ADDENDUM No. 2

for

Rehabilitate Runway 17-35 Bid # FY22-805-49

at the Manchester - Boston Regional Airport

Due to be opened 2:30 p.m., on April 19, 2022

Date: April 8, 2022

The attention of firms submitting proposals for the work named above is called to the following modifications to the documents as were issued.

The items set forth herein, whether of clarification, omission, addition and/or substitution, shall be included and form a part of the Proposer's submitted materials and the corresponding contract when issued. No claim for additional compensation, due to lack of knowledge of the contents of this Addendum will be considered.

All Proposer's are advised that receipt of this notice and all attached material must be duly acknowledged in the space provided on the signature page of the proposal documents, and by the insertion of this sheet, signed, and submitted with your Proposal package.

This form must be signed and attached to the original copy of your submission.

The attached sheets contain information or clarifications requested or discussed.

Receipt of Addendum No. 2 to the REQUEST FOR PROPOSALS for Rehabilitate Runway 17-35 at the MANCHESTER-BOSTON REGIONAL AIRPORT is hereby acknowledged.

COMPANY NAME:_____

SIGNED BY:

NAME AND TITLE PRINTED:_____

TELEPHONE: FAX:

GENERAL

In general, this addendum is accomplishing the following:

- 1. Answers to questions to date.
- 2. Updates to the Bid Proposal.
- 3. Updates to the various specification requirements.
- 4. Updated plans are provided with added or enhanced details. Specific attention is made to the runway pavement grading and related effects on the runway lighting edge lighting. In addition, the MSE wall coping requirements have been further illustrated.

QUESTIONS/CLARIFICATIONS

Addendum Item No.1 -

Q1: Item No. L-125-1 There is a quantity of 560. It appears that this would be inclusive of both TDZ's and centerline lights. If so, can you create 2 separate pay items? One for TDZ's and one for runway lights? A1: New pay items have been created. See the revised bid proposal and updated Specification L-125.

Q2: Item No. L-125-4 I'm confused why the quantity is 106 less than Item No. L-125-1. Also, If L-125-4 is inclusive of both TDZ's and Runway lights can you break it into 2 pay items, or eliminate the item all together and make it incidental to L-125-1?

A2: Item L-125-4 is the quantity of light bases requiring adjustments, i.e. new base can extensions. The quantity differs from the number of new in-pavement runway lights for two reasons:

1) New base can extensions will be installed on the Runway 6-24 centerline where existing fixtures are removed and reinstalled to accommodate paving operations.

2) The base can extensions for the outermost TDZ lights on every row are paid for as part of the connection to the new TDZ conduit system (L-125-9) due to the altered installation process at these bases.

Item L-125-4 cannot be made incidental to the installation of new lights because it is also used to adjust the elevation of light bases where existing lights are to be removed and reinstalled.

Q3: Pertaining to the DBE goal of 6.5%, how will the airport handle if/when certain Add. Alternates are not awarded? For instance, if you only award the base bid plus add alts 1-3, but we carried a percentage of our DBE goal in add alts 4-5, will the contractor get an opportunity to revisit their committed DBE % for the project? How would you suggest handling this?

A3: The Airport will evaluate that the bidder used Good Faith efforts to achieve the project goal in accordance with 49 CFR Part 26(a)(1)&(2). <u>https://www.ecfr.gov/current/title-49/subtitle-A/part-26/subpart-C/section-26.53</u>

Q4: We would be very interested in providing a quote for this RWIS upgrade project but wanted to confirm that the project would accept other manufacturers equipment?

A4: The project cannot accept other manufacturer's equipment for the RWIS upgrades. The base bid work includes upgrades to only the RWIS RPUs and sensors on RW 17-35, while the existing Vaisala components other than communications modems will remain in place for all other RWIS equipment on the airfield. For compatibility with the existing to remain RWIS equipment, Vaisala equipment must be provided.

Q5: We received the addendum #1 with the work hours. Based on the quantity and the work hours, we request that the time allowed for the grooving be extended to 16 or 17 nights. A5: Phase 5, grooving phase, is increased by 6 nights for a total of 16 nights.

PROJECT MANUAL

Note that where a change was made to the specifications, a vertical line (|) is provided in the left margin denoting that a change was made. Sample vertical line shown next to this paragraph.

Addendum Item No.2 -

Bid Proposal & Certificates of Compliance:

REMOVE and REPLACE with the attached Bid Proposal and Certificate of Compliance.

Addendum Item No.3 -

Technical Specifications:

REMOVE and REPLACE the below listed specifications sections and pages.

- 1. G-001 Attachment Construct Safety Phasing Plan (CSPP) All Pages
 - 2. G-002 pages 1-3
 - 3. G-004 pages 1-3
 - 4. G-005 page 2
 - 5. C-100-pages 6-7
 - 6. C-102-page3
 - 7. C-105-page1
 - 8. M-001 page 1
 - 9. M-002 page 1 10. M-004 All pages

 - 11. M-007 pages 4-5
 - 12. M-008 All pages13. P-101 – page 4

 - 14. P-152 page 7
 - 15. P-401 pages 17-21
 - 16. P-621 page 2 17. D-701 - page 5

 - 18. D-751-page 4 19. L-125 - pages 8-12
 - 20. T-901 page 4

DRAWINGS

Addendum Item No.4 -

REMOVE and REPLACE the below drawings.

- 1.Volume 1
 - a. C-202
 - b. C-209
 - c. C-302
 - d. C-309
 - e. C-501
 - f. C-502
 - g. C-601 to C-610
 - h. C-620
 - i. C-621
 - j. C-901
 - k. C-902
 - 1. E-402
 - m. E-408

2.Volume 3

- a. G2.1
- b. D1.1
- c. D1.2
- d. ES1.1
- e. ES1.2
- f. C2.1
- g. C2.2

h. C3.1 i. C4.1 j. C4.2 k. C4.3 l. C5.1 - C5.8

Addendum Item No.5 -

REVISE DRAWING NO. G-100 (Issued with Addendum 1), General Construction Safety and Phasing Note 6 per the below. Increases contract duration by 6 days for grooving.



Addendum Item No.6 -

REVISE DRAWING NO. G-100 (Issued with Addendum 1), Table with Phases to note that Phase 5 (Grooving) is 16 Calendar Days of night work.

END OF ADDENDUM #2

BID PROPOSAL

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PROPOSAL

for

REHABILITATE RUNWAY 17-35

at

Manchester • Boston Regional Airport

Proposal of	* hereinafter called "Bidder") a
corporation organized under the laws of the State of	, a partnership, or an
individual** doing business as	, to the City of Manchester ,

New Hampshire, Department of Aviation (hereinafter called "Owner").

The bidder in compliance with your invitation for bids for the construction of airport improvements having examined the plans and specifications with related documents and the site of the proposed work if required, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials, and labor, hereby proposes to furnish all plant, labor, materials, supplies, equipment, services, and to construct the work in accordance with the Contract Documents, within the time set forth therein, and at the amount in U.S. dollars provided herein. This price is to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

Time of Completion and Liquidated Damages

Bidder hereby agrees to commence work under this Contract on the date to be specified in written "Notice to Proceed" of the Owner, and to fully complete the project within **the Calendar Days specified on Drawing** No. G-100.

Bidder further agrees to pay to the Owner, as liquidated damages, the sum of **two thousand dollars** (\$2,000.00) for each and every **calendar day** that the work remains incomplete beyond the time specified for milestone dates and completion as hereinafter provided in the Contract Documents.

In addition, Bidder must agree to pay the Owner as liquidated damages the sum of **twenty-five thousand dollars** (**\$25,000.00**) for each and every calendar day the work in the runway 17-35 and 6-24 intersection remains incomplete beyond the specified time on the phasing plans.

Bidder acknowledges receipt of the addenda shown on the attached form entitled, **ACKNOWLEDGMENT OF ADDENDA**.

*The name of the bidder must be exactly the same as the name under which the bidder was prequalified with the City of Manchester.

** Strike out inapplicable terms.

Bidder agrees to perform all the work described in the specifications, shown on the plans or directed, for the unit prices provided in the Bid Forms provided herein.

ACKNOWLEDGMENT OF ADDENDA

Addendum No.	 Date:
Addendum No.	 Date:
Addendum No.	Date:

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
BASE BID	BASE BID – 9,250'L x 150'W Runway; Runways Intersection; FAA Approach Lights; Runway Lights, Signage and Electrical: RWIS Ungrades: and South Retaining Wall & Pond Improvements							
	ESTIMATED			FIGURES				
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE	UNIT P	RICE	EXTEN	SION		
	UNIT	(II WORDS)	Dollars	Cents	Dollars	Cents		
		As-Built Plans						
G-002-1	1 LS	Dollars and						
		Cents						
		Aerial Photos (All Phases)						
G-002-2	1 LS	Dollars and						
		Cents						
		Gate Guard Allowance						
G-003-1	1 AL	<u>One Hundred Thousand</u> Dollars and	100,000	.00	100,000	.00		
		ZeroCents						
		Maintenance and Protection of Traffic (Phases 1-7 & 9)						
G-004-1	1 LS	Dollars and						
		Cents						
		Contractor's Safety Plan Compliance Document (All Phases)						
G-004-4	1 LS	Dollars and						
		Cents						
		Utility Locating Allowance						
G-004-5	1 AL	Fifteen Thousand Dollars and	15,000	.00	15,000	.00		
		Zero Cents						
		Engineer's Field Office						
G-005-1	5 Months	Dollars and						
		Cents						
		Contractor Quality Control Program (CQCP) (All Phases)						
C-100-1	1 LS	Dollars and						
		Cents						
		Installation, Maintenance, and Removal of Silt Fence						
C-102-1	1,000 LF	Dollars and						
		Cents						

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Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM							
BASE BID	– 9,250'L x 150' and Electrica	W Runway; Runways Intersection; FAA and south Retaining	Approach Li Wall & Pond	ghts; Run Improvei	way Lights, nents	Signage	
	ESTIMATED			FIGU	RES		
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT P	RICE	EXTEN	SION	
			Dollars	Cents	Dollars	Cents	
		Erosion Sock					
C-102-3	45 LF	Dollars and					
		Cents					
		Drain Inlet Protectors					
C-102-4	10 EA	Dollars and					
		Cents					
		Mobilization (3% Max.)					
C-105-1	1 LS	Dollars and					
		Cents					
		Construction Access Modifications					
M-001-1	1 LS	Dollars and					
		Cents					
		Runway Standby Time Allowance					
M-002-1	1 AL	Twenty Thousand Dollars and	20,000	.00	20,000	.00	
		<u>Zero</u> Cents					
		Remove and Reset Mechanically Stabilized Earth Wall Panels and Strips					
M-004-1	65 EA	Dollars and					
		Cents					
		Concrete Wall Coping					
M-004-2	80 LF	Dollars and					
		Cents					
		Concrete Wall Coping (Bolted)					
M-004-3	160 LF	Dollars and					
		Cents					
		Concrete Wall Coping (Cast-in-Place)					
M-004-4	80 LF	Dollars and					
		Cents					

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM							
BASE BID	BASE BID – 9,250'L x 150'W Runway; Runways Intersection; FAA Approach Lights; Runway Lights, Signage and Electrical: RWIS Upgrades: and South Retaining Wall & Pond Improvements						
	ESTIMATED			FIGURES			
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT P	RICE	EXTEN	SION	
			Dollars	Cents	Dollars	Cents	
		NHDOT Class III Rip Rap					
M-005-2	395 CY	Dollars and					
		Cents					
		NHDOT Class C Stone					
M-005-3	360 CY	Dollars and					
		Cents					
M-005-4	1,470 SY	GeotextileDollars andCents					
M-005-5	1 EA	Check Dam Dollars and					
		Cents					
M-006-1	1 AL	Flush/Clean Out Existing Underdrains <u>Twenty Thousand Dollars</u> and Zero Cents	20,000	00	20,000	00	
		Crack Repair – Type 1A					
M-008-1A	3,000 LF	Dollars and					
		Cents Crack Repair – Type 1B					
M-008-1B	3,000 LF	Dollars and					
		Cents					
		Стаск Керан – Туре IC					
M-008-1C	3,000 LF	Dollars and					
		Crack Repair Type 1D					
M-008-1D	3,000 SY	Dollars and					
		Cents					

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
BASE BID	BASE BID – 9,250'L x 150'W Runway; Runways Intersection; FAA Approach Lights; Runway Lights, Signage							
			yun et i one	FIGU	RES			
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE	UNIT PRICE EXTE		EXTEN	ISION		
	UNIT	(IN WORDS)	Dollars	Cents	Dollars	Cents		
		Pavement Milling (4" Nominal Depth – Runway)						
P-101-1	170,000 SY	Dollars and						
		Cents						
		Pavement Milling (2" Nominal Depth – Runway Shoulder)						
P-101-2	5,840 SY	Dollars and						
		Cents						
		Unclassified Excavation						
P-152-1	1,000 CY	Dollars and						
		Cents						
		Rock Excavation						
P-152-2	50 CY	Dollars and						
		Cents						
		Embankment in Place						
P-152-3	105 CY	Dollars and						
		Cents						
		Crushed Aggregate Base Course						
P-209-1	135 CY	Dollars and						
		Cents						
		Asphalt Mix Pavement – Surface Course						
P-401-1	40,000 TON	Dollars and						
		Cents						
	4	Localizer Checkpoint Marker						
P-401-2	6 EA	Dollars and						
		Cents						
		Asphalt Mix Pavement – Shoulders/Blast Pad Surface Course						
P-403-1	700 TON	Dollars and						
		Cents						

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM									
BASE BID	BASE BID – 9,250'L x 150'W Runway; Runways Intersection; FAA Approach Lights; Runway Lights, Signage								
FIGURES									
ITEM NO.	ESTIMATED OUANTITY/	DESCRIPTION AND UNIT PRICE	UNIT P	RICE	EXTEN	ISION			
	UNIT	(IN WORDS)	Dollars	Cents	Dollars	Cents			
		Emulsified Asphalt Tack Coat							
P-603-1	34,500 GAL	Dollars and							
		Cents							
		Saw and Seal Pavement Joints – HMA							
P-605-1	20,400 LF	Dollars and							
		Cents							
		Emulsified Asphalt Seal Coat							
P-608-1	500 SY	Dollars and							
		Cents							
		Runway and Taxiway Marking – Permanent Color							
P-620-1	145,500 SF	Dollars and							
		Cents							
		Runway and Taxiway Marking – Permanent Black Borders							
P-620-2	81,000 SF	Dollars and							
		Cents							
		Runway and Taxiway Marking – Temporary							
P-620-3	37,000 SF	Dollars and							
		Cents							
		Removal of Markings							
P-620-4	77,500 SF	Dollars and							
		Cents							
		Saw-Cut Grooves							
P-621-1	145,000 SY	Dollars and							
		Cents							
		Remove and Reset Flared End Section							
D-752-2	1 EA	Dollars and							
		Cents							

		Manchester • Boston Regional REHABILITATE RUNWAY 1 BID FORM	Airport 7-35			
BASE BID	– 9,250'L x 150 and Electrica	'W Runway; Runways Intersection; FAA A al; RWIS Upgrades; and South Retaining V	Approach Li Wall & Pond	ghts; Run I Improvei	way Lights nents	, Signage
	ESTIMATED			FIGU	RES	
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE	UNIT P	RICE	EXTEN	ISION
	UNIT	(IIV WORDS)	Dollars	Cents	Dollars	Cents
		Cable Removal				
L-105-1	57,610 LF	Dollars and				
		Cents				
		Demolition in Airfield Lighting Vault				
L-105-2	1 LS	Dollars and				
		Cents				
		Remove Existing Pavement Sensor				
L-105-3	9 EA	Dollars and				
		Cents				
		Remove Existing Guidance Sign				
L-105-4	38 EA	Dollars and				
		Cents				
		Demolition of Existing LAHSO Light Base				
L-105-5	6 EA	Dollars and				
		Cents				
		Reaming of Existing Duct or Conduit				
1-105-6	1,000 LF	Dollars and				
		Cents				
		No. 8 AWG, 5kV, L-824, Type C Cable, Installed in Duct Bank or Conduit				
L-108-1	92,930 LF	Dollars and				
		Cents				
		No. 8 AWG, 5kV, L-824, Type C Cable, Installed in Trench				
L-108-2	470 LF	Dollars and				
		Cents				

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM									
BASE BID	BASE BID – 9,250'L x 150'W Runway; Runways Intersection; FAA Approach Lights; Runway Lights, Signage								
		, K (10 epgrades, and bodan Ketanning (van ee i one	FIGU	RES				
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE	UNIT PRICE EXTENS		SION				
	UNIT	(IN WORDS)	Dollars	Cents	Dollars	Cents			
L-108-3	16,450 LF	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed in Trench, Above the Duct Bank or Conduit, Including Connections/Terminations							
		Dollars and							
		Cents							
		3/4" x 10' Copper Clad Steel Ground Rod							
L-108-4	36 EA	Dollars and							
		Cents							
L-110-1	1,350 LF	Concrete Encased Schedule 40 PVC Electrical Conduit, 1-Way 2-inch, in Existing Pavement, 24-inch Minimum Cover							
		Cents							
L-110-2	13,120 LF	Concrete Encased Schedule 80 PVC Electrical Conduit, 1-Way 2-inch, in Existing Pavement (for TDZ Lights), 10- inch Minimum Cover							
		Dollars and							
		<u>Cents</u>							
L-110-3	1,700 LF	Non-Encased Schedule 40 PVC Electrical Conduit, 1-Way 2-inch, in Turf Dollars and							
		Cents							
L-110-4	410 LF	Concrete Encased Schedule 40 PVC Drainage Conduit, 1-Way 2-inch, in Existing Pavement Dollars and							
L-110-5	280 LF	Concrete Encased Schedule 40 PVC Electrical Ductbank, 2-Way 2-inch, in Existing Pavement Dollars and Cents							

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM							
BASE BID	– 9,250'L x 150' and Electrics	W Runway; Runways Intersection; FAA A	Approach Lig Vall & Pond	ghts; Run Improve	way Lights, nents	Signage	
			van ee i one	FIGU	RES		
ITEM NO.	QUANTITY/	$\left \begin{array}{c} \text{ED} \\ \text{Y} \\ \end{array} \right $ DESCRIPTION AND UNIT PRICE		UNIT PRICE EXTEN		ISION	
	UNIT	(IN WORDS)	Dollars	Cents	Dollars	Cents	
		Electrical Handhole 4'X 4', Aircraft Rated					
L-115-1	2 EA	Dollars and					
		Cents					
		Electrical Junction Structure, L-867, Size D					
L-115-2	1 EA	Dollars and					
		Cents					
	360 EA	New In-pavement LED Touchdown Zone Light on Existing Base Can					
L-125-1A		Dollars and					
		Cents					
		New In-pavement LED Runway Centerline Light on Existing Base Can					
L-125-1B	183 EA	Dollars and					
		Cents					
L-125-1C	17 FA	New In-pavement LED Semi-Flush Runway Edge Light on Existing Base Can					
112010	1, 51	Dollars and					
		Cents					
		New Elevated LED Runway Edge Light on Existing Base Can					
L-125-2	107 EA	Dollars and					
		Cents					
		New In-Pavement L-868 Base Can and Steel Cover					
L-125-3	30 EA	Dollars and					
		Cents					
		Replace L-868 Base Can Extension					
L-125-4	454 EA	Dollars and					
		Cents					

		Manchester • Boston Regional REHABILITATE RUNWAY 1 BID FORM	Airport 7-35			
BASE BID	– 9,250'L x 150' and Electrica	W Runway; Runways Intersection; FAA A I; RWIS Upgrades; and South Retaining V	Approach Li Wall & Pond	ghts; Runv Improver	way Lights, nents	Signage
FIGURES						
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT P	RICE	EXTEN	SION
	UNII		Dollars	Cents	Dollars	Cents
L-125-5	6 EA	New Lighted Guidance Sign on New Foundation, Size 3, One Module Dollars and				
		Cents				
		New Lighted Guidance Sign on New Foundation, Size 3, Two Module				
L-125-6	6 EA	Dollars and				
		Cents				
	4 EA	Foundation, Size 3, Three Module				
L-125-7		Dollars and				
		Cents				
		New Lighted Guidance Sign, Size 4				
L-125-8	16 EA	Dollars and				
		Cents				
		Foundation, Size 3, One Module				
L-125-5.9	4 EA	Dollars and				
		Cents				
		New Lighted Guidance Sign on Existing Foundation, Size 3, Three Module				
L-125-10	2 EA	Dollars and				
		Cents				
		Photometric Acceptance Testing				
L-125-11	1 LS	Dollars and				
		Cents				
		Field Lighting Arrestor				
L-125-12	25 EA	Dollars and				
		Cents				

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Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM									
BASE BID	BASE BID – 9,250'L x 150'W Runway; Runways Intersection; FAA Approach Lights; Runway Lights, Signage and Electrical: RWIS Upgrades: and South Retaining Wall & Pond Improvements								
	ESTIMATED			FIGU	RES				
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE	UNIT PRICE		EXTEN	SION			
	UNIT	(IN WORDS)	Dollars	Cents	Dollars	Cents			
		Connection of TDZ Light to New Conduit							
L-125-13	120 EA	Dollars and							
		Cents							
		Temporary Lighting							
L-125-14	1 LS	Dollars and							
		Cents							
1 105 15		Temporary Lighting (Phases 1, 2 & 3 – Except Phase 1A)							
L-125-15	I LS	Dollars and							
		Cents							
L-125-16	1 LS	Light Base MeasurementsDollars and							
		Light Base Broken Bolt Removal							
L-125-17	300 EA	Dollars and							
		Cents							
		Runway Weather Sensor							
L-140-1	9 EA	Dollars and							
		Cents							
		Extension Cable							
L-140-2	13,240 LF	Dollars and							
		Cents							
		System Upgrades and Commissioning							
L-140-3	1 AL	<u> </u>	50,000	.00	50,000	.00			
		Zero Cents							

	Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM									
BASE BID	BASE BID – 9,250'L x 150'W Runway; Runways Intersection; FAA Approach Lights; Runway Lights, Signage and Electrical; RWIS Upgrades; and South Retaining Wall & Pond Improvements									
	FSTIMATED			FIGU	RES					
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT P	RICE	EXTENSION					
	UNIT	(Dollars	Cents	Dollars	Cents				
		Adjust Existing FAA MALS Approach Light								
L-150-1	16 EA	Dollars and								
		Cents								
		Adjust Existing FAA ALSF-2 Threshold Light								
L-150-2	49 EA	Dollars and								
		Cents								
		New FAA ALSF-2 Approach Light on Existing Base Can								
L-150-3	96 EA	Dollars and								
		Cents								
		Light Base Measurements – FAA Approach Lights								
L-150-6	1 LS	Dollars and								
		Cents								

BASE BID SUMMARY



	Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
	ADD ALT #1 – Rehabilitate Runway 17-35 Shoulders (9,250' x 25' Wide)								
	FSTIMATED			FIGU	RES				
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT P	RICE	EXTENSION				
	UNII		Dollars	Cents	Dollars	Cents			
		As-Built Plans							
G-002-1	1 LS	Dollars and							
		Cents							
		Mobilization (3% Max.)							
C-105-1	1 LS	Dollars and							
		Cents							
		Crack Repair – Type 1A							
M-008-1A	2,000 LF	Dollars and							
		Cents							
		Crack Repair – Type 1B							
M-008-1B	1,000 LF	Dollars and							
		Cents							
		Crack Repair – Type 1C							
M-008-1C	500 LF	Dollars and							
		Cents							
		Pavement Milling (2" Nominal Depth – Runway Shoulder)							
P-101-2	40,950 SY	Dollars and							
		Cents							
		Asphalt Mix Pavement – Shoulders/Blast Pad Surface Course							
P-403-1	4,850 TON	Dollars and							
		Cents							
		Emuisified Asphait Tack Coat							
P-603-1	4,100 GAL	Dollars and							
		Cents							
		Saw and Seal Pavement Joints – HMA							
P-605-1	620 LF	Dollars and							
		Cents							

	Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
	ADD Al	LT #1 – Rehabilitate Runway 17-35 Should	lers (9,250' x	25' Wide)				
	ESTIMATED			FIGU	RES				
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT P	RICE	EXTEN	SION			
	UNIT		Dollars	Cents	Dollars	Cents			
		Adjust Existing Underdrain Cleanout							
D-751-4	75 EA	Dollars and							
		Cents							
		Elevated Light Base Adjustment							
L-125-18	21 EA	Dollars and							
		Cents							
		Seeding							
T-901-1	990 SY	Dollars and							
		Cents							
	405 SV	Topsoil (Obtained on Site or Removed from Stockpile)							
T-905-1	495 51	Dollars and							
		Cents							
		Topsoil (Furnished from Off the Site)							
T-905-2	495 SY	Dollars and							
		Cents							
		Adjust Existing FAA MALS Approach Light							
L-150-1	2 EA	Dollars and							
		Cents							

ADDITIVE ALTERNATE #1 SUMMARY

TOTAL ADD ALT #1: _____dollars (amount in words) (\$______).

	Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM ADD ALT #2 – Rehabilitate Runway 17-35 Blast Pads (200' x 200')									
	ESTIMATED		FIGURES							
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT P	RICE EXTEN:		SION				
	UNIT		Dollars	Cents	Dollars	Cents				
		Mobilization (3% Max.)								
C-105-1	1 LS	Dollars and								
		Cents								
		Crack Repair – Type 1A								
M-008-1A	1,000 LF	Dollars and								
		Cents								
		Crack Repair – Type 1B								
M-008-1B	500 LF	Dollars and								
		Cents								
		Crack Repair – Type 1C								
M-008-1C	250 LF	Dollars and								
		Cents								
		Pavement Milling (2-Inch Nominal Depth-Runway Blast Pad)								
P-101-3	9,290 SY	Dollars and								
		Cents								
		Asphalt Mix Pavement – Shoulders/Blast Pad Surface Course								
P-403-1	1,037 TON	Dollars and								
		Cents								
		Emulsified Asphalt Tack Coat								
P-603-1	930 GAL	Dollars and								
		Cents								
		Saw and Seal Pavement Joints – HMA								
P-605-1	470 LF	Dollars and								
		Cents								

	Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
	ADD	ALT #2 – Rehabilitate Runway 17-35 Bla	st Pads (200	' x 200')					
	ESTIMATED		FIGURES						
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT PRICE		EXTEN	ISION			
	UNIT		Dollars	Cents	Dollars	Cents			
		Runway and Taxiway Marking – Permanent Color							
P-620-1	7,750 SF	Dollars and							
		Cents							
	P-620-2 5,350 SF	Runway and Taxiway Marking – Permanent Black Borders							
P-620-2		Dollars and							
		Cents							
		Removal of Markings							
P-620-4	630 SF	Dollars and							
		Cents							
		Elevated Light Base Adjustment							
L-125-18	4 EA	Dollars and							
		Cents							
		Adjust Existing FAA MALS Approach Light							
L-150-1	5 EA	Dollars and							
		Cents							
		Remove and Reinstall Existing FAA ALSF-2 Elevated Approach Light							
L-150-4	34 EA	Dollars and							
		Cents							
		Modifications to Existing Elevated Approach Light Concrete Foundation							
L-150-5	1 LS	Dollars and							
		Cents							
T-901-1	300 SY	SeedingDollars and							
		Cents							

	Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
	ADD ALT #2 – Rehabilitate Runway 17-35 Blast Pads (200' x 200')								
	ESTIMATED			FIGU	RES				
ITEM NO. QU	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT PRICE		EXTENSION				
	UNIT		Dollars	Cents	Dollars	Cents			
		Topsoil (Obtained on Site or Removed from Stockpile)							
T-905-1	150 SY	Dollars and							
		Cents							
		Topsoil (Furnished from Off the Site)							
T-905-2	150 SY	Dollars and							
		Cents							

ADDITIVE ALTERNATE #2 SUMMARY

TOTAL ADD ALT #2:

F

(amount in words)

__dollars

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(\$_____).

	Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM							
ADD ALT #3 – Rehabilitate 1,300' +/- of Taxiway A Mechanically Stabilized Earth Retaining Wall & Related								
		Improvements		FIGU	RES			
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE	UNIT PRICE EXTENS			SION		
	UNIT (IN WORDS)	Dollars	Cents	Dollars	Cents			
		As-Built Plans						
G-002-1	1 LS	Dollars and						
		Cents						
					• • • • •			
G-003-1	1 AL	<u>Thirty Thousand</u> Dollars and	30,000	00	30,000	00		
		Zero Cents						
		(Phase 8)						
G-004-2	1 LS	Dollars and						
		Cents						
		Utility Locating Allowance						
G-004-5	1 AL	Two Thousand Dollars and	2,000	.00	2,000	.00		
		Zero Cents						
		Engineer's Field Office						
G-005-1	2 Months	Dollars and						
		Cents						
		Installation, Maintenance and Removal of Silt Fence						
C-102-1	20 LF	Dollars and						
		Cents						
		Straw Wattles						
C-102-2	1,345 LF							
		Cents						
C-102-3	55 LF	Dollars and						
		Cents						
C-102-4	7 EA	Drain Inlet ProtectorsDollars and						
		Cents						
C 102 5	2 005 037	Erosion Control Blanket Dollars and						
C-102-5	3,005 SY	Cents						

		Manchester • Boston Regional REHABILITATE RUNWAY BID FORM	Airport 17-35						
ADD ALT	ADD ALT #3 – Rehabilitate 1,300' +/- of Taxiway A Mechanically Stabilized Earth Retaining Wall & Related Improvements								
				FIGU	RES				
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT P	RICE	EXTEN	SION			
	UNII		Dollars	Cents	Dollars	Cents			
C-105-1	1 LS	Mobilization (3% Max.)Dollars and							
		Cents Remove and Reset Mechanically Stabilized Earth Wall Panels and Straps							
M-004-1	420 EA	Dollars and							
		Cents							
		Concrete Wall Coping							
M-004-2	1,040 LF	Dollars and							
		Concrete Wall Coping (Bolted)							
M-004-3	135 LF	Dollars and							
		Cents							
		Concrete Wall Coping (Cast-in-Place)							
M-004-4	30 LF	Dollars and							
		Cents							
		Wall Strap Splicing							
M-004-5	35 EA	Dollars and							
		Cents							
		Wall Tie-Off							
M-004-6	20 EA	Dollars and							
		Cents							
		NIDOT Class I Riplap							
M-005-1	140 CY	Dollars and							
		Cents Cents							
M-005-2	55 CY	Dollars and							
		Canta							
		Geotextile							
M-005-4	485 SY	Dollars and							
		Cents							

	Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
ADD ALT #3 – Rehabilitate 1,300' +/- of Taxiway A Mechanically Stabilized Earth Retaining Wall & Related Improvements									
	ESTIMATED			FIGU	RES				
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT P	RICE	EXTEN	ISION			
	UNII		Dollars	Cents	Dollars	Cents			
		Check Dam							
M-005-5	1 EA	Dollars and							
		Cents							
		Stormwater Pollution Prevention Plan (SWPPP) (Phases 1-8)							
M-007-1	1 LS	Dollars and							
		Cents							
		SWPPP Monitoring (Phases 1-8)							
M-007-2	1 LS	Dollars and							
		Cents							
		Pavement Removal (4" Depth)							
P-101-4	1,110 SY	Dollars and							
		Cents							
		Removal of Pipe							
P-101-5	140 LF	Dollars and							
		Cents							
		Removal of Structures							
P-101-6	1 EA	Dollars and							
		Cents							
		Unclassified Excavation							
P-152-1	2 510 CY	Dollars and							
1 102 1	_,010 01	2 o mus und							
		Cents		-					
		Rock Excavation							
P-152-2	50 CY	Dollars and							
		Cents							
		Embankment in Place							
P-152-3	100 CY	Dollars and							
		Cents							

	Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
ADD ALT #3 – Rehabilitate 1,300' +/- of Taxiway A Mechanically Stabilized Earth Retaining Wall & Related Improvements									
	ESTIMATED			FIGU	RES				
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE	UNIT P	RICE	EXTEN	ISION			
	UNIT	(IN WORDS)	Dollars	Cents	Dollars	Cents			
	<u> </u>	Crushed Aggregate Base Course	2011415		2011115				
P-209-1	425 CY	Dollars and							
		Cents							
		Asphalt Mix Pavement – Shoulders/Blast Pad Surface Course							
P-403-1	260 TON	Dollars and							
		Cents							
P-403-2	350 TON	Asphalt Mix Pavement – Surface Course (Hand Work)							
		Dollars and							
		Cents							
		Emulsified Asphalt Tack Coat							
P-603-1	130 GAL	Dollars and							
		Cents							
		Saw and Seal Pavement Joints – HMA							
P-605-1	1,005 LF	Dollars and							
		Cents							
		Runway and Taxiway Marking – Permanent Color							
P-620-1	50 SF	Dollars and							
		Cents							
		12-Inch PVC Pipe							
D-701-1	190 LF	Dollars and							
		Cents							
		15-Inch PVC Pipe		-					
D-701-2	190 LF	Dollars and							
		Cents							
		18-Inch PVC Pipe							
D-701-3	460 LF	Dollars and							
		Cents							

	Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
ADD ALT #3 – Rehabilitate 1,300' +/- of Taxiway A Mechanically Stabilized Earth Retaining Wall & Related Improvements									
	ESTIMATED			FIGU	RES				
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT P	RICE	EXTEN	ISION			
	UNIT	× ,	Dollars	Cents	Dollars	Cents			
		24-Inch RCP Pipe							
D-701-4	90 LF	Dollars and							
		Cents							
		30-Inch RCP Pipe							
D-701-5	25 LF	Dollars and							
		Cents							
		Board Insulation, 2" Thick							
D-701-6	475 SY	Dollars and							
		Cents							
		60-Inch Diameter Catch Basin							
D-751-1	1 EA	Dollars and							
		Cents							
		3'x 2' Drop Inlet							
D-751-2	5 EA	Dollars and							
		Cents							
		Adjust Frames and Covers							
D-751-3	1 EA	Dollars and							
		Cents							
		24-Inch Flared End Section							
D-752-1	1 EA	Dollars and							
		Cents							
		Remove and Reset Flared End Section							
D-752-2	1 EA	Dollars and							
		Cents							
		Seeding							
T-901-1	3,630 SY	Dollars and							
		Cents							

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM ADD ALT #3 – Rehabilitate 1,300' +/- of Taxiway A Mechanically Stabilized Earth Retaining Wall & Related Improvements								
	ESTIMATED			FIGU	RES			
ITEM NO.	QUANTITY/ UNIT	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT PRICE		EXTENSION			
			Dollars	Cents	Dollars	Cents		
	1,815 SY	Topsoil (Obtained Onsite or Removed from Stockpile)						
T-905-1		Dollars and						
		Cents						
		Topsoil (Furnished from Off the Site)						
T-905-2	1,815 SY	Dollars and						
		Cents						

ADDITIVE ALTERNATE #3 SUMMARY

TOTAL ADD ALT #3:

(amount in words)

_____dollars

(\$_____).

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM							
	AL	DD ALT #4 Runway Weather Information	System Upg	rades			
	ESTIMATED	DESCRIPTION AND UNIT PRICE (IN WORDS)		FIGU	RES		
ITEM NO.	QUANTITY/ UNIT		UNIT PRICE		EXTENSION		
			Dollars	Cents	Dollars	Cents	
L-140-4	1 AL	Add Alternate #4 - Runway Weather Information System Upgrades and Commissioning <u>Seventy-Five Thousand</u> Dollars and <u>Zero</u> Cents	75,000	00	75,000	00	
L-140-5	1 LS	Add Alternate #4 - Contractor Support of RWIS System Manufacturer Dollars and Cents					

ADDITIVE ALTERNATE #4 SUMMARY

TOTAL ADD ALT #4:

(amount in words)

___dollars

(\$_____).

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM							
		ADD ALT #5 Electrical Manhole Drainag	e Improveme	nts			
			FIGURES				
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT PRICE		EXTENSION		
	UNIT		Dollars	Cents	Dollars	Cents	
		As-Built Plans					
G-002-1	1 LS	Dollars and					
		Cents					
		Utility Locating Allowance					
G-004-5	1 AL	Five Thousand Dollars and	5,000	00	5,000	00	
		Zero Cents					
		Drain Inlet Protectors					
C-102-2	16 EA	Dollars and					
		Cents					
	1 LS	Stormwater Pollution Prevention Plan (SWPPP) (Phase 9)					
M-007-3		Dollars and					
		Cents					
		SWPPP Monitoring (Phase 9)					
M-007-4	1 LS	Dollars and					
		Cents					
		Schedule 80 4-Inch PVC Pipe					
D-701-7	1,900 LF	Dollars and					
		Cents					
		Seeding					
T-901-1	3,000 SY	Dollars and					
		Cents					
		Topsoil (Obtained Onsite or Removed from Stockpile)					
T-905-1	3,000 SY	Dollars and					
		Cents					

ADDITIVE ALTERNATE #5 SUMMARY

TOTAL ADD ALT #5:

		dollars
	(amount in words)	
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Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM							
	ADD ALT #6 Reconstruct and Rehabilitate Runway 35 Service Road						
	ESTIMATED	DESCRIPTION AND UNIT PRICE (IN WORDS)	FIGURES				
ITEM NO.	QUANTITY/		UNIT PR	UNIT PRICE EXTEN		SION	
			Dollars	Cents	Dollars	Cents	
		As-Built Plans					
G-002-1	1 LS	Dollars and					
		Cents					
		Gate Guard Allowance					
G-003-1	1 AL	Twelve Thousand Dollars and	12,000	00	12,000	00	
		Zero Cents					
		Maintenance and Protection of Traffic (Phase 10)					
G-004-3	1 LS	Dollars and					
		Cents					
	1 AL	Curry Locating Anowance					
G-004-5		Three Thousand Dollars and	3,000	00	3,000	00	
		Zero Cents					
		Engineer's Field Office					
G-005-1	1 Month	Dollars and					
		Cents					
	1,000 LF	Installation, Maintenance, and Removal of Silt Fence					
C-102-1		Dollars and					
		Cents					
		Drain Inlet Protectors					
C-102-2	2 EA	Dollars and					
		Cents					
		Mobilization (3% Max.)					
C-105-1	1 LS	Dollars and					
		Cents					

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
	ADD ALT #6 Reconstruct and Rehabilitate Runway 35 Service Road							
	ESTIMATED		FIGURES					
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT PRICE		EXTENSION			
			Dollars	Cents	Dollars	Cents		
		Stream Bed Native Material						
M-003-1	1,600 SY	Dollars and						
		Cents						
		Rip Rap Class I						
M-003-2	1,600 SY	Dollars and						
		Cents						
		Rip Rap Class VII						
M-003-3	1,900 SY	Dollars and						
		Cents						
	1 LS	Water Diversion						
M-003-4		Dollars and						
		Cents						
	15 EA	Stone Check Dam						
M-005-5		Dollars and						
		Cents						
	1 LS	Stormwater Pollution Prevention Plan (SWPPP) (Phase 10)						
M-007-5		Dollars and						
		Cents						
		Swifti Womornig (Flase 10)						
M-007-6	1 LS	Dollars and						
		Cents						
P-101-4		ravement Kemoval (4° Deptn)						
	2,800 SY	Dollars and						
		Cents						
	16,000 SY	Pavement Milling (2" Nominal Depth – Service Road)						
P-101-7		Dollars and						
		Cents						

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
	ADD ALT #6 Reconstruct and Rehabilitate Runway 35 Service Road							
	ESTIMATED		FIGURES					
ITEM NO.	QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	UNIT PRICE		EXTENSION			
	UNIT		Dollars	Cents	Dollars	Cents		
		Unclassified Excavation						
P-152-1	4,800 CY	Dollars and						
		Cents						
		Subbase Course						
P-154-1	950 CY	Dollars and						
		Cents						
		Crushed Aggregate Base Course						
P-209-1	650 CY	Dollars and						
		Cents						
		Asphalt Mix Pavement-Shoulders/Blast Pad Surface Course						
P-403-1	2,700 TON	Dollars and						
		Cents						
		Emulsified Asphalt Tack Coat						
P-603-1	2,800 GAL	Dollars and						
		Cents						
		Saw and Sear Pavement Joints – HMA						
P-605-1	400 LF	Dollars and						
		Cents						
		Runway and Taxiway Marking - Permanent Color						
P-620-1	8,400 SF	Dollars and						
		Cents						
		54" RCP Culvert						
D-701-8	15 LF	Dollars and						
		Cents						
		12" HDPE Pipe						
D-701-9	250 LF	Dollars and						
		Cents						
Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM								
---	------------------------	--	---------------	----------	--------------	--		
	ADD .	ALT #6 Reconstruct and Rehabilitate Ru	inway 35 Serv	ice Road				
	ESTIMATED QUANTITY/	DESCRIPTION AND UNIT PRICE (IN WORDS)	FIGURES					
ITEM NO.			UNIT PRICE		EXTENSION			
	UNIT		Dollars	Cents	ents Dollars			
		Headwalls						
D-751-4	2 EA	Dollars and						
		Cents						
		Seeding						
T-901-1	5,000 SY	Dollars and						
		Cents						
		Wetland Seeding						
T-901-2	1,600 SY	Dollars and						
		Cents						
		Topsoil (Obtained On-site or Removed from Stockpile)						
T-905-1	5,000 SY	Dollars and						
		Cents						
		Chain Link Fence with Wildlife Deterrent						
F-163-1	3,000 LF	Dollars and						
		Cents						
		Remove Fence						
F-163-2	2,500 LF	Dollars and						
		Cents						

ADDITIVE ALTERNATE #6 SUMMARY

TOTAL ADD ALT #6:

(amount in words)

_dollars

(\$_____).

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BID SUMMARY (Transcribe from above bid summaries)

TOTAL BASE BID:	\$
TOTAL ADD ALT #1:	\$
TOTAL ADD ALT #2:	\$
	*
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IOTAL ADD ALT #3.	۵
TOTAL ADD ALT #4:	\$
TOTAL ADD ALT #5:	\$
TOTAL ADD ALT #6:	\$

TOTAL THE ABOVE: \$_____

Manchester • Boston Regional Airport REHABILITATE RUNWAY 17-35 BID FORM					
	Optional Bid Items – Seal Coat				
	ESTIMATED QUANTITY/ UNIT		FIGURES		
ITEM NO.		DESCRIPTION AND UNIT PRICE	UNIT PRICE		
		(IN WORDS)	Dollars	Cents	
	Up to 39,200	Asphalt Surface Treatment			
P-608-1	SY (Runway	Dollars and			
	Shoulders)	Cents			
P-608-1	Up to 8,900 SY (Blast Pads)	Asphalt Surface TreatmentDollars andCents			

The stated prices shall include-all plant, labor, materials, supplies, equipment, services, incidentals, expenses, overhead, profit, insurance, etc., perform all work required by the Contract Documents.

The bidder agrees that the Owner may base the low bid on the Base Bid plus any or all of the Additive Alternates, if applicable.

The bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn prior to **180 calendars** from the bid opening.

The bidder agrees that the Owner may reduce the quantities or may delete work items altogether if necessary to bring the contract awarded within funds available to finance the project. Such reduction or deletion of work shall not constitute a basis for withdrawal of this proposal.

Upon receipt of written notice of acceptance of this bid, bidder will execute the formal contract provided within 15 calendar days and deliver the Surety Bonds as required by the General Provisions. The bid security attached in the sum of _______

Respectfully submitted:

Name of Bidder:

By:

Name and Title:

Business Address:

(Affix corporate seal if bid is by a corporation)

CERTIFICATE AS TO CORPORATE PRINCIPAL

PROPOSAL

I,	certify that I am the	of the
corporation named as Bidder in the	above Proposal; that	who
signed the said Proposal on behalf o	f the Bidder was then	of
said Corporation; that I know his/he	r signature and his/her signature thereto i	s genuine; and that said
Proposal was duly signed, sealed an	d attested to for and in behalf of said Cor	poration by authority of its
governing body and is within the sco	ope of its corporate powers.	

(Signature)

(Corporate Seal)

BID BOND

KNOW ALL MEN BY THESE PRESENTS, THAT WE, THE UNDERSIGNED,

(Name of Principal)

as PRINCIPAL, and

(*Name of Surety*)

as SURETY, are held and are firmly bound unto **The City of Manchester**, **New Hampshire**, **Department of Aviation** hereinafter called the Owner, in the penal sum of

lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the accompanying Bid Amount of _______ for

REHABILITATE RUNWAY 17-35 at Manchester • Boston Regional Airport

NOW, THEREFORE, if the Principal shall not withdraw said bid within 180 calendar days after the opening thereof, and shall within fifteen (15) calendar days after the prescribed forms are presented to him/her for signature, enter into a written Contract with the Owner in accordance with the bid as accepted, and give bonds with good and sufficient Surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract; or in the event of the withdrawal of said bid within the period specified, or the failure to enter into such Contract and give such bonds within the time specified, if the Principal shall pay the Owner the difference between the amount specified in said bid and the amount for which the Owner may procure the required work or supplies or both, if the latter amount be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above named Principal and Surety have executed this instrument under their several seals this ______ day of ______, name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

	SEAI
Individual Principal	
Business Address	
Individual Principal	SEAL
Business Address	
Cornorate Principal	
Corporate Francipal	
	<u>.</u>
Business Address Affix	
Corporate Seal	
	-
	_
Corporate Surety	
Duciners Address	
Business Address Affix	
Corporate Seal	
	-
Attorney-in-Fact	
	Individual Principal Business Address Individual Principal Business Address Corporate Principal Business Address Affix Corporate Seal Corporate Surety Business Address Affix Corporate Seal Affix Corporate Seal Affix Corporate Seal

CERTIFICATE AS TO CORPORATE PRINCIPAL

BID BOND

I,	, certify that I am the
	_ of the Corporation named as principal in the within
bond; that	, who signed the said bond on
behalf of the Principal was then	
of said Corporation; that I know his/her si	gnature, and his/her signature thereto is genuine, and
that said bond was duly signed, sealed, an	id attested to for and in behalf of said Corporation by
authority of its governing body.	

Affix Corporate Seal **CERTIFICATES OF COMPLIANCE FOR AIP PROJECTS**

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CERTIFICATIONS TO ACCOMPANY PROPOSAL BID FORMS

1.01 ALL CONTRACTS

- a. The bidder (proposer) must supply all the information required by the proposal forms and specifications.
- b. The City of Manchester Department of Aviation, New Hampshire, in accordance with Title VI of the Civil Rights Act of 1964, hereby notifies all bidders that they (bidders) must affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for award.

1.02 INSTRUCTIONS TO BIDDERS

- a. Section 60-1.7(b) of the Regulations of the Secretary of Labor requires each bidder or prospective prime Contractor and proposed subcontractors, where appropriate, to state in the bid whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and if so, whether it has filed with the Joint Reporting Committee, the Director, an agency, or the former President's Committee on Equal Employment Opportunity all reports due under the applicable filing requirements. In any case in which a bidder or prospective prime Contractor or proposed subcontractor has participated in a previous contract subject to Executive Orders 10Y25, 11114, or 11246 and has not filed a report due under the applicable filing requirements, no contract nor subcontract shall be awarded unless such Contractor submits a report covering the delinquent period or such other period specified by the FAA or the Director, OFCC.
- b. To achieve these requirements, the Bidder shall complete and sign the attached statement.

AFFIRMATIVE ACTION CERTIFICATION

The Bidder (has / has not)* participated in a previous contract subject to the equal opportunity clause prescribed by Executive Order 10925, or Executive Order 11246, or Executive Order 11114.

The Bidder (has / has not)* submitted all compliance reports in connection with any such contract due under the applicable filing requirements; and that representations indicating submission of required compliance reports signed by proposed subcontractors will be obtained prior to award of subcontracts.

If the Bidder has participated in a previous contract subject to the equal opportunity clause and has not submitted compliance reports due under applicable filing requirements, the Bidder (Proposer) shall submit a compliance report on Standard Form 100, "Employee Information Report EE0-1" prior to the award of contract.

The Bidder (has / has not) been considered for sanction due to violation of Executive Order 11246, as amended.

Dated _____, 20_____ Legal Name of Person, Firm or Corporation

By:

Title

*Strike out inappropriate term.

CERTIFICATION OF NONSEGREGATED FACILITIES

1. <u>Notice to Prospective Federal Assisted Construction Contractors.</u>

- a. A Certification of nonsegregated Facilities must be submitted prior to the award of a contract exceeding \$10,000 which is not exempt from the provisions of the equal opportunity clause.
- b. Contractors receiving contract awards exceeding \$10,000 which are not exempt from the provisions of the equal opportunity clause will be required to provide for the forwarding of the notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the equal opportunity clause. NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.
- 2. <u>Notice to Prospective Construction Subcontractors.</u>
 - a. A Certificate of Nonsegregated Facilities must be submitted prior to the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the equal opportunity clause.
 - b. Contractors receiving subcontract awards exceeding \$10,000 which are not exempt from the provisions of the equal opportunity clause will be required to provide for the forwarding of this notice to prospective subcontractors for supplies and construction contracts where the subcontractors exceed \$10,000 and are not exempt from the provisions of the equal opportunity clause. NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

3. <u>Notice to Prospective Contractors of Requirement for Certification for Nonsegregated Facilities.</u>

A Certification of Nonsegregated Facilities must be submitted prior to the award of a contract or subcontract exceeding \$10,000 which is not exempt from the provisions of the equal opportunity clause.

CERTIFICATION OF NONSEGREGATED FACILITIES (CONTRACTORS/ SUBCONTRACTORS)

The Contractor certifies that he/she does not maintain or provide for his/her employees any segregated facilities at any of his/her establishments, and that he/she does not permit his/her employees to perform their services at any location, under his/her control, where segregated facilities are maintained. The construction contractor certifies further that he will not maintain or provide for his/her employees any segregated facilities at any of his/her establishments, and that he/she will not permit his/her employees to perform their services at any location, under his/her control, where segregated facilities are maintained. The contractor agrees that a breach of this certification is a violation of the equal opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex or national origin, because of habit, local custom, or any other reason. The contractor agrees that (except where he/she has obtained identical certifications from proposed subcontractors for specific time periods) he/she will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the equal opportunity clause, and that he/she will retain such certifications in his/her files.

Certification - The information above is true and complete to the best of my knowledge and belief.

Name and Title of Signer (Please type)

Signature

Date

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Certificate of Buy American Compliance for Manufactured Products

(Non-building construction projects, equipment acquisition projects)

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101 by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (\checkmark) or the letter "X".

Bidder or offeror hereby certifies that it will comply with 49 USC § 50101 by:

- a) Only installing steel and manufactured products produced in the United States, or;
- b) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing, or;
- c) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- 1. To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
- 2. To faithfully comply with providing US domestic product
- 3. To furnish US domestic product for any waiver request that the FAA rejects
- 4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
- 5.

□ The bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

- 1. To the submit to the Owner within 15 calendar days of the bid opening, a formal waiver request and required documentation that support the type of waiver being requested.
- 2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination may result in rejection of the proposal.
- 3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA.
- 4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
- 5.

Required Documentation

Type 3 Waiver - The cost of the item components and subcomponents produced in the United States is more that 60% of the cost of all components and subcomponents of the "item". The required documentation for a type 3 waiver is:

- a) Listing of all product components and subcomponents that are not comprised of 100% US domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety)
- b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
- c) Percentage of non-domestic component and subcomponent cost as compared to total "item" component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver – Total cost of project using US domestic source product exceeds the total project cost using non-domestic product by 25%. The required documentation for a type 4 of waiver is:

- a) Detailed cost information for total project using US domestic product
- b) Detailed cost information for total project using non-domestic product

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date

Signature

Company Name

Title

GOALS AND ASSURANCES FOR DISADVANTAGED BUSINESS ENTERPRISES

The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex, in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

The requirements of CFR 49 Part 26, Regulations of the U. S. Department of Transportation, apply to this contract. It is the policy of The City of Manchester-Department of Aviation to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. All firms qualifying under this solicitation are encouraged to submit bids/proposals. Award of this contract will be conditioned upon satisfying the requirements of this bid specification. These requirements apply to all bidders/offerors, including those who qualify as a DBE. A DBE goal of "6.5" percent has been established for this contract. The bidder/offeror shall make good faith efforts, as defined in Appendix A, 49 CRF Part 26 (Attachment 1), to meet the contract goal for DBE participation in the performance of this contract.

The bidder/offeror will be required to submit the following information (1) the names and addresses of DBE firms that will participate in this contract; (2) a description of the work that each DBE will perform; (3) the dollar amount of the participation of each DBE Firm participating; (4) written documentation of the bidder/offeror's commitment to use a DBE subcontractor whose participation it submits to meet the contract as provided in the commitment made under (4); and (5) if the contract goal is not met, evidence of good faith efforts.

DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION

The undersigned bidder/offeror has satisfied the requirements of the bid specification in the following manner (please check the appropriate space):

The bidder/offeror is committed to a minimum of **6.5**% DBE utilization on this contract.

_____ The bidder/offeror (if unable to meet the DBE goal of 6.5%) is committed to a minimum of _____ % DBE utilization on this contract and submits documentation demonstrating good faith efforts.

Name of bidder/offeror's firm:

State Registration No. _____

By _____ (Signature) _____

(Title)

DBE LETTER OF INTENT

Name of bidder'/offeror's firm:			
Address:			
City:	State:	Zip:	
Name of DBE firm:			
Address:			
City:	State:	Zip:	
Telephone:	-		
Description of work to be performed by DBE firm:			
The bidder/offeror is committed to utilizing the above estimated dollar value of this work is \$	e-named DBE	firm for the work described above.	The
Affirmation			
The above named DBE firm affirms that it will perfo value as stated above.	rm the portior	n of the contract for the estimated d	ollar
D			

By: ___

(Signature)

(Title)

If the bidder/offeror does not receive award of the prime contract, any and all representations in this letter of Intent and Affirmation shall be null and void.

(Submit this page for each DBE subcontractor.)

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION (For Bids Exceeding \$25,000)

The bidder/offeror certifies, by submission of this proposal or acceptance of this contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. It further agrees by submitting this proposal that it will include this clause without modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where the bidder/offeror/contractor or any lower tier participant is unable to certify to this statement, it shall attach an explanation to this solicitation/proposal.

Certification - The information above is true and complete to the best of my knowledge and belief.

Name and Title of Signer (Please type)

Signature

Date

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

CERTIFICATION REGARDING LOBBYING

(31 USC § 1352 – Byrd Anti-Lobbying Amendment, 2 CFR part 200, Appendix II(J), 49 CFR part 20, Appendix A)

The Bidder or Offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

CERTIFICATION OF OFFERER/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (\Box) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

1) The applicant represents that it is (\Box) is not (\Box) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

2) The applicant represents that it is (\Box) is not (\Box) is not a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty-four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

TRADE RESTRICTION CERTIFICATION 49 USC § 50104, 49 CFR Part 30

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror -

- is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (USTR);
- 2) has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the USTR; and
- 3) has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18 USC Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

- 1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR or
- 2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such USTR list or
- 3) who incorporates in the public works project any product of a foreign country on such USTR list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The Contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by USTR, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration (FAA) may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

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Manchester – Boston Regional Airport **Rehabilitate Runway 17-35** FAA AIP #: 3-33-0011-TBD-2022

CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)



Prepared by:



Jacobs Engineering Inc. April 2022 (Addendum 2)

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1. GENERAL

It is imperative that all personnel who may have a role in the safety and/or security of Manchester-Boston Regional Airport, and any associated construction and staging areas, be thoroughly familiar with their responsibilities as described herein, all personnel involved in the project are mutually responsible for the safety and security of Manchester-Boston Regional Airport and the traveling public. Safety and security must be the main priority when coordinating daily activities and work assignments.

Manchester-Boston Regional Airport is owned and operated by the City of Manchester, Department of Aviation. When the term "Airport" or "Airport Operator" is used herein it shall be understood to mean the City of Manchester, Department of Aviation.

2. PROJECT DESCRIPTION

The base bid work to be completed consists of the following:

- Rehabilitate approximately 9,250-feet of Runway 17-35 full width
- Rehabilitate Runway 17-35 In-pavement approach lights
- Rehabilitate all runway and shoulder pavements in the runway-runway intersection
- Upgrade the FAA in-pavement approach lights
- Airport lighting and signage & related airfield electrical improvements
- Rehabilitate the south Taxiway A retaining wall and detention pond

Additive Alternates (ADD-ALT) consist of the following:

- ADD-ALT #1 Mill and overlay shoulders of Runway 17-35
- ADD-ALT #2 Mill and overlay the blast pads of Runway 17-35
- ADD-ALT #3 Rehabilitate the Taxiway A Retaining Wall
- ADD-ALT #4 RWIS RPU Upgrades not in the base bid
- ADD-ALT #5 Electrical Manhole Drainage
- ADD-ALT #6 Reconstruct and Rehabilitate a Portion of the Service Road
- Sealcoat shoulders and blast pads as funds allow if funds are not available for ADD-ALTs #1 and #2. See Options in Bid Proposal.

General work items include:

- Construction safety and phasing to include barricades, lights, and signs
- Installation of temporary security gate (north and south) to allow Contractor access
- Construction of a required temporary access haul road
- Temporary 6,291' runway during intersection work
- Removal of existing HMA pavement
- Excavation and embankment
- Installation of new airfield drainage system to drain existing electrical system
- Removal of structures, pipes, ducts and electrical equipment (lights, signs, etc.)
- New pavement marking

- New runway airfield guidance signs
- New runway 17-35 edge lights
- New Centerline and touch-down lighting fixture and cable replacement
- New Taxiway centerline lighting fixture and cable installation
- Replacement of pavement temperature and moisture sensors
- Airfield lighting vault work to support new lighting systems
- Light base adjustments for all existing base cans to be reused within paving limits
- Replacement of Runway 17 & 35 approach lighting
- Erosion and sediment control measures
- Crack repairs of existing milled surfaces
- New hot mix asphalt pavements
- Pavement grooving
- Retaining wall construction
- Drainage
- Service Road reconstruction and milling
- Fencing

The project is anticipated to be completed in 10 phases. Construction phases are shown on the Construction Safety and Phasing drawings which are included by reference to the Project Plans.

3. COORDINATION

The Airport Operator will notify tenants, FBO's, local users, and any field operations personnel of the planned construction activity via the following methods or a combination thereof: public 'flyers', notification calls/emails/letters, local publication briefings, and project meetings.

The project shall be coordinated among the MHT, FAA, Engineer and Contractor in the following manner:

a. Pre-Bid Meeting

At the pre-bid meeting, the Construction Safety and Phasing Plan (CSPP) will be introduced as the standard for operational safety during construction in accordance with FAA AC 150/5370-2G (current edition). Contractors will be made aware of the operational impacts on certain aspects of their construction and should plan accordingly. In addition, Contractors will be informed of the requirement for producing a Safety Plan Compliance Document (SPCD) prior to beginning construction. The SPCD describes how the Contractor plans to comply with the requirements of the CSPP.

b. Pre-Construction Meeting

In addition to the standard agenda items concerning the award of construction, this meeting will again present the CSPP. During the pre-construction meeting, the Contractor will be informed of the specific operations impacts to construction and safety requirements. Prior to

the construction Notice to Proceed, the Contractor must meet the requirements of providing an approved SPCD.

c. Contractor progress meetings

Weekly progress meetings will be held with the Airport Operator, Contractor and Engineer. Safety is a required standing agenda item and will include both operational and personal safety. Airport tenants and users will be invited to these progress meetings.

In addition to progress meetings, the Airport Operator, Contractor and Engineer will meet prior to the end of each phase in order to coordinate the location, limits, NOTAMS, and notices required for the next construction phase work area.

d. Scope or Schedule Changes

Changes to the scope of work or construction schedule as detailed here-in may require portions of this document to be revised and submitted for approval by the Airport Operator and/or the FAA. Approval may take up to 45 working days.

e. FAA ATO & SEC Coordination

Runway 17-35 will be closed during construction. Refer to the Section 5 entitled 'AREAS AND OPERATIONS AFFECTED BY CONSTRUCTION ACTIVITY' of this document for additional information.

f. Contact Information:

Reference Section 11.a. entitled 'List of Responsible Representatives/ Points of Contact'.

4. PHASING

This project is divided into specific phases of construction to minimize disruptions and maintain a safe environment for airport operations. The work will be completed in 10 construction phases. Construction will take place during daytime and nighttime hours. Contractor must coordinate with Airport Operations before beginning all construction phases.

a. Phase Elements

(1) Areas closed to aircraft operations:

Phase 1 – Refer to drawing no. G-101. This is a two-part phase.

Phase 1A is the set up temporary runway. All areas shall be re-opened with a 2-hour PPR for any work within the runway safety area. Otherwise, Runway 17-35 is closed. During Phase 1A Taxiway E will be utilized for the airport operations of crossing Runway 17-35. This phase includes the following closures:

- Runway 17-35
- Taxiways K1 and K2
- Taxiway H closed from 'E' to Runway 24
- Taxiway D closed from 'A' to Runway 35
- Taxiway A3 closed

- Taxiway B closed
- Taxiway F closed

Phase 1B reconstructs the north end of Runway 17. During this phase Airport Operations and ATCT may open the temporary runway to meet operational demand. Considering a temporary runway, this phase includes the following closures:

- Runway 17 (north end work area)
- Taxiways K1 and K2
- Runway 35 from Runway 6 to Taxiway B

Phase 2 – Refer to drawing no. G-102:

- Runway 17-35 temporary runway is open
- Runway 6-24
- Taxiway K1 and K2
- Taxiway J
- Taxiway M

Phase 3 – Refer to drawing no. G-103:

- Utilize 270' wide active movement area of Taxiway E for airport operations in Phase 3A
- Utilize 270' wide active movement area of Taxiway B for airport operations in Phase 3B
- Runway 17-35
- Taxiway A closed from 'E' to Runway 35 end
- Taxiway A1 and A2
- Taxiway F
- Taxiway H closed from 'E' to Runway 17-35
- Taxiway D closed from 'A' to Runway 17-35
- Taxiway A3 closed from 'A' to Runway 17-35
- Taxiway E closed (during sub-phase 3 B)
- Taxiway B closed (during sub-phase 3 A)

Phase 4 – Refer to drawing no. G-104:

- Work within the RSA of RW 6-24 shall require coordination with the Airport and have an associated 1 hour PPR
- Runway 17-35 close during work shift
- Taxiway K1 and K2
- Taxiway B
- Taxiway A3
- Taxiway D closed from 'A' to Runway 17-35
- Taxiway E closed from 'A' to Runway 17-35
- Taxiway E closed from 'H' to Runway 17-35
- Taxiway A closed from 'E' to Runway 35 end
- Taxiway H closed from 'E' to Runway 17-35
- Taxiway F
- Taxiway J
- Taxiway M
- Taxiway A1 and A2

Phase 5 – Refer to drawing no. G-104:

- Work within the RSA of RW 6-24 shall require coordination with the Airport and have an associated 1 hour PPR
- Runway 17-35 close during work shift
- Taxiway K1 and K2
- Taxiway B
- Taxiway A3
- Taxiway D closed from 'A' to Runway 17-35
- Taxiway E closed from 'A' to Runway 17-35
- Taxiway E closed from 'H' to Runway 17-35
- Taxiway A closed from 'E' to Runway 35 end
- Taxiway H closed from 'E' to Runway 17-35
- Taxiway F
- Taxiway A1 and A2

Phase 6 – Refer to drawing no. G-104:

- Work within the RSA of RW 6-24 shall require coordination with the Airport and have an associated 1 hour PPR
- Runway 17-35 close during work shift
- Taxiway K1 and K2
- Taxiway B
- Taxiway A3
- Taxiway D closed from 'A' to Runway 17-35
- Taxiway E closed from 'A' to Runway 17-35
- Taxiway E closed from 'H' to Runway 17-35
- Taxiway A closed from 'E' to Runway 35
- Taxiway H closed from 'E' to Runway 17-35
- Taxiway F
- Taxiway A1 and A2

Phase 7 – Refer to drawing no. G-105:

- Taxiway A closed from 'F' to Runway 35
- Work outside of the TOFA does not require movement area closures
- Work inside the TOFA will require movement area closures

Phase 8 – Refer to drawing no. G-105:

- Taxiway A closed from 'E' to Runway 35
- Taxiway F closed from 'A' to Runway 35
- Work outside of the TOFA does not require movement area closures
- Work inside the TOFA will require movement area closures

Phase 9 – Refer to drawing no. G-106:

- Work within the TOFA of an active taxiway shall require coordination for a movement area closure with the Airport
- Runway 17-35
- Taxiway A closed from 'E' to Runway 35 end
- Taxiway A1 and A2
- Taxiway F

- Taxiway H closed from 'E' to Runway 17-35
- Taxiway D closed from 'A' to Runway 17-35
- Taxiway A3 closed from 'A' to Runway 17-35
- Taxiway E closed (during sub-phase 3 B)
- Taxiway E closed (during sub-phase 3 A)
- Taxiway K1 and K2

Phase 10 – Refer to drawing no. G-107:

- None. All work on the Service Road.
- (2) Phase Durations:

Phase 1 - 14 Calendar Days

Phase 2 – 7 Calendar Days

Phase 3 – 62 Calendar Days

Phase 4 - 3 Calendar Days

Phase 5 - 16 Calendar Days

Phase 6 - 3 Calendar Days

Phase 7 – 21 Calendar Days

Phase 8 – 65 Calendar Days

Phase 9 – 62 Calendar Days

Phase 10 - 21 Calendar Days

Overall Project Duration: 167 Calendar Days (See concurrent phases on Drawing G-100)

(3) Taxi Routes (See Section 4.a for closures):

Contractor to coordinate setup of construction safety signs and barricades.

Note 1: Airport operations will coordinate with Air Traffic Control (ATC) for movement during closures.

Phase 1A – Taxiway E will be utilized for all airport operations of crossing Runway 17-35.

Phase 1B – See note 1.

Phase 2 – See note 1.

Phase 3 – Utilize 270' wide active movement area for airport operations in phase 3A and phase 3B. See note 1.

Phase 4/5/6 – Airport operations full access during non-working periods. See note 1.

Phase 7 – If not concurrent to Phase 3, back taxi from Taxiway A-F intersection on Runway 35 to Taxiway A2. If concurrent to Phase 3, Runway 17-35 is closed, and no taxiing is occurring. See note 1

Phase 8 – If not concurrent to Phase 3, back taxi from Taxiway A-E intersection on Runway 35 to Taxiway A2. If concurrent to Phase 3, Runway 17-35 is closed, and no taxiing is occurring. See note 1

Phase 9 – See note 1. Work within the TOFA of an active taxiway will require a movement area closure for that work.

Phase 10 – All taxiways open, unless the work is concurrent to another phase.

- (4) Emergency Access Routes:
 - The Contractor shall ensure emergency services shall always have access to all areas of the airport. Airport Operations shall notify ARFF 72 hours prior to the start of construction.
- (5) Construction Staging Areas:
 - The construction staging area for this project shall be located as shown on the attached drawings.
 - Any deviations from the planned staging area location will be as determined by the Airport.
 - The height of equipment and stockpiles shall be limited to 20 feet as shown on the reference Construction Safety and Phasing Plan drawings.
 - Equipment stationed within a staging area shall not obstruct nor impede aircraft or airport vehicle movement or any protected imaginary surface.
- (6) Construction Access and Haul Routes:
 - Access to the airfield shall be via the designated haul routes and existing airport access Gate #9 as shown on the attached drawings. Two additional temporary construction security gates will be used for construction as well. See drawing no. G-004 for locations.
 - Airport Operations will lock the access gate when the Contractor is not on-site. During all work hours the Contractor's security guard shall control access by allowing only authorized vehicles and personnel into the Airport.
- (7) Impacts to Visual Aids/NAVAIDS:

- Runway 17 MALSR and 35 ALSF construction.
- (8) Lighting and Marking Changes:
 - The Contractor shall disable portions of the existing airport lighting by disconnecting electrical and covering or removing lights and removing and replacing sign panels with blank panels. Refer to the drawings for the locations of the lights and signs.
 - Centerline markings leading into work areas shall be removed by the Contractor.
- (9) Available Runway Length:
 - Runway 6-24 7,651 feet during Phases 1, 3,7-10.
 - Temporary Runway 17-35 6,291 feet during Phase 1B & 2.
 - Runway 17-35 9,250 feet during non-work shift of Phases 4, 5 & 6.

(10) Declared Distances:

- During Phase 1B and 2 a temporary runway is planned.
 - Runway 17 TODA, TORA, LDA & ASDA: 6,291 feet
 - Runway 35 TODA, TORA, LDA & ASDA: 6,291 feet

(11) Required Hazard Marking and Lighting:

- Refer to Section 7.b for vehicle marking and lighting.
- (12) Lead Times:
 - The Contractor shall provide 72-hour advanced notice prior to the start of work and advancement to the next Phase of work.

b. Construction Safety and Phasing Plan Drawings

• Refer to the Construction Safety and Phasing Plan Drawings found in Volume 1 of the plans.

5. AREAS AND OPERATIONS AFFECTED BY CONSTRUCTION ACTIVITY

a. Identification of Affected Areas

(1) Closing, or partial closing of runways, taxiways and aprons: Refer to Section 4.a entitled '*Phase Elements*'.

(2) Closing of Emergency access routes:

Emergency response access routes will not be impeded during construction. The work to be performed will occur in a manner that allows existing pavements to be always accessible and traversable by emergency response crews. ARFF response to both

runways will be reviewed and confirmed with the Airport Operator prior to the commencement of any construction phase of this project.

(3) Closing of access routes used by airport and FBO support vehicles:

Vehicular access routes used by the airport will not be closed. All will be advised to avoid work areas whenever possible due to areas where construction vehicles will be traveling.

(4) Interruption of utilities, including water supplies for firefighting:

Utilities, including water supplies for firefighting, will not be interrupted during construction. If required, the contractor shall provide advance notice of any utility interruptions.

(5) Approach/departure surfaces affected by heights of objects:

Object heights are specified so as to not affect the approach/departure surfaces.

(6) Construction areas:

Refer to the construction areas, storage areas, and access/haul routes as shown on the referenced Construction Safety and Phasing Plans. All work conducted by the Contractor within the Taxiway Object Free Area (TOFA) shown on the drawings will be conducted with a partial or total closure of the Taxiway. All Contractor escorts will monitor radios when traversing active aircraft areas and ensure that construction equipment will give the right of way to aircraft. The Contractor shall ensure that all construction equipment shall give the right of way to aircraft. The Airport will provide escorts whenever the Contractor is working in the AOA. Contractor vehicle operators will always remain with the escort when traveling to and from the work site. The Contractor shall be responsible for maintaining pavements free of foreign object debris (FOD) by sweeping any construction debris from the pavements. The sweeper shall be motorized. The sweeper shall apply water prior to sweeping to minimize dust.

b. Mitigation of Effects

(1) Temporary changes to runway and/or taxi operations:

Taxiway operations will be impacted during each phase of the project. Refer to Section 4.a above. The Contractor will give a minimum of 1-week advance notice to the Airport Operator for any phase that requires a taxiway closure. The Airport Operator will coordinate all taxiway restrictions with the appropriate FAA Airports Regional or District Office and issue NOTAMs as required.

Should there be a need for a temporary change of the Runway or adjacent taxiway condition, such as during an emergency, the Airport Operator will notify and coordinate with the Contractor. The Contractor will remove the barricades/safety items as quickly as possible. Everyone will remain clear of the area until notified by the Airport Operator that work may resume.

(2) Detours for Emergency and other airport vehicles:

Emergency response access to areas of the airport will not be impeded during construction. When possible, all vehicles will be advised to avoid work areas due to general construction operations.

(3) Maintenance of essential utilities:

Essential utilities are not expected to be impacted during the construction activity. Should an unforeseen utility be encountered and determined to be essential, the contractor shall clear the area around the utility, and it shall be protected.

(4) Temporary changes to air traffic control procedures:

Aircraft ground traffic patterns will be impacted during this project due to partial taxiway closures. Refer to Section 4.a above

6. PROTECTION OF NAVIGATION AIDS (NAVAIDS)

Impacts to NAVAIDs will be coordinated with the local FAA technical service representative through MHT and the Resident Engineer. Equipment/materials stockpiles are not permitted in the AOA without approval of the Airport or Resident Engineer. Clearance of all NAVAID critical areas will be maintained. The Contractor will be required to verify the location of all utilities in the field prior to starting excavation. Any impact to NAVAIDs, airfield lighting circuits, communication or power circuits shall be immediately communicated to MHT Operations through the Engineer for coordination with the FAA, ATC, and any other relevant stakeholder.

7. CONTRACTOR ACCESS

The Contractor shall be provided with an escort by the Airport for all Phases. Refer to Section 4.a for airport access and haul routes in the referenced Construction Safety and Phasing Plan drawings.

a. Location of Stockpiled Construction Materials

All stockpiles and construction materials shall be located within the Contractor's construction staging area. If there is any deviation from the planned area, then the Contractor must obtain approval regarding the location of the stockpiled materials from the Airport. No materials shall be stockpiled within the TOFA or ROFA. The TOFA and ROFA dimensions are shown on the referenced Construction Safety and Phasing Plan drawings.

b. Vehicle and Pedestrian Operations

- 1. Construction Site Parking:
 - Contractor employee parking shall be in the Contractor's staging area as shown. It is the Contractor's responsibility to establish a privately owned vehicle (POV) parking area and safely transport work crews from the POV parking area to the construction site. The Contractor must obtain approval regarding the location of the parked vehicles from the Airport prior to the start of construction. No personal vehicles shall operate on the airport outside of the designated parking area.
- 2. Construction Equipment Parking:
 - The Contractor shall park and service all construction vehicles in an area designated by the Airport outside the TOFA. Inactive equipment shall not be parked on a closed taxiway or runway. Return all equipment to the construction staging area at night, on weekends, holidays and when not in use.
- 3. Access and haul roads:
 - The haul routes are defined as shown on the referenced Construction Safety and Phasing Plan drawings. The Contractor shall not use any access or haul roads other than those approved. The Contractor's equipment shall not operate on any taxiways that are open to aircraft.
 - When required, the Contractor's equipment shall yield and give way to all aircraft. When aircraft and construction equipment are passing, the Contractor shall provide a minimum of 50 ft. clear distance between the equipment and wingtips.
 - The Contractor shall keep the haul routes clear of debris or FOD at all times.
- 4. Marking and lighting of vehicles:
 - All vehicles shall comply with FAA AC 150/5210-5D, Painting, Marking, and Lighting of Vehicles Used on an Airport.
 - All vehicles to be used on the airport shall have the company logo or name visible and legibly identified on both sides of vehicle.
 - Each construction vehicle shall be equipped with an approved yellow rotating or flashing beacon light and this light must be unobstructed from view.
 - Each piece of construction equipment shall have a 3' x 3' orange/white checkered flag attached to their highest point.
- 5. Description of proper vehicle operations:
 - Contractor vehicle operators shall always remain with the Airport escort while traveling to or from the work site.
 - At all times, vehicles shall give right of way to any passing aircraft.
 - When within the Airport Operations Area (AOA), all construction vehicles must remain within the designated work areas and travel along the planned haul routes.
 - If a vehicle is inoperable due to a mechanical emergency, it must be moved to a safe area, away from aircraft and airport vehicles, for normal repairs that take less than 10 minutes or removed from within the AOA for complex repairs requiring extended time.
 - Repairs involving the use of petrochemicals and other flammable fluids, flammable aerosols and powders, and small parts and accessories that can easily become FOD shall not be conducted on the airfield.
 - Vehicles that lose communications shall immediately return to the Contractor staging area along the approved haul route.
- 6. Required escorts:
 - The Contractor shall be provided with an escort by the Airport for all Phases.

- 7. Training requirements for vehicle drivers:
 - Prior to operating on the Airfield, the Airport shall brief the Contractor on the features of the airfield and areas affected by the construction activity. This includes but is not limited to; the location of airport runway and taxiway safety areas, airfield signage, NAVAIDs, special airport markers, fueling areas, and aircraft parking and transit areas, heavy pedestrian crossing areas, and areas with obstructed views.
 - The Contractor's badged employees shall also be briefed by the Airport on how to interpret the airport signage encountered along the haul routes and within the work area.
- 8. Situational awareness:
 - At all times, vehicles shall give the right of way to any passing aircraft.
 - Aircraft with their rotating beacons and/or strobe lights flashing are typical indications that the engine is running or that the engine start procedure has begun.
 - The Contractor shall treat all aircraft with caution, regardless of whether they are occupied or not.
- 9. Radio Communications:
 - The Contractor's site superintendent will be required to carry a portable radio to communicate with the gate guard(s) and Airport Operations.
 - The Airport Communications Center monitors four airport operating (granite) frequencies i.e. Channels 1 through 4. All emergency calls and emergency communication shall take place on granite channel 1. When there is an emergency in progress, all communications relative to the emergency shall take place on channel 1. All other granite users shall utilize other assigned frequencies until the emergency has been resolved and the emergency alert is terminated by the airport communications center.
 - The ATCT will have direct communication with the Airport Operations personnel who are providing contractor escorts and operation safety oversight. This communication will take place on the MHT ground frequency.
- 10. Maintenance of the secured area of the airport:
 - All personnel with regular job duties and responsibilities within the Airport Operations Area, including contractors, subcontractors, general workers and/or security personnel will obtain an MHT Security Identification Badge. In addition, all applicants will attend an airport security briefing prior to being granted access to any secure area.
 - All authorized visitors and short-term workers will be issued a temporary escorted badge. Issuance of escorted badges will be noted in the daily security access log. The log and badges will be returned to airport operations at the close of each workday. The contractor's MHT badged supervisor(s) are required to coordinate AOA escort assignments with airport operations. An escorted worker will be

informed (by the contractor) as to their MHT badged escort and will at all times remain within line of sight of the escort.

- All personnel and vehicles that are granted access to the AOA will submit to random security inspections conducted by airport law enforcement, security, operations, and Transportation Security Administration personnel. Random inspections may occur at any time and may take place at the perimeter gates, on the AOA, and/or within other secure areas of the airport. Mirrors will be used to ensure a thorough inspection of the undercarriage of vehicles.
- Security Gate #9 will be manned by an Airport approved security guard during normal business hours. The following procedures will be followed for contractor access:
 - Gate guards will have an approved means of communication -i.e. "granite" radio contact with his/her supervisors, the contractor, airport operations, and Airport Communications in the event of an emergency.
 - Vehicle Inspections will take place on the public side of the security fence prior to the gate being opened.
 - All personnel entering an AOA access gate will sign the daily security/AOA access log (once per day for all personnel except when leaving the secured area or hauling material off site). The daily log will be maintained by the gate guard and turned over to airport operations at the close of each workday.

8. WILDLIFE MANAGEMENT

a. Trash

The Contractor will immediately secure and clean up all FOD upon observation of the objects. The Contractor will be required to keep the work areas clean of trash and food waste which might attract wildlife. If wildlife is observed in the vicinity of the worksite the Contractor or Engineer will notify the Airport Operator of the type and last known location of the sighting. The Airport Operator will determine the appropriate course of action if so required.

b. Standing Water

The Contractor shall not permit standing water in the work site.

c. Poorly Maintained Fencing and Gates

Access gates that are opened or utilized for the purpose of construction vehicle and work crew access must be closed and locked. Fence in need of maintenance will be identified and reported to Airport Operator as necessary.

d. Wildlife Encounters

Notify either the Airport Operator or Engineer in the case of any wildlife encounters.

9. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

The Contractor will implement the following FOD management procedures for the duration of the project. The work areas and adjacent airport areas will be kept free of unsecured

paper, boxes, litter and other debris that could be blown onto the runways and taxiways or pose a hazard to aircraft.

Access roads and haul routes used by the Contractor will be maintained and kept clean throughout the course of work to prevent the accumulation of dirt and mud and the generation of dust by sweeping, washing or other methods approved by the Engineer.

Immediately prior to the end of each work shift, all airport pavements to be re-opened must be inspected by the Contractor, Airport Operator and Engineer to ensure these areas are swept clean, free of FOD and that the pavement markings, signage and lights are unobstructed.

10. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

The Contractor will comply with all Federal, State, and local laws and regulations controlling pollution of the environment and hazardous waste. The Contractor will always have on hand and accessible the MSDS sheets for all chemicals on site. All construction equipment will be serviced and refueled in the Contractor's staging area. Approved secondary containment will be used during servicing and refueling. Airport Operations and or the Engineer must be notified of any spills. The Airport Operator will notify the appropriate responders. The Contractor will have a HAZMAT management procedure manual in place. Copies will be available upon request and must be included with the Safety Plan Compliance Document (SPCD).

11. NOTIFICATION OF CONSTRUCTION ACTIVITIES

The resident engineer and site superintendent are available 24-hours a day for any emergency involving the construction of the project. Any emergency involving the construction of the project will be notified to the airport, airfield maintenance, resident engineer, contractor, and engineer. Before beginning any construction activity, the contractor will, through airport operations and the resident engineer, ensure that all appropriate safeguards are in place and that all required notifications e.g., Notices to Airmen (NOTAMS) have been disseminated.

a. List of Responsible Representatives/ Points of Contact

A list of responsible representatives and the associated contact numbers shall be maintained in this document and shall be distributed to the Contractor, Engineer, and Airport. Any updates to the original list in this document must be made promptly and the full list reflecting those amendments shall be redistributed separately.

1.	Emergency (Airport Comm. Center)	603-628-6222
2.	Airport Owner/Operator	603-628-6539
3.	Engineer	Name & # (TBD)
4.	Contractor (Office)	Name & # (TBD)
5.	Contractor (Site Superintendent)	Name & # (TBD)
6.	Tech Ops	603-621-1762

b. Notices to Airmen (NOTAMs)

• NOTAMs must be issued to advise pilots and other airport users of the construction activity, closure period and other operational impacts. **Only the**

Airport Operator will initiate or cancel NOTAMs and is the only entity that can close or open any part of the Airfield. The Airport Operator must coordinate the issuance, maintenance and cancellation of NOTAMs about airport conditions resulting from the construction activities with tenants and the local air traffic facility and must provide information on the closed or hazardous conditions on the airport movement areas to the FAA Flight Service Station (FSS) so that it can issue a NOTAM. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the Airport Operator immediately.

c. Emergency Notification Procedures

- The Airport shall be the first point of contact for any emergency involving the construction of the project after which the Engineer shall be immediately contacted as well. The Airport Operator and Engineer will be called for non-emergency incidents.
- For an emergency requiring immediate medical attention the Airport Communication Center will be notified via the emergency number (603-628-6222) The Communication Center will dispatch ARFF.
- Refer to Section 15 "Special Conditions" in the event of an emergency on the Airfield.

d. Coordination with Emergency Response Personnel

• The ARFF Personnel will be notified a minimum of 72 hours prior to the notice to proceed of the project as well as any changes to the emergency access route or any deactivation and subsequent reactivation of waterlines and fire hydrants.

e. Notification to the FAA

• Prior to the start of construction, the Airport will file a FAA Form 7460-1, Notice of Proposed Construction or Alteration for the locations and anticipated heights of equipment. The Contractor shall review the submitted FAA Form 7460-1 and notify the Airport of any deviation requests. The Contractor shall plan on a 45 working day approval process by the FAA for any deviation requests.

12. INSPECTION REQUIREMENTS

a. Daily Inspections

- Inspections to ensure compliance with this CSPP shall be performed daily by the Contractor and Engineer. A sample checklist is provided in Appendix 4 of FAA AC 150/5370-2G.
- Airport operations personnel make frequent checks of the airfield and work areas. If a deficiency is found, airport operations personnel will contact the Contractor and Engineer.
- Safety issues are to be corrected immediately by the Contractor.

- All areas scheduled to be opened to aircraft shall be inspected by the Engineer and the Airport prior to completion of the work shift and opening of the area.
- At the conclusion of the workday, the contractor will ensure that the worksite is vacated, is properly secured, and that all escorted badges are collected, accounted for, and returned to airport operations. Airport operations will make a final inspection prior to the contractor leaving. This may include a lighting inspection.

b. Final Inspections

- When the Contractor determines the Contract is completed, the Contractor shall notify the Engineer in writing and the Engineer will schedule a final inspection of the work with the appropriate parties.
- Any work found to be unsatisfactory at the time of the inspection shall be noted and the Contractor shall be provided instructions on how to remedy the deficient areas.
- Upon completion of any 'punch-list' work, the Engineer and Airport will inspect the areas again for acceptance.
- The FAA will be notified of the project completion and invited to attend the final inspection.

13. UNDERGROUND UTILITIES GENERAL

The Contractor is specifically cautioned that the locations and/or elevations of existing underground utilities as shown on these plans are based on record drawings and were field surveyed for confirmation where possible. This information is not to be relied on as being complete or exact and the Contractor shall field verify all information prior to the commencement of the work. The Contractor shall immediately notify the Engineer in writing of any discrepancy discovered during field verification.

The Contractor shall provide a utility locating service to locate/verify utility location prior to commencing excavation. All existing utilities in the vicinity of any excavation shall be clearly marked on the ground by the Contractor prior to beginning excavation.

The Contractor shall coordinate all work on and in the vicinity of the underground utilities and cables with the following agencies as appropriate:

- MHT Facilities/Electrical
- Local Federal Aviation Administration

The Contractor shall provide the Engineer with records of coordination prior to commencing with excavation.

The Contractor shall hand dig when within three (3) feet of any known or suspected underground utility.

The Contractor shall repair, at his/her own expense, any underground utilities damaged by his/her operations.

The Contractor shall perform an airfield lighting check at the completion of each work shift to verify that the lighting system and NAVAIDS are operational.

Any impacts to NAVAIDs, airfield lighting circuits, communications or power circuits shall be immediately communicated to MHT Operations through the Engineer for coordination with the FAA, ATC, and any other relevant stakeholder.

14. PENALTIES

- If airport rules, regulations, or the safety plan are not followed, the project is to be shut down and will not resume until the contractor complies and acknowledges he/she understands the rules/regulations.
- Badged personnel and drivers who deviate from the assigned haul routes or work areas are to have their airport access privileges revoked. Any work (MHT badged or under escort) who engages in any activity, other than that for which his/her access was granted, will be removed from the work area. Failure to submit to random security inspections will result in suspension of the MHT security I.D. badge and associated access privileges.
- If unauthorized access to the AOA or deviation from the assigned construction work area and haul route is observed, a call will be made immediately by the Contractor to the Airport Operations Personnel. If Airport Law Enforcement Officer is required, call the Airport Communications Center at 603.628.6019.

15. SPECIAL CONDITIONS

- There are no anticipated problems with low visibility or snow removal resulting from the project.
- In the event of an emergency involving an inbound aircraft in distress, the Contractor and Engineer must be alerted of the situation and must comply with all instructions issued by the Airport Operator and/or Emergency Responders.
- In the event of an aircraft emergency or construction accident on the field, the Airport Operator will be notified immediately, and all work crews must meet at a pre-designated point, and all personnel will be accounted for.
- If a security breach occurs on the airport, the Airport Operator will inform the Contractor of any action required, and all workers will remain within the work site until the issue is resolved.
- If a potential security breach is noticed by any of the Contractor's staff, the Engineer and Airport Operator will be notified immediately.
- In the event of a vehicle/pedestrian deviation by a member of the Contractor's staff, work will immediately cease, and all workers will be retrained regarding the airfield safety and operations. Upon investigation, the worker who caused the deviation may be penalized by being relieved of their duties for the day's work shift or for an extended period of time if so determined.

16. RUNWAY AND TAXIWAY VISUAL AIDS

- For all closures, a NOTAM will be issued, and the applicable taxiway edge lights will be covered. "No entry" signs, lighted "X's", runway safety area and object free area cone delineators, lighted and flagged barricades and taxiway closure markers will be placed as shown on the Safety and Phasing Plans and/or as direct by the Airport. Signs directing traffic will have panels removed and replaced with blank panels.
- Barricades will be used to delineate the boundaries of the work areas and the pavement areas open to aircraft and airport vehicle operations. Refer to section HAZARD MARKING AND LIGHTING of this document.

17. MARKING AND SIGNS FOR ACCESS ROUTES GENERAL

• Construction signs that direct construction traffic shall be located at the work area egress/ingress points. All construction signs shall conform to standards of MUTCD, and AC 1450/5340-18G and be approved by MHT Operations and the Engineer.

18. HAZARD MARKING AND LIGHTING

- Hazard marking and lighting prevents aircraft operators from breaching work areas and prevent construction crews and vehicles from inadvertently entering aircraft operation areas. At the start of each phase, construction barricades will be installed at the limits of the work area. The barricades will be outside of any active runway safety area. All barricade locations must be approved by the Airport Operator and/or Engineer prior to the commencement of the Work. At the end of each workday the area shall be swept clean.
- Lighted Xs, barricades, Lights, and signs are detailed on the referenced Construction Safety and Phasing Plan drawings. Barricades are to be interlocked with two lights per barricade and not more than 10ft between lights. The Contractor is responsible to maintain all lighted Xs, barricades, lights, and signs 24 hours/day.

19. WORK ZONE LIGHTING FOR NIGHTTIME CONSTRUCTION

- Lighting equipment must adequately illuminate the work area meeting the requirements of AC 150/5370-10 for minimum illumination levels during nighttime paving.
- All support equipment, except haul trucks, must be equipped with artificial illumination to safely illuminate the immediate surrounding area.
- Light towers will be positioned and adjusted to aim away from the ATCT and active runway to prevent blinding effects. Shielding may be necessary.
- Light towers will be removed from the work area prior to being reopened to aircraft operations.

20. PROTECTION OF RUNWAY AND TAXIWAY SAFETY AREAS

Authorized work near or within active runway and taxiway safety areas will be coordinated with the Airport escorts, Airport operations, and Engineer.

a. Runway Safety Area (RSA)

• The RSA locations are shown on the attached drawings.

- Open trenches or excavations in the RSA are not permitted to be left open. Excavations must be backfilled prior to recall. In the case of "pullback" work, if backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway to cross the trench without damaging the aircraft.
- The Contractor will install erosion control in the RSA in a manner compliant with the RSA construction standards. That is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and must be capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

b. Runway Object Free Area (ROFA)

- The ROFA locations are shown on the attached drawings.
- Construction, including excavations, will be permitted in the ROFA during work in associated work areas. However, equipment must be removed from the ROFA when not in use, and materials will not be stockpiled in the ROFA.

c. Taxiway Safety Area (TSA)

- The TSA locations are shown on the attached drawings.
- There will be no work associated with this project inside the TSA while the taxiway is open for aircraft operations.
- Open trenches or excavations in the TSA are not permitted to be left open when the taxiway is open for aircraft operations. Trenches will be backfilled before the taxiway is opened.
- Where required the Contractor will install erosion control in the TSA in a manner compliant with the TSA construction standards. That is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and must be capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

d. Taxiway Object Free Area (TOFA)

- The TOFA locations are indicated on the drawings. Work in the TOFA is not allowed unless special provision are provided in accordance with the AC 150/5370-2G.
- The Contractor shall notify the Airport 72 hours prior to commencing work in this area.
- e. Runway Obstacle Free Zone (OFZ)

• For MHT, the ROFZ extends 200 feet beyond each runway end and is 400 feet wide. Refer to AC 150/5300-10A for the Inner Approach and Transitional OFZ dimensions.

21. OTHER LIMITATIONS ON CONSTRUCTION

a. Prohibitions

The Contractor will not perform any construction within the Runway Safety Area or Runway OFZ's while the Runway is open to aircraft operations.

b. Restrictions

Any equipment that is expected to exceed **twenty feet in height** will require filing of separate FAA Form 7460-1 by the contractor. It is anticipated that this project will have no blasting, welding or any other open flame generated.

The general construction, phasing and safety notes on the project drawings contain further notes and limitations on construction. The Contractor shall also adhere to the limitations set forth in the Contract Specifications.

22. ACRONYMS AND ABBREVIATIONS

- Advisory Circular
- Airport Certification Safety Inspector
- Airport Operations Area
- Airport Rescue and Fire Fighting
- Air Traffic Office
- Common Traffic Advisory Frequency
- Federal Aviation Administration
- Foreign Object Debris
- Hazardous Materials
- Instrument Meteorological Conditions
- Localizer Critical Area
- Localizer
- Manchester-Boston Regional Airport
- Navigational Aid
- Notice to Proceed
- Object Free Area
- Obstacle Free Zone
- Privately Owned/Operated Vehicle
- Runway Safety Area
- Taxiway Object Free Area

23. COMMENTS/REVISION LOG

No items

END OF ITEM G-001

ITEM G-002 Record Documents

DESCRIPTION

002-1.1 General. The Contractor's attention is also directed to Section G-001 *Special Work Requirements* paragraph 001-1.31 *Record Documents* and Section 90 *Measurement and Payment* paragraph 90-11 *Contractor Final Project Documentation* of the General Conditions for additional project closeout documents and requirements.

The work included under this section of these specifications shall consist of preparing and submitting project record documents to the owner as specified in the items outlined below:

- a. Record Documents. This item includes the following items:
 - 1. As-Built Plans.
 - 2. Project Photographs
 - 2. Aerial Photos
 - 4. Final DBE Participation Statement.
- b. Field Data Collection for GIS Survey Conversion. Not used

RELATED DOCUMENTS

002-2.1 Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5300-16B, "General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submissions to the National Geodetic Survey."

002-2.2 FAA AC 150/5300-17C, "Standards for Using Remote Sensing Technologies in Airport Surveys."

002-2.3 FAA AC 150/5300-18B, "General Guidance and Specifications for Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards."

REQUIREMENTS

002-3.1 RECORD DOCUMENTS

a. As-Built Plans. The Contractor shall maintain at the site a set of drawings on which shall be accurately recorded the actual as-built locations and dimensions of all his/her work. Changes and variations from the Contract Drawings should be clearly noted. The location an elevation of utilities and other items encountered during progress of the work shall be recorded. Notations on mechanical and electrical work shall include nameplate data for all installed equipment. The Contractor shall keep these drawings current as work progresses and available for review by the Engineer at all times. This record of as-built conditions shall include the work of all subcontractors.

Prior to final acceptance of the work, the Contractor shall have a final survey made by a Land Surveyor

licensed in the State of New Hampshire. The final survey shall consist of <u>taking elevation and state plane</u> <u>coordinate measurements at 50' longitudinal and transverse spacing</u>, at all changes in grade, at the top and toes of slopes, and at the limits of work.

It shall also include the location and elevation of all structures, lights, signs, installed utilities, pavement markings, and joints. For drainage items the survey shall include rim elevations, invert elevations, and sump elevations. All survey shall be referenced to the National Geodetic Survey (NGS) Primary Airport Control Station (PAC) and/or Secondary Airport Control Stations (SACS). PAC and SAC locations and data may be obtained from <u>http://www.ngs.noaa.gov/cgi-bin/airports.prl?TYPE=PACSAC</u>. A copy of the Survey information shall be delivered to the Engineer in the appropriate vertical datum, in State Plane coordinate system, and in AutoCAD® 2014 format. All elevations shall be to the nearest 0.01 foot with the exception of turf areas which may be to the nearest 0.1 foot.

All "As-Built" information from the final survey shall be shown on the As-Built Drawings and submitted to the Engineer for review. Any errors shall be corrected by the Contractor as required. The As-Built Drawings and final survey shall be completed and accepted by the Engineer before final payment will be made.

b. Project Photographs. The Contractor shall furnish photographs of the project, the views shall be as directed or approved by the Engineer. The photographs shall show the project site prior to construction, the work in progress and the project site at the completion of work.

A minimum of 60 color photographs will be taken during each 30-day period of the contract. A digital camera shall be used to take the photographs. At the completion of each 30-day period of the project the Contractor shall deliver to the Engineer one Color print of each view and a CD/USB flash drive with each photo. Each view shall be clearly labeled with the date, project and identification of the view.

c. Aerial Photos. The Contractor shall furnish four (4) sets of four 11-inch by 14-inch unmounted, oblique aerial color photographs taken from an altitude to completely cover the site of the work, with sufficient detail to shown the work from four different quadrants. These photographs shall be taken after completion of the contract. The Contractor shall inscribe on the reverse side of each photograph all pertinent information such as description, date, compass direction on which the picture was taken, AIP project number, photograph shall include all the airport boundaries.

All sets of photographs shall be delivered to the Engineer. These photographs to be taken with a digital format aerial camera with a photo resolution no less than 2750 x 2200 pixels, minimum photo size shall be 16 MP unless approved by the Engineer.

1. The Contractor shall furnish eleven (11) color aerial photographs of the entire airport, including all airport boundaries, I-293 on the north, the F.E. Everett Turnpike on the west, Route 28 on the east, and Delta Drive on the south. This photograph shall be taken with a mapping quality (cartographic) camera.

The Contractor shall submit certification that the camera has been calibrated within the last three (3) years in accordance with USGS mapping standards. The photo shall be vertical and shall be enlarged to 1'' = 400'. The 1'' = 400' enlargements shall be mounted on 48'' x 48'' Gator Board (or approved equal) and shall be identified on the back of the Gator Board. The Contractor shall also provide a digital image of theaerial photo on CD/USB flash drive.

2. The Contractor shall furnish six (6) color aerial photographs of the entire airport, including all airport boundaries, North Perimeter Road on the north, Brown Avenue on the west, Harvey Road on the east, and South Perimeter Road on the south. This photograph shall be taken with a mapping quality (cartographic) camera. The contractor shall submit certification that the camera has been calibrated within the last three (3) years in accordance with USGS mapping standards. The photo shall be vertical and shall

be enlarged to 1" = 200'. The 1" = 200' enlargements shall be mounted on 48" x 65" Gator Board (or approved equal) and shall be identified on the back of the Gator Board.

3. The Contractor shall furnish one (1) color aerial photographs of the entire airport, including all airport boundaries, I-293 on the north, the F.E. Everett Turnpike on the west, Route 28 on the east, and Delta Drive on the south. This photograph shall be taken with a mapping quality (cartographic) camera. The Contractor shall submit certification that the camera has been calibrated within the last three (3) years naccordance with USGS mapping standards. The photo shall be vertical and shall be enlarged to approximately 1" = 800' and have the ability to fit on a 24" x 24" mount. This enlargement shall be mounted on 24" x 24" DiBond Mounting Material (or approved equal) and shall be identified on the back of the mount.

Snow cover will not be permitted. Cloud cover shall not obscure photos. The photos shall be taken at the time of day when shadows from the sun will be minimal. Photos shall be clear, in focus, with high resolution and sharpness. Color and tint shall be correct; washed out photos will not be accepted. The Contractor shall submit to the Engineer, contact prints of the photograph for approval prior to making enlargements. Enlargements shall be mounted on Gator Board as indicated above and shall be identified on the back of the Gator Board. Photos shall be suitable for photogrammetric mapping.

d. Final DBE Participation Statement. The Contractor shall submit a statement showing the final accounting of all DBE participation actually used in the execution of the work prior to the final acceptance of the project. Should the actual DBE participation be less than the contract goals and/or contractor's assurance submitted with the bid proposal, than the Contractor shall provide written documentation of their good faith effort to achieve the goal per the requirements of the MHT DBE Plan.

METHOD OF MEASUREMENT

002-4.1 Measurement of the As-Built Plans and Aerial Photos (All Phases) will be made for each unit submitted and accepted.

As-Built Plans are listed on the Bid Proposal Bid Form for the scope of the project work requiring asbuilt plans. However if the Additive Alternates for the shoulders and the blast pad are awarded, the shoulders and blast pad will be included in the cost of the As Built Pan for the Runway as the shoulders and blast pad are near the runway and adding a separate pay item for the shoulders and blast pad is not warranted.

Aerial Photos (All Phases) is listed on the Bid Proposal Bid Form under the base bid only as the geographic area of the Aerial Photos covers the Bid and all the Additive Alternates.

BASIS OF PAYMENT

002-5.1 Payment shall be made at the contract unit price, which price and payment thereof shall constitute full compensation for all labor, materials, equipment, utilities, expenses, and incidentals required.

Payment will be made under:

Item G-002-1	As-Built Plans	per Lump Sum
Item G-002-2	Aerial Photos (All Phases)	per Lump Sum

END OF ITEM G-002

Item G-004 Maintenance and Protection of Traffic

CONTRACT DOCUMENTS

004-0.1 This section of these Specifications is a part of the Contract Documents as defined in the General Provisions. All applicable parts of the balance of the Contract Documents are equally as binding for this section as for all other sections.

DESCRIPTION

004-1.1 GENERAL. This work shall consist of maintaining aircraft and vehicular traffic and protecting the public from damage to person and property within the limits of and for the duration of the Contract.

The Contractor shall comply with all guidelines regarding construction safety set forth in FAA Advisory Circular 150/5370-2 (latest revision), *Operational Safety on Airports During Construction* and Special Provisions.

The following items are specifically included without limiting the generality implied by these Specifications and the Contract Drawings.

- Preparation of the Safety Plan Compliance Document with submission to the Engineer and Airport for review and implementation
- Providing qualified flag persons, as required, at the locations shown on the plans or as directed by the Owner's representative.
- Locating and marking of existing underground lighting or other airfield circuits within the project work areas.
- Staged or phased construction
- Off-peak construction periods, including both day and night shift work
- Temporary construction lighting for night shift construction periods, if applicable.
- Installation, maintenance and removal of temporary work zone (RSA) delineation markers, including the furnishing of stakes and cones which will remain the property of the Contractor at the completion of the project.
- Installation, maintenance and removal of temporary or permanent barricades, warning signs, hazard markings and runway closure markings, including lighted runway closure markings. Furnishing temporary barricades for the project which will remain the property of the Contractor at the completion of the project.
- Temporary alteration or decommissioning of any existing Runway or Taxiway lighting and signage and coordination with MHT Ops/FAA Tech Ops for NAVAIDs shutdowns, if required.

- Installation, maintenance, and removal of temporary lights and lighting circuits, including "jumpers" of circuits as required.
- Installation, maintenance, and removal of temporary guidance sign <u>blank panels</u>
- Installation, maintenance, and removal of temporary light coverings
- Installation, maintenance, and removal of temporary lights and lighting
- Testing and maintenance of existing, temporary, and new lighting circuitry.
- Installation, maintenance, and removal of any temporary pavement tapers, transitions or temporaryaccesses to any airport facilities, if applicable.
- Installation, maintenance, and removal of any temporary asphalt pavement tapers and/or transitions accordance with FAA Advisory Circular 150/5370-13 *Off-Peak Construction using Hot Mix Asphalt* (latest revision).
- Installation, maintenance, and removal of any temporary drainage, including, ditches, swales, piping and de-watering of work areas.
- Alteration, adjustment, maintenance of any drainage inlets, structures or systems necessary to maintain runway drainage during construction.
- Cleaning and maintenance of all areas within construction limits and haul routes or areas disturbed by the Contractor's operation via vacuum sweeper trucks.
- Restoration of all surfaces disturbed because of the Contractor's Operations, which are not otherwise paid for under a specific item.
- Provide temporary stake-mounted threshold lights and other edge lighting revisions, if required.
- Placement of temporary markings, including a black primer coat, prior to placing the temporary marking as shown on the plans, in accordance with FAA AC 150/5340-1 *Standards for Airport Markings* (latest revision), and meeting the requirements of Specification Section P-620, if required.
- Removal of temporary markings by approved techniques in accordance with FAA Advisory Circular 150/5340-1 *Standards for Airport Markings* (latest revision) and meeting the requirements of Specification Section P-620., if required.

METHOD OF MEASUREMENT

004-2.1 Maintenance and Protection of Traffic [phase(s) vary] will be measured as a lump sum item for the Phase(s) indicated in the pay item. The lump sum shall include all items required in the plans and specifications.

004-2.2 Contractor's Safety Plan Compliance Document (All Phases) will be measured as a lump sum item. One document shall cover all phases of the project regardless of the project's award of the Additive Alternates.

004-2.3 Utility Locating Allowance will be measured based on actual costs of labor, equipment and materials submitted and approved by the RPR. No contractor markup is allowed.

BASIS OF PAYMENT

004-3.1 The lump sum price bid for Maintenance and Protection of Traffic [phase(s) vary] shall include all equipment, materials, and labor necessary to adequately and safely maintain and protect traffic. Progress payments willbe made for this item in proportion to the total amount of contract work completed, less any deductions forunsatisfactory maintenance and protection of traffic.

In the event the contract completion date is extended, no additional payment will be made for maintenance and protection of traffic.

No payment will be made under maintenance and protection of traffic for each calendar day during which there are substantial deficiencies in compliance with the Specification requirements of any subsection of thisSection as determined by the Engineer. The amount of such calendar day non-payment will be determined by dividing the lump sum amount bid for maintenance and protection of traffic by the number of calendar days between the date the Contractor commences work and the date of completion as designated in this proposal, without regard to any extension of time.

If the Contractor fails to maintain and protect traffic adequately and safely for a period of four (4) hours, theOwner shall correct the adverse conditions by any means it deems appropriate and shall deduct the cost of the corrective work from any monies due the Contractor. The cost of this work shall be in addition to the liquidated damages and non-payment for maintenance and protection of traffic listed above.

However, where major non-conformance with the requirement of this Specification is noted by the Engineerand prompt Contractor compliance is deemed not to be obtainable, all contract work may be stopped by direct order of the Engineer regardless of whether corrections are made by the Owner as stated in the paragraph above.

004-3.2 The lump sum price bid for the Contractor's Safety Plan Compliance Document (All Phases) shall include all equipment, materials, and labor necessary.

004-3.3 Utility Locating Allowance will be paid based on documented costs approved by the RPR.

Payment will be made under:

Item G-004-1	Maintenance and Protection of Traffic (Phases 1-7, 9)	per Lump Sum
Item G-004-2	Maintenance and Protection of Traffic (Phase 8)	per Lump Sum
Item G-004-3	Maintenance and Protection of Traffic (Phase 10)	per Lump Sum
Item G-004-4	Contractor's Safety Plan Compliance Document (All Phases)	per Lump Sum
Item G-004-5	Utility Locating Allowance	per Allowance

END OF SECTION G-004

The Contractor shall pay all internet/data service, sanitary facility, heating, and electric bills applicable to the Contract.

The Contractor shall furnish assistance to the RPR, as requested, to check the layout, obtain quantities or otherwise control the work. Such assistance shall be understood to include the provision of suitable manpower to assist the RPR in taping measurements, holding a survey rod, checking grades and the like. The Contractor's obligations for furnishing assistance to the RPR shall be deemed incidental to the completion of the various work items and no separate payment shall be made for such assistance.

METHOD OF MEASUREMENT

005-3.1 Engineer's Field Office. All work and costs involved in furnishing and maintaining the Engineer's field office shall be measured <u>per month.</u>

BASIS OF PAYMENT

005-4.1 Engineer's Field Office. Payment shall be made at the contract unit price, which price and payment thereof shall constitute full compensation for all labor, materials, equipment, utilities, expenses, setup, removal, and incidentals required.

The field office will not be paid during the winter shutdown (if applicable).

Payment will be made under:

Item G-005-1

Engineer's Field Office

per Month

END OF SECTION G-005

- (8) Recommended remedial actions
- (9) Retests

Test results from each day's work period shall be submitted to the RPR prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical QC charts. When QC daily test results are recorded and transmitted electronically, the results must be archived.

100-10 Corrective action requirements. The CQCP shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the CQCP as a whole, and for individual items of work contained in the technical specifications.

The CQCP shall detail how the results of QC inspections and tests will be used for determining the need for corrective action and shall contain clear rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable or required by the technical specifications, the Contractor shall establish and use statistical QC charts for individual QC tests. The requirements for corrective action shall be linked to the control charts.

100-11 Inspection and/or observations by the RPR. All items of material and equipment are subject to inspection and/or observation by the RPR at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate QC system in conformance with the requirements detailed here and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to inspection and/or observation by the RPR at the site for the same purpose.

Inspection and/or observations by the RPR does not relieve the Contractor of performing QC inspections of either on-site or off-site Contractor's or subcontractor's work.

100-12 Noncompliance.

a. The Resident Project Representative (RPR) will provide written notice to the Contractor of any noncompliance with their CQCP. After receipt of such notice, the Contractor must take corrective action.

b. When QC activities do not comply with either the CQCP or the contract provisions or when the Contractor fails to properly operate and maintain an effective CQCP, and no effective corrective actions have been taken after notification of non-compliance, the RPR will recommend the Owner take the following actions:

(1) Order the Contractor to replace ineffective or unqualified QC personnel or subcontractors and/or $% \mathcal{A}(\mathcal{A})$

(2) Order the Contractor to stop operations until appropriate corrective actions are taken.

BASIS OF PAYMENT & METHOD OF MEASUREMENT

100-13 Basis of measurement and payment. Contractor Quality Control Program (CQCP) (<u>All Phases</u>) is for the personnel, tests, facilities and documentation required to implement the CQCP. The CQCP will be paid as a lump sum with the following schedule of partial payments:

a. With first pay request, 25% with approval of CQCP and completion of the Quality Control (QC)/Quality Assurance (QA) workshop.

b. When 25% or more of the original contract is earned, an additional 25%.

Item C-100 Contractor Quality Control Program (CQCP) (Addendum No. 2)

c. When 50% or more of the original contract is earned, an additional 20%.

d. When 75% or more of the original contract is earned, an additional 20%

e. After final inspection and acceptance of project, the final 10%.

One document shall cover all phases of the project regardless of the project's award of the Additive Alternates.

BASIS OF PAYMENT

100-14 Payment will be made under:

Item C-100-1Contractor Quality Control Program (CQCP) (All Phases)per Lump Sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. National Institute for Certification in Engineering Technologies (NICET) ASTM International (ASTM)

ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D3666	Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

END OF ITEM C-100

remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the RPR.

METHOD OF MEASUREMENT

102-4.1 Temporary erosion and pollution control work required which is not attributed to the Contractor's negligence, carelessness, or failure to install permanent controls will be performed as scheduled or ordered by the RPR. Completed and accepted work will be measured as follows:

- **a.** Sediment Barrier. Sediment Barrier will be measured by the linear foot to the nearest foot. Measurement will be along the top of the fence/filter sock for each continuous run in place.
- **b.** <u>Straw Wattles and Erosion Sock.</u> <u>Straw Wattles and Erosion Socks shall be measured by the linear foot to the nearest foot.</u>
- **c.** Inlet Protection. Inlet protection shall be measured by the number of each type of inlet protection installed.
- **d.** Erosion Control Blanket. Erosion Control Blanket shall be measured by the number of square yards installed.
- **e.** Temporary seed will not be measured and paid for directly rather it shall be considered subsidiary to the permanent seeding.

102-4.2 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor.

BASIS OF PAYMENT

102-5.1 Accepted quantities of temporary water pollution, soil erosion, and siltation control work ordered by the Engineer and measured as provided in paragraph 102-4.1 will be paid for as follows:

Payment will be made under:

Item C-102-1	Installation, Maintenance, and Removal of Silt I	Fence per Linear Foot
Item C-102-2	Straw Wattles	per Linear Foot
Item C-102-3	Erosion Sock	per Linear Foot
Item C-102-4	Drain Inlet Protectors	per Each
Item C-102-5	Erosion Control Blanket	per Square Yard

Where other directed work falls within the specifications for a work item that has a contract price, the units of work shall be measured and paid for at the contract unit price bid for the various items. Temporary control features not covered by contract items that are ordered by the RPR will be paid for in accordance with Section 90, paragraph 90-05 *Payment for Extra Work*.

Item C-105 Mobilization

105-1 Description. This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-2 Mobilization limit. Mobilization shall be limited to 3 percent of the total project cost.

105-3 Posted notices. Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster "Equal Employment Opportunity is the Law" in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL "Notice to All Employees" Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-4 Engineer/RPR field office. The Contractor shall provide dedicated space for the use of the field RPR and inspectors, as a field office for the duration of the project. This space shall be located conveniently near the construction and shall be separate from any space used by the Contractor. The Contractor shall furnish water, sanitary facilities, heat, air conditioning, and electricity in accordance with local building codes. <u>Refer to Item G-005 for requirements of the Engineer Field Office</u>.

METHOD OF MEASUREMENT

105-5.1 Basis of measurement and payment Mobilization. Based upon the contract lump sum price for "Mobilization" partial payments will be allowed as follows:

a. With first pay request, 25%.

b. When 25% or more of the original contract is earned, an additional 25%.

c. When 50% or more of the original contract is earned, an additional 40%.

d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by Section 90, paragraph 90-11, *Contractor Final Project Documentation*, the final 10%.

Mobilization costs shall be considered for phases covered by the Base Bid and/or the Additive Alternates in the Bid Form. The Base Bid Mobilization costs will cover Phase 1-7. Mobilization for Additive Alternates 1 -3 & 6 will be for the work under each of these alternate bid schedules. Additive Alternates 4 & 5 work is concurrent to other work and therefore a separate mobilization cost is not paid for.

105-5.2 Basis of measurement and payment Engineer Field Office. Based upon the contract lump sum price for "Engineer Field Office" partial payments will be allowed as described in specification section G-

BASIS OF PAYMENT

105-6 Payment will be made under:

Item C-105-1

Mobilization

per Lump Sum

Item M-001 Construction Access Modifications

CONTRACT DOCUMENTS

001-0.1 This section of these Specifications is a part of the Contract Documents as defined in the General Provisions. All applicable parts of the balance of the Contract Documents are equally as binding for this section as for all other sections.

DESCRIPTION

001-1.1 This item includes all of the work necessary to provide the road improvements for the proposed temporary access gates as shown on the plans or otherwise directed by the Resident Project Representative (RPR) due to existing field conditions. The temporary access road and temporary gate to be installed will become the project access road and entrance gate to the Airside work.

After the completion of the work, the temporary access road and the temporary fence and gate shall be removed, and the existing temporary access road and fence restored to its original configuration. In addition, the existing vehicle service road pavement shall be removed and replaced at no cost to the project, if determined by the RPR to have been damaged by the hauling activities from the project.

MATERIALS

001-2.1 GRAVEL: The gravel material may be recycled material from on-site sources if materials are available. The gravel materials shall meet the requirements of NHDOT Item 304.3 – Crushed Gravel specification, which are as follows:

REQUIREMENTS FOR NHDOT CRUSHED GRAVEL GRADATION

NHDOT 304.3 Allowable Range			
Sieve Size	Percentage Passing by Weight		
3 inch	100		
2 inch	95 - 100		
1-1/2 inch			
1 inch	55-85		
3/4 inch			
No. 4	27 - 52		
No. 40			
No. 200	$0 - 12^{*}$		
* Fraction passing #4 Sieve			

001-2.2 RECLAIMED ASPHALT PAVEMENT (RAP): Reclaimed Asphalt Pavement (RAP) materialis to be used as a temporary surface material and shall meet the requirements for the material as outlinedin NHDOT Standard Specifications for Road and Bridge Construction (NHDOT Standard Specifications) Sections 401. The material shall have the following gradation:

Item M-002 Runway Standby Time

DESCRIPTION

002-1.1 The work included under this section of these specifications shall consist of compensation to the Contractor for lost production due to aircraft operations on Runways 17-35 and 6-24.

EXECUTION

002-2.1 General. The Contractor shall review, in detail, the Detailed Safety and Phasing Plans and plan all work accordingly. The Contractor shall be required to restore the runway safety area to a compliant condition and remove all men and equipment from the safety area if directed to do so by the Owner. This will only occur if severe weather conditions exclude the use of <u>the other runway</u> at MHT.

002-2.2 Coordination. The Contractor will be provided 24 hours prior notification of the need to restore the safety area and open the runway to aircraft.

002-2.3 Resuming Work. Once conditions allow utilization of an alternate runway, a NOTAM will be issued by the Owner. The Contractor will then re-install all barricades and closure markers and resume operations.

002-2.6 Compensation. The Contractor will be compensated for manpower and equipment required to restore the <u>Runway and</u> Runway Safety Area to a compliant condition, removal of runway closure markers and reinstalling closure markers and barricades. Additionally, the Contractor will be compensated for any rework directly caused by the pull back as approved the Engineer.

002-2.7 Pre-Approval and Compensation Procedures. Compensation will be made based on approved rates. A markup of no more than 20% on <u>direct labor</u> rates shall be paid as compensation for insurance, taxes, benefits, etc. No mark-up will be allowed on equipment or materials. The Contractor shall submit all labor and equipment rates to the Engineer for approval <u>prior to beginning</u> any <u>work</u>. Any rates not <u>pre-approved</u> by the Engineer will not be eligible for compensation. Complete documentation including the "cease work" time, "resume work" time, and a list of all personnel and equipment for each pull back is required. Documentation shall be submitted to the Engineer for consideration.

METHOD OF MEASUREMENT

002-3.1 Runway Standby Time. All compensation for lost production shall be measured by the number of hours, or fraction thereof, of lost production as outlined in section 002-2.6 and submitted in accordance with section 002-2.7.

BASIS OF PAYMENT

002-4.1 Runway Standby Time. Payment shall be made from the contract allowance for Item M-002-1 "Runway Standby Time". Payment shall be made after review and upon acceptance of the required documentation by the Engineer. The Contractor is not entitled to the full value of this allowance. Unused allowance value shall be returned to the Owner by change order at the completion of the project.

ITEM M-004 Mechanically Stabilized Earth Walls

DESCRIPTION

1.0 Description

- A. This item shall consist of design, fabrication, furnishing, transportation, of a new coping and removing and resetting of Mechanically Stabilized Earth (MSE) retaining wall panels, as needed, including excavation, support of excavation, backfill and miscellaneous items necessary for a complete installation.
- B. The MSE retaining walls consist of reinforcing strips utilizing architectural precast concrete facing panels. Note where straps and strips are used in the specifications and drawings they shall mean the same thing.
- C. All reinforcing strips shall consist of galvanized steel.
- D. The adjacent wall tie-offs shall consist of galvanized steel utilizing structural Portland Cement Concrete for installation.
- E. The MSE retaining wall shall be constructed in accordance with these specifications and in conformity with the lines, grades, design criteria, and dimensions shown on the Plans or established by the RPR.

1.1 Design Requirements

A. In general, the concrete <u>coping</u> shall be designed in accordance with the manufacturer's requirements to cover all loading during delivery, installation and the 75-year service life.

1.2 Submittals

- A. Design computations demonstrating compliance with the above criteria prepared, and signed and stamped by a registered professional engineer licensed in the State of New Hampshire shall be submitted. The design calculations shall include:
 - 1. Statement of all assumptions made and copies of all references used in the calculations.
 - 2. Analyses or studies demonstrating durability and corrosion resistance of retaining wall systems for the proposed location and environment. The designers shall provide all corrosion protection devices necessary for the retaining wall to have a minimum service life of 75 years in the proposed location and environment.
 - 3. A detailed listing of MSE walls that the Contractor has constructed including a brief description of each project and a listing of personnel who will construct the walls demonstrating their experience in construction of MSE retaining walls. A reference shall be included for each project listed. As a minimum, the reference shall include an individual's name, address and current phone number.
 - 4. Manufacturer's product data for the MSE wall system, including material, manufacture and erection specifications, all specified erection equipment necessary, details of buried MSE wall elements, special details required of reinforcing layout around drainage structures and sign foundations, structures design properties, type of backfill and details for connections between facing panels.

- 5. Concrete mix design in accordance with manufacturer recommendations.
- B. Shop Drawings showing the configuration and all details, dimensions, quantities and crosssections necessary to construct the MSE wall, including but not limited to the following:
 - 1. A plan view of the wall which shall include Contract limits, stations and offsets, and the face of wall line shown on the Plans.
 - 2. An elevation view of the wall which shall include the elevation at the top of the wall at all horizontal and vertical break points and at least every 50 feet along the face of the wall, the designation as to the type of coping (precast or cast-in-place) and an indication of the final ground line. The face of wall shown on the Plans shall be indicated.
 - 3. A typical cross section or cross sections showing the elevation relationship between existing ground conditions and proposed grades, and the proposed coping configuration including details for the proposed methods for connecting to existing conditions. The sections shall also indicate the location of the face of wall shown on the Plans.
 - 4. Structural details of all concrete coping (precast, cast-in-place, level up concrete) showing dimensions, reinforcing, lifting points and lifting requirements.
 - 5. General notes pertaining to design criteria, wall construction and lifting equipment requirements.
 - 6. A listing of the summary of material quantities.
 - 7. Clearly indicated details for construction of walls or reinforcing elements around drainage, foundations, utilities, or any other potential obstructions.
 - 8. Drainage design detail and design scheme.
 - 9. Location of utilities.
 - 10. Sequence and schedule of construction, including overall construction schedule.
 - 11. Methods of excavation and backfill.
 - 12. Method of maintaining stability of excavated trenches.
 - 13. Method of monitoring plumbness and deviation of wall.
 - 14. Excavation support system, if any.
 - 15. Any acceptance testing and frequency.
 - 16. Details and location of all necessary construction and expansion joints.

PRODUCTS

2.0 General

A. The Contractor shall be responsible for the purchase or manufacture of any reinforcing strips, panel/reinforcement connections, bearing pads, joint filler, galvanized steel posts, galvanized steel shoulder eyebolts, and all other necessary components. The Contractor shall furnish to the RPR the appropriate Certificates of Compliance certifying that the applicable wall materials meet the requirements of the project specifications. All materials used in the construction of the MSE retaining walls shall meet the requirements as specified herein.

Materials not conforming to this section of the specifications or from sources not listed in the contract documents shall not be used without written consent from the RPR.

2.1 Reinforced Concrete Coping. Concrete for all precast and cast-in-place components shall be air-entrained composed of portland cement, fine and coarse aggregates, admixtures and water in accordance with 2016 NHDOT Standard Specifications, Section 520 "Portland Cement Concrete". The air-entraining feature may be obtained by the use of either air-entraining

portland cement or an approved air-entraining admixture. The entrained-air content shall be not less than four percent or more than seven percent. The concrete utilized shall be a mix which will attain a minimum 28-day compressive strength of 5,000 pounds per square inch. The mix design shall be furnished to the RPR for approval.

- A. Reinforced Concrete Facing Panels. Use existing.
- B. Inspection and Rejection: The quality of materials, process of manufacture, and finished units shall be subject to inspection by the RPR prior to shipment. Precast units may be subject to rejection on account of failure to conform to this specification. Individual units may be rejected because of any of the following:
 - 1. Variations in the exposed face that substantially deviate from the approved architectural model as to color, texture, relief and reveals in accordance with precast concrete industry standards.
 - 2. Dimensions not conforming to the following tolerances:
 - a. Surface defects on smooth-formed surfaces measured over a length of five feet shall not exceed 1/8". Surface defects on textured-finished surfaces measured over a length of 5' shall not exceed 5/16".
 - 3. Defects indicating honeycombed or open texture.
 - 4. Defects which would affect the structural integrity of the unit including cracked or severely chipped.
- C. The units shall be fully supported until the concrete reaches a minimum compressive strength of 1,500 psi. The units may be shipped after reaching a minimum compressive strength of 4,400 psi. At the option of the Contractor, the units may be installed after the concrete reaches a minimum compressive strength of 4,400 psi.
- D. Not used.
- E. Not used.
- F. All new and existing units shall be handled, stored, and shipped in such a manner as to eliminate the dangers of chipping, discoloration, cracks, fractures, and excessive bending stresses. <u>Coping</u> in storage shall be supported in firm blocking to protect the panel connection devices and the exposed exterior finish.
- G. Reinforcing steel for shall be plain epoxy coated reinforcing bars in accordance with ASTM A615, Grade 60. Epoxy coating shall be in accordance with ASTM A775.

Quality assurance and testing will be modified by the following:

- 1. Compressive Strength Acceptance of concrete <u>coping</u> with respect to compressive strength will be determined on the basis of production lots. A production lot is defined as a group of panels that will be represented by a single compressive strength sample <u>and will</u> of a single day's production, whichever is less.
- 2. During the production, the manufacturer will randomly sample the concrete in accordance with ASTM C172. A single compressive strength sample, consisting of a minimum of four cylinders, will be randomly selected for every production lot.

- 3. Compressive tests shall be made on a standard 6-inch by 12-inch test specimen prepared in accordance with ASTM C31. Compressive strength testing shall be conducted in accordance with ASTM C39.
- 4. Air content will be performed in accordance with ASTM C231 or ASTM C173. Air content samples will be taken at the beginning of each day's production and at the same time as compressive samples are taken to ensure compliance.
- 5. The slump test will be performed in accordance with ASTM C143. The slump will be determined at the beginning of each day's production and at the same time as the compressive samples are taken.
- 6. For every compressive strength sample, a minimum of two cylinders shall be cured in accordance with ASTM C31 and tested at 28 days. The average compressive strength of these cylinders, when tested in accordance with ASTM C39 will provide a compressive strength test result which will determine the compressive strength of the production lot.
- 7. If the Contractor wishes to ship prior to 28 days, a minimum of two additional cylinders will be cured in the same manner as the panels. The average compressive strength of these cylinders when tested in accordance with ASTM C39 will determine whether the coping can be shipped.
- 8. Acceptance of a production lot will be made if the compressive strength test result is greater than or equal to 5,000 pounds per square inch. If the compressive strength test result is less than 5,000 pounds per square inch, then the acceptance of the production lot will be based on its meeting the following acceptance criteria in their entirety:
 - a. Ninety percent of the compressive strength test results for the overall production shall exceed 5,150 pounds per square inch.
 - b. The average of any six consecutive compressive strength test results shall exceed 5,250 pounds per square inch.
 - c. No individual compressive strength test result shall fall below 4,600 psi.

2.2 Soil Reinforcing and Attachment Devices

- A. All reinforcing and attachment devices shall be carefully inspected to insure they are true to size and free from defects that may impair their strength and durability.
- B. Ribbed Reinforcing Strips Ribbed reinforcing strips shall be hot rolled from bars to the required shape and dimensions. Their physical and mechanical properties shall conform to either ASTM A36 or ASTM A572. Galvanization shall conform to the minimum requirements of ASTM A123.
- C. Tie Strips The tie strips shall be shop fabricated of hot rolled steel conforming to the minimum requirements of ASTM A570, Grade 50 or equivalent. Galvanization shall conform to ASTM A123.
- Coil Embeds/Loop Embeds-Shall be fabricated of cold drawn steel wire conforming to ASTM 510, UNS G 10350 or ASTM A82. Loop imbeds shall be welded in accordance with ASTM A185. Both shall be galvanized in accordance with ASTM B633.
- E. Coil Embed Grease The cavity of each coil embed shall be completely filled with no-oxide type grease.
- F. Coil Bolt The coil bolts shall have two inches of thread. They shall be cast of 80-55-06 ductile iron conforming to ASTM A536. Galvanization shall conform to ASTM B633.

- G. Fasteners Fasteners shall consist of hexagonal cap screw bolts and nuts, which are galvanized and conform to the requirements of ASTM A325 or equivalent.
- H. Connector Pins Connector pins and mat bars shall be fabricated from ASTM A36 steel and welded to the soil reinforcement mats as shown on the Plans. Galvanization shall conform to ASTM A123.

2.3 Joint Materials

- A. Installed to the dimensions and thickness in accordance with the Plans or approved shop drawings.
- B. Provide either preformed EPDM rubber pads conforming to ASTM D2000 for 4AA, 812 rubbers or neoprene elastomeric pads having a Durometer Hardness of 55 ±5.
- C. All horizontal and vertical joints between panels shall be covered by a geotextile (separation-high survivability) conforming to the requirements for filtration applications as specified by AASHTO M288. The minimum width and lap shall be twelve inches. Slit film and multifilament woven and resin bonded non-woven geotextile fabrics are not allowed for this application. The minimum width of the fabric shall be 12 inches. Lap fabric at least 4 inches where splices are required.

2.4 Reinforced/Structural Backfill Materials

A. General

Reinforced backfill material shall be free of shale, organic matter, mica, gypsum, smectite, montmorillonite, or other soft poor durability particles. No salvaged material, such as asphaltic concrete millings or Portland Cement Concrete rubble, etc., will be allowed.

B. Gradation

Gradations will be determined per AASTHO T 27 and shall be in accordance with Table 1, unless otherwise specified. The reinforced backfill shall be well-graded in accordance with the Unified Soil Classification System (USCS) in ASTM D2487. Furthermore, the reinforced wall fill shall not be gap-graded.

Sieve Size	Percent Passing
4 inch	100
No. 40	0-60
No. 200	0-15

Table 1. Reinforced Backfill Gradation Requirements

C. Plasticity

Plasticity Index (PI), as determined in accordance with AASHTO T 90, shall not exceed six.

D. Soundness

The reinforced backfill material shall have a soundness loss of 30 percent or less when tested in accordance with AASHTO T 104 using a magnesium sulfate solution with a test duration of four

cycles. Alternatively, the material shall have a soundness loss of 15 percent or less when tested in accordance with AASHTO T 104 using a sodium sulfate solution with a test duration of five cycles.

E. Internal Friction Angle Requirements

The reinforced backfill material shall exhibit an effective (drained) angle of internal friction of not less than 34 degrees, as determined in accordance with AASHTO T 236. The test shall be run on the portion finer than the No. 10 sieve. The sample shall be compacted at optimum moisture content to 95 percent of the maximum dry density, as determined in accordance with the requirements of AASHTO T 99. The sample shall be tested at the compacted condition without addition of water. No direct shear testing will be required when 80 percent or more of the material is larger than ³/₄ inch.

F. Electrochemical Requirements

The reinforced backfill material shall meet the electrochemical requirements of Table 2. The organic content of backfill shall be less than one (1) percent, determined in

accordance with AASHTO T-267.

Table 2. Electrochemical Requirements for Metallic Reinforcements

Characteristic	Requirement	Test Method
PH	5 to 10	AASHTO T289
Resistivity, min.	3,000 ohm-cm	AASHTO T288
Chlorides*, max.	100 ppm	ASTM D4327
Sulfates*, max.	200 ppm	ASTM D4327

*: If the resistivity is greater or equal to 5,000 ohm-cm, the chloride and sulfate requirements may be waived.

G. Limits of Reinforced Backfill

For all MSE walls, except back-to-back walls, the reinforced backfill shall extend to at least one (1) foot beyond the free end of the reinforcement.

2.5 Retained Backfill Materials

A. General

Backfill behind the limits of the reinforced backfill shall be considered as retained backfill for a distance equal to 50 percent of the design height of the MSE wall or as shown on the Plans. The retained backfill shall be free of shale, mica, gypsum, smectite, montmorillonite or other soft particles of poor durability. The retained backfill shall meet the soundness criteria as described in Subsection 2.4(D).

The percent fines (the fraction passing No. 200 sieve) shall be less than 35 as determined in accordance with AASHTO T-27, and the Liquid Limit (LL) and the Plasticity Index (PI) shall be less than 30 and 12, respectively, as determined in accordance with AASHTO T-90.

B. Internal Friction Angle Requirements

Unless otherwise noted on the Plans, the retained backfill material shall exhibit an effective (drained) angle of internal friction of not less than 32 degrees, as determined in accordance with AASHTO T 236. The test shall be run on the portion finer than the No. 10 sieve. The sample shall be compacted at optimum moisture content to 95 percent of the maximum dry density, as determined in accordance with the requirements of AASHTO T 99. The sample shall be tested at the compacted condition without addition of water. No direct shear testing will be required when 80 percent or more of the material is larger than ³/₄ inch.

2.6 Acceptance of Material

A. The Contractor shall furnish to the RPR a Certificate of Compliance certifying that the above materials comply with the applicable contract specifications. A copy of all test results performed by the Contractor necessary to assure contract compliance shall also be furnished to the RPR. Acceptance will be based on the Certificate of Compliance, accompanying test reports, and visual inspection by the RPR.

2.7 SAMPLES

A. Certificate of Analysis for Reinforced Backfill and Retained Backfill Materials.

At least three weeks prior to construction of the MSE wall, the Contractor shall furnish the RPR with an 80-pound representative sample of each of the backfill material and a Certificate of Analysis conforming to the requirements of Subsections 2.4 and 2.5 certifying that the backfill materials comply with the requirements specified herein.

During construction the reinforced and retained backfill shall be sampled and tested by the Contractor for acceptance and quality control testing. The gradation and plasticity index requirements should be tested at least once per 2,000 cubic yard and 5,000 cubic yards for reinforced backfill and retained backfill, respectively.

A new sample and Certificate of Analysis shall be provided any time the reinforced and retained backfill material changes.

2.8 Wall Tie-Off and Associated Materials

- A. All reinforcing materials shall be carefully inspected to ensure they are true to size and free from defects that may impair their strength and durability. Concrete for all required backfill locations shall be in accordance with Item P-610.
- B. Fence posts all installed galvanized steel fence posts will be 4" in diameter and 4' in length, filled with concrete and capped. Galvanization shall conform to ASTM A123.
- C. Eyebolt and Screws $-\frac{1}{2}$ "x6" steel shoulder eyebolt with cast eye and nut fastening shall be hot dip galvanized in conformance with ASTM A123 and installed 2" from top of fence posts.

2.9 Geomembrane

- A. High Density Polyethylene (HDPE), Textured
- B. Properties

Certified Property	ASTM	Values
Thickness	D-5199	60 mil
Formulated Density	ASTM D1505/D-792	0.940 g/cc
Tensile Properties (Min. ave.)	ASTM D-6693 (Type IV)	
Yield Strength		120 lb/in
Break Strength		90 lb/in
Yield Elongation		12%
Break Elongation		100%
Tear Resistance (min. ave)	D-1004	42 lb
Puncture Resistance (min. ave)	D-4833	90 lb
Stress Crack Resistance	D-5397	500 hr.
Carbon Black Content Range	D-4218	2-3%
Oxidative Induction Time	D-3895	
(OIT) Min. Ave		100 min.
Standard OIT		
Oven Aging @ 85deg C	D-5721	55%
Standard OIT % Retained afer 90 days	D-3895	

EXECUTION

3.0 Delivery, Storage and Handling

- A. The Contractor shall check the material upon delivery to assure that the proper material has been received. A product certification should be provided with each shipment.
- B. All wall materials and facing panels shall be stored elevated from the ground and protected to prevent all mud, wet cement, epoxy and like substances which may affix themselves to the panels or materials. The panels shall be supported during storage to prevent excessive bending stress. For storage exceeding 30 days in duration, all materials shall be stored in or beneath a trailer or covered with a colored tarpaulin to prevent long-term exposure.

3.1 Layout

A. The contractor shall make the required measurements by survey or other means on the sloped sections of the wall prior to ordering pre-cast materials to ensure the fit and support by the level up concrete matches the manufacture details. Engineer's survey will be made available to the Contractor.

3.2 Wall Excavation

A. Earth excavations shall be in accordance with the requirements of P-152 Excavation, Subgrade and Embankment, and in close conformity to the limits and construction stages shown on the Plans. Payment for excavation and incidentals to complete the excavation are included in the MSE wall item.

3.3 Wall Erection.

Walls shall be erected in accordance with the manufacturer's written instructions. The Contractor shall be responsible for ensuring that a field representative from the manufacturer is available at the site as called upon by the RPR, to assist the Contractor and RPR at no additional cost to the Owner. All temporary construction aids (e.g., wedges, clamps, etc.) shall be in accordance with the manufacturer's recommendations.

For precast concrete panel walls, the panels shall be placed such that their final position is vertical or battered as shown on the plans. As wall fill material is placed, the panels shall be maintained in the correct vertical alignment by means of temporary wedges, clamps, or bracing as recommended by the manufacturer. A minimum of two, but not more than three, rows of panel wedges shall remain in place at all times during wall erection. Wedges shall be removed from lower rows as panel erection progresses, so as to prevent chipping or cracking of concrete panels. The Contractor shall repair any damage to erected concrete panels as directed by the RPR and to the RPR's satisfaction. No external wedges in front of the wall shall remain in place when the wall is complete.

Erection of walls with panel facing shall be in accordance with the following tolerances:

- Vertical and horizontal alignment of the wall face shall not vary by more than ³/₄ inch when measured along a 10-foot straightedge.
- The overall vertical tolerance (plumbness) of the finished wall shall not exceed ¹/₂ inch per 10 feet of wall height. Negative (outward leaning) batter is not acceptable.
- The maximum permissible out of plane offset at any panel joint shall not exceed 3/8 inch.
- The final horizontal and vertical joint gaps between adjacent facing panel units shall be within 1/8 inch and 1/4 inch, respectively, of the design final joint opening per the approved calculations and shop drawings.

Wall sections not conforming to these tolerances shall be reconstructed at no additional cost to the Owner.

3.4 Placement of Metallic Reinforcement Elements.

Metallic reinforcement elements shall be placed normal (perpendicular) to the face of the wall, unless otherwise shown on the approved Plans. All reinforcement shall be structurally connected to the wall face.

At each level of the soil reinforcement, the reinforced wall fill material shall be roughly leveled and compacted before placing the next layer of reinforcement. The reinforcement shall bear uniformly on the compacted reinforced soil from the connection to the wall to the free end of the reinforcing elements. The reinforcement placement elevation shall be at the connection elevation to two (2) inches higher than the connection elevation.

Where overlapping of reinforcing may occur, such as at corners, reinforcing connections to panels shall be adjusted to maintain at least three (3) inches of vertical separation between overlapping reinforcement.

3.5 Backfill Placement

- A. Backfill placement shall closely follow erection of each course of panels. Backfill shall be placed in such a manner as to avoid any damage or disturbance of the wall materials or misalignment of the facing panels or reinforcing elements. Any wall materials which become damaged during backfill placement shall be removed and replaced at the Contractor's expense. Any misalignment or distortion of the wall facing panels due to placement of backfill outside the limits of this specification shall be corrected at the Contractor's expense. At each reinforcement level, the backfill shall be placed to the level of the connection. Backfill placement methods near the facing shall assure that no voids exist directly beneath the reinforcing elements.
- B. For metallic reinforcements, the fill shall be spread by moving the machinery parallel to or away from the wall facing and in such a manner that the steel reinforcement remains normal to the face of the wall. Construction equipment shall not operate directly on the steel reinforcement. A minimum fill thickness of three (3) inches over the steel reinforcement shall be required prior to operation of vehicles. Sudden braking and sharp turning shall be avoided.
- C. The maximum lift thickness before compaction shall not exceed ten (10) inches. The Contractor shall decrease this lift thickness, if necessary, to obtain the specified density. Backfill shall be compacted to 95 percent of the maximum density as determined by AASHTO T-99.
- D. Backfill shall be compacted using a static-weighted or vibratory roller. Sheeps-foot or grid-type rollers shall not be used for compacting material within the limits of the soil reinforcement. The Contractor shall take soil density tests, in accordance with ASTM D1556 or ASTM D 6938 to ensure compliance with the specified compaction requirements. Soil density tests shall be taken at intervals of not less than one for every 200 cubic yards, with a minimum of one test per lift. Compaction tests shall be taken at locations determined by the RPR.
- E. The backfill density requirement within three (3) feet of the wall facing shall be 90 percent of maximum dry density as determined by AASHTO T 99 (Standard Proctor). Compaction within three (3) feet of the wall shall be achieved by a minimum number of passes of a lightweight mechanical tamper or roller system. The minimum number of passes and rolling pattern shall be determined, prior to construction of the wall, by constructing a test pad section. The minimum dimensions of the test pad shall be five (5) feet wide, 15 feet long, and three (3) feet final depth.

Compaction in the test pad section shall be performed as follows:

- Maximum lift thickness before compaction shall be eight (8) inches.
- Minimum one density test per lift.

Only those methods used to establish compaction compliance in the test pad section shall be used for production work. Any change in the approved material or the approved equipment shall require the Contractor to conduct a new test pad section and obtain re-approval by the RPR of the minimum number of passes and rolling pattern. No measurement or payment will be made for test pad sections.

- F. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer. Backfill materials shall have a placement moisture content three (3) percent less than or equal to the optimum moisture content as determined in accordance with the requirements of AASHTOT 99. Backfill material with a placement moisture content in excess of the optimum moisture content shall be removed and reworked until the moisture content is uniformly acceptable throughout the entire lift.
 - G. At the end of each day's operation, the Contractor shall slope the last lift of the backfill away from the wall facing to rapidly direct runoff away from the wall face. In addition, the Contractor shall not allow surface runoff from other areas to enter the wall construction site.

3.6 Geomembrane Placement

- A. Install per manufacturer's recommendations.
 - B. Overlap membrane as specified on the Plans.
- C. Protect membrane during installation from punctures and tears.

MEASUREMENT AND PAYMENT

4.0 MEASUREMENT

- A. Mechanically Stabilized Earth Wall shall be measured by the number of each panel of MSE wall complete in place and accepted.
- B. Concrete wall coping shall be measured by the number of linear feet of coping installed in place and accepted.
- C. Concrete coping on slopes (Bolted) shall be measured by the number of linear feet of coping installed bolted in place and accepted.
- D. Concrete coping on slopes (Cast-in-Place) shall be measured by the number of linear feet of coping installed in place and accepted.
- E. Wall Strap Splicing shall be the number of straps (strips) cut and spliced in place and accepted.
- F. Wall tie-offs shall be measured by the number of each complete installations in place and accepted.

5.0 PAYMENT

- A. Payment shall be made at the contract unit price per each panel for Mechanically Stabilized Earth Wall panel removed and reset, including associated straps (strips). These prices shall be full compensation for submittal preparation, furnishing all materials and for all preparation, delivery, and installation of these materials, including excavation, backfilling and compaction, temporary shoring, textured geo-membrane (on slope), and for all labor, equipment, tools, and incidentals necessary to complete the item.
- B. Payment shall be made at the contract unit price per linear foot for construction and installation of precast reinforced concrete coping. These prices shall be full compensation for the field layout confirmation; NH professional engineering stamped design of the coping layout and coping construction details; submittals; and furnishing all materials including level-up concrete form work, concrete, dowels & reinforcing; and for all preparation, delivery and installation of materials, including all labor, equipment, tools, and incidentals necessary to complete the item.
- C. Payment shall be made at the contract unit price per linear foot for construction and installation of reinforced concrete coping (bolted.) These prices shall be full compensation for the field layout confirmation; NH professional engineering stamped design of the coping layout and coping construction details; submittals; and furnishing all materials including level-up concrete form work, concrete, dowels & reinforcing; and for all preparation, delivery and installation of materials, including all labor, equipment, tools, and incidentals necessary to complete the item.
- D. Payment shall be made at the contract unit price per linear foot for construction and installation of reinforced concrete coping (Cast-in-Place.) These prices shall be full compensation for the field layout confirmation; NH professional engineering stamped design of the coping layout and coping construction details; submittals; and furnishing all materials including level-up concrete form work, concrete, dowels & reinforcing; and for all preparation, delivery and installation of materials, including all labor, equipment, tools, and incidentals necessary to complete the item.
- E. Payment shall be made at the contract unit price per each for Wall Strap Splicing completed. These prices shall be full compensation for submittal preparation, furnishing all materials and for all preparation, delivery, and installation of these materials, including excavation, backfilling and compaction, temporary shoring, and for all labor, equipment, tools, and incidentals necessary to complete the item.
- F. Payment shall be made at the contract unit price per each Wall Tie-Off installed. These prices shall be full compensation for design and furnishing all materials, and for all preparation, delivery, and installation of these materials, including all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item M-004-1	Remove and Reset Mechanically Stabilized Earth Wall Panels and Straps	per Each
Item M-004-2	Concrete Wall Coping	per Linear Foot
Item M-004-3	Concrete Wall Coping (Bolted)	per Linear Foot
Item M-004-4	Concrete Wall Coping (Cast-in-Place)	per Linear Foot
Item M-004-5	Wall Strap Splicing	per Each
Item M-004-6	Wall Tie-Off	per Each

M-004 Mechanically Reinforced Earth Walls (Addendum No. 2)

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END OF SECTION M-004

Item M-006 Flush/Clean Out Existing Underdrains

DESCRIPTION

006-1.1 The work under this section of these specifications shall consist of flushing and cleaning the underdrains on Runway 17-35 and Runway 6-24 as ordered.

The existing 4" to 6" diameter underdrains were installed 20-years ago with the runway construction. The underdrains reside approximately 4' below the pavement surface at the edge of the runway. The underdrains are accessed from inspection holes at the edge of the runway. The inspection hole consists of an approx. 6-inch diameter cast iron cover and frame over an HDPE pipe. The inspection holes are spaced approximately 500-feet apart on both sides of the runway.

The Airport staff has noted that certain electrical drainage connects to the underdrains. However, the electrical drainage is not draining. Therefore, a blockage in the underdrain is anticipated.

As the scope of this item is unclear, this item will be an allowance.

This item shall flush, clean and video inspect the underdrain pipes as ordered.

MATERIALS

006-2.1 Not used.

CONSTRUCTION METHODS

006-3.1 Flush, Clean and Inspect

All underdrains designated by the RPR shall be opened, cleaned by flushing and inspected with camera. It is anticipated that this work will be conducted by a specialty contractor.

All work shall be completed under the direction of the RPR.

All debris shall be cleaned from the pavement and removed from the site.

METHOD OF MEASUREMENT & BASIS OF PAYMENT

006-4.1 Measurement of "Flush/Cleanout Existing Underdrains" will be based on invoices for material, labor and equipment to complete this item. Payment shall be made from the contract allowance for "Flush/Cleanout Existing Underdrains". Payment shall be made after review and upon acceptance of the required documentation by the Engineer. Contractor markup is not allowed.

The payment items and units for the work under this section of these Specifications are as follows:

Payment shall be made under:

Item M-006-1

Flush/Cleanout Existing Underdrains

per allowance

END OF ITEM M-006

Item M-006 Flush/Cleanout Existing Underdrains (Addendum No. 2) M-006-1

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- general site conditions
- erosion control maintenance and corrective actions taken
- the anticipated schedule of construction activities for the next reporting period
- any SWPPP amendments
- representative photographs

The weekly on-site review shall be conducted only when the Contractor's personnel are on site. Should any deficiencies or non-compliance issues be found, corrective action shall be performed in accordance with the USEPA and Construction General Permit (CGP). The Plan Monitor shall report any deficiencies or non-compliant issues to the Contractor and RPR prior to exiting the site.

Within 24 hours of completing the on-site review, the Plan Monitor shall provide a formal written copy of the monitoring report to the RPR to be maintained on file with the SWPPP at the project site.

The Plan shall include the preparation and submittal by the Contractor of the US EPA Notice of Intent prior to construction and Notice of Termination at the end of construction. Forms are available on the US EPA web site. Copies of all documents shall be made available to the RPR.

The RPR may order modifications to the Plan for changing operations or for inadequate erosion and sediment control and stormwater management measures. Changes and/or modifications shall be noted by the Plan Preparer on the approved Plan located at the project site.

The Preparer of the Plan shall be available for on-site consultations with the RPR within 24 hours of request. The Owner reserves the right to request a replacement Plan Monitor.

Project work may be suspended, wholly or in part, with no extension of time or additional compensation for failure to implement and maintain the approved Plan, including modifications.

METHOD OF MEASUREMENT

007-3.1 Stormwater Pollution Prevention Plan will be measured as a unit. A unit will include preparation, submittals, modifications, resubmittals, filing the Notice of Intent with the EPA and filing the Notice of Termination with the EPA. Additional erosion control features called for in the SWPPP that are not included on the contract plans will not be measured and paid for directly but rather shall be considered a subsidiary to the SWPPP.

007-3.2 SWPPP Monitoring will be measured as a unit for all site monitoring, report development and report delivery to the RPR.

007-3.3 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor with costs included in the contract prices bid for the items to which they apply.

BASIS OF PAYMENT

007-4.1 Stormwater Pollution Prevention Plan and SWPPP Monitoring will be paid for based on the work area covered as indicated by the project phasing.

The SWPPP and monitoring are required for 1-acre or more of disturbance. Therefore, based on award of the additive alternates in the various phases of the project, the pay items become required the land disturbances increase.

Therefore, the runway phases 1-7 alone do not require the SWPPP and monitoring as they disturb under 1-acre. However, if phase 8 is awarded, the SWPPP and monitoring is required for phase 8 plus phases 1-7. Phases 9 & 10, when awarded with phase 8, will require the SWPPP and monitoring. Based on the above the pay items are defined incrementally for the project areas required as follows:

Payment will be made under:

M-007-1		Stormwater Pollution Prevention Plan (SWPPP) (Phases 1-8)	per Lump Sum
M-007-2		SWPPP Monitoring (Phases 1-8)	per Lump Sum
M-007-3		Stormwater Pollution Prevention Plan (SWPPP) (Phase 9)	per Lump Sum
M-007-4		SWPPP Monitoring (Phase 9)	per Lump Sum
M-007-5		Stormwater Pollution Prevention Plan (SWPPP) (Phase 10)	per Lump Sum
M-007-6		SWPPP Monitoring (Phase 10)	per Lump Sum

END OF ITEM M-007

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Item M-008 Crack Repairs for Bituminous Pavements

Description

<u>008-1.1</u> This work consists of milling, excavating, reshaping, cleaning, filling, repairing and reconstructing cracked bituminous concrete pavement, including the application of a stress relieving membrane over the cracks, as required, and installing pavement patches where necessary, in accordance with these specifications and as directed by the Engineer.

The various types of crack repairs are further classified as follows:

a. Type 1A Crack Repair - Fiber Modified Cracksealer. Applying hot pumped asphalt crack sealer containing polyester modified fibers as shown on the Drawings for Type 1A crack filling on pavement to be repaired and to be inlaid.

b. Type 1B Crack Repair - Fiber Modified Cracksealer with Stress Absorbing Membrane. Type 1B crack filling shall be prepared and filled using the same treatment as specified for Type 1A repair except the surface shall be primed and a 12-inch wide stress absorbing membrane shall be installed over the crack sealer.

c. Type 1C Crack Repair –**Mill and Inlay Repair.** Remove bituminous concrete pavement by milling; clean, dry, <u>prime coat over trench joints, apply a 12-inch wide stress absorbing membrane over the trench joints.</u>

d. Type 1D Crack Repair –**Mill and Inlay Repair.** Remove bituminous concrete pavement by milling; clean, dry, <u>install crack sealing filler</u>, tack coat, fill with bituminous concrete surface course, prime surface and apply variable width stress absorbing membrane as indicated on the Contract Drawings. This shall be used for localized areas requiring milling depths deeper than indicated due to suspect pavement that is encountered or that falls outside of the project milling items.

Materials

008-2.1 MEMBRANE

Stress absorbing membrane shall conform to the following requirements:

Property		Value	Test Method
Thickness (mils)		75	ASTM D1777
Grab tensile (lbs)	(MD) (XMD)190	180	ASTM D1682

Elongation (%)	(MD) (XMD)75	85	ASTM D1682
Strip tensile (lbs/in)		60	ASTM D882 (modified)
Puncture resistance (lbs)		215	ASTM E154
Puncture resistance (lbs)		80	CW 022 Corps of Engineers
Permanence Perms		0.10 (maximum)	ASTM E96 Method B
Pliability (1/4 inch mandrel)		No cracks in fabric or rubberized asphalt	ASTM D146 (modified)
Peel adhesion (lbs/in) in 180 angle without primer	degree	3	PSTC

Primer shall be compatible with membrane and shall be supplied by membrane manufacturer.

008-2.2 FIBER REINFORCED ASPHALT CRACK SEALER

Fiber reinforced asphalt crack sealer materials shall be short-length polyester fibers having the following properties

Length	0.25 inch
Diameter	0.0008 inch plus or minus 0.001 inch
Specific Gravity	1.32 to 1.40
Melt Temperature	480-degrees Fahrenheit minimum
Ignition Temperature	1000-degrees Fahrenheit minimum
Tensile Strength	greater than 80,000 PSI
Break Elongation	33% plus or minus 9% when they are fully drawn

Asphalt fiber compound shall be mixed at a rate of 6-8% fiber weight to weight of asphalt cement (AC-20). The asphalt binder shall conform to a PG 64-28.

008-2.3 ASPHALT MIX PAVEMENT

Asphalt shall conform to the requirements of Project Item P-401 Asphalt Mix Pavement" of these Specifications.

<u>008-2.4</u> <u>TACK COAT</u>

Tack coat shall conform to the requirements described in Project Item P-603 Bituminous Tack Coatof these Specifications.

Construction Methods

008-3.1 WEATHER LIMITATIONS

No crack repair material shall be applied in wet cracks or where frost, snow or ice is present nor when ambient temperature is <u>below the manufacturer's recommendation</u>.

008-3.2 TIME LIMITATIONS

The Contractor shall schedule operations so that all crack filling and pavement repairs will be performed within the schedules identified on the Plans and Specifications.

008-3.3 EQUIPMENT

Equipment used in the performance of the work shall be as subject to the approval of the Engineer and maintained in first class working conditions at all times. Saws for sawcutting shall be capable of following the path of the crack to form a precise saw reservoir to provide structurally sound crack interfaces. Saws shall be capable of interchangeable diamond blades to readily adjust widths to field conditions or as directed by the Engineer. No wet sawing will be allowed.

Air compressor shall be portable and capable of furnishing not less than 100 cubic feet of air per minute at not less than 90 pounds per square inch pressure at the nozzle. The compressor shall be equipped with traps that will maintain the compressed air free of oil and water.

Manually operated, gas powered, air-broom or self-propelled vacuum sweeper designed especially for use in cleaning highway pavements shall be used to remove debris, dirt an dust from routed cracks.

Hand tools shall consist of brooms, shovels, metal bars with chisel-shaped ends, and any other tools which may be satisfactorily used to accomplish the work.

The melting kettle used to melt the crack sealing compound shall be a double boiler, indirect fired type. The space between the inner and outer shells shall be filled with a suitable heat transfer oil or substitute having a flash point of not less than 600-degrees F. The kettle shall be equipped with a satisfactory means of agitating the crack sealer at all times. This may be accomplished by continuous stirring with mechanically operated paddles and/or by a continuous circulating gear pump attached to the heating unit. The kettle shall be equipped with thermostatic control calibrated between 200 and 550-degrees F. (93 and 288-degrees C).

Equipment for blowing clean, drying and rejuvenating sidewall of cracks shall be a propane torch unit which operates at 3000-degrees F, and gas velocity 3000 feet per second.

008-3.4 STRESS ABSORBING MEMBRANE

Membrane shall be installed after crackfilling or as specified herein and shown on the detailed drawings. The pavement surface shall be thoroughly cleaned and dried and shall be primed in

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accordance with the manufacturer's instructions prior to placement of the membrane.

The primer will be placed on the surface at the rate specified by the manufacturer of the primer, it shall extend two inches wider than the membrane and will be allowed to dry until tack-free before applying the membrane. Sections, which are primed, shall be covered with membrane within the same day.

The membrane shall be installed in widths of 12 inches and shall be centered over the crack or perimeter of bituminous concrete patch within a one inch tolerance. Transverse cracks shall be sealed first in any area. The longitudinal cracks will be sealed after the transverse cracks. Laps will be permitted in both the transverse and longitudinal membrane with a minimum overlay of 3 inches.

The material shall be laid smooth, straight and wrinkle-free, with no uplifted edges. Any wrinkles over 3/8-inches in width shall be slit and folded down. After the membrane has been placed, it shall be pressed against the asphalt surface by means of a hand roller or other suitable equipment to ensure proper bonding. Special attention should be given to insure that the edges or corners of the strips are securely bonded to the surface. Any strips with loose edges or corners should be rebonded or replaced prior to placement of the overlay at the expense of the Contractor.

All membrane shall be surface dry before placement of the bituminous concrete patch or overlay.

008-3.5 TYPE 1A CRACK REPAIR - FIBER MODIFIED CRACKSEALER

Type 1A Cracks shall be clean and dry before installing hot applied fiber reinforced crack sealer. All cracks shall be blown clean by high-pressure air. All loose material shall be removed from the cracks and from the pavement surfaces. The cracks shall be sterilized by use of propane torch to eliminate all vegetation, moisture and dirt.

No crack sealing material shall be applied in wet cracks or where frost, snow, or ice is present, nor when the ambient temperature is below <u>the manufacturer's recommendation</u>.

Fiber modified crack sealing material shall be heated and applied at a temperature specified by the manufacturer and approved by the Engineer. Minimum application temperature shall be 320 degrees. Sealer shall be delivered to the pavement surface through a pressure hose line and applicator shoe.

All cracks shall be sealed as specified herein, and the sealer shall be well bonded to the pavement. Unless otherwise directed, the cracks shall be completely filled flush with the pavement, not more than 1/8 inch below surface, without formation of voids or trapped air. More than one application of crack sealer may be necessary to fill cracks to required level. When an overband of material is required, it shall be placed over the crack as shown on the Drawings. The overband shall be rolled to a thickness of 1/8 inch or less when there is no subsequent inlay placed. Excess or spilled sealer shall be removed from the pavement by approved methods and discarded.

Excess or spilled sealer shall be removed from the pavement by approved methods and discarded.

<u>008-3.6 TYPE 1B CRACK REPAIR - FIBER MODIFIED CRACKSEALER WITH STRESS</u> <u>ABSORBING MEMBRANE</u>

Type 1B cracks shall be repaired using the same treatment as Type 1A except the surface shall be primed and a 12-inch stress absorbing membrane shall be installed over the cracks as specified in Paragraph 008-3.4.

008-3.7 TYPE 1C CRACK REPAIR – MILL AND INLAY REPAIR

- (a) Type 1C crack repair shall include milling and removal of the pavement, tack coat, installation of a hot mix asphalt patch, and sawcut and seal perimeter of patch. Location of cracks to be repaired will be located in the field by the Engineer.
- (b) Limits of areas to be repaired will be located in the field by the Engineer. Pavement will be removed to a depth <u>as indicated on the plan</u>, by milling or other approved means, and shall conform to the requirements of Project Item P-101 Preparation/Removal of Existing Pavements of these Specifications. All excavated material shall be legally disposed of offsite.
- (c) An asphalt mix patch will be installed and compacted to match the adjacent pavement grade. The asphalt mix and tack coat shall conform to the requirements of <u>Project Item P-403</u> Asphalt Mix Pavement and Project Item P-603 Bituminous Tack Coat of these Specifications.
- (d) Not used.

008-3.8 TYPE 1D CRACK REPAIR - STRESS ABSORBING MEMBRANE

- (a) Type 1D mill and inlay repair shall include removing the existing pavements at areas designated by the Engineer to a minimum depth shown on the plans and a variable width. Clean, dry, tack coat bottom and sides of trench, place and compact hot mix asphalt patch. Install stress absorbing membrane as specified in paragraph 008-3.4.
- (b) Reconstruction shall include the cutting and removal of pavement on either side of the patch, tack coat, <u>installation of P-403-1 hot mix asphalt</u>, and the placement of stress relieving membrane over the patch in accordance with the construction details. Locations of patched to be <u>repaired will be located by the Engineer</u>.

The limit of pavement repair shall be sawcut in a neat straight line and the pavement removed for a variable distance and to a minimum depth of 3". Pavement removal method will be at the option of the Contractor and disposal will be as directed.

Cracks in the bottom of the excavation shall be filled in accordance with the requirements for Type 1A Crack Repair.

An asphalt mix patch will be installed and compacted to match the adjacent pavement grade. The asphalt mix and tack coat shall conform to the requirements of Project Item P-401 Asphalt Mix Pavement and Project Item P-603 Bituminous Tack Coat of these Specifications.

A stress relieving membrane shall be installed over each of the patch sides extending 6" on each patch side. Cleaning of the pavement surface, priming, and installation of the membrane will be as specified in paragraph 008-3.4.

008-3.9 MILLING AND SAWCUTTING

Milling, saw-cutting, and sealing, as required, shall conform to the requirements of Project Item P-101 Preparation/Removal of Existing Pavements of these Specifications.

008-3.10 CERTIFICATIONS

Manufacturer's certificates of all materials used shall be required.

Method of Measurement

<u>008-4.1</u> The quantity of Type 1A and Type 1B crack repairs will be measured by the linear feet of crack repair, of the type specified, measured in place, completed, ready for overlay and accepted by the Engineer.

<u>008-4.2</u> The quantity of Type 1C crack repair will be measured by the number of linear feet of pavement excavated and replaced, measured in place, completed and accepted by the Engineer.

<u>008-4.3</u> The quantity of Type 1D crack repair will be measured by the number of square yards of excavated patched area, replaced, measured in place, completed and accepted by the Engineer.

Basis of Payment

<u>008-5.1</u> Payment will be made at the contract unit price per linear foot for Crack Repair Types 1A and 1B. This price shall be full compensation for all cleaning and preparation, saw cutting, crack sealer, membrane, rolling, and for all materials, labor, equipment and incidentals necessary to complete the work.

<u>008-5.2</u> Payment will be made at the contract unit price per linear foot for "Type 1C Crack Repair". This price shall be full compensation for all cleaning and preparation, saw cutting, milling, crack sealer, primer, membrane, rolling and for all materials, labor, equipment and incidentals necessary to complete the work.

<u>008-5.3</u> Payment for pavement removal, preparation, tack coat, hot mix asphalt patch and installing stress relieving membrane, all as specified herein for pavements to be inlaid, will be made at the contract unit price per square yard for "Type 1D Crack Repair". This price shall be full compensation for all cleaning and preparation, saw cutting, <u>milling (up to 5-feet width)</u>, removal and disposal of pavement, preparation and filing cracks in the bottom of excavation, tack coat, primer, stress relieving membrane, rolling and for all materials, labor, equipment and incidentals necessary

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to complete the work. <u>Hot mix asphalt patch will be paid under item P-403-1.</u>

Payment will be made under:

Item M-008-1A - Crack Repair - Type 1A_	per Linear Foot
Item M-008-1B - Crack Repair - Type 1B_	per Linear Foot
Item M-008-1C - Crack Repair - Type 1C_	per Linear Foot
Item M-008-1D - Crack Repair - Type 1D_	per Square Yard

END OF PROJECT ITEM M-008

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b. Removal of Inlets/Manholes. Where indicated on the plans or as directed by the RPR, inlets and/or manholes shall be removed and legally disposed of off-site in a timely fashion after removal. Excavations after removal shall be backfilled with material equal or better in quality than adjacent embankment. When under paved areas must be compacted to 95% of ASTM D1557, when outside of paved areas must be compacted to 95% of ASTM D698.

METHOD OF MEASUREMENT

101-4.1 Pavement removal. The unit of measurement for pavement removal shall be the number of square yards (square meters) removed by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to pavement removal.

101-4.2 Joint and crack repair. Refer to specification M-008 Crack Repairs for type, measurement, and payment of joint and crack repair.

101-4.3 Removal of Foreign Substances/contaminates. Foreign substances/contaminates removal shall not be measured separately but shall be considered subsidiary to the item requiring their removal.

101-4.4 Cold milling. The unit of measure for cold milling shall be per square yard (square meter). The location and average depth of the cold milling shall be as shown on the plans and as directed based on the pay items below. If the initial cut does not correct the condition, the Contractor shall re-mill the area and will be paid for the total depth of milling.

101-4.5 Removal of Pipe and other Buried Structures. The unit of measurement for removal of pipe shall be per linear foot and other buried structures per each will be made at the contract unit price for each completed and accepted item. This price shall be full compensation for all labor, equipment, tools, and incidentals necessary to complete this item in accordance with paragraph 101-3.9.4.

BASIS OF PAYMENT

101-5.1 Payment. Payment shall be made at contract unit price for the unit of measurement as specified above. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material and for all labor, equipment, tools, and incidentals necessary to complete this item.

Item P-101-1	Pavement Milling (4-Inch Nominal Depth-Runway Pavement)	per square yard
Item P-101-2	Pavement Milling (2-Inch Nominal Depth-Runway Shoulder Pavement)	per square yard
Item P-101-3	Pavement Milling (2-Inch Nominal Depth-Blast Pad Pavement)	per square yard
Item P-101-4	Pavement Removal (4" Depth)	per square yard
Item P-101-5	Removal of Pipe	per linear foot
Item P-101-6	Removal of Structures	per each
Item P-101-7	Pavement Milling (2-Inch Nominal Depth- Service Rd)	per square yard
REFERENCES		

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. Topsoil shall be paid for as provided in Item T-905. No direct payment will be made for topsoil under Item P-152.

METHOD OF MEASUREMENT

152-3.1 Measurement for payment specified by the cubic yard (cubic meter) shall be computed by the average end areas of design cross sections for computation of neat line design quantities. The end area is that bound by the original ground line established by field cross-sections and the final theoretical pay line established by cross-sections shown on the plans, subject to verification by the RPR.

152-3.2 The quantity of unclassified or rock excavation to be paid for shall be the number of cubic yards (cubic meters) measured in its original position. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

152-3.3 The quantity of embankment in place shall be the number of cubic yards (cubic meters) measured in its final position.

152-3.4 Stockpiled material shall not be measured for payment in the stockpiled position.

BASIS OF PAYMENT

152-4.1 Unclassified excavation, Rock Excavation payment shall be made at the contract unit price per cubic yard (cubic meter). This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

152-4.2 For embankment in place, payment shall be made at the contract unit price per cubic yard (cubic meter). This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

Grubbing turf areas shall be considered incidental to the excavation. Specification P-151 Clearing and Grubbing is not included as the project has not tree and stump removals.

Waste materials shall be removed from the airport property and legally disposed or managed by the Contractor.

Payment will be made under:

	REFERENCES	
Item P-152-3	Embankment in Place	per cubic yard
Item P-152-2	Rock Excavation	per cubic yard
Item P-152-1	Unclassified Excavation	per cubic yard

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

when consistently producing a base course with an average mat density of at least 94.0% with 1.55% or less variability, and (3) 90 PWL is achieved when consistently producing joints with an average joint density of at least 92.5% with 1.55% or less variability.

401-6.4 Resampling pavement for mat density.

a. General. Resampling of a lot of pavement will only be allowed for mat density, and then, only if the Contractor requests same, in writing, within 48 hours after receiving the written test results from the RPR. A retest will consist of all the sampling and testing procedures contained in paragraphs 401-6.1d and 401-6.2b. Only one resampling per lot will be permitted.

(1) A redefined PWL will be calculated for the resampled lot. The number of tests used to calculate the redefined PWL will include the initial tests made for that lot plus the retests.

(2) The cost for resampling and retesting shall be borne by the Contractor.

b. Payment for resampled lots. The redefined PWL for a resampled lot will be used to calculate the payment for that lot in accordance with Table 6.

c. Outliers. Check for outliers in accordance with ASTM E178, at a significance level of 5%.

METHOD OF MEASUREMENT

401-7.1 Measurement. Asphalt shall be measured by the number of tons (kg) of asphalt used in the accepted work. Batch weights or truck scale weights will be used to determine the basis for the tonnage.

401-7.2 Localizer Checkpoint Markers shall be measure for each marker installed as shown on the Drawings and accepted.

BASIS OF PAYMENT

401-8.1 Payment. Payment for a lot of asphalt meeting all acceptance criteria as specified in paragraph 401-6.2 shall be made based on results of tests for mat density and air voids. Payment for acceptable lots shall be adjusted according to paragraph 401-8.1c for mat density and air voids; and paragraph 401-6.2c for joint density, subject to the limitation that:

a. The total project payment for plant mix asphalt pavement shall not exceed 100 percent of the product of the contract unit price and the total number of tons (kg) of asphalt used in the accepted work.

b. The price shall be compensation for furnishing all materials, for all preparation, mixing, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

c. Basis of adjusted payment. The pay factor for each individual lot shall be calculated in accordance with Table 6. A pay factor shall be calculated for both mat density and air voids. The lot pay factor shall be the higher of the two values when calculations for both mat density and air voids are 100% or higher. The lot pay factor shall be the product of the two values when only one of the calculations for either mat density or air voids is 100% or higher. The lot pay factor shall be the lower of the two values when calculations for both mat density or air voids is 100% or higher. The lot pay factor shall be the lower of the two values when calculations for both mat density and air voids are less than 100%. If PWL for joint density is less than 71% then the lot pay factor shall be reduced by 5% but be no higher than 95%.

For each lot accepted, the adjusted contract unit price shall be the product of the lot pay factor for the lot and the contract unit price. Payment shall be subject to the total project payment limitation specified in paragraph 401-8.1a. Payment in excess of 100% for accepted lots of asphalt shall be used to offset payment for accepted lots of asphalt pavement that achieve a lot pay factor less than 100%.

Payment for sublots which do not meet grade in accordance with paragraph 401-6.2d after correction for over 25% of the sublot shall be reduced by 5%.

Percentage of material within specification limits (PWL)	Lot pay factor (percent of contract unit price)
96 - 100	106
90 - 95	PWL + 10
75 – 89	0.5 PWL + 55
55 – 74	1.4 PWL – 12
Below 55	Reject ²

Table 6. Price adjustment schedule¹

¹ Although it is theoretically possible to achieve a pay factor of 106% for each lot, actual payment above 100% shall be subject to the total project payment limitation specified in paragraph 401-8.1a.

² The lot shall be removed and replaced. However, the RPR may decide to allow the rejected lot to remain. In that case, if the RPR and Contractor agree in writing that the lot shall not be removed, it shall be paid for at 50% of the contract unit price and the total project payment shall be reduced by the amount withheld for the rejected lot.

d. Profilograph Roughness. The Contractor will receive full payment when the profilograph average profile index is in accordance with paragraph 401-6.2e. When the final average profile index for the entire length of pavement does not exceed 15 inches per mile per 1/10 mile, payment will be made at the contract unit price for the completed pavement.

401-8.1 Payment.

Payment will be made under:

Item P-401-1	Asphalt Mix Pavement-Surface Course	per Ton
Item P-401-2	Localizer Checkpoint Marker	per Each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C29	Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C127	Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D242	Standard Specification for Mineral Filler for Bituminous Paving Mixtures
ASTM D946	Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction
ASTM D979	Standard Practice for Sampling Asphalt Paving Mixtures
ASTM D1073	Standard Specification for Fine Aggregate for Asphalt Paving Mixtures
ASTM D1188	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
ASTM D2172	Standard Test Method for Quantitative Extraction of Bitumen from Asphalt Paving Mixtures
ASTM D1461	Standard Test Method for Moisture or Volatile Distillates in Asphalt Paving Mixtures
ASTM D2041	Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D2489	Standard Practice for Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures
ASTM D2726	Standard Test Method for Bulk Specific Gravity and Density of Non- Absorptive Compacted Bituminous Mixtures
ASTM D2950	Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods
ASTM D3203	Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
ASTM D3381	Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D3666	Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4552	Standard Practice for Classifying Hot-Mix Recycling Agents

ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D4867	Standard Test Method for Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D5361	Standard Practice for Sampling Compacted Asphalt Mixtures for Laboratory Testing
ASTM D5444	Standard Test Method for Mechanical Size Analysis of Extracted Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6084	Standard Test Method for Elastic Recovery of Bituminous Materials by Ductilometer
ASTM D6307	Standard Test Method for Asphalt Content of Hot Mix Asphalt by Ignition Method
ASTM D6373	Standard Specification for Performance Graded Asphalt Binder
ASTM D6752	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Method
ASTM D6925	Standard Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt (HMA) Specimens by Means of the SuperPave Gyratory Compactor.
ASTM D6926	Standard Practice for Preparation of Bituminous Specimens Using Marshall Apparatus
ASTM D6927	Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures
ASTM D6995	Standard Test Method for Determining Field VMA based on the Maximum Specific Gravity of the Mix (Gmm)
ASTM E11	Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves
ASTM E178	Standard Practice for Dealing with Outlying Observations
ASTM E1274	Standard Test Method for Measuring Pavement Roughness Using a Profilograph
ASTM E950	Standard Test Method for Measuring the Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference
ASTM E2133	Standard Test Method for Using a Rolling Inclinometer to Measure Longitudinal and Transverse Profiles of a Traveled Surface
American Association of State	Highway and Transportation Officials (AASHTO)
AASHTO M156	Standard Specification for Requirements for Mixing Plants for Hot- Mixed, Hot-Laid Bituminous Paving Mixtures.
AASHTO T329	Standard Method of Test for Moisture Content of Hot Mix Asphalt (HMA) by Oven Method

	AASHTO T324	Standard Method of Test for Hamburg Wheel-Track Testing of Compacted Asphalt Mixtures
	AASHTO T 340	Standard Method of Test for Determining the Rutting Susceptibility of Hot Mix Asphalt (APA) Using the Asphalt Pavement Analyzer (APA)
Asphalt	Institute (AI)	
	Asphalt Institute Handb	ook MS-26, Asphalt Binder
	Asphalt Institute MS-2	Mix Design Manual, 7th Edition
	AI State Binder Specific	cation Database
Federal	Highway Administration	n (FHWA)
	Long Term Pavement P	erformance Binder Program
Advisor	ry Circulars (AC)	
	AC 150/5320-6	Airport Pavement Design and Evaluation
FAA O	rders	
	5300.1	Modifications to Agency Airport Design, Construction, and Equipment Standards
Softwar	·e	
	FAARFIELD	

END OF ITEM P-401

621-2.2 Environmental requirements. Grooving operations will not be permitted when freezing conditions prevent the immediate removal of debris and/or drainage of water from the grooved area. Discharge and disposal of waste slurry shall be the Contractor's responsibility.

621-2.3 Control strip. Groove a control strip in an area of the pavement outside of the trafficked area, as approved by the RPR. The area shall be 130 feet (39.6 m) long by two lanes wide. Demonstrate the setup and alignment process, the grooving operation, and the waste slurry disposal.

621-2.4 Existing pavements. Bumps, depressed areas, bad or faulted joints, and badly cracked and/or spalled areas in the pavement shall not be grooved until such areas are adequately repaired or replaced.

621-2.5 New pavements. New asphalt and Portland cement concrete pavements shall be allowed to cure for a minimum of 30 days before grooving, to allow the material to become stable enough to prevent closing of the grooves under normal use. If it can be demonstrated that grooves are stable, and can be installed with no spalling, tearing or raveling of the groove edge, grooving may occur sooner that 30 days with approval of the RPR. All grade corrections must be completed prior to grooving. Spalling along or tearing or raveling of the groove edges shall not be allowed.

621-2.6 Grooving machine. Provide a grooving machine that is power driven, self-propelled, specifically designed and manufactured for pavement grooving, and has a self-contained and integrated continuous slurry vacuum system as the primary method for removing waste slurry. The grooving machine shall be equipped with diamond-saw cutting blades, and capable of making at least 18 inches (0.5 m) in width of multiple parallel grooves in one pass of the machine. Thickness of the cutting blades shall be capable of making the required width and depth of grooves in one pass of the machine. The cutting head shall not contain a mixture of new and worn blades or blades of unequal wear or diameter. Match the blade type and configuration with the hardness of the existing airfield pavement. The wheels on the grooving machine shall be of a design that will not scar or spall the pavement. Provide the machine with devices to control depth of groove and alignment.

621-2.7 Water supply. Water for the grooving operation shall be provided by the Contractor.

621-2.8 Clean-up. During and after installation of saw-cut grooves, the Contractor must remove from the pavement all debris, waste, and by-products generated by the operations to the satisfaction of the RPR. Cleanup of waste material must be continuous during the grooving operation. Flush debris produced by the machine to the edge of the grooved area or pick it up as it forms. The dust coating remaining shall be picked up or flushed to the edge of the area if the resultant accumulation is not detrimental to the vegetation or storm drainage system. Accomplish all flushing operations in a manner to prevent erosion on the shoulders or damage to vegetation. Waste material must be disposed of in an approved manner. Waste material must not be allowed to enter the airport storm sewer system. The Contractor must dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations

621-2.9 Repair of damaged pavement. Grooving must be stopped and damaged pavement repaired at the Contractor's expense when directed by the RPR.

ACCEPTANCE

621-3.1 Acceptance testing. Grooves will be accepted based on results of zone testing. All acceptance testing necessary to determine conformance with the groove tolerances specified will be performed by the RPR.

Instruments for measuring groove width and depth must have a range of at least 0.5 inch (12 mm) and a resolution of at least 0.005 inch (0.13 mm). Gauge blocks or gauges machined to standard grooves width, depth, and spacing may be used.

701-4.2 The length of schedule 80 PVC pipe shall be measured in linear feet (m) of pipe in place, completed, and accepted. It shall be measured along the centerline of the pipe from end or inside face of structure to the end or inside face of structure, whichever is applicable. All fittings shall be included in the footage as typical pipe sections in the pipe being measured. All <u>concrete coring & connections</u> to electrical manhole and handhole structures, and drainage structures will not be measured and paid for directly but shall be considered subsidiary to the installation of schedule 80 PVC pipe.

701-4.3 The amount of board insulation shall be measured in square yards of insulation in place, completed and accepted.

BASIS OF PAYMENT

701-5.0 These prices shall fully compensate the Contractor for furnishing all materials and for all preparation, excavation, and installation of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

701-5.1 Payment will be made at the contract unit price per linear foot (meter) for each pipe class and size listed below.

701-5.2 Payment will be made at the contract unit price per square yard of type of board insulation listed below <u>and as specified on the Drawings.</u>

Payment will be made under:

Item 701-1	12-Inch PVC Pipe	per linear foot
Item 701-2	15-Inch PVC Pipe	per linear foot
Item 701-3	18-Inch PVC Pipe	per linear foot
Item 701-4	24-Inch RCP Pipe	per linear foot
Item 701-5	30-Inch RCP Pipe	per linear foot
Item 701-6	NHDOT Board Insulation, 2" Thick	per square yard
Item 701-7	Schedule 80 4-Inch PVC Pipe	per linear foot
Item 701-8	54-Inch RCP Culvert	per linear foot
Item 701-9	12-Inch HDPE Pipe	per linear foot

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M167	Standard Specification for Corrugated Steel Structural Plate, Zinc- Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches
AASHTO M190	Standard Specification for Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe Arches
AASHTO M196	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains

751-3.10 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankments, shoulders, or as approved by the RPR. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

751-4.1 Manholes, catch basins, drop inlets, adjustments and inspection holes shall be measured by the unit.

BASIS OF PAYMENT

751-5.1 The accepted quantities of manholes, catch basins, drop inlets, and inspection holes will be paid for at the contract unit price per each in place when completed. This price shall be full compensation for furnishing all materials and for all preparation, excavation, backfilling and placing of the materials; furnishing and installation of such specials and connections to pipes and other structures as may be required to complete the item as shown on the plans; and for all labor equipment, tools and incidentals necessary to complete the structure.

The price for the 60-Inch Diameter Catch Basin shall include the concrete pipe encasement at the 60-Inch catch basin structure.

751-5.2 The accepted quantity of adjustment to frame & covers and underdrain cleanouts will be paid for at the contract unit price per each in place when completed. This price shall be full compensation for furnishing all materials and for all preparation, excavation, backfilling and placing of the materials; furnishing and installation of connections to pipes and other structures as may be required to complete the item as shown on the plans; and for all labor equipment, tools and incidentals necessary to complete the structure.

Payment will be made under:

Item D-751-4	Adjust Existing Underdrain Cleanout	per each
Item D-751-3	Adjust Frames and Covers	per each
Item D-751-2	3'x2' Drop Inlet	per each
Item D-751-1	60-Inch Diameter Catch Basin	per each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM A27	Standard Specification for Steel Castings, Carbon, for General Application
ASTM A47	Standard Specification for Ferritic Malleable Iron Castings
ASTM A48	Standard Specification for Gray Iron Castings
ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

temporary wiring installed in conduit or ductbank. Direct buried wiring shall be abandoned in place. Temporary light fixtures and isolation transformers shall be removed and turned over to the airport.

125-3.8 Light Base Measurements. The contractor shall be required to take accurate measurements of all in-pavement light bases which are to receive new base can extensions. Measurements shall include the depth to bottom of light base from the existing pavement surface and measurement from bottom of light base to top of light base bottom section flange. The purpose of the light base measurements is for the contractor to establish the required sizes of base can extensions and spacer ring(s) to complete the light base can extension installations per the requirements of the Contract Drawings. The contractor shall give respect in their construction schedule to perform light base measurements far enough in advance of light base can extension installation to account for the lead times required to obtain the correctly sized base can extensions and spacer ring(s) to complete the installation.

Light base measurements will be performed off hours with the affected runway closed to aircraft. The contractor shall have 2 continuous weeks to complete the light base measurements with nightly closures (9:00 PM to 6:00 AM) of the affected runways allowed during this time. All closures shall be coordinated in advance with the Airport and the airport shall reserve the right to cancel closures as required to accommodate adverse weather conditions or for any other reason deemed necessary to maintain safe operation of the airport.

See Item L-150 for requirements related to measurements of the FAA approach light bases.

125-3.9 Light Base Broken Bolt Removal All fixture bolts must be installed. It is estimated that 6% of the existing bolts are broken. The Contractor shall only be paid separately for bolts that need to be drilled and tapped for removal. If a bolt head is broken and the threaded portion of the bolt can be removed without drilling/tapping this work shall be considered incidental to the fixture installation. The Contractor shall keep track of the number of bolts that require drilling and tapping and provide the quantity to the RPR <u>daily</u> to be considered for compensation.

METHOD OF MEASUREMENT

125-4.1 In-pavement runway lights will be measured by the number of in-pavement runway lights installed as completed units in place, ready for operation, and accepted by the RPR. In-pavement runway lights shall include the light fixture, isolation transformer, snow plow ring, identification tag, L-823 connectors, heat shrink, hardware, and other incidentals installed as shown on the Contract Drawings. Measurement shall also include removal and disposal or salvage of existing light fixture, isolation transformer, snow plow ring, bolting hardware and incidentals as shown on the Contract Drawings. Separate measurement shall be made for the different types of in-pavement runway lights installed. Base can extensions, and spacer rings shall be measured for payment under section L-125-4.4.

125-4.2 Elevated runway lights will be measured by the number of elevated runway lights installed as completed units in place, ready for operation, and accepted by the RPR. Elevated runway lights shall include the light fixture, isolation transformer, base plate, frangible coupling, identification tag, L-823 connectors, heat shrink, hardware, and other incidentals installed as shown on the Contract Drawings. Measurement shall also include removal and disposal or salvage of existing light fixture, isolation transformer, frangible coupling, base plate, hardware and incidentals as shown on the Contract Drawings.

Temporary elevated runway edge lights will not be measured separately for payment but shall be included in the measurement of Item L-125-14 "Temporary Lighting (Phase 1A)".

125-4.3 In-pavement base cans with steel covers will be measured by the number of base cans with steel covers installed as completed units in place and accepted by the RPR. In-pavement base cans with steel covers shall include the base can, base can extension, spacer ring(s), snow plow ring, steel cover plate, reinforcing steel, concrete encasement, excavation, backfill, grounding, hardware, and other incidentals

Item L-125 Installation of Airport Lighting Systems (Addendum 2)

installed as shown on the Contract Drawings. Where removal and reinstallation of an existing fixture, snow plow ring, and isolation transformer is required in order to replace an existing base can, all labor, materials, and incidentals shall be incidental to the base can installation. Where an existing base can is being replaced by a new base can as required per the Contract Drawings or at the direction of the RPR, the removal and disposal of the existing base can shall be incidental to the new base can installation.

125-4.4 Replacement of L-868 base can extensions will be measured by the number of existing L-868 base cans where new base can extensions are installed. Measurement shall include the installation of the new base can extensions sized per the requirements of the Contract drawings, new spacer ring(s), sealant, paving plate, hardware, coring, backfill, and the installation of the required number of spacer rings at each light fixture base to install the light fixture to the elevation and tolerances required and as detailed on the Contract Drawings. Measurement shall also include the removal and disposal of the existing base can extension(s) and spacer ring(s) at each location where new base extensions are installed. No separate measurement will be made for varying heights of base can extensions or quantities and thicknesses of spacer ring(s) required.

125-4.5 New guidance signs on new foundations will be measured by the number of each type and size installed as completed units, in place, ready for operation, and accepted by the RPR. Guidance signs shall include the sign, frangible couplings, gasket bolts, anchor bolts, sign tethers, concrete foundation, conduit, concrete encased transformer housing, steel cover plate, isolation transformer, connector kits, heat shrink, L-823 extension cord, ground clamp, ground rod, hardware, excavation, backfill, gravel, paving, topsoil, seed, and all other incidentals installed as shown on the Contract Drawings. Distinction will be made between the various sizes and number of modules for new guidance signs.

125-4.6 New guidance signs on existing foundations will be measured by the number of each type and size installed as completed units, in place, ready for operation, and accepted by the RPR. Guidance signs shall include the sign, frangible couplings, sign tethers, isolation transformer, connector kits, heat shrink, L-823 extension cord, hardware, and all other incidentals installed as shown on the Contract Drawings. Distinction will be made between the various sizes and number of modules for new guidance signs.

125-4.7 Photometric testing will be measured on a lump sum basis. Work shall include the photometric testing of all runway edge, centerline, and TDZ lighting, delivery of written report, and completion of any remedial efforts required as part of the findings within the report.

125-4.8 Field lightning arrestors will be measured by the number of field lightning arrestors installed as completed units in place, ready for operation, and accepted by the RPR. Field lightning arrestors shall include the lightning arrestor, junction can, concrete encasement, cover plate, ground rod, L-823 connectors, heat shrink, hardware, excavation, backfill, restoration, and other incidentals installed as shown on the Contract Drawings.

125-4.9 Connection of TDZ lights to new conduit will be measured by the number of TDZ light fixtures where connections to the new TDZ lighting conduit system are made. Measurement shall include removal and disposal of existing base extension(s), and spacer ring(s), installation of new base extension with conduit hubs, spacer ring(s), flexible conduit and conduit connections to base can extension, sawcutting, excavation, coring, concrete, backfill, sealant and all incidentals installed as shown on the Contract Drawings. No separate measurement will be made for varying heights of base can extensions or quantities and thicknesses of spacer ring(s) required.

125-4.10 Temporary Lighting will be measured on a lump sum basis. Measurement shall include all temporary lighting provisions installed and removed by the contractor as described in this specification and shown on the Contract Drawings. Measurement shall include temporary light fixtures, relocation, furnishing and installing, and removal of colored lens filters for elevated fixtures, temporary relocation of in-pavement edge light fixtures, covering of existing lighted guidance signs, temporary sign panels, as well as the labor, equipment, materials and incidentals required to install and remove these items as

shown on the Contract Drawings. Separate measurement shall be made for the temporary lighting provisions installed for the Phase 1A temporary runway configuration and temporary lighting provisions installed for all other construction phases requiring temporary lighting.

Cable installed for temporary lighting provisions shall not be included for measurement under this lump sum but shall be measured under Item L-108 "Underground Power Cable for Airports".

125-4.11 Light Base Measurements will be measured on a lump sum basis. Measurement shall include all labor, equipment, and incidentals required to perform the required measurements of the existing light bases as described in this specification and shown on the Contract Drawings. Measurements of the FAA approach light bases will be paid for under Item L-150 of these specifications.

125-4.12 Light Base Broken Bolt Removal shall be measured by the number of bolts drilled and tapped to complete the installation. The Contractor shall keep track of the number of bolts that require drilling and tapping and provide the quantity to the Resident Project Representative <u>daily</u> to be considered for compensation.

125-4.13 Elevated Light Base Adjustments shall be measured per each, complete in place and accepted by the Engineer. Measurement includes removal, storage and installation of existing elevated light fixtures/transformers if required by project phasing, new spacers, all bolts, washers and other hardware, gaskets, and epoxy. Coring operation and temporary paving plate shall not be measured separately, but will be considered incidental to the Light Base Adjustment. New light fixtures and appurtenances required for lighting system shall be measured separately per paragraph L-125-4.2.

BASIS OF PAYMENT

125-5.1 Payment will be made at the Contract unit price for each complete runway light, base can with steel cover, guidance sign, or field lightning arrestor installed by the Contractor and accepted by the RPR. This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

125-5.2 Payment for Replace L-868 Base Can Extension will be made at the Contract unit price for each L-868 base can where extensions are installed by the Contractor and accepted by the RPR, including removal and disposal of existing base can extension(s) and spacer ring(s). This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

125-5.3 Payment for photometric testing will be made at the Contract lump sum price for the completed testing as accepted by the RPR. This price shall be full compensation for furnishing all materials and for all preparation and assembly of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

125-5.4 Payment will be made at the Contract unit price for each connection of TDZ light to new conduit installed by the Contractor and accepted by the RPR, including installation of new base can extension and spacer ring(s). This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

125-5.5 Payment for Temporary Lighting will be made at the Contract lump sum price for the completed installation and removal of temporary lighting provisions installed by the Contractor and as accepted by the RPR. This price shall be full compensation for furnishing all materials and for all preparation and assembly of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

125-5.6 Payment for Light Base Measurements will be made at the Contract lump sum price for the completed work as performed by the Contractor and accepted by the RPR. This price shall be full compensation for furnishing all labor, materials, equipment, tools, and incidentals necessary to complete this item.

125-5.7 Payment will be made at the Contract unit price for each broken bolt removed by drilling and tapping required to complete the installation. This price shall be full compensation for furnishing all materials and for all preparation and assembly of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

125-5.8 Payment for Elevated Light Base Adjustments will be at the contract unit price for each light adjustment measured complete in place and accepted by the Engineer. This price shall be full compensation for furnishing all materials, for all preparation, coring, chipping, removal and temporary storage and re-installation of existing light fixtures/transformers, new spacers, removal of temporary risers, steel plates, all bolts, washers and other hardware, gaskets, cleaning of existing light fixtures and for all labor, equipment, tools and incidentals necessary to complete this item. New light fixtures and appurtenances required for installation shall be paid for separately elsewhere in this specification.

Payment will be made under:

L-125-1A	New In-Pavement LED Runway Touchdown Zone Light on Existing Base Can – per each
L-125-1B	New In-Pavement LED Runway Centerline Light on Existing Base Can – per each
L-125-1C	New In-Pavement LED Semi-Flush Runway Light on Existing Base Can – per each
L-125-2	New Elevated LED Runway Edge Light on Existing Base Can – per each
L-125-3	New In-Pavement L-868 Base Can and Steel Cover – per each
L-125-4	Replace L-868 Base Can Extension – per each
L-125-5	New Lighted Guidance Sign on New Foundation, Size 3, One Module – per each
L-125-6	New Lighted Guidance Sign on New Foundation, Size 3, Two Module – per each
L-125-7	New Lighted Guidance Sign on New Foundation, Size 3, Three Module – per each
L-125-8	New Lighted Guidance Sign on New Foundation, Size 4 – per each
L-125-9	New Lighted Guidance Sign on Existing Foundation, Size 3, One Module – per each
L-125-10	New Lighted Guidance Sign on Existing Foundation, Size 3, Three Module – per each
L-125-11	Photometric Acceptance Testing – per lump sum
L-125-12	Field Lighting Arrestor – per each
L-125-13	Connection of TDZ Light to New Conduit – per each
L-125-14	Temporary Lighting (Phase 1A) – per lump sum

L-125-15	Temporary Lighting (Phases 1, 2 & 3 – Except Phase 1A) – per lump sum
L-125-16	Light Base Measurements – per lump sum
L-125-17	Light Base Broken Bolt Removal – per each
L-125-18	Elevated Light Base Adjustment – per each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5340-18	Standards for Airport Sign Systems
AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories
AC 150/5345-44	Specification for Runway and Taxiway Signs
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures
AC 150/5345-47	Specification for Series to Series Isolation Transformers for Airport Lighting Systems
AC 150/5345-53	Airport Lighting Equipment Certification Program
Engineering Brief (EB)	
EB No. 67	Light Sources Other than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures

END OF ITEM L-125

All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within two (2) hours from the time they were mixed or they shall be wasted and disposed of at approved locations.

d. Spraying. Lime, if required, shall be sprayed only upon previously prepared seedbeds. After the applied lime mixture has dried, the lime shall be worked into the top 3 inches (75 mm), after which the seedbed shall again be properly graded and dressed to a smooth finish.

Mixtures of seed and fertilizer shall only be sprayed upon previously prepared seedbeds on which the lime, if required, shall already have been worked in. The mixtures shall be applied by means of a high-pressure spray that shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

Particular care shall be exercised to ensure that the application is made uniformly and at the prescribed rate and to guard against misses and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of known area.

Checks on the rate and uniformity of application may be made by observing the degree of wetting of the ground or by distributing test sheets of paper or pans over the area at intervals and observing the quantity of material deposited thereon.

On surfaces that are to be mulched as indicated by the plans or designated by the RPR, seed and fertilizer applied by the spray method need not be raked into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

901-3.4 Maintenance of seeded areas. The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the RPR. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The Contractor shall mow, water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work done out of season, it will be required that the Contractor establish a good stand of grass of uniform color and density to the satisfaction of the RPR. A grass stand shall be considered adequate when bare spots are one square foot (0.01 sq m) or less, randomly dispersed, and do not exceed 3% of the area seeded.

METHOD OF MEASUREMENT

901-4.1 The quantity of seeding to be paid for shall be the number of square yards measured on the ground surface, completed and accepted. Wetland see mix is specified on the Service Road drawings.

BASIS OF PAYMENT

901-5.1 Payment shall be made at the contract unit price per square yard or fraction thereof, which price and payment shall be full compensation for furnishing and placing all material and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item.

Payment will be made under:

Item T-901-1	Seeding	per square yard
Item T-901-2	Wetland Seeding	per square yard













CENTER DOT 32

SPECIFY ANGLE

GENERAL MARKER NOTES:

ON PAVEMENT MARKER NOTES:

- ENGRAVED WITH THE APPROPRIATE ANGLE.
- GROOVING AND PERMANENT MARKING OPERATIONS.

2 LOCALIZER ANTENNA GROUND CHECKPOINT MARKER DETAILS SCALE: NTS

*SEE NOTES 3 & 4

JUNWAY 7> "COCALIZER VEG MP

DETAIL A NOT TO SCALE

1. ALL GROUND CHECK POINTS ARE TO BE SURVEYED AND MARKED PER THE FOLLOWING GUIDELINES: 2. GROUND CHECK POINTS SHALL BE TEMPORARILY MARKED (WITH STAKE OR NAIL IN PAVEMENT) AS SHOWN AND REPOSITIONED AS REQUIRED AFTER FLIGHT CHECK. (IF REQUIRED) 3. GROUND CHECK MONUMENTS SHALL NOT BE PERMANENTLY MARKED OR INSTALLED UNTIL LOCATIONS HAVE BEEN VERIFIED AFTER FLIGHT CHECK BY ILS INSTALLATION ENGINEERS. 4. LOCATION OF LOW CLEARANCE CHECKPOINTS ARE APPROXIMATE. MONUMENTS SHALL BE PERMANENTLY MARKED BY FAA AFTER SYSTEM TUNE-UP AND FLIGHT CHECK.

1. BOND A 2" ROUND METAL PLATE FLUSH WITH ADJACENT PAVEMENT. 2. INSTALLATION OF ON-PAVEMENT MARKERS SHALL BE PERFORMED AFTER

ROJECT DESIGNER:	•		うつうりつ	2 Executive Park Drive	Suite 200 Bedford, NH 03110 PHONE: (603) 666-7181	FAX: (603) 666-7185
PR	SCALE: NTS	DATE: MARCH 2022	DESIGNED BY: DJA	DRAWN BY: JKS	снескер ву: JAM	
	BY MANCHESTER .		REHABILITATE RUNWAY 17-3			
REVISIONS	DESCRIPTION					
	DATE					


























FILL LARGEST SPACES BETWEEN BOULDERS WITH NHDOT CLASS I RIPRAP	
— USE NHDOT CLASS III RIPRAP TO FORM "V"	

KEY INTO EMBANKMENT

PLACE STONE TO ACHIEVE MAXIMUM INTERLOCKING CONTACT

- USE NHDOT CLASS I RIPRAP TO PREVENT SCOURING

NHDOT CLASS III RIPRAP

SWALE INVERT

- GEOTEXTILE

GEOTEXTILE

PLACE STONE TO ACHIEVE MAXIMUM INTERLOCKING

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- MESH.
- FEASIBLE.







STA. 30+00



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THE RUNWAY. HOWEVER IN CERTAIN AREAS THE RUNWAY CROSS SLOPES WERE FOUND GREATER THAN THE 1.5% ALLOWED BY THE FAA. SEE THE GRADING ADJUSTMENT TABULATION ON THIS SHEET FOR ADDITIONAL INFORMATION. THESE AREAS ARE HIGHLIGHTED TO THE CONTRACTOR FOR ADJUSTMENT TO THE CROSS SLOPES ARE REQUIRED.

- 5
  - PREPARATION ACTIVITIES.





STA. 60+00









EXISTING GRADING ADJUST	MENT TABULATION	Ý
APPROXIMATE STATION RANGE	SIDE OF RUNWAY	2
11+50 TO 12+50	RIGHT	Ş
30+50 TO 35+50	RIGHT	3
31+50 TO 34+50	LEFT	2
51+50 TO 52+50	RIGHT	Ş
51+50 TO 53+50	LEFT	3
60+50 TO 63+50	RIGHT	Ž
69+50 TO 70+50	RIGHT	3
72+50 TO 73+50	LEFT	}
98+50 TO 102+50	LEFT	5

THE EXISTING GRADING INFORMATION HAS BEEN OBTAINED FROM EXISTING RECORDS AND FIELD SURVEYS. NEITHER THE AIRPORT NOR THE RPR NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY  $\mathbf{\dot{y}}$  WHATSOEVER WITH RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THE CONTRACTOR TO VERIFY THE EXISTING CONDITION GRADING PRIOR TO THE START OF ANY SITE



ROJECT DESIGNER:			うつつてつ			2 Executive Park Drive	Bedford, NH 03110 PHONE: (603) 666-7181	FAX: (603) 666–7185
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	HOR	Z. SCA	\LE: 1" = 40'	







STA. 80+00



## NOTES:

- 1. SEE THE 600 SERIES OF DRAWINGS FOR THE GRADING PLANS AND THE LOCATION OF RUNWAY BASELINE THESE PROFILES REFER TO.
- 2. SEE THE 400 SERIES OF DRAWINGS FOR THE PROFILES ASSOCIATED WITH THE CROSS SECTIONS ON THIS SHEET.
- 3. THE INTENT OF THIS PROJECT IS TO MATCH THE EXISTING GRADES OF THE RUNWAY. HOWEVER IN CERTAIN AREAS THE RUNWAY CROSS SLOPES WERE FOUND GREATER THAN THE 1.5% ALLOWED BY THE FAA. SEE THE GRADING ADJUSTMENT TABULATION ON SHEET C-901 FOR ADDITIONAL INFORMATION. THESE AREAS ARE HIGHLIGHTED TO THE CONTRACTOR FOR ADJUSTMENT TO THE CROSS SLOPES ARE REQUIRED.

- ADJUSTMENTS ARE REQUIRED.
- PREPARATION ACTIVITIES.

![](_page_157_Figure_13.jpeg)

![](_page_157_Figure_14.jpeg)

4. THE ADJUSTED GRADING AREAS AND CROSS SECTIONS ASSUMES THAT ADDITIVE ALTERNATE #1 IS AWARDED AS THE SHOULDER PAVEMENT ELEVATIONS WILL BE REQUIRED TO BE RAISED IN THESE AREAS. WHERE THE SHOULDER PAVEMENT ELEVATIONS ARE ADJUSTED THE ELEVATED RUNWAY EDGE / END LIGHTS WILL REQUIRE AN ADJUSTMENT ON THE EXISTING BASE CAN. IN ALL OTHER AREAS THE CONTRACTOR IS TO MATCH EXISTING ELEVATIONS AND NO ELEVATED LIGHT

5. THE EXISTING GRADING INFORMATION HAS BEEN OBTAINED FROM ) EXISTING RECORDS AND FIELD SURVEYS. NEITHER THE AIRPORT NOR THE RPR NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY  $\mathbf{\hat{y}}$  WHATSOEVER WITH RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THE CONTRACTOR TO VERIFY THE EXISTING CONDITION GRADING PRIOR TO THE START OF ANY SITE

![](_page_157_Picture_17.jpeg)

PROJECT DESIGNER:	I		うつつしてつ		2 Executive Park Drive Suite 205	Bedford, NH 03110 PHONE: (603) 666-7181	FAX: (603) 666–7185			
	SCALE: 1"=40'	DATE: MARCH 2022	DESIGNED BY:		DRAWN BY: IAU	снескер ву: JAM	APPROVED: JWG			
	MANCHESTER • BOSTON	REGIONAL AIRPORT	REHABILITATE RUNWAY 17-35		RUNWAY 17-35 CROSS SECTIONS STATION 70+00 TO 102+50					
	BΥ	DJA								
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![](_page_158_Figure_0.jpeg)

![](_page_159_Figure_0.jpeg)

![](_page_160_Figure_0.jpeg)

![](_page_161_Figure_0.jpeg)

cobs - P:\2021\E2X89206 - MHT Retaining Wall Rehabilitation\700 CAD\Plans\04 - Existing Conditions Plans.dwg [D1.1] April 08, 2022 - 9:50am [Bauman5

![](_page_162_Figure_0.jpeg)

Jacobs - P:\2021\E2X89206 - MHT Retaining Wall Rehabilitation\700 CAD\Plans\04 - Existing Conditions Plans.dwg [D1.2] April 07, 2022 - 4:35pm [Baum

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![](_page_163_Figure_0.jpeg)

![](_page_163_Figure_1.jpeg)

![](_page_163_Figure_2.jpeg)

![](_page_164_Figure_0.jpeg)

![](_page_165_Figure_0.jpeg)

![](_page_166_Figure_0.jpeg)

![](_page_167_Figure_0.jpeg)

![](_page_168_Figure_0.jpeg)

![](_page_168_Figure_1.jpeg)

~~~~~ <u>A</u>								
		2 Executive Park Drive	Bedford, NH 03110 PHONE: (603) 666–7181	FAX: (603) 666-7185				
RSE	PROJECT DESIGNER:		Cacobs					
		SCALE: AS SHOWN	DATE: MARCH 2022	DESIGNED BY: JPP	DRAWN BY: TAD	CHECKED BY: JAM	APPROVED: JWG	
TURAL BACKFILL AND PAVEMENT CTOR SHALL CONSULT THE WALL EIGHT OF COMPACTION		MANCHESTER • BOSTON		REHABILITATE RUNWAY 17-35	TYPICAL SECTIONS			
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	DATE	4/4/2022	Ţ								STRUCTION
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NOTES: 1. INSULATION REQUIRED OVER ALL

PROPOSED PVC PIPES. 2. INSULATION INSTALLATION SHALL BE

2" POLYSTYRENE PIPE INSULATION

4'

POLYSTYRENE INSULATION SPECIFICATION

PROPERTY (UNITS)	ASTM METHOD	REQUIREMENT VALUE
COMPRESSIVE STRENGTH, MIN. (PSI)	D 1621	30
COMPRESSIVE MODULUS, MIN. (PSI)	D 1621	1,050
FLEXURAL STRENGTH (PSI)	C 203	50
WATER ABSORPTION, MAX. (% BY VOLUME)	D 2842	0.70
WATER AFFINITY		HYDROPHOBIC
WATER CAPILLARITY		NONE

STRUCTURAL PORTLAND CEMENT CONCRETE -REFER TO P-610 (INCIDENTAL TO DRAINAGE STRUCTURE)

- SUBGRADE

🗕 12" DIA. 🗕

TIE-OFF DETAIL

NOT TO SCALE

PER MANUFACTURER'S REQUIREMENTS.

DRAWING NO.

C5.

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110		2 Executive Park Drive	Suite 203 Bedford, NH 03110 PHONF· (603) 666-7181	FAX: (603) 666-7185			
	PROJECT DESIGNER:	-	Jacobs				
$= \begin{bmatrix} 3 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\$		SCALE: AS SHOWN	DATE: MARCH 2022	DESIGNED BY: JPP	DRAWN BY: TAD	CHECKED BY: JAM	APPROVED: JWG
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		BY	SBB				
	REVISIONS	DESCRIPTION	ENDUM - 2				
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65		2 Executive Park Drive	Suite 203 Bedford, NH 03110 Puloner / 662 7101	FAX: (603) 666-7185				-
	PROJECT DESIGNER:	AS SHOWN	MARCH 2022 JOCOD	VED BY: JPP	V BY: TAD	(ED BY: JAM	DVED: JWG	
		MANCHESTER • BOSTON BECOMMAN ALBOODE	DATE:	REHABILITATE RUNWAY 17-35			SHEEL 3 OF 8	
	ISIONS	RIPTION BY	SBB					-
 DIES: THE WALL PANEL ELEVATION VIEW SHOWN IS FROM THE APPROVED SUBMITTAL INFORMATION AVAILABLE FROM THE ORIGINAL CONSTRUCTION OF THE TAXIWAY 'A' RETAINING WALL DATED 04–29–2002. DRAWINGS IN THE ABOVE SUBMITTAL WERE PROVIDED BY "THE REINFORCED EARTH COMPANY" AND ARE DATED 04–11–2002. 		DESCF	Z 4/4/2022 ADDENDUM – 2	E2X8	3920 G N(6 0.		ID - NOT FOR CONSTRUCTION

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- 2.

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<u>ELEVATION - FRONT FACE - RETAINING WALL</u>

NOT TO SCALE

MISCELLANEOUS DETAILS BRHET 4 OF 8 MISCELLANEOUS DETAILS CHECKED BY: JPD MISCELLANEOUS DETAILS CHECKED BY: JPD CHECKED BY: JPD	Image: marked back of the state is a structure of the state is a structure of the state is a structure of the state of	REVISIONSREVISIONSPROJECT DESIGNERDESCRIPTIONBYCALE: AS SHOWNDESCRIPTIONSBCALE: AS SHOWNADDENDUM - 2SBBDATE: MARCH 2022ADDENDUM - 2SBBREHABILITATE RUNWAY 17:35ADDENDUM - 2SBBDATE: MARCH 2022ADDENDUM - 2SBBREHABILITATE RUNWAY 17:35ADDENDUM - 2SBBREHABILITATE RUNWAY 17:35ADDENDUM - 2SBBREHABILITATE RUNWAY 17:35ADDENDUM - 2SBBREADENDUMADDENDUM - 2SBBADDENDUM - 2SBB		2 Executive Park Drive	Bedford, NH 03110 Butone, 6037 666 718	FAX: (603) 666-7185			
MANCHESTER • BOSTON Scale: AS SHOWN REGIONAL AIRPORT Date: MARCH 2022 REHABILITATE RUNWAY 17-35 Date: MARCH 2022 MISCELLANEOUS DETAILS DESIGNED BY: JPP SHEET 4 OF 8 DRAWN BY: TAD CHECKED BY: JMG CHECKED BY: JMG	BY MANCHESTER • BOSTON BY EAGINAL AIRPORT SBB MARCHESTER • BOSTON SBB EAGINAL AIRPORT SBB DATE: MARCH 2022 REHABILITATE RUNWAY 17-35 DATE: MARCH 2022 MISCELLANEOUS DETAILS DATE: MARCH 2022 SHEET 4 OF 8 CHECKED BY: JMG	REVISIONS BY DESCRIPTION BY DESCRIPTION BY DESCRIPTION BY ADDENDUM - 2 SBB ADDENDUM - 2 SBB ADDENDUM - 1 SBB ADDENDUM - 2 SBB ADDENDUM - 4 SBB ADDENDUM - 5 SBB ADDENDUM - 7 SBB ADDENDUM	PROJECT DESIGNER:	-	Square Constants				
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		REVISIONS REVISIONS DESCRIPTION B ADDENDUM 2 SB		MANCHESIER • BOSION	B REGUNAL AIRFORT	REHABILITATE RUNWAY 17-35			

NOTES:

- 1. THE WALL PANEL ELEVATION VIEW SH APPROVED SUBMITTAL INFORMATION ORIGINAL CONSTRUCTION OF THE TAX WALL DATED 04-29-2002.
- 2. DRAWINGS IN THE ABOVE SUBMITTAL "THE REINFORCED EARTH COMPANY" 04–11–2002.

- 1. LAYOUT PROVIDED IS BEST FIT WITH AVAILABLE INFORMATION FOR BIDDING PURPOSES. LAYOUT ASSUMES NO EXISTING PANELS CAN BE CUT AND THE LEVEL UP CONCRETE IS A VARIABLE HEIGHT OF 2 TO 12 INCHES. A MIX OF PRECAST AND CAST IN PLACE COPING SECTIONS WERE FOUND TO BE REQUIRED TO INSTALL THE COPING OVER THE EXISTING NON-UNIFORM GEOMETRY OF THE WALL.
- 2. PRIOR TO ORDERING COPING, THE CONTRACTOR SHALL SURVEY THE TOP OF THE WALL AND PROVIDE A DETAILED PLAN SUBMITTAL FOR APPROVAL. SUBMITTAL SHALL PROVIDE THE LAYOUT FOR THE PRECAST AND CAST IN PLACE COPING SECTIONS, DEPTH OF LEVEL UP CONCRETE AND DIMENSIONS OF THE VARIABLE DEPTH COPING SECTION.
- 3. ALL LAYOUT AND SUBMITTAL DEVELOPMENT IS INCIDENTAL

- 1. THE WALL PANEL ELEVATION VIEW SHOWN IS FROM THE APPROVED SUBMITTAL INFORMATION AVAILABLE FROM THE ORIGINAL CONSTRUCTION OF THE TAXIWAY 'A' RETAINING WALL DATED 04-29-2002.
- 2. DRAWINGS IN THE ABOVE SUBMITTAL WERE PROVIDED BY "THE REINFORCED EARTH COMPANY" AND ARE DATED

PROPER INSTALLATION OF GEOTEXTILE AT PANEL JOINTS IS IMPERATIVE IN PREVENTING LOSS OF BACKFILL MATERIAL.

GEOTEXTILE PLACEMENT RECOMMENDATIONS:

- PANEL GEOTEXTILE SHALL BE FIRMLY AFFIXED TO BACK OF PANEL AS SHOWN
- PANEL GEOTEXTILE SHALL BE APPROXIMATELY CENTERED ON JOINTS.
- PANEL GEOTEXTILE SHALL HAVE A 6" MIN. OVERLAP. VERTICAL GEOTEXTILE SHALL

PANEL	REINFORCEMEN
THICKNESS	DESIGNATION
5 1/2"	R6

