL EXPENSES

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- Non-reimbursable expenses include, but are not limited to, the following:
  - Additional charges for hotel or room upgrades or special "club" floors
  - Alcoholic beverages
  - Airline baggage fees for stays of two nights or less
  - Coat check services
  - Entertainment, including but not limited to in-room movies
  - Late check-out and any guarantee charges
  - Parking or moving violation tickets
  - Personal services (i.e. health club, massage, personal maintenance)
  - Spousal or other family expenses
  - Toiletries
  - Travel accident insurance
  - Other expenses of a purely personal nature and not listed as reimbursable in these guidelines

CHICAGO METROPLITAN AREA



# TRAVEL REIMBURSEMENT RATES

Reimbursement rates are categorized by relative travel costs associated with certain cities. For cities not listed, please consult with the Office of Budget and Management for appropriate reimbursement rates.

	GROUP 1 CITIES	GROUP 2 CITIES	GROUP 3 CITIES	GROUP 4 CITIES
	Boston, MA Los Angeles, CA Miami, FL New York, NY & Metro Areas San Francisco, CA Washington, DC & Metro Areas	Atlanta, GA Chicago, IL Baltimore, MD Philadelphia, PA San Jose, CA Seattle, WA White Plains, NY	Cleveland, OH Denver, CO Detroit, MI Indianapolis, IN Las Vegas, NV Madison, WI Memphis, TN New Orleans, LA Orlando, FL Phoenix, AZ Portland, OR San Diego, CA Springfield, IL** St Louis, MO Tampa, FL Honolulu, HI	Columbus, OH Cleveland, OH Hartford, CT Kansas City, MO Louisville, KY Madison, WI Milwaukee, WI Nashville, TN Pittsburgh, PA
<b>GROUND TRANSPORTATION</b>				
Including parking at point of departure.	\$55	\$50	\$40	\$40
<b>TRANSPORTATION</b>				
AIR:	Coach Economy	Coach Economy	Coach Economy	Coach Economy
RAIL:	Economy	Economy	Economy	Economy
PERSONAL CAR*:	\$.565/mile	\$.565/mile	\$.565/mile	\$.565/mile
<b>LODGING</b>				
Maximum daily rate is exclusive of applicable taxes. Taxes will be included in the reimbursement.	\$250	\$225	\$150	\$125
<b>PER DIEM</b>				
Including tax and gratuity.	\$65	\$60	\$55	\$50

\* Mileage reimbursement follows the rate as determined by the Internal Revenue Service. 2012 rate is listed.

\*\* When the Illinois legislature is in session, the Springfield, IL maximum is increased to Group 3.

# TRAVEL REQUEST FORM

Name: \_\_\_\_\_ Department: \_\_\_\_\_  
 Purpose of Travel: \_\_\_\_\_ Bureau/Division: \_\_\_\_\_  
 \_\_\_\_\_ Destination: \_\_\_\_\_  
 Funding Code: \_\_\_\_\_ Departure Day and Date: \_\_\_\_\_  
 (If more than one code is used, specify amount per code.) Return Day and Date: \_\_\_\_\_

Third Party Travel  If yes, please provide documentation from the Board of Ethics confirming review.

## TRAVEL EXPENSE ESTIMATE

TO BE COMPLETED AND SUBMITTED 10 BUSINESS DAYS PRIOR TO TRAVEL TO THE  
 OFFICE OF BUDGET AND MANAGEMENT ALONG WITH PROPER DOCUMENTATION

**Estimated Expense(s):** Pick City \_\_\_\_\_

Transportation \$ \_\_\_\_\_

Ground Transportation \$ \_\_\_\_\_

Meals # of days of travel \_\_\_\_\_

1st and last day 1/2 the per diem rate \_\_\_\_\_ days @ \_\_\_\_\_ per day \$ \_\_\_\_\_

Lodging \_\_\_\_\_ nights @ \_\_\_\_\_ per day \$ \_\_\_\_\_

Registration (Acct. 0169) \$ \_\_\_\_\_

**Other Expenses (please list)**

Other: \_\_\_\_\_ \$ \_\_\_\_\_

\_\_\_\_\_ \$ \_\_\_\_\_

\_\_\_\_\_ \$ \_\_\_\_\_

CorpTrav Service Fee \$ \_\_\_\_\_

TOTAL ESTIMATE \$ \_\_\_\_\_

**I have reviewed this travel request, and find:**

- The purpose of this trip fulfills an important public objective;
- This trip adheres to the City of Chicago Travel Policy; and
- The purpose of the trip cannot be fulfilled locally.

TRAVELER \_\_\_\_\_ DATE \_\_\_\_\_

DEPARTMENT HEAD \_\_\_\_\_ DATE \_\_\_\_\_

OBM ANALYST \_\_\_\_\_ DATE \_\_\_\_\_

OBM DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF OF STAFF\* \_\_\_\_\_ DATE \_\_\_\_\_

\* for international travel and non-employees

Please attach approved Request Form to Expense Statement when submitting for reimbursement.

## Department Submit to Comptroller's Audit Section

# TRAVEL EXPENSE STATEMENT

Employee:		Phone:	Employee Title:							
Contact:		Phone:	Travel Dates:	From:	To:					
Dept. #	Purpose/Location of trip:									
Funding Code:										
Date	Transportation Vehicle		Ground	Common Carrier (Air, Train)	Parking & Toll	Room & Taxes	Meals	Telephone	Misc. *	Total Expenses
	Personal	Rental								
*Explanation of Miscellaneous Expenses							Total Expenses _____ Less Advance _____ Less Prepaid Expenses _____ Balance Due City _____ Balance Due Employee _____			
I hereby certify that this Travel Expense Statement is in accordance with the policies and procedures of the City of Chicago. All receipts included are original.					_____ Approving Finance Director or Designee			_____ Date		
					_____ Dept. Head/Approving Official Signature			_____ Date		
_____ Employee Signature				_____ Date						





