



APPENDIX A: EMAS PRELIMINARY MODELING ANALYSIS



PRELIMINARY PERFORMANCE & COST ESTIMATES

FOR

**Sikorsky Memorial Airport (BDR)
Runway 11-29 Departure End**

2021.12.2



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Airport: **Sikorsky Memorial Airport (BDR)**

Location: **Stratford, Connecticut**

Runway: **Runway 11-29 Departure End**

Runway Dimensions: **4,759' X 150'**

Elevation: **RWY 11-29 Departure El. = 9'MSL**

RWY 11 Departure End: 515 ft. RSA with 0% longitudinal grade

Objective:	Maximize stopping within the 214.62 ft. length parameter. All aircraft can be stopped within the system at maximum performance of 70 knots.			
Cost Estimate:	\$4.7 Million for EMAS materials & locally contracted installation, excluding site preparation (*Cost estimate based on 2021 dollars)			
Size & Strength:	50 strength, 214.62 ft. arrestor bed setback 300.38 ft. from runway end (515 ft. total)			
Performances:	Aircraft Model	Runway exit speed @ MTOW (kt)	Runway exit speed @ 80% MLW	Remarks
	Dassault Falcon F7X	70+	70+	
	Embraer 175	70+	70	
	Bombardier Global 5000	70+	70+	
	Bombardier Global Express	70+	70+	
	Gulfstream V	70+	70+	
	Gulfstream VI	70+	70+	
	Bombardier Challenger 300	70+	70+	
Notes:	(1) EMAS performances were derived from an FAA validated computer program.			
	(2) Based on design case poor braking (.25 braking coefficient) and no reverse thrust between runway end and EMAS (Setback).			
	(3) Actual performances may be better due to availability of braking and reverse thrust.			
	(4) Aircraft weight reflects MTOW			



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RWY 29 Departure End: 184.82 ft. RSA with .0% longitudinal grade

Objective:	Maximize stopping within the 149.82 ft. length parameter. EMAS will provide 47 knots and above for all aircraft.			
Cost Estimate:	\$3.6 Million for EMAS materials & locally contracted installation, excluding site preparation (*Cost estimate based on 2021 dollars)			
Size & Strength:	50 strength, 149.82 ft. arrestor bed setback 35 ft. from runway end (184.82 ft. total)			
Performances:	Aircraft Model	Runway exit speed @ MTOW (kt)	Runway exit speed @ 80% MLW	Remarks
	Dassault Falcon F7X	52	51	
	Embraer 175	50	48	
	Bombardier Global 5000	48	51	
	Bombardier Global Express	47	51	
	Gulfstream V	48	50	
	Gulfstream VI	47	53	
	Bombardier Challenger 300	55	53	
Notes :	(1) EMAS performances were derived from an FAA validated computer program.			
	(2) Based on design case poor braking (.25 braking coefficient) and no reverse thrust between runway end and EMAS (Setback).			
	(3) Actual performances may be better due to availability of braking and reverse thrust.			
	(4) Aircraft weight reflects MTOW			

Pricing:

The above Rough Order of Magnitude (ROM) pricing is provided as a courtesy to the Sikorsky Memorial Airport as an indication of a potential pricing as it relates to the purchase of their new EMASMAX systems for both the Runway 11 & 29 Departure Ends. Its purpose is to assist the airport in moving forward with its procurement process. The next step in the process is for Runway Safe to furnish the airport with a configuration contract for both systems. This contract is needed to finalize configuration which will address their concern with improving the safety of both RSA's.

The pricing given is a rough order of magnitude (ROM). The fleet mix and RSA lengths were provided to Runway Safe Inc. by the consultant.



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Summary:

Runway 11 Departure End – 50 Strength

The preliminary modeling for the 50-strength Runway 11 Departure End system represents a 214.62-foot EMAS bed with a 300.38-foot setback, with the RSA grade set at 0%. The results show that all the aircraft meet a predicted goal of 70 knots.

Based on the length (515') available at the end of Runway 11 Departure End, Runway Safe can predict fully arresting all the modeled aircraft at both MTOW and 80% MLW from an overrun speed of 70 knots using our 50 strength EMASMAX material. The EMAS on the Runway 11 departure end is a non-standard system.

29 Departure End – 50 Strength

The preliminary modeling for the 50-strength Runway 29 Departure End represents a 149.82 ft. EMAS bed with a 35-foot setback, (total RSA length of 184.82 ft.) with the RSA grade set at 0%.

Based on the length (184.82') available at the end of Runway 29 Departure End, Runway Safe can predict fully arresting all the modeled aircraft at both MTOW and 80% MLW from an overrun speed of 47 knots and above using our 50 strength EMASMAX material.

The EMAS at Runway 29 departure end, is a non-standard system with performance <70kt, but > 40kt. To obtain a 70-knot system for this end, the minimum RSA length (including a 35ft setback) is 308 ft, which requires the RSA to extend by 123 ft (308-185), in the back away from the runway.

Please note Runway Safe's preliminary modeling is based on limited information available at the time of submittal and is subject to changes in predicted performance with the accumulation of additional new information.

Runway Safe recommends the implementation of this EMAS preliminary configuration proposal and stands ready to respond to any questions, comments or further adjustments needed to implement the full site configurations for this project.



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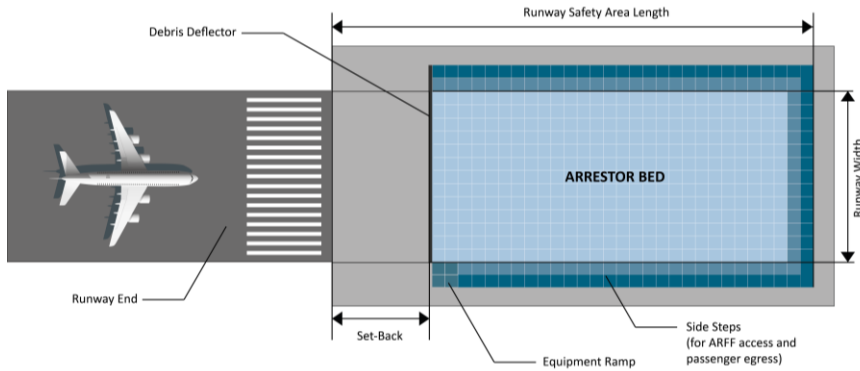
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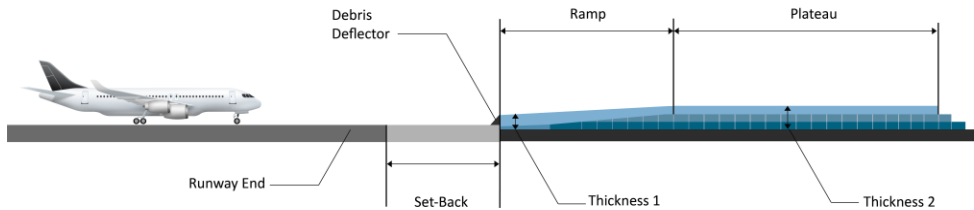
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Typical EMAS Configuration

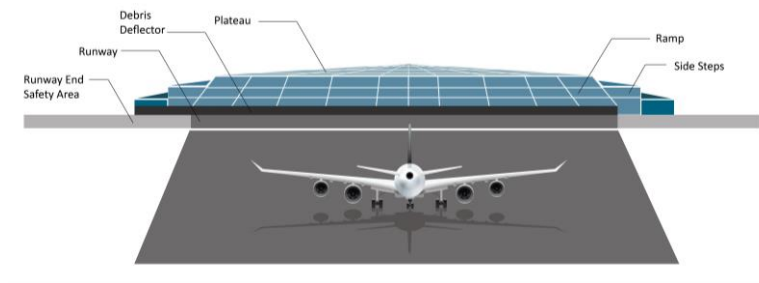
Picture 1 – A Typical plan view of EMASMAX®



Picture 2 – A Typical elevation view of EMASMAX®



Picture 3 – A Typical elevation front view of EMASMAX®



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