

# DETROIT LAKES - BECKER COUNTY AIRPORT

## TERMINAL APRON RECONSTRUCTION & EXPANSION

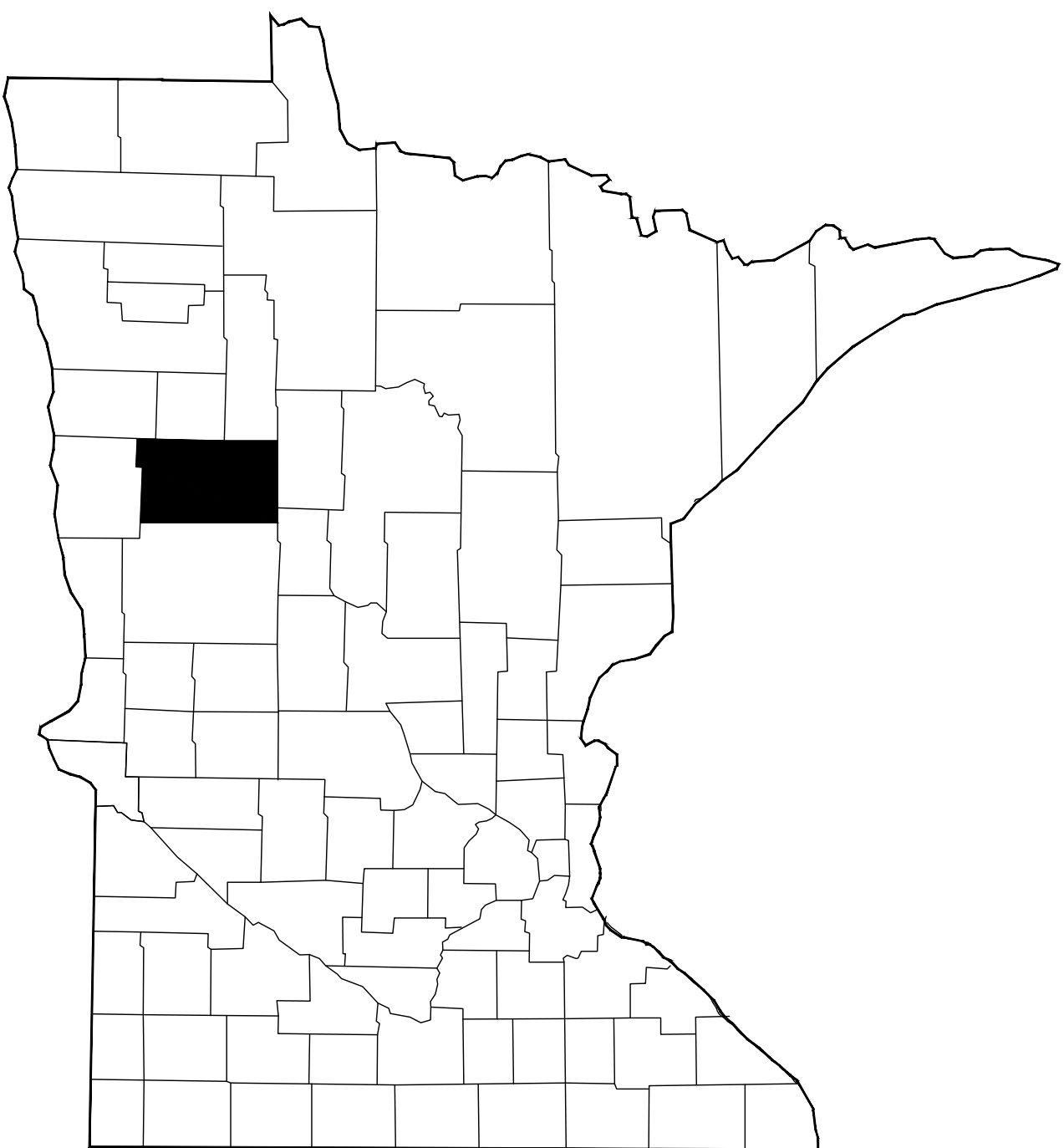
24813 US HIGHWAY 10

DETROIT LAKES, MN 56501

AIP 3-27-0021-026-2025 / SP A0301-93

MAY 7, 2025

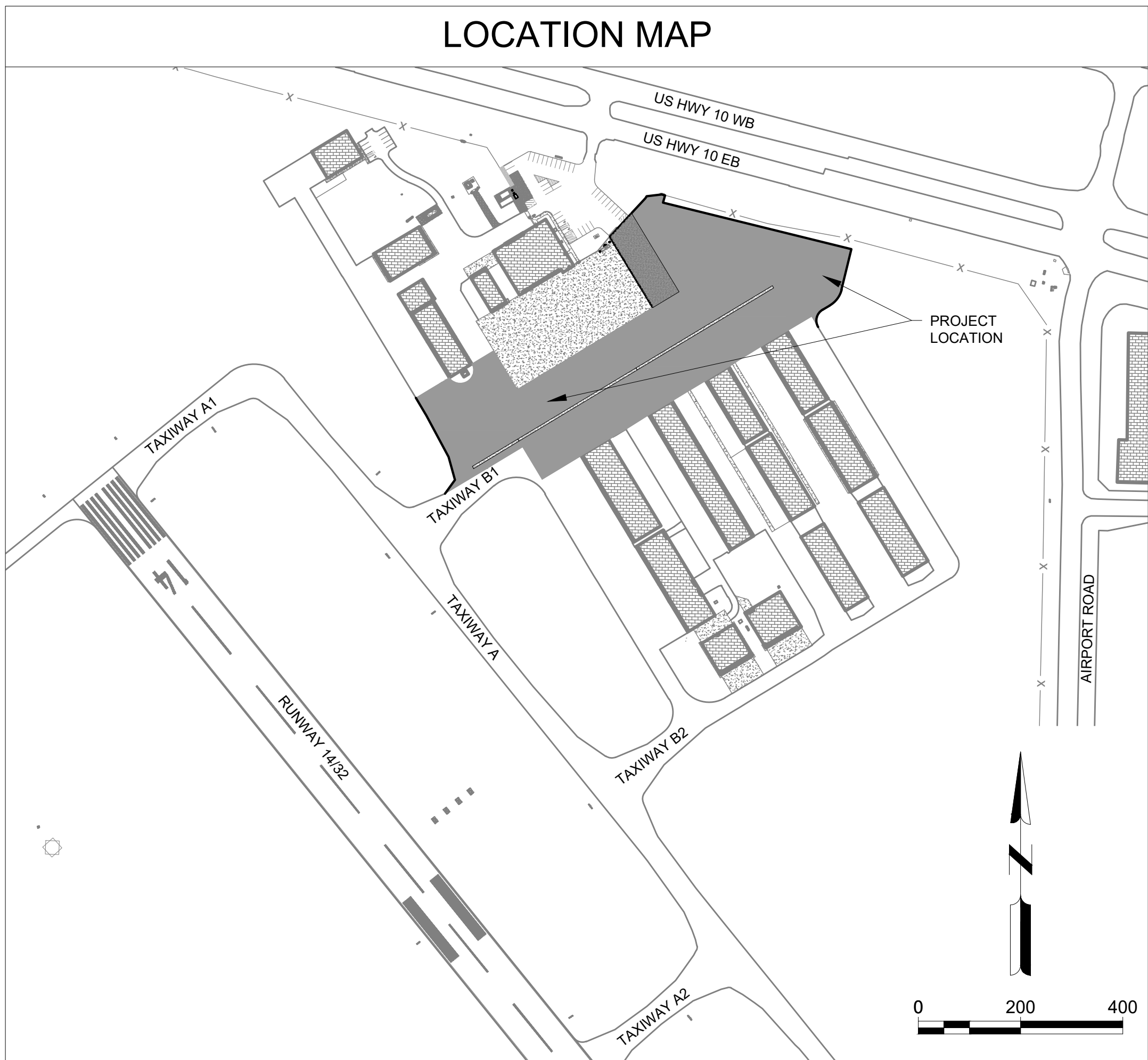
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BECKER COUNTY

**DESCRIPTION**  
**SCHEDULE 1 (PHASE 1): EAST TERMINAL APRON RECONSTRUCTION & EXPANSION;**  
**CONCRETE APRON MAINTENANCE**  
**SCHEDULE 2 (PHASE 2A & 2B): WEST TERMINAL APRON RECONSTRUCTION &**  
**TAXILANE F EXPANSION**

LOCATION MAP

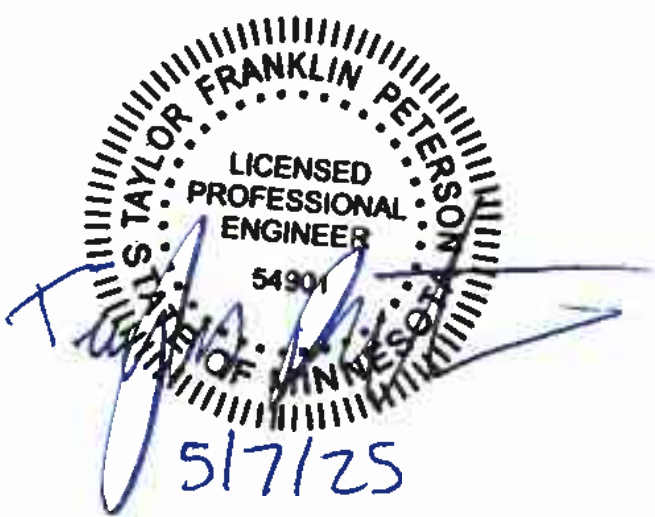


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MEAD AND HUNT, INC  
BLOOMINGTON, MINNESOTA

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DATE: MAY 7, 2025 REGISTRATION NUMBER: 54901

DETROIT LAKES - BECKER COUNTY AIRPORT  
TERMINAL APRON RECONSTRUCTION &  
EXPANSION  
24813 US HIGHWAY 10  
DETROIT LAKES, MN 56501

ISSUED 05/07/25 ISSUED FOR BID

AIP NO.: 3-27-0021-26-25  
M&H NO.: 3197100-242527.01  
DATE: MAY 7, 2025  
DESIGNED BY: JDC  
DRAWN BY: KSH  
CHECKED BY: TFP  
DO NOT SCALE DRAWINGS

SHEET CONTENTS  
COVER SHEET

SHEET NO. 1 of 32

G-001

**Mead & Hunt**  
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SIGNATURE: \_\_\_\_\_  
PRINT NAME: TAYLOR F. PETERSON  
E: 05/07/2025 LICENSE #: 54901

# DETROIT LAKES DECK RECONSTRUCTION AND TERMINAL APRON RECONSTRUCTION & EXPANSION

05/07/25 ISSUED FOR  
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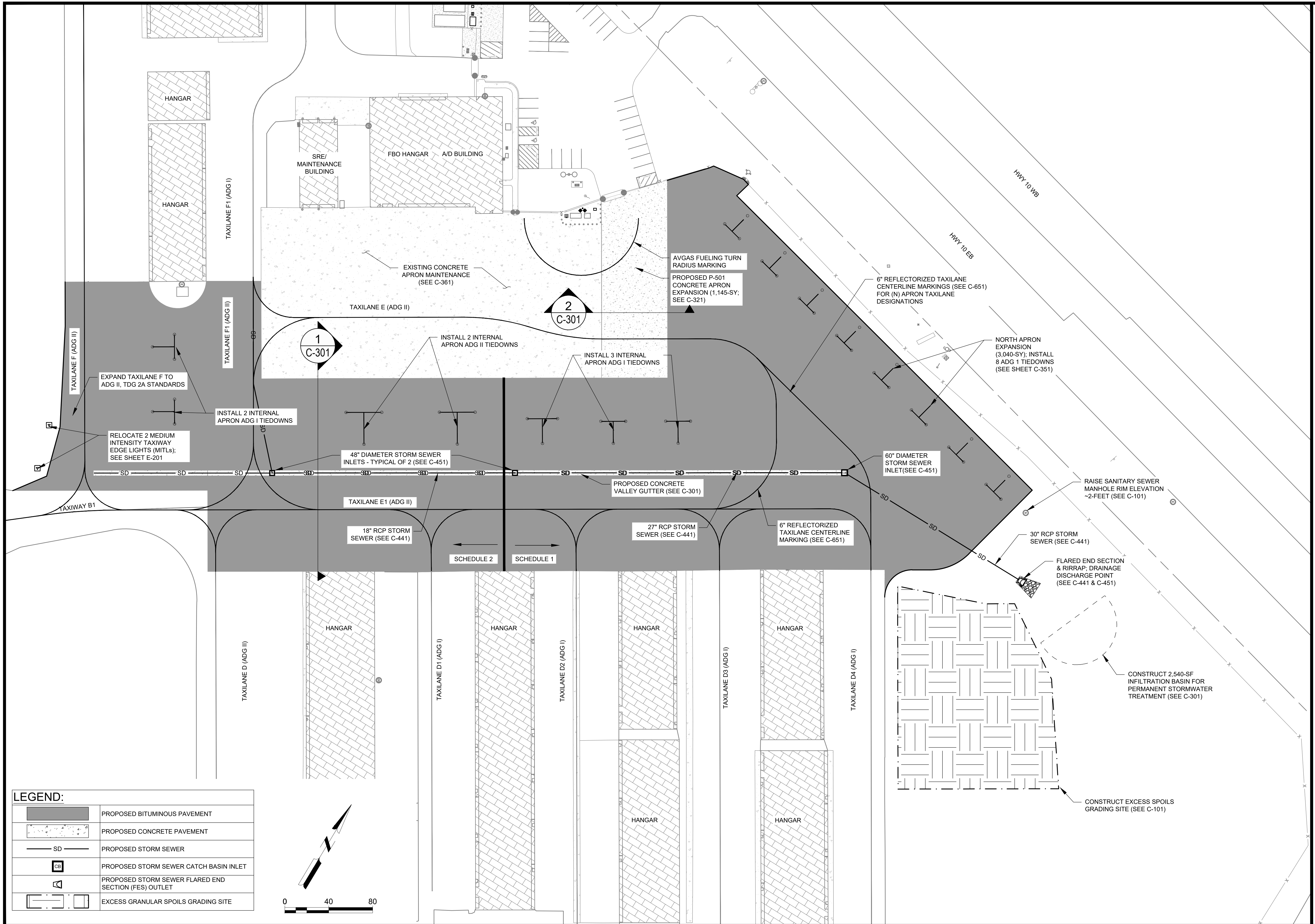
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### PROJECT LAYOUT

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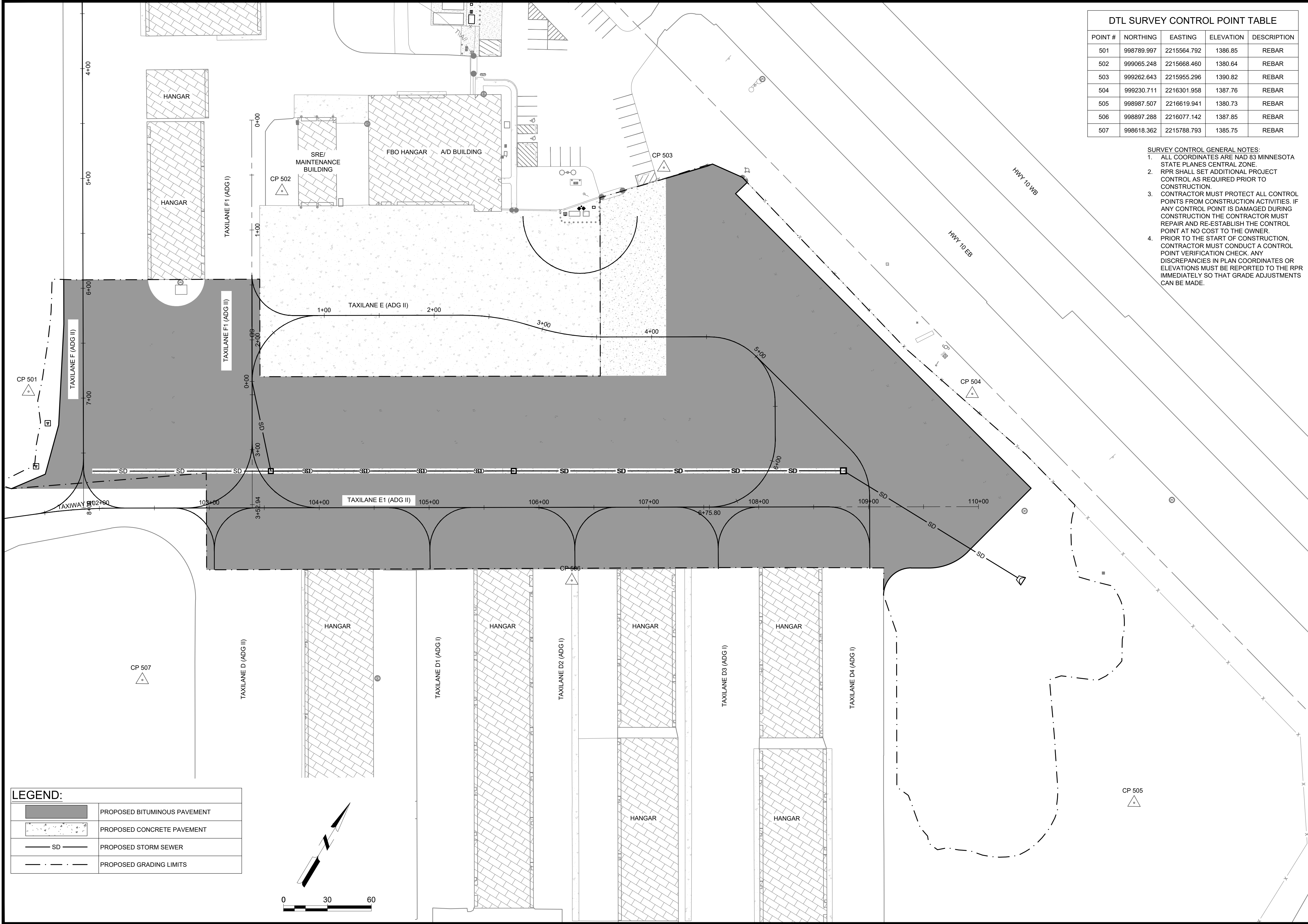
G-021



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DTL SURVEY CONTROL POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
501	998789.997	2215564.792	1386.85	REBAR
502	999065.248	2215668.460	1380.64	REBAR
503	999262.643	2215955.296	1390.82	REBAR
504	999230.711	2216301.958	1387.76	REBAR
505	998987.507	2216619.941	1380.73	REBAR
506	998897.288	2216077.142	1387.85	REBAR
507	998618.362	2215788.793	1385.75	REBAR

- SURVEY CONTROL GENERAL NOTES:
- ALL COORDINATES ARE NAD 83 MINNESOTA STATE PLANES CENTRAL ZONE.
  - RPR SHALL SET ADDITIONAL PROJECT CONTROL AS REQUIRED PRIOR TO CONSTRUCTION.
  - CONTRACTOR MUST PROTECT ALL CONTROL POINTS FROM CONSTRUCTION ACTIVITIES. IF ANY CONTROL POINT IS DAMAGED DURING CONSTRUCTION THE CONTRACTOR MUST REPAIR AND RE-ESTABLISH THE CONTROL POINT AT NO COST TO THE OWNER.
  - PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR MUST CONDUCT A CONTROL POINT VERIFICATION CHECK. ANY DISCREPANCIES IN PLAN COORDINATES OR ELEVATIONS MUST BE REPORTED TO THE RPR IMMEDIATELY SO THAT GRADE ADJUSTMENTS CAN BE MADE.

# Mead & Hunt

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SIGNATURE: *Taylor F. Peterson*  
PRINT NAME: TAYLOR F. PETERSON  
DATE: 05/07/2025 LICENSE #: 24801

## DETROIT LAKES - BECKER COUNTY AIRPORT TERMINAL APRON RECONSTRUCTION & EXPANSION

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SHEET CONTENTS  
SURVEY CONTROL PLAN

SHEET NO. 3 of 32

# G-041



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SCHEDULE 1: EAST TERMINAL APRON RECONSTRUCTION & EXPANSION; CONCRETE APRON MAINTENANCE

ITEM NO.	SPEC NO.	ITEM DESCRIPTION	UNIT	UNIT (FULL)	QUANTITY	AS BUILT
1	C-100	Contractor Quality Control Program	LS	LUMP SUM	1	
2	C-102-5.1a	Installation and Removal of Silt Fence, Type MS	LF	LINEAR FOOT	500	
3	C-102-5.1b	Sediment Control Log	LF	LINEAR FOOT	600	
4	C-102-5.1c	Stabilized Construction Exit	EA	EACH	1	
5	C-102-5.1e	Storm Drain Inlet Protection	EA	EACH	2	
6	C-105-6.1a	Mobilization	LS	LUMP SUM	1	
7	C-105-6.1b	Temporary RPR Field Office for Construction	LS	LUMP SUM	1	
8	P-101-5.1	Remove Concrete Valley Gutter, Full Depth	SY	SQUARE YARD	109	
9	P-101-5.2a	Rout, Clean, & Seal Concrete Joint	LF	LINEAR FOOT	6400	
10	P-101-5.2b	Rout, Clean, & Seal Concrete Surface Crack	LF	LINEAR FOOT	250	
11	P-101-5.7a	Remove Storm Sewer Pipe	LF	LINEAR FOOT	379	
12	P-101-5.7b	Remove Storm Sewer Structure	EA	EACH	4	
13	P-101-5.7c	Remove Aircraft Tie-Down Anchor	EA	EACH	27	
14	P-101-5.8	Concrete Corner, Pop Out, or Joint Spall Repair	EA	EACH	20	
15	P-101-5.9	Raise Existing Sanitary Manhole Rim Elevation	EA	EACH	1	
16	P-152-4.1a	Unclassified Excavation	CY	CUBIC YARD	5460	
17	P-152-4.1b	Unsuitable Excavation	CY	CUBIC YARD	125	
18	P-152-4.1c	Excess Topsoil Excavation – Haul Off Site	CY	CUBIC YARD	560	
19	P-154-5.1	Subbase Course	CY	CUBIC YARD	1510	
20	P-207-5.1a	In-place Full Depth Recycled (FDR) asphalt aggregate base course	SY	SQUARE YARD	9300	
21	P-207-5.1b	Place and Compact FDR Base Course – 6" Depth	CY	CUBIC YARD	2135	
22	P-401-8.1	Asphalt Surface Course	TON	TON	3020	
23	P-501-8.1a	Concrete Pavement, 8.5"	SY	SQUARE YARD	1063	
24	P-501-8.1b	Concrete Pavement, 8.5" – reinforced	SY	SQUARE YARD	82	
25	P-603-5.1	Emulsified Asphalt Tack Coat	GAL	GALLON	1175	
26	P-620-5.1	Marking, Reflectorized, Yellow, Waterborne, Type I	SF	SQUARE FOOT	300	
27	D-701-5.1b	27-Inch RCP Storm Sewer, Class V	LF	LINEAR FOOT	300	
28	D-701-5.1c	30-Inch RCP Storm Sewer, Class V	LF	LINEAR FOOT	187	
29	D-705-5.1	4-Inch Pipe Underdrain, Perforated PVC Complete, Including Filter Sock	LF	LINEAR FOOT	296	
30	D-751-5.1a	48-Inch I.D. Storm Sewer Inlet	EA	EACH	1	
31	D-751-5.1b	60-Inch I.D. Storm Sewer Inlet	EA	EACH	1	
32	D-752-5.1	Precast Flored End Section for 30-Inch RCP, Class V	EA	EACH	1	
33	D-754-5.1	Structural Concrete, Reinforced (Flatwork)	CY	CUBIC YARD	41	
34	T-901-5.1a	Seeding, MnDOT Mixture Residential Turf Grass (RT)	ACRE	ACRE	1.8	
35	T-901-5.1b	Seeding, MnDOT Mixture Winter Wheat (WW)	ACRE	ACRE	1.2	
36	T-901-5.2a	Hydraulic Stabilized Fiber Matrix (SFM)	SY	SQUARE YARD	6880	
37	T-901-5.2b	Hydraulic Bonded Fiber Matrix (BFM)	SY	SQUARE YARD	950	
38	T-901-5.2c	Erosion Control Blanket, Category 3N	SY	SQUARE YARD	850	
39	T-901-5.3	Random Riprap Class III	CY	CUBIC YARD	12	
40	T-905-5.1	Topsoil Respread (Obtained On Site or Removed from Stockpile)	ACRE	ACRE	1.8	
41	NS-01-4.1	Airfield Safety and Traffic Control	LS	LUMP SUM	1	
42	NS-02-5.1	Maintenance and Restoration of Haul Roads	LS	LUMP SUM	1	
43	NS-03-4.1	Locate and Protect Existing Circuits	LS	LUMP SUM	1	
44	NS-04-5.1	Infiltration Basin	CY	CUBIC YARD	290	
45	NS-05-4.1	Aircraft Tie-Down Anchor, In-Pavement	EA	EACH	33	

SCHEDULE 2: WEST TERMINAL APRON RECONSTRUCTION

ITEM NO.	SPEC NO.	ITEM DESCRIPTION	UNIT (SHORT)	UNIT (FULL)	QUANTITY	AS BUILT
1	C-100	Contractor Quality Control Program	LS	LUMP SUM	1	
2	C-102-5.1a	Installation and Removal of Silt Fence, Type MS	LF	LINEAR FOOT	210	
3	C-102-5.1c	Stabilized Construction Exit	EA	EACH	1	
4	C-102-5.1d	Culvert End Control	EA	EACH	1	
5	C-102-5.1e	Storm Drain Inlet Protection	EA	EACH	1	
6	C-105-6.1a	Mobilization	LS	LUMP SUM	1	
7	P-101-5.1	Remove Concrete Valley Gutter, Full Depth	SY	SQUARE YARD	125	
8	P-101-5.7a	Remove Storm Sewer Pipe	LF	LINEAR FOOT	327	
9	P-101-5.7b	Remove Storm Sewer Structure	EA	EACH	2	
10	P-101-5.7c	Remove Aircraft Tie-Down Anchor	EA	EACH	15	
11	P-152-4.1a	Unclassified Excavation	CY	CUBIC YARD	1250	
12	P-152-4.1b	Unsuitable Excavation	CY	CUBIC YARD	90	
13	P-152-4.1c	Excess Topsoil Excavation – Haul Off Site	CY	CUBIC YARD	100	
14	P-154-5.1	Subbase Course	CY	CUBIC YARD	1000	
15	P-207-5.1a	In-place Full Depth Recycled (FDR) asphalt aggregate base course	SY	SQUARE YARD	7724	
16	P-207-5.1b	Place and Compact FDR Base Course – 6" Depth	CY	CUBIC YARD	1450	
17	P-401-8.1	Asphalt Surface Course	TON	TON	2250	
18	P-603-5.1	Emulsified Asphalt Tack Coat	GAL	GALLON	875	
19	P-620-5.1	Marking, Reflectorized, Yellow, Waterborne, Type I	SF	SQUARE FOOT	2080	
20	P-620-5.3	Remove Pavement Marking	SF	SQUARE FOOT	220	
21	D-701-5.1a	18-Inch RCP Storm Sewer, Class V	LF	LINEAR FOOT	222	
22	D-705-5.1	4-Inch Pipe Underdrain, Perforated PVC Complete, Including Filter Sock	LF	LINEAR FOOT	552	
23	D-754-5.1	Structural Concrete, Reinforced (Flatwork)	CY	CUBIC YARD	50	
24	T-901-5.1a	Seeding, MnDOT Mixture Residential Turf Grass (RT)	ACRE	ACRE	0.2	
25	T-901-5.1b	Seeding, MnDOT Mixture Winter Wheat (WW)	ACRE	ACRE	0.2	
26	T-901-5.2a	Hydraulic Stabilized Fiber Matrix (SFM)	SY	SQUARE YARD	190	
27	T-901-5.2b	Hydraulic Bonded Fiber Matrix (BFM)	SY	SQUARE YARD	470	
28	T-905-5.1	Topsoil Respread (Obtained On Site or Removed from Stockpile)	ACRE	ACRE	0.2	
29	L-108-5.3	No.8 AWG, 5kV, L-824, Type C Cable, Installed In Conduit	LF	LINEAR FOOT	160	
30	L-108-5.3	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed in Trench, Including Connections/Terminations and Ground Rods	LF	LINEAR FOOT	80	
31	L-110-5.2	Non-Encased Electrical Conduit, 1W-2", Schedule 40 PVC, Type II	LF	LINEAR FOOT	80	
32	L-125-5.1	Relocate Medium Intensity Taxiway Edge Light (MITL), Elevated	EA	EACH	2	
33	NS-01-4.1	Airfield Safety and Traffic Control	LS	LUMP SUM	1	
34	NS-02-5.1	Maintenance and Restoration of Haul Roads	LS	LUMP SUM	1	
35	NS-03-4.1	Locate and Protect Existing Circuits	LS	LUMP SUM	1	
36	NS-05-4.1	Aircraft Tie-Down Anchor, In-Pavement	EA	EACH	12	

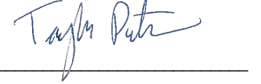
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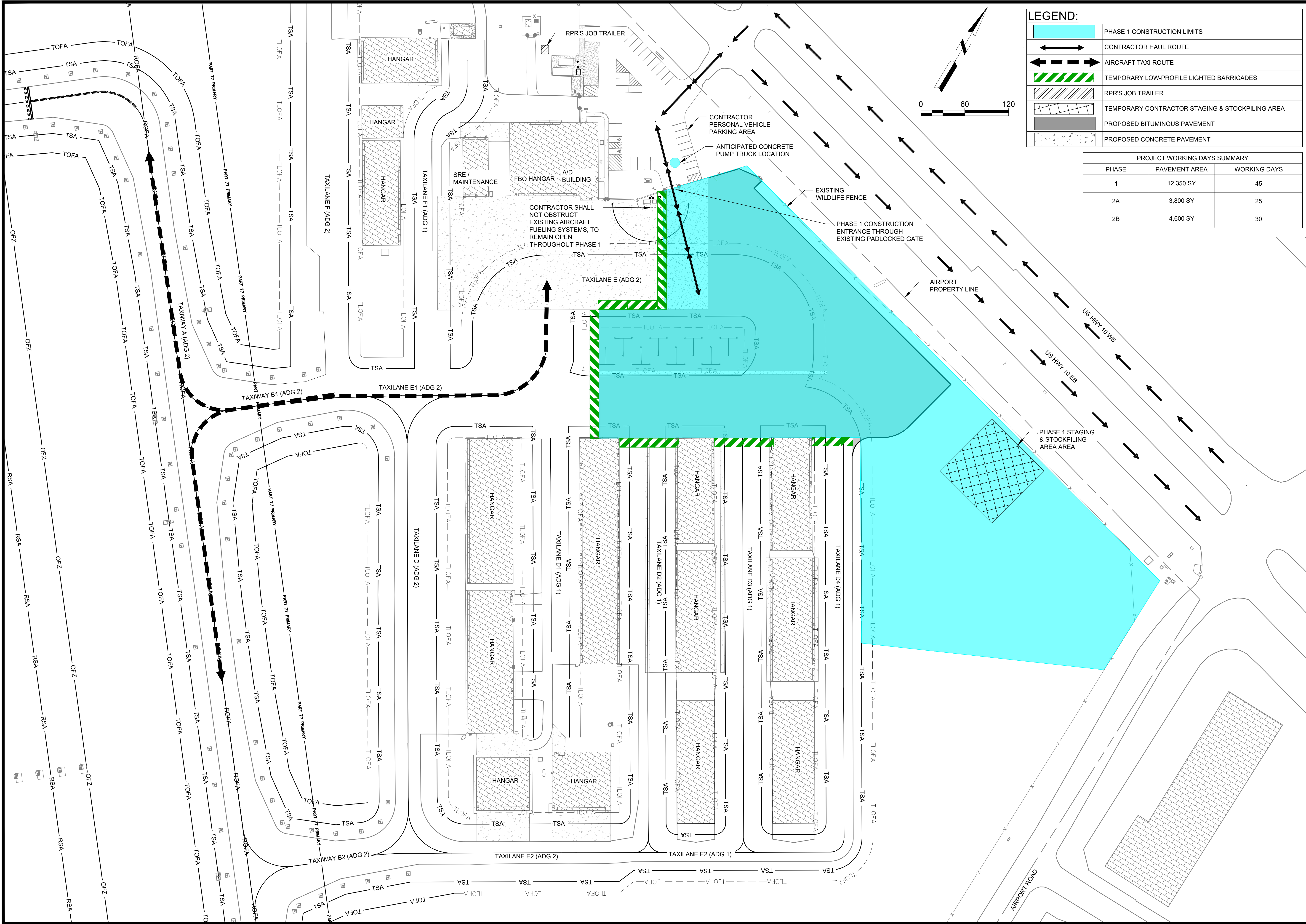
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SHEET CONTENTS  
PROJECT QUANTITIES





LEGEND:

	PHASE 1 CONSTRUCTION LIMITS
	CONTRACTOR HAUL ROUTE
	AIRCRAFT TAXI ROUTE
	TEMPORARY LOW-PROFILE LIGHTED BARRICADES
	RPR'S JOB TRAILER
	TEMPORARY CONTRACTOR STAGING & STOCKPILING AREA
	PROPOSED BITUMINOUS PAVEMENT
	PROPOSED CONCRETE PAVEMENT

PROJECT WORKING DAYS SUMMARY		
PHASE	PAVEMENT AREA	WORKING DAYS
1	12,350 SY	45
2A	3,800 SY	25
2B	4,600 SY	30

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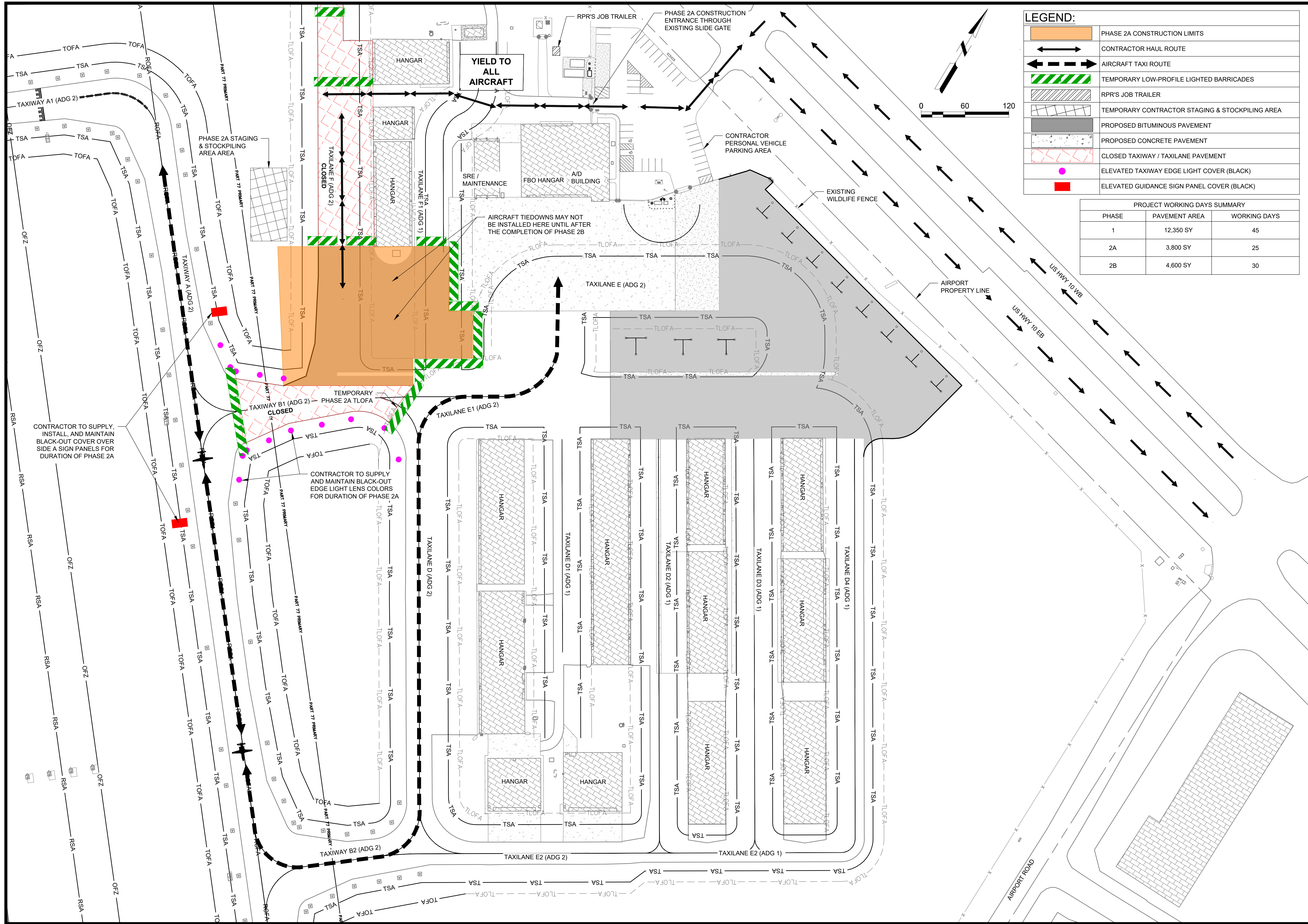
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SHEET CONTENTS  
CONSTRUCTION  
OPERATIONS &  
SAFETY PHASING  
PLAN - PHASE 1

SHEET NO. 5 of 32

G-081





LEGEND:

	PHASE 2A CONSTRUCTION LIMITS
	CONTRACTOR HAUL ROUTE
	AIRCRAFT TAXI ROUTE
	TEMPORARY LOW-PROFILE LIGHTED BARRICADES
	RPR'S JOB TRAILER
	TEMPORARY CONTRACTOR STAGING & STOCKPILING AREA
	PROPOSED BITUMINOUS PAVEMENT
	PROPOSED CONCRETE PAVEMENT
	CLOSED TAXIWAY / TAXILANE PAVEMENT
	ELEVATED TAXIWAY EDGE LIGHT COVER (BLACK)
	ELEVATED GUIDANCE SIGN PANEL COVER (BLACK)

PROJECT WORKING DAYS SUMMARY		
PHASE	PAVEMENT AREA	WORKING DAYS
1	12,350 SY	45
2A	3,800 SY	25
2B	4,600 SY	30

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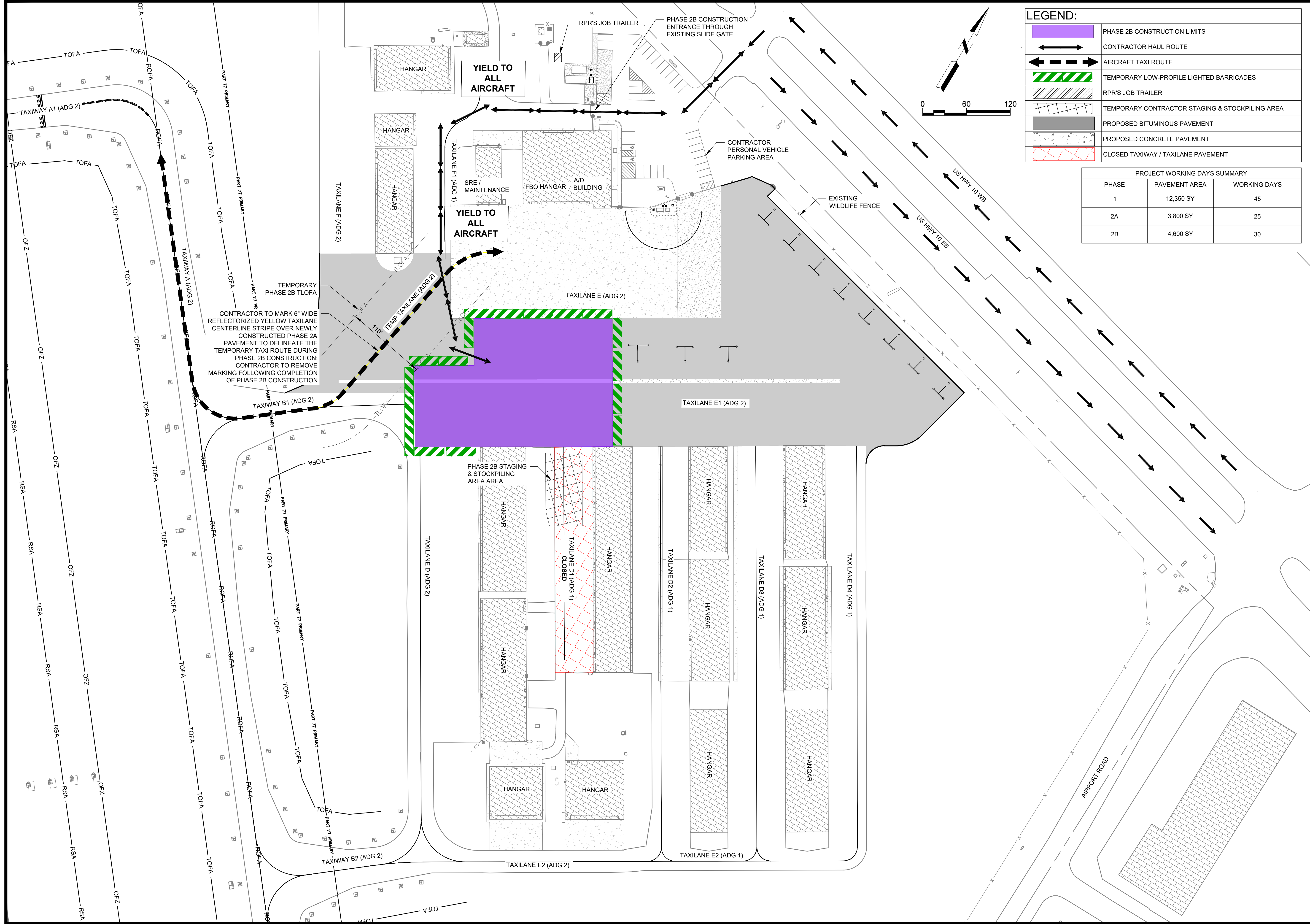
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PLAN - PHASE 2A

SHEET NO. 6 of 32

G-082



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	CONTRACTOR HAUL ROUTE
	AIRCRAFT TAXI ROUTE
	TEMPORARY LOW-PROFILE LIGHTED BARRICADES
	RPR'S JOB TRAILER
	TEMPORARY CONTRACTOR STAGING & STOCKPILING AREA
	PROPOSED BITUMINOUS PAVEMENT
	PROPOSED CONCRETE PAVEMENT
	CLOSED TAXIWAY / TAXILANE PAVEMENT

PROJECT WORKING DAYS SUMMARY		
PHASE	PAVEMENT AREA	WORKING DAYS
1	12,350 SY	45
2A	3,800 SY	25
2B	4,600 SY	30

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*Taylor F. Peterson*  
 SIGNATURE:  
 PRINT NAME: TAYLOR F. PETERSON  
 DATE: 05/07/2025 LICENSE #: 24901

**DETROIT LAKES - BECKER COUNTY AIRPORT  
 TERMINAL APRON RECONSTRUCTION &  
 EXPANSION**  
 24813 US HIGHWAY 10  
 DETROIT LAKES, MN 56501

ISSUED 05/07/25 ISSUED FOR BID

AIP NO.: 3-27-0021-26-25  
 MSH NO.: 3197100-242527.01  
 DATE: MAY 7, 2025  
 DESIGNED BY: JDK  
 DRAWN BY: KSH  
 CHECKED BY: TFP  
DO NOT SCALE DRAWINGS

SHEET CONTENTS  
 CONSTRUCTION  
 OPERATIONS &  
 SAFETY PHASING  
 PLAN - PHASE 2B

SHEET NO. 7 of 32



X:\1917\00242527 01\TECH\CAD\DRAWINGS\G-081 CONSTRUCTION OPERATIONS & SAFETY PHASING PLAN - PHASE 1.DWG  
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CONFORMS TO FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR 150/5370-2G "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION" AND THE PROJECT SPECIFIC "CONSTRUCTION SAFETY AND PHASING PLAN" (CSPP)

GENERAL NOTES

- A. CONSTRUCTION NOTICE TO PROCEED IS ANTICIPATED TO BE ISSUED IN THE SPRING OF 2026. SEE SHEETS G-081 THROUGH G-083 AND THE SPECIAL PROVISIONS IN THE SPECIFICATIONS FOR MORE DETAILS INCLUDING THE NUMBER OF WORKING DAYS ALLOTTED FOR THE PROJECT.
- B. EXACT LIMITS OF CONSTRUCTION WILL BE VERIFIED BY THE RESIDENT PROJECT REPRESENTATIVE (RPR) PRIOR TO THE CONTRACTOR BEGINNING WORK IN ANY AREA. **THE CONTRACTOR SHALL BE RESPONSIBLE FOR INFORMING ALL EMPLOYEES AND SUBCONTRACTORS OF THESE LIMITS.**
- C. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATION OF ALL UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITY LOCATES AND COORDINATION FOR SCHEDULING LOCATES.
- D. ALL STAGING AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION UPON PROJECT COMPLETION AT THE CONTRACTOR'S EXPENSE. THE EXACT LOCATION OF THE STAGING AREAS WILL BE DETERMINED BY THE RPR IN THE FIELD.
- E. SEE "CONSTRUCTION SAFETY AND PHASING PLAN" AND "SAFETY PLAN COMPLIANCE DOCUMENT" FOR ADDITIONAL DETAILS AND INFORMATION ON OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION.

MARKING, LIGHTING, AND BARRICADES

- A. CONSTRUCTION EQUIPMENT -- ALL CONSTRUCTION EQUIPMENT MUST BE MARKED WITH A 3 FOOT X 3 FOOT ORANGE AND WHITE CHECKERED FLAG MOUNTED AT THE HIGHEST POINT AND/OR LIGHTED WITH AN AMBER BEACON. FOR NIGHTTIME CONSTRUCTION, CONSTRUCTION EQUIPMENT MUST BE LIGHTED AND INCLUDE A FLASHING AMBER BEACON.
- B. EXCAVATION/STOCKPILES -- EXCAVATION ADJACENT TO PAVED SURFACES MUST BE APPROPRIATELY MARKED AND LIGHTED BY BARRICADES.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING LOW PROFILE BARRICADES ACROSS THE PAVEMENT AS SHOWN ON SHEETS G-081 THROUGH G-083 TO KEEP VEHICLES FROM ENTERING ACTIVE AREAS AND TO KEEP AIRCRAFT FROM TAXIING INTO AREAS UNDER CONSTRUCTION. CARE SHALL BE EXERCISED BY CONTRACTOR DURING CONSTRUCTION NOT TO PLACE BARRICADES CLOSER THAN THE CLEAR DISTANCES STATED IN THE SPECIAL PROVISIONS AND SHOWN ON THE PLANS.
- D. LOW-PROFILE BARRICADES SHALL BE NO MORE THAN 18 INCHES IN HEIGHT. A MAXIMUM GAP OF FOUR (4) FEET IS ALLOWED BETWEEN BARRICADES. BARRICADES SHALL BE ADEQUATELY WEIGHTED SO AS TO WITHSTAND WIND, PROPELLER, AND JET BLASTS. BARRICADES SHALL HAVE ALTERNATING STRIPS OF REFLECTIVE WHITE AND ORANGE AND BE EQUIPPED WITH RED BLINKING LIGHTS.
- E. CONTRACTOR MUST ALWAYS STAY WITHIN THE BARRICADED AREA UNLESS ACCOMPANIED BY AN AIRPORT APPROVED ESCORT.
- F. BARRICADES SHALL BE PLACED IN ACCORDANCE WITH CONTRACT PROVISIONS AS SHOWN AND AS DIRECTED BY THE RPR. THE CONTRACTOR SHALL PLACE, MOVE, AND MAINTAIN THE BARRICADES THROUGHOUT THE DURATION OF THE WORK.

FUEL SUPPORT

- A. ANY TYPE OF FUELING SUPPORT FACILITY OR DEVICE USED TO REFUEL CONSTRUCTION EQUIPMENT IS SUBJECT TO LOCAL FIRE INSPECTION. LOCAL FIRE CODES AND SAFETY STANDARDS SHALL BE MET PRIOR TO COMMENCEMENT OF WORK. FUELING SHALL BE RESTRICTED TO THE DESIGNATED STAGING AREA SHOWN ON THE PLANS.

SWEEPING/CLEAN-UP

- A. THE CONTRACTOR SHALL HAVE SWEEPING OR VACUUMING EQUIPMENT ON-SITE IN ORDER TO REMOVE DEBRIS AS IT OCCURS. DEBRIS SHALL NOT BE DEPOSITED ON ANY PORTION OF THE AIRFIELD OR LANDSIDE PAVEMENTS. SHOULD DEBRIS BE DEPOSITED ACCIDENTALLY, IT SHALL BE REMOVED IMMEDIATELY. UPON COMPLETION OF THE PROJECT, THE CONTRACTOR IS RESPONSIBLE FOR INSURING THAT THE PROJECT AREA IS RESTORED TO ITS ORIGINAL CONDITION OR CLEANED-UP TO THE CITY AND RPR'S SATISFACTION.

HAUL ROUTES

- A. HAUL ROUTES AND ACCESS TO THE CONSTRUCTION SITE WILL BE DISCUSSED AT THE PRE-CONSTRUCTION MEETING AND ARE DEPICTED ON THIS PLAN.
- B. THE CONTRACTOR SHALL CONDUCT THEIR OPERATIONS ON THE AIRPORT IN A MANNER THAT WILL MINIMIZE INTERFERENCE WITH THE NORMAL OPERATION OF THOSE AIRPORT FACILITIES THAT ARE DESIGNATED UNDER THIS CONTRACT TO REMAIN OPEN TO AIR TRAFFIC, AND THE CONTRACTOR SHALL IMPLEMENT ALL SPECIFIED AND OTHER APPROPRIATE MEASURES TO ENSURE THE SAFETY OF ALL USERS OF THE AIRPORT.
- C. NO HAULING IS ALLOWED ACROSS ANY PORTION OF THE APRON THAT IS OPEN TO AIR TRAFFIC WITHOUT A CONTRACTOR PROVIDED FLAGGER PERSON CONTROLLING THE MOVEMENT OF VEHICLES.

ENFORCEMENT

- A. VIOLATION OF THESE RULES AND REGULATIONS, DEPENDING UPON SEVERITY OF THE VIOLATION, MAY RESULT IN ONE OR MORE OF THE FOLLOWING:
- (1) A VERBAL AND/OR WRITTEN WARNING.
- (2) THE CONTRACT WORK BEING STOPPED UNTIL CORRECTIVE MEASURES ARE TAKEN TO PRECLUDE A RECURRENCE OF THE VIOLATIONS.
- (3) THE REMOVAL OF PERSONNEL FROM THE PROJECT SITE.

MEETINGS AND CORRESPONDENCE

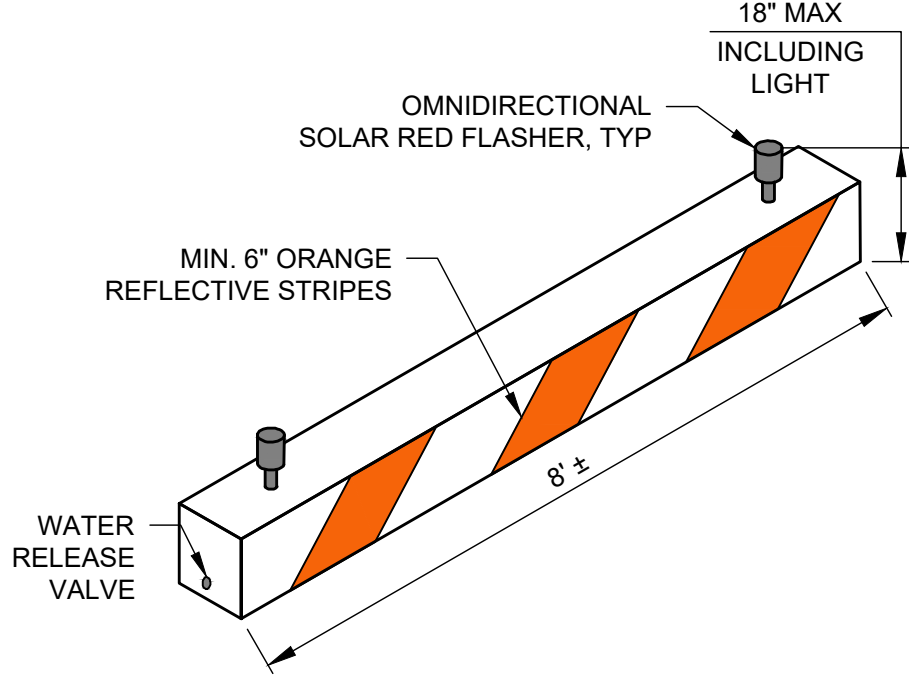
- A. THE AIRPORT MANAGER SHALL ISSUE ALL NOTAMS. THE CONTRACTOR MUST NOTIFY THE AIRPORT MANAGER/RPR A MINIMUM OF 72 HOURS PRIOR TO NOTAM TAKING EFFECT AND A MINIMUM OF 4 WEEKS PRIOR TO INITIAL CONSTRUCTION.
- B. CONTRACTOR IS REQUIRED TO ATTEND WEEKLY COORDINATION MEETINGS AT WHICH SAFETY ISSUES WILL BE DISCUSSED.

OPERATIONS/PHASING/TRAFFIC CONTROL NOTES

- A. ALL PUBLIC ROADS AND THE AIRPORT PARKING LOT ARE TO REMAIN OPEN TO VEHICLE TRAFFIC AT ALL TIMES. CONTRACTOR SHALL REPLACE ANY PAVEMENT DAMAGED DUE TO CONSTRUCTION ACTIVITIES IN KIND AT THE CONTRACTOR'S EXPENSE. TRAFFIC CONTROL WILL BE REQUIRED WHILE PERFORMING CONSTRUCTION CROSSING EXISTING ROADS AND AT ALL HAUL ROUTE/CONSTRUCTION ENTRANCES.
- B. DURING WORKING AND NON-WORKING HOURS, THE CONTRACTOR SHALL PROPERLY BARRICADE AND SIGN AREAS WHICH COULD CAUSE DAMAGE TO VEHICLES. TEMPORARY TRANSITIONS SHALL BE PLACED AT ALL MATCHING PAVEMENT EDGES.
- C. CONTRACTOR SHALL SUPPLY ANY TEMPORARY STOP SIGN, SPEED LIMIT, HAUL ROUTE, OR ANY OTHER TEMPORARY SIGN OR TRAFFIC CONTROL DEVICE REQUIRED TO PERFORM CONSTRUCTION AS DIRECTED BY THE CITY/RPR.
- D. CONTRACTOR SHALL NOT PARK OR TURN AROUND CONSTRUCTION VEHICLES IN ANY ACTIVE AIRCRAFT MOVEMENT OR NON-MOVEMENT AREAS, PARKING LOTS, OR PARKING LOT ENTRANCES.
- E. ALL TRAFFIC CONTROL ITEMS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), CURRENT EDITION. ALL BARRICADES SHALL BE WEIGHTED TO WITHSTAND WIND AND JET BLAST AND KEEP BARRICADES STATIONARY.
- F. PERSONAL VEHICLES SHALL BE PARKED IN THE DESIGNATED SECTION OF THE AIRPORT PARKING LOT AS DEPICTED ON SHEETS G-081 THROUGH G-083.
- G. THE EXACT NUMBER, TYPE, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.
- H. TRAFFIC CONTROL MEASURES SHOWN ON THE PLANS ARE A MINIMUM; THE CONTRACTOR IS TO SUPPLY ANY ADDITIONAL TRAFFIC CONTROL MEASURES TO PERFORM REQUIRED WORK AS REQUIRED BY THE CITY, THE RPR, THE FAA, OR THE MINNESOTA DEPARTMENT OF TRANSPORTATION (MnDOT). THIS IS INCIDENTAL TO THE AIRFIELD SAFETY AND TRAFFIC CONTROL BID ITEM.
- I. AT THE PRE-CONSTRUCTION MEETING, IT WILL BE DISCUSSED IF A CONCRETE PUMP WILL BE USED IN CONSTRUCTION OR AT A LOCATION / HEIGHT OTHER THAN SHOWN ON SHEET G-081. IF SO, THE CONTRACTOR MUST SUBMIT THE APPROPRIATE FORMS TO THE FAA FOR APPROVAL. (ALLOW A MINIMUM OF 60 DAYS FOR REVIEW).
- J. DAILY SAFETY INSPECTIONS SHALL BE PERFORMED AS REQUIRED IN THE CSPP BY THE CONTRACTOR AND THE CITY/RPR.

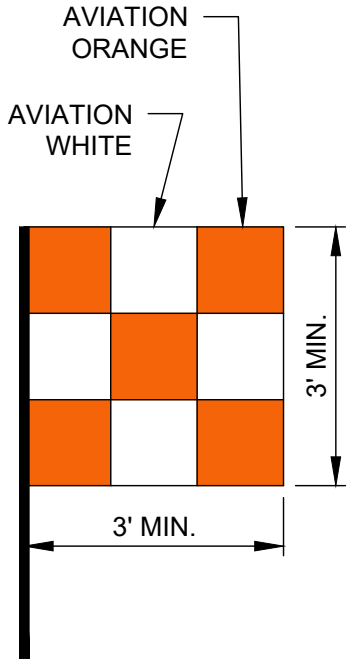
SCHEDULING NOTES:

- A. ALL SCHEDULING TO BE COORDINATED THROUGH THE RPR AND APPROVED BY THE CITY.
- B. THE CONTRACTOR SHALL SUBMIT A DETAILED PROJECT SCHEDULE AT THE PRE-CONSTRUCTION MEETING FOR APPROVAL BY THE CITY AND RPR. A MINIMUM OF 4-WEEKS NOTICE TO THE CITY/FBO/RPR PRIOR TO BEGINNING CONSTRUCTION IS REQUIRED FOR THE CITY TO PROPERLY NOTIFY ALL TENANTS OF THE PROPOSED CONSTRUCTION.



- NOTES:
- LOW-PROFILE, LIGHTED BARRICADES SHALL BE PLACED AROUND ALL OPEN EXCAVATIONS, HOLES, TRENCHES, PAVEMENT DROPOFFS, WORK AREAS, AND AREAS IDENTIFIED ON THE PHASING PLAN.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING, INSTALLING, MAINTAINING, AND POSITIONING AND OPERATIONS OF ALL LOW-PROFILE BARRICADES FOR THE DURATION OF THE PROJECT.
  - BARRICADES SHALL BE PLACED END TO END OR INTERCONNECTED WHEN PLACED ALONG ACTIVE APRON, TAXIWAY, TAXILANE, OR RUNWAY PAVEMENTS. ALL LOW-PROFILE BARRICADES SHALL BE WEIGHTED AGAINST JET BLAST. CONTRACTOR SHALL IMMEDIATELY REPLACE ANY BARRICADES THAT HAVE BEEN PUNCTURED OR DO NOT RETAIN WATER. SEE SPECIFICATION NS-01 AIRFIELD SAFETY AND TRAFFIC CONTROL FOR MORE DETAIL.

1 LOW PROFILE BARRICADE DETAIL  
NO SCALE



NOTE:  
SAFETY FLAG SHALL BE PROMINENTLY DISPLAYED AT THE HIGHEST POINT OF THE CONSTRUCTION EQUIPMENT.

2 CONSTRUCTION SAFETY FLAG  
NO SCALE

**Mead & Hunt**  
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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

SIGNATURE: *Taylor F. Peterson*  
PRINT NAME: TAYLOR F. PETERSON  
DATE: 05/07/2025 LICENSE #: 24801

DETROIT LAKES - BECKER COUNTY AIRPORT  
TERMINAL APRON RECONSTRUCTION &  
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24813 US HIGHWAY 10  
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SHEET CONTENTS  
CONSTRUCTION  
OPERATIONS &  
SAFETY PHASING  
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G-084



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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

SIGNATURE: \_\_\_\_\_  
PRINT NAME: TAYLOR F. PETERSON  
E: 05/07/2025 LICENSE #: 54901

24813 US HIGHWAY 10  
DETROIT LAKES, MN 56501

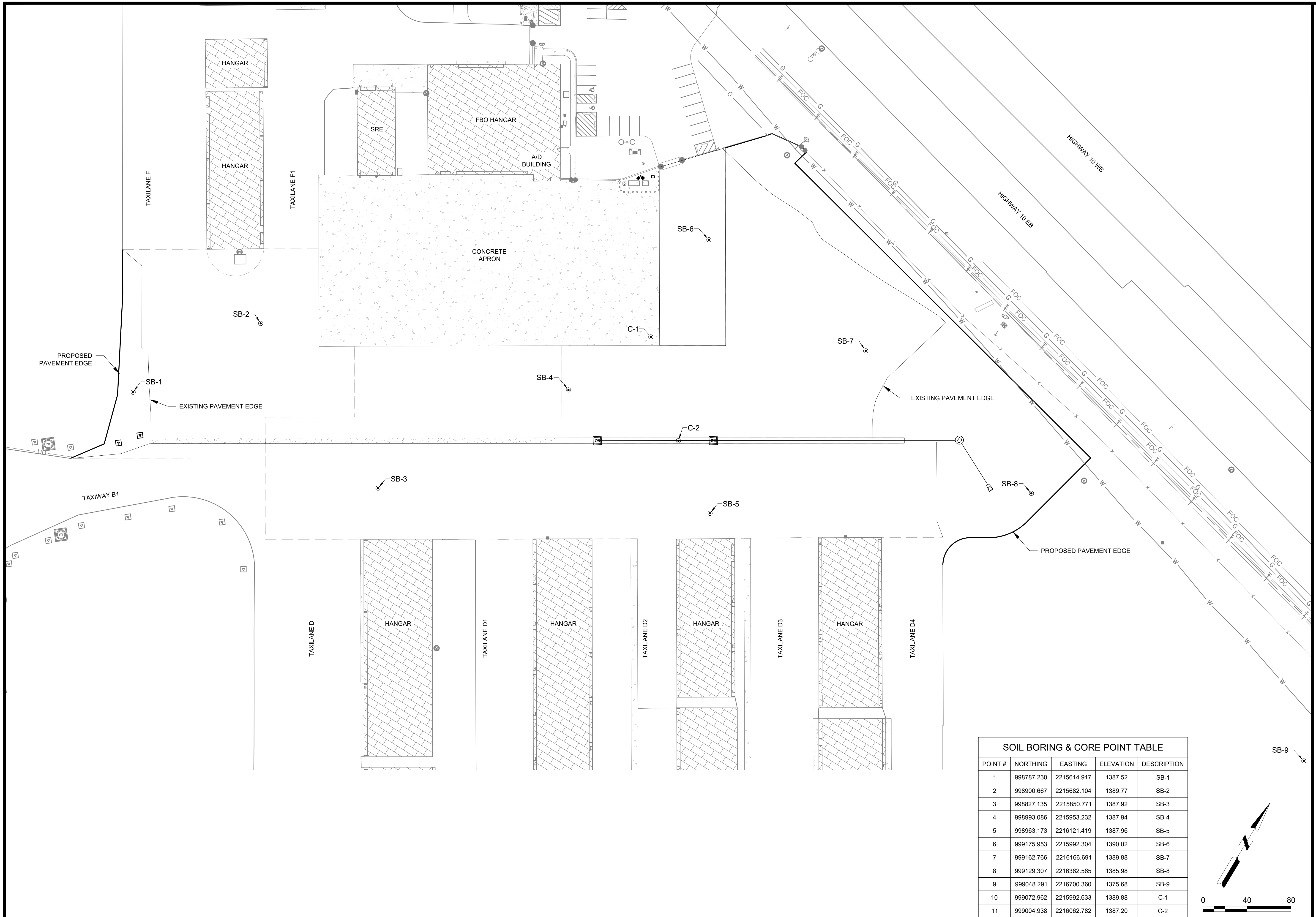
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## SOIL BORING PLAN

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B-051





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## LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B2411442</b> <b>Geotechnical Evaluation</b> <b>Proposed Terminal Apron Reconstruction &amp; Expansion</b> <b>24813 U.S. Hwy 10</b> <b>Detroit Lakes, Minnesota</b>				<b>BORING: SB-1</b> LOCATION: Captured with RTK GPS. DATUM: NAD 1983 HARN Adj MN Becker (US Feet) NORTHING: 998787.2 EASTING: 2215614.9 START DATE: 02/10/25 END DATE: 02/10/25 DRILLER: T.Schmidt LOGGED BY: C.Mathiason SURFACE ELEVATION: 1387.5 ft RIG: 7521 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Partly cloudy, 1"			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>s</sub> tsf	MC %	Tests or Remarks
1387.2 0.3		SANDY LEAN CLAY (CL), trace roots, black, frozen (moist when thawed) (TOPSOIL FILL) FILL: SILTY SAND (SM), fine to coarse-grained, little Gravel, brown, frozen (moist when thawed) to moist		AU 29-37-45 (82") 10"			*Influenced by frost to 4 feet  Bulk sample obtained from 3 to 6 feet
1381.0 6.5		POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained, brown, moist, medium dense (GLACIOFLUVIUM)		3-7-8 (15) 10"			
1378.5 9.0		POORLY GRADED SAND (SP), fine to coarse-grained, trace Gravel, brown, moist, medium dense (GLACIAL OUTWASH)		2-4-7 (11) 12"			
1376.5 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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## LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B2411442</b> <b>Geotechnical Evaluation</b> <b>Proposed Terminal Apron Reconstruction &amp; Expansion</b> <b>24813 U.S. Hwy 10</b> <b>Detroit Lakes, Minnesota</b>				<b>BORING: SB-2</b> LOCATION: Captured with RTK GPS. DATUM: NAD 1983 HARN Adj MN Becker (US Feet) NORTHING: 998900.7 EASTING: 2215682.1 START DATE: 02/11/25 END DATE: 02/11/25 DRILLER: T.Schmidt LOGGED BY: C.Mathiason SURFACE ELEVATION: 1389.8 ft RIG: 7521 METHOD: 3 1/4" HSA SURFACING: Bituminous WEATHER: Sunny, -1"			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>s</sub> tsf	MC %	Tests or Remarks
1389.4 0.4		BITUMINOUS, 4 1/4 inches		AU			*Influenced by frost to 4 feet
1388.9 1.0		APPARENT AGGREGATE BASE, 8 inches FILL: POORLY GRADED SAND with SILT (SP-SM), fine to coarse-grained, trace Gravel, brown, frozen (moist when thawed) to moist		15-50/3" (REF*) 4"	3	P200=11%	
		With black Clay seams at 5 feet		29-50/3" (REF) 5"			
1383.3 6.5		POORLY GRADED SAND with SILT (SP-SM), fine to coarse-grained, trace Gravel, brown, moist, medium dense to dense (GLACIAL OUTWASH)		3-7-9 (16) 12"			
		With Gravel at 10 feet		14-21-26 (47) 8"			
1378.8 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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## LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B2411442</b> <b>Geotechnical Evaluation</b> <b>Proposed Terminal Apron Reconstruction &amp; Expansion</b> <b>24813 U.S. Hwy 10</b> <b>Detroit Lakes, Minnesota</b>				<b>BORING: SB-3</b> LOCATION: Captured with RTK GPS. DATUM: NAD 1983 HARN Adj MN Becker (US Feet) NORTHING: 998827.1 EASTING: 2215850.8 START DATE: 02/10/25 END DATE: 02/10/25 DRILLER: T.Schmidt LOGGED BY: C.Mathiason SURFACE ELEVATION: 1387.9 ft RIG: 7521 METHOD: 3 1/4" HSA SURFACING: Bituminous WEATHER: Partly cloudy, 1"			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>s</sub> tsf	MC %	Tests or Remarks
1387.4 0.5		BITUMINOUS, 5 1/2 inches		AU			*Influenced by frost to 4 feet
1385.3 1.0		APPARENT AGGREGATE BASE, 6 inches FILL: POORLY GRADED SAND with SILT (SP-SM), fine to coarse-grained, trace Gravel, dark brown, frozen (moist when thawed)		50/5" (REF*) 3"			
1383.9 4.0		FILL: CLAYEY SAND (SC), fine to coarse-grained, trace Gravel, brown, moist		7-14-7 (21) 14"	9	P200=20%	
1380.9 7.0		SANDY LEAN CLAY (CL), black, moist		3-3-5 (8) 6"			
1380.4 7.5		(BURIED TOPSOIL) SANDY LEAN CLAY (CL), trace Gravel, brown to dark brown, moist, medium (GLACIAL TILL)		3-3-4 (7) 8"			
1376.9 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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## LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B2411442</b> <b>Geotechnical Evaluation</b> <b>Proposed Terminal Apron Reconstruction &amp; Expansion</b> <b>24813 U.S. Hwy 10</b> <b>Detroit Lakes, Minnesota</b>				<b>BORING: SB-4</b> LOCATION: Captured with RTK GPS. DATUM: NAD 1983 HARN Adj MN Becker (US Feet) NORTHING: 998993.1 EASTING: 2215953.2 START DATE: 02/10/25 END DATE: 02/10/25 DRILLER: T.Schmidt LOGGED BY: C.Mathiason SURFACE ELEVATION: 1387.9 ft RIG: 7521 METHOD: 3 1/4" HSA SURFACING: Bituminous WEATHER: Partly cloudy, 1"			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>s</sub> tsf	MC %	Tests or Remarks
1387.5 0.4		BITUMINOUS, 4 1/2 inches		AU			*Influenced by frost to 4 feet
1386.9 1.0		APPARENT AGGREGATE BASE, 7 inches FILL: SILTY SAND (SM), fine to coarse-grained, with Gravel, dark brown with brown, frozen (moist when thawed) to moist		29-50/4" (REF*) 8"			Bulk sample obtained from 3 to 6 feet Non-plastic
				15-50/5" (REF) 6"			
				7-11-9 (20) 10"			
1379.9 8.0		POORLY GRADED GRAVEL with SILT (SP-SM), fine to medium-grained, trace Gravel, brown, moist, medium dense (GLACIAL OUTWASH)		7-7-13 (20) 10"			
1376.9 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

B2411442 Braun Intertec Corporation Print Date:05/02/2025 SB-4 page 1 of 1



## LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

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Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>s</sub> tsf	MC %	Tests or Remarks
1387.6 0.4		BITUMINOUS, 5 1/4 inches		AU			*Influenced by frost to 4 feet
1387.1 0.9		APPARENT AGGREGATE BASE, 6 inches FILL: POORLY GRADED SAND with SILT (SP-SM), fine to coarse-grained, trace Gravel, dark brown, frozen (moist when thawed)		50/3" (REF*) 2"			
				11-28-34 (62) 10"	4		
1381.5 6.5		POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained, trace Gravel, brown, moist, medium dense to loose (GLACIAL OUTWASH)		6-10-12 (22) 12"			
1377.0 11.0		END OF BORING Boring then backfilled with auger cuttings		4-4-5 (9) 8"			Water not observed while drilling.

B2411442 Braun Intertec Corporation Print Date:05/02/2025 SB-5 page 1 of 1

# Mead & Hunt

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

SIGNATURE: *Taylor F. Peterson*  
PRINT NAME: TAYLOR F. PETERSON  
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SHEET CONTENTS  
SOIL BORING LOGS

SHEET NO. 10 of 32

## B-052





LOG OF BORING

Project Number B2411442 Geotechnical Evaluation Proposed Terminal Apron Reconstruction & Expansion 24813 U.S. Hwy 10 Detroit Lakes, Minnesota				BORING: SB-6 LOCATION: Captured with RTK GPS. DATUM: NAD 1983 HARN Adj MN Becker (US Feet) NORTHING: 999176.0 EASTING: 2215992.3 START DATE: 02/19/25 END DATE: 02/19/25 DRILLER: C. Gorman LOGGED BY: C. Anderson SURFACING: Bituminous WEATHER: Cold			
1390.0 ft	1390.0 ft	RIG: 7508	METHOD: 3 1/4" HSA	1390.0 ft	1390.0 ft	1390.0 ft	1390.0 ft
Elev./ Depth	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>s</sub> tsf	MC %	Tests or Remarks
1389.6	0.4	BITUMINOUS, 5 inches					*Influenced by frost to 4 feet
1388.9	1.1	APPARENT AGGREGATE BASE, 8 1/2 inches		AU			
		FILL: SILTY SAND (SM), fine to coarse-grained, with Gravel, brown and gray, frozen (moist when thawed) to moist		53-50/3* (REF*) 6"			Bulk sample obtained from 3 to 6 feet
1385.0	5.0	POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained, brown, moist, very dense (GLACIOFLUVIUM)	5	35-35-32-26 (67) 10"			
1383.5	6.5	POORLY GRADED SAND (SP), fine to coarse-grained, with Gravel, brown, moist, medium dense (GLACIAL OUTWASH)		7-8-7 (15) 2"			
1379.0	11.0	END OF BORING	10	9-11-10 (21) 0"			No recovery Water not observed while drilling.
		Boring then backfilled with auger cuttings					Water not observed at end of drilling.



LOG OF BORING

Project Number B2411442 Geotechnical Evaluation Proposed Terminal Apron Reconstruction & Expansion 24813 U.S. Hwy 10 Detroit Lakes, Minnesota				BORING: SB-7 LOCATION: Captured with RTK GPS. DATUM: NAD 1983 HARN Adj MN Becker (US Feet) NORTHING: 999162.8 EASTING: 2216166.7 START DATE: 02/19/25 END DATE: 02/19/25 DRILLER: C. Gorman LOGGED BY: C. Anderson SURFACING: Bituminous WEATHER: Cold			
1389.9 ft	1389.9 ft	RIG: 7508	METHOD: 3 1/4" HSA	1389.9 ft	1389.9 ft	1389.9 ft	1389.9 ft
Elev./ Depth	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>s</sub> tsf	MC %	Tests or Remarks
1389.5	0.4	BITUMINOUS, 5 inches					*Influenced by frost to 4 feet
1388.9	1.0	APPARENT AGGREGATE BASE, 7 1/2 inches		AU			
		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to coarse-grained, trace Gravel, brown to dark brown, frozen (moist when thawed) to moist		63-54-43-45 (97*) 12"			
1385.9	4.0	POORLY GRADED SAND (SP), fine to coarse-grained, with Gravel, brown, moist, medium dense (GLACIAL OUTWASH)	5	10-12-13-12 (25) 12"			
				3-6-5 (11) 12"			
1378.9	11.0	END OF BORING	10	7-6-5 (11) 10"			Water not observed while drilling.
		Boring then backfilled with auger cuttings					Water not observed at end of drilling.



LOG OF BORING

Project Number B2411442 Geotechnical Evaluation Proposed Terminal Apron Reconstruction & Expansion 24813 U.S. Hwy 10 Detroit Lakes, Minnesota				BORING: SB-8 LOCATION: Captured with RTK GPS. DATUM: NAD 1983 HARN Adj MN Becker (US Feet) NORTHING: 999129.3 EASTING: 2216362.6 START DATE: 02/19/25 END DATE: 02/19/25 DRILLER: C. Gorman LOGGED BY: C. Anderson SURFACING: Grass WEATHER: Cold			
1386.0 ft	1386.0 ft	RIG: 7508	METHOD: 3 1/4" HSA	1386.0 ft	1386.0 ft	1386.0 ft	1386.0 ft
Elev./ Depth	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>s</sub> tsf	MC %	Tests or Remarks
1385.0	1.0	CLAYEY SAND (SC), fine to medium-grained, trace roots, black, frozen (moist when thawed) (TOPSOIL FILL)		AU			*Influenced by frost to 4 feet
		FILL: CLAYEY SAND (SC), fine to medium-grained, little Gravel, dark brown, frozen (moist when thawed) to moist		12-19-15-13 (34*) 16"			Bulk sample obtained from 3 to 6 feet LL=30, PL=17, PI=13
1379.5	6.5	POORLY GRADED SAND (SP), fine to coarse-grained, with Gravel, brown, moist, loose to medium dense (GLACIAL OUTWASH)	5	6-7-11-12 (18) 10"			
1375.0	11.0	END OF BORING	10	3-4-6 (10) 10"			Water not observed while drilling.
		Boring then backfilled with auger cuttings		2-5-7 (12) 12"			Water not observed at end of drilling.



LOG OF BORING

Project Number B2411442 Geotechnical Evaluation Proposed Terminal Apron Reconstruction & Expansion 24813 U.S. Hwy 10 Detroit Lakes, Minnesota				BORING: SB-9 LOCATION: Captured with RTK GPS. DATUM: NAD 1983 HARN Adj MN Becker (US Feet) NORTHING: 999048.3 EASTING: 2216700.4 START DATE: 02/19/25 END DATE: 02/19/25 DRILLER: C. Gorman LOGGED BY: C. Anderson SURFACING: Grass WEATHER: Cold			
1375.7 ft	1375.7 ft	RIG: 7508	METHOD: 3 1/4" HSA	1375.7 ft	1375.7 ft	1375.7 ft	1375.7 ft
Elev./ Depth	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>s</sub> tsf	MC %	Tests or Remarks
1374.7	1.0	CLAYEY SAND (SC), fine-grained, trace roots, dark brown, frozen (moist when thawed) (TOPSOIL)		AU			*Influenced by frost to 4 feet
		POORLY GRADED SAND with SILT (SP-SM), fine-grained, brown, frozen (moist when thawed) to moist, very loose (GLACIOFLUVIUM)		16-19-12-13 (31*) 12"			
1369.2	6.5	POORLY GRADED SAND (SP), fine to coarse-grained, with Gravel, brown, moist, loose (GLACIAL OUTWASH)	5	3-2-2-2 (4) 10"			
				3-3-2 (5) 4"			
1364.7	11.0	END OF BORING	10	2-2-3 (5) 6"			Water not observed while drilling.
		Boring then backfilled with auger cuttings					Water not observed at end of drilling.



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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

SIGNATURE:   
PRINT NAME: TAYLOR F. PETERSON  
DATE: 05/07/2025 LICENSE #: 24901

DETROIT LAKES - BECKER COUNTY AIRPORT  
TERMINAL APRON RECONSTRUCTION &  
EXPANSION  
24813 US HIGHWAY 10  
DETROIT LAKES, MN 56501

ISSUED 05/07/25 ISSUED FOR BID

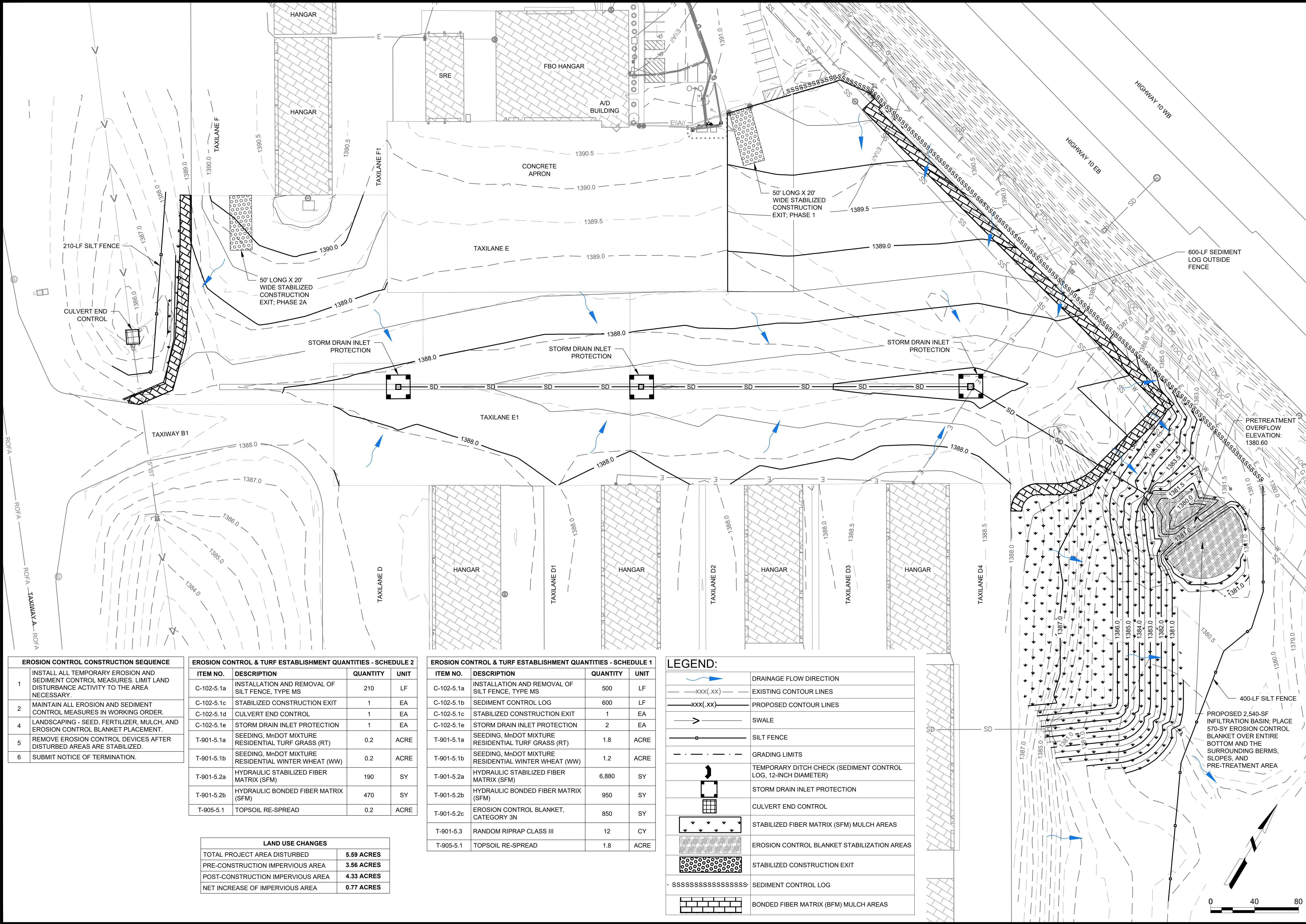
AIP NO.: 3-27-0021-26-25  
MSH NO.: 3197100-242527.01  
DATE: MAY 7, 2025  
DESIGNED BY: JDK  
DRAWN BY: KSH  
CHECKED BY: TFP  
DO NOT SCALE DRAWINGS

SHEET CONTENTS  
SOIL BORING LOGS

SHEET NO. 11 of 32

B-053





EROSION CONTROL CONSTRUCTION SEQUENCE	
1	INSTALL ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES. LIMIT LAND DISTURBANCE ACTIVITY TO THE AREA NECESSARY.
2	MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES IN WORKING ORDER.
4	LANDSCAPING - SEED, FERTILIZER, MULCH, AND EROSION CONTROL BLANKET PLACEMENT.
5	REMOVE EROSION CONTROL DEVICES AFTER DISTURBED AREAS ARE STABILIZED.
6	SUBMIT NOTICE OF TERMINATION.

EROSION CONTROL & TURF ESTABLISHMENT QUANTITIES - SCHEDULE 2			
ITEM NO.	DESCRIPTION	QUANTITY	UNIT
C-102-5.1a	INSTALLATION AND REMOVAL OF SILT FENCE, TYPE MS	210	LF
C-102-5.1c	STABILIZED CONSTRUCTION EXIT	1	EA
C-102-5.1d	CULVERT END CONTROL	1	EA
C-102-5.1e	STORM DRAIN INLET PROTECTION	1	EA
T-901-5.1a	SEEDING, MnDOT MIXTURE RESIDENTIAL TURF GRASS (RT)	0.2	ACRE
T-901-5.1b	SEEDING, MnDOT MIXTURE RESIDENTIAL WINTER WHEAT (WW)	0.2	ACRE
T-901-5.2a	HYDRAULIC STABILIZED FIBER MATRIX (SFM)	190	SY
T-901-5.2b	HYDRAULIC BONDED FIBER MATRIX (SFM)	470	SY
T-905-5.1	TOPSOIL RE-SPREAD	0.2	ACRE

LAND USE CHANGES	
TOTAL PROJECT AREA DISTURBED	5.59 ACRES
PRE-CONSTRUCTION IMPERVIOUS AREA	3.56 ACRES
POST-CONSTRUCTION IMPERVIOUS AREA	4.33 ACRES
NET INCREASE OF IMPERVIOUS AREA	0.77 ACRES

EROSION CONTROL & TURF ESTABLISHMENT QUANTITIES - SCHEDULE 1			
ITEM NO.	DESCRIPTION	QUANTITY	UNIT
C-102-5.1a	INSTALLATION AND REMOVAL OF SILT FENCE, TYPE MS	500	LF
C-102-5.1b	SEDIMENT CONTROL LOG	600	LF
C-102-5.1c	STABILIZED CONSTRUCTION EXIT	1	EA
C-102-5.1e	STORM DRAIN INLET PROTECTION	2	EA
T-901-5.1a	SEEDING, MnDOT MIXTURE RESIDENTIAL TURF GRASS (RT)	1.8	ACRE
T-901-5.1b	SEEDING, MnDOT MIXTURE RESIDENTIAL WINTER WHEAT (WW)	1.2	ACRE
T-901-5.2a	HYDRAULIC STABILIZED FIBER MATRIX (SFM)	6,880	SY
T-901-5.2b	HYDRAULIC BONDED FIBER MATRIX (SFM)	950	SY
T-901-5.2c	EROSION CONTROL BLANKET, CATEGORY 3N	850	SY
T-901-5.3	RANDOM RIPRAP CLASS III	12	CY
T-905-5.1	TOPSOIL RE-SPREAD	1.8	ACRE

LEGEND:	
	DRAINAGE FLOW DIRECTION
	EXISTING CONTOUR LINES
	PROPOSED CONTOUR LINES
	SWALE
	SILT FENCE
	GRADING LIMITS
	TEMPORARY DITCH CHECK (SEDIMENT CONTROL LOG, 12-INCH DIAMETER)
	STORM DRAIN INLET PROTECTION
	CULVERT END CONTROL
	STABILIZED FIBER MATRIX (SFM) MULCH AREAS
	EROSION CONTROL BLANKET STABILIZATION AREAS
	STABILIZED CONSTRUCTION EXIT
	SEDIMENT CONTROL LOG
	BONDED FIBER MATRIX (BFM) MULCH AREAS

# Mead & Hunt

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

SIGNATURE: *Taylor F. Peterson*  
PRINT NAME: TAYLOR F. PETERSON  
DATE: 05/07/2025 LICENSE #: 24801

## DETROIT LAKES - BECKER COUNTY AIRPORT TERMINAL APRON RECONSTRUCTION & EXPANSION

24813 US HIGHWAY 10  
DETROIT LAKES, MN 56501

ISSUED 05/07/25 ISSUED FOR BID

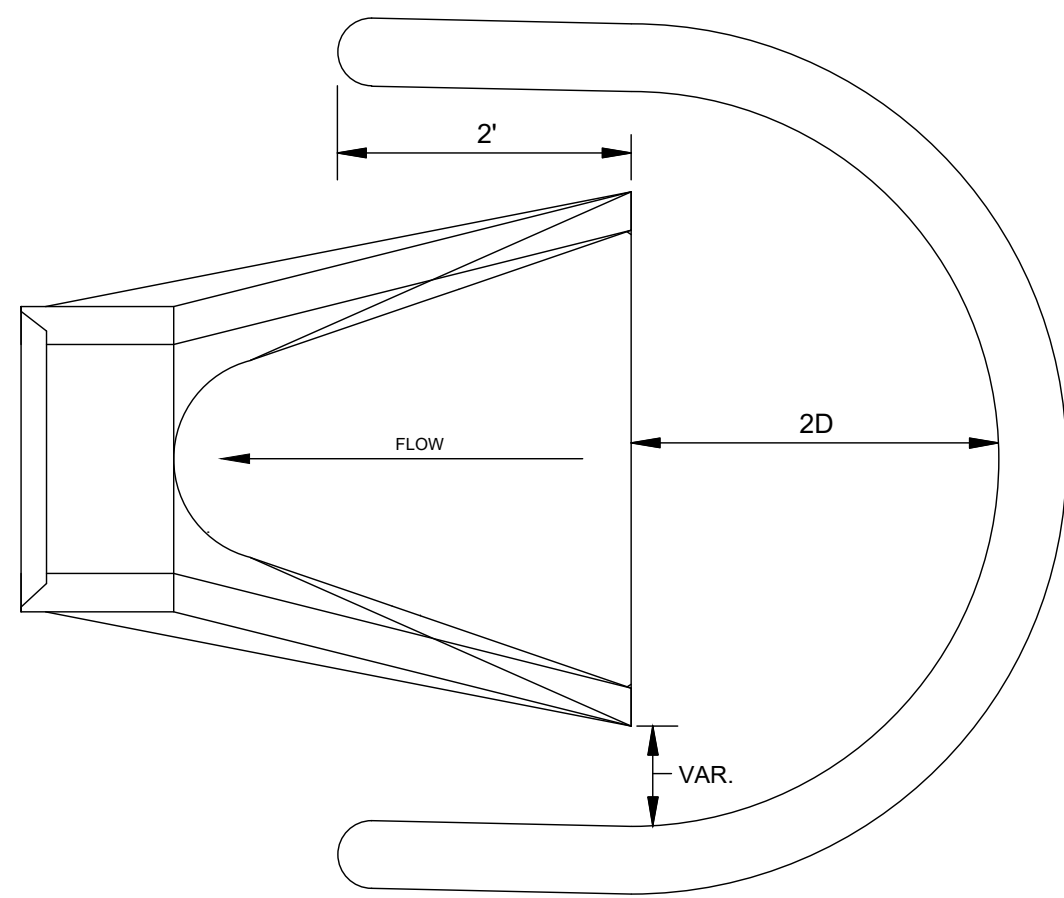
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SHEET CONTENTS  
EROSION CONTROL &  
TURF  
ESTABLISHMENT PLAN

SHEET NO. 12 of 32

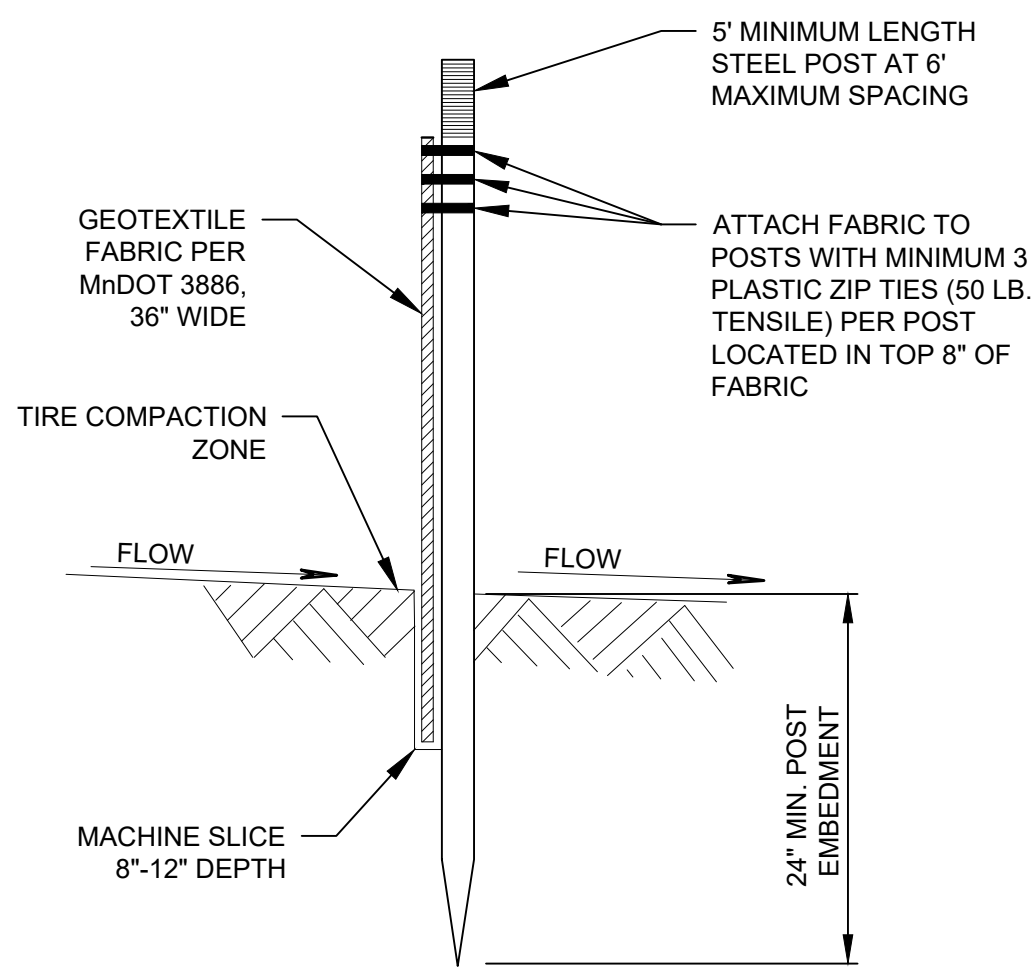
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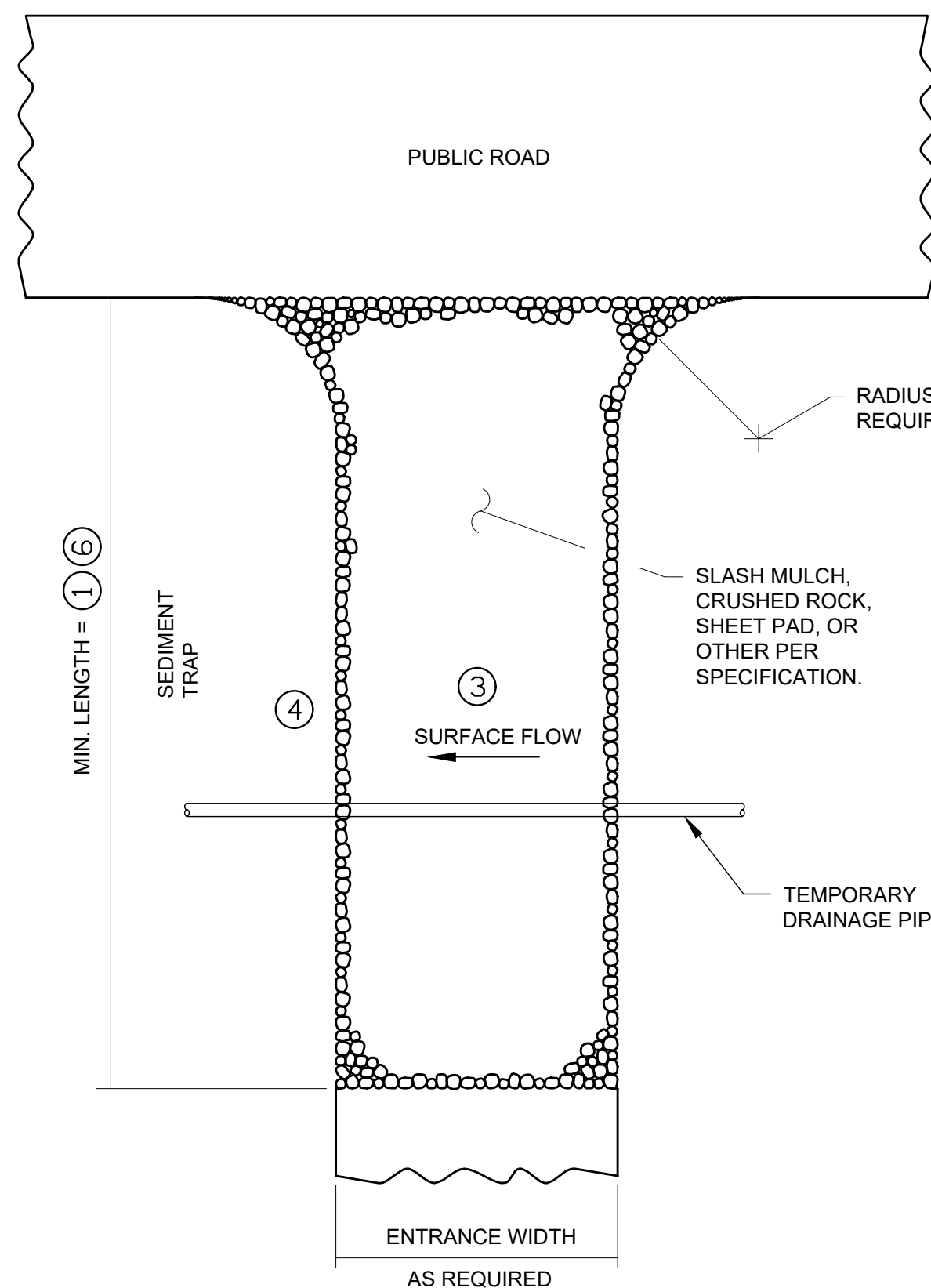
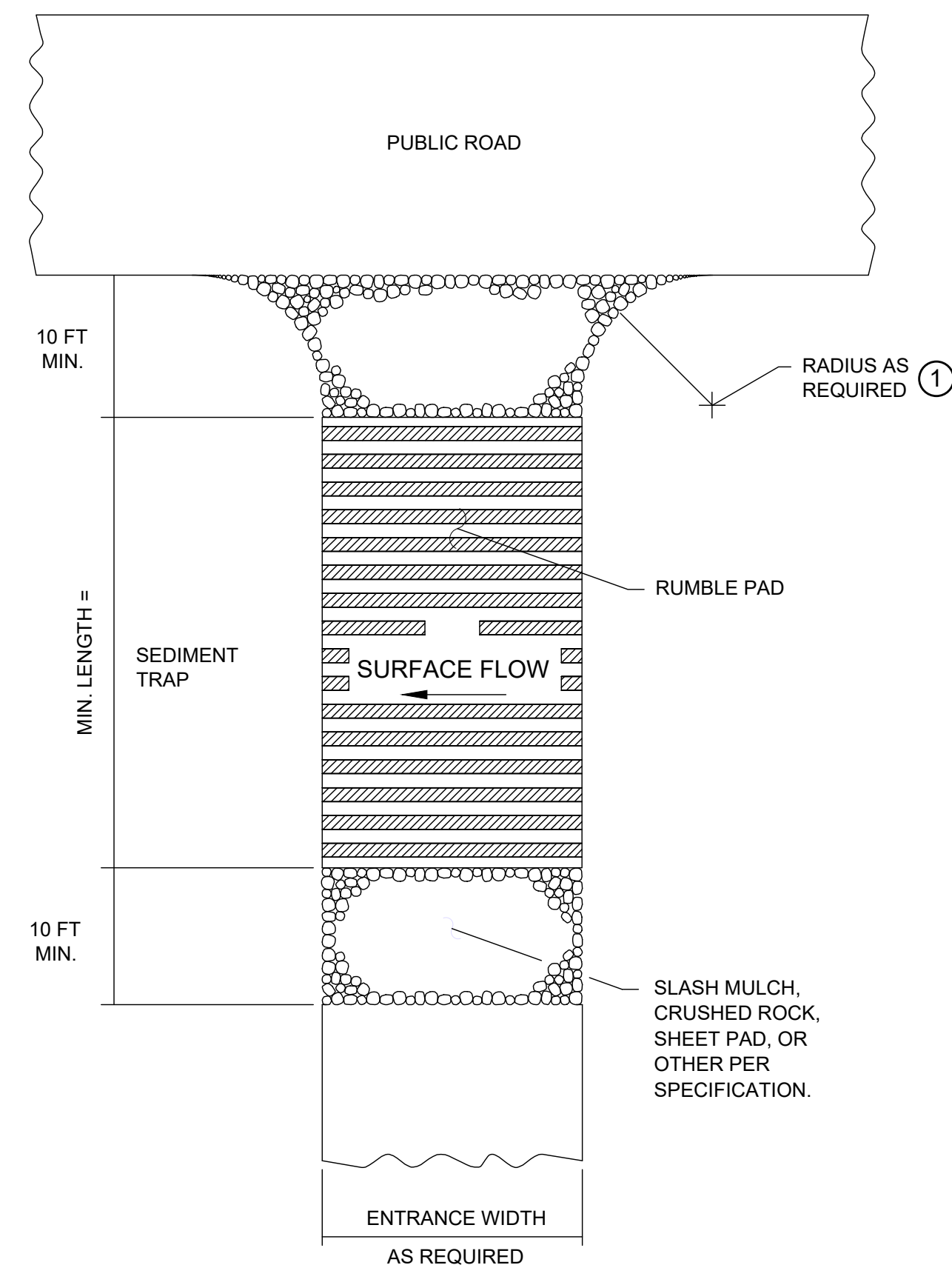
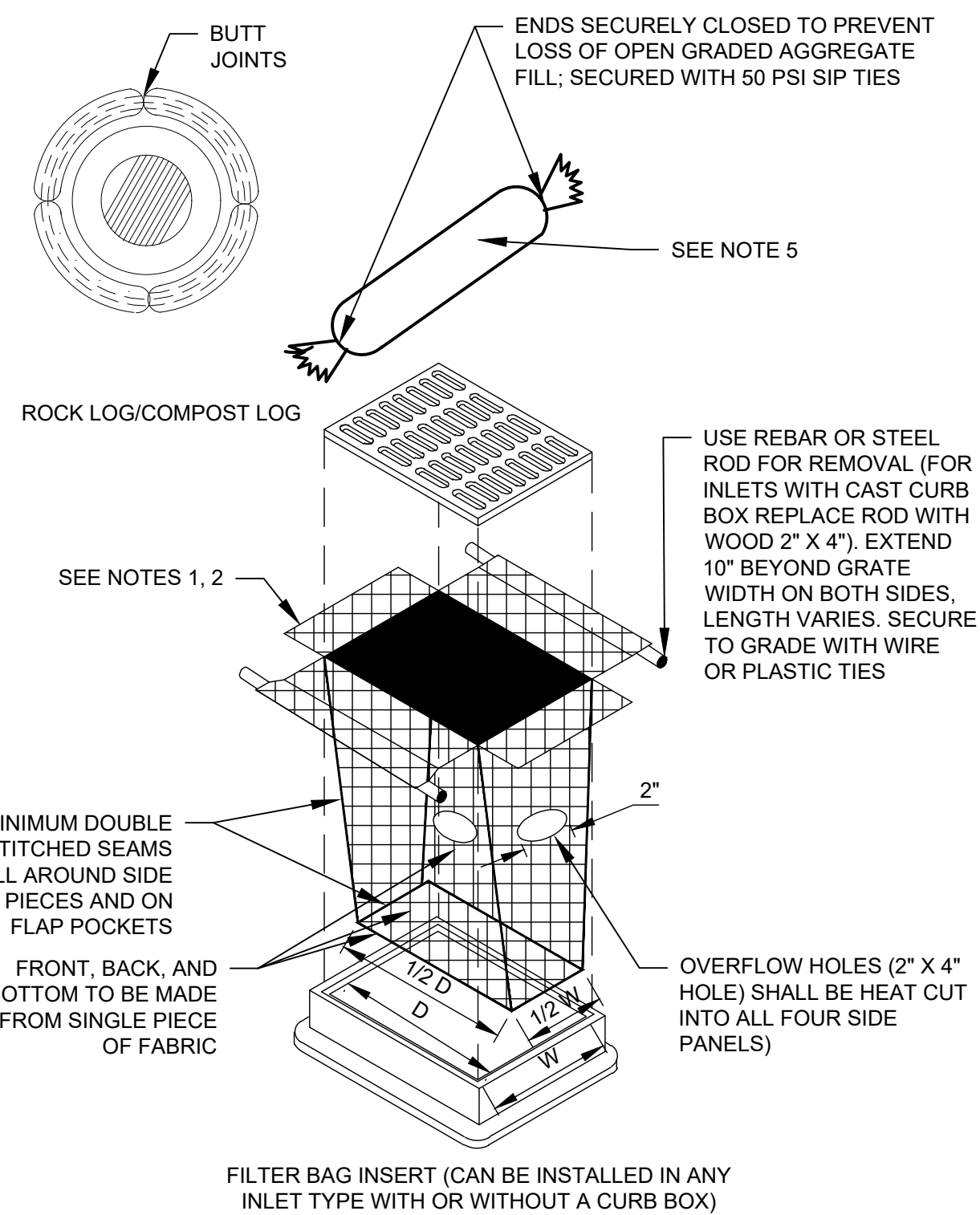
## NOTE:

- 12" DIAMETER SEDIMENT CONTROL LOG WEIR (TYPE COMPOST, WOOD CHIP, OR ROCK)
- D=CULVERT SPAN (12"-36")

4 CULVERT INLET CONTROL DETAIL  
NOT TO SCALE

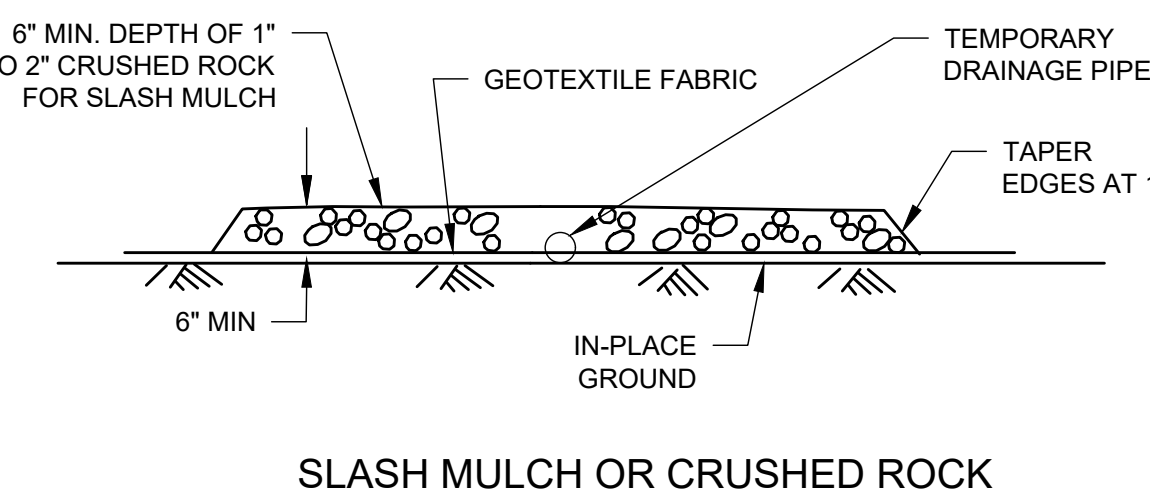
## NOTE:

- SILT FENCE TO BE INSTALLED CONTINUOUSLY ALONG A SINGLE CONTOUR WHERE SHOWN ON PLAN. MAXIMUM LENGTH OF SINGLE STRETCH TO BE 650 LINEAR FEET, WITH A J-HOOK CONSTRUCTED AT THE END OF EACH STRETCH.

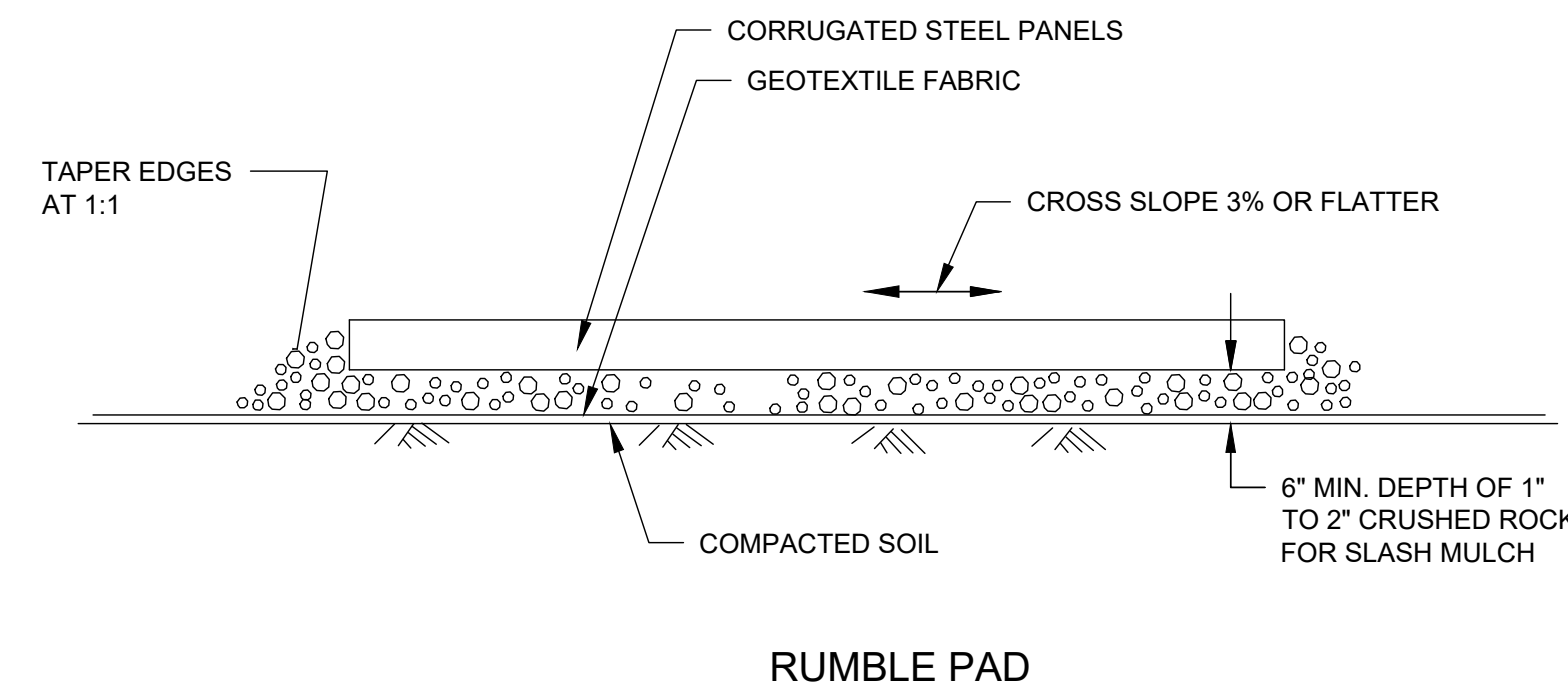
3 SILT FENCE,  
MACHINE SLICED DETAIL  
NOT TO SCALESLASH MULCH, CRUSHED ROCK, OR SHEET  
PAD CONSTRUCTION EXIT (SEE NOTES 5 & 7)RUMBLE PAD  
CONSTRUCTION EXIT  
(SEE NOTES 2 & 3)

## NOTES:

- ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING MnDOT SPEC 3886.
- FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- INSTALLATION: DO NOT PLACE FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE PLACED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY, THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.
- FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.
- GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT). FILL ROCK LOG WITH OPEN GRADED AGGREGATE CONSISTING OF SOUND DURABLE PARTICLES OF COARSE AGGREGATE CONFORMING TO SPEC. 3137 TABLE 3137-1; CA-3 GRADATION.

3 STORM DRAIN INLET PROTECTION DETAIL  
NOT TO SCALE

## SHEET PAD



## RUMBLE PAD

## NOTES (SEE MnDOT SPECIFICATIONS 2573 &amp; 3882):

- MINIMUM LENGTH SHALL BE THE GREATER OF 50 FEET OR A LENGTH SUFFICIENT TO ALLOW A MINIMUM OF 5 TIRE ROTATIONS ON THE PROVIDED PAD. MINIMUM LENGTH SHALL BE CALCULATED USING THE LARGEST TIRE WHICH WILL BE USED IN TYPICAL OPERATIONS.
- PROVIDE RADIUS OR WIDEN PAD SUFFICIENTLY TO PREVENT VEHICLE TIRES FROM TRACKING OFF OF PAD WHEN LEAVING SITE.
- IF RUNOFF FROM DISTURBED AREAS FLOWS TOWARD CONSTRUCTION EXITS, PREVENT RUNOFF FROM DRAINING DIRECTLY TO PUBLIC ROAD OVER CONSTRUCTION EXIT BY CROWNING THE EXIT OR SLOPING TO ONE SIDE. IF SURFACE GRADING IS INSUFFICIENT, PROVIDE OTHER MEANS OF INTERCEPTING RUNOFF.
- IF RUNOFF FROM CONSTRUCTION EXITS WILL DRAIN OFF OF PROJECT SITE, PROVIDE SEDIMENT TRAP WITH STABILIZED OVERFLOW.
- IF A TIRE WASH OFF IS REQUIRED, THE CONSTRUCTION EXITS SHALL BE GRADED TO DRAIN THE WASH WATER TO A SEDIMENT TRAP.
- MINIMUM LENGTH OF CONSTRUCTION EXIT SHALL BE PER NOTE 1, OR AS REQUIRED TO REMOVE SEDIMENT FROM TIRES. IF SIGNIFICANT SEDIMENT IS TRACKED FROM THE SITE, THE CONSTRUCTION EXIT SHALL BE LENGTHENED OR THE DESIGN MODIFIED TO PROVIDE ADDITIONAL VIBRATION. WASH-OFF LENGTH SHALL BE AS REQUIRED TO EFFECTIVELY REMOVE CONSTRUCTION SEDIMENT FROM VEHICLE TIRES.
- MAINTENANCE OF CONSTRUCTION EXITS SHALL OCCUR WHEN THE EFFECTIVENESS OF SEDIMENT REMOVAL HAS BEEN REDUCED. MAINTENANCE SHALL CONSIST OF REMOVING SEDIMENT AND CLEANING THE MATERIALS OR PLACING ADDITIONAL MATERIAL (SLASH MULCH OR CRUSHED ROCK) OVER SEDIMENT FILLED MATERIAL TO RESTORE EFFECTIVENESS.

1 STABILIZED CONSTRUCTION EXIT DETAIL  
NOT TO SCALE

## EROSION CONTROL GENERAL NOTES:

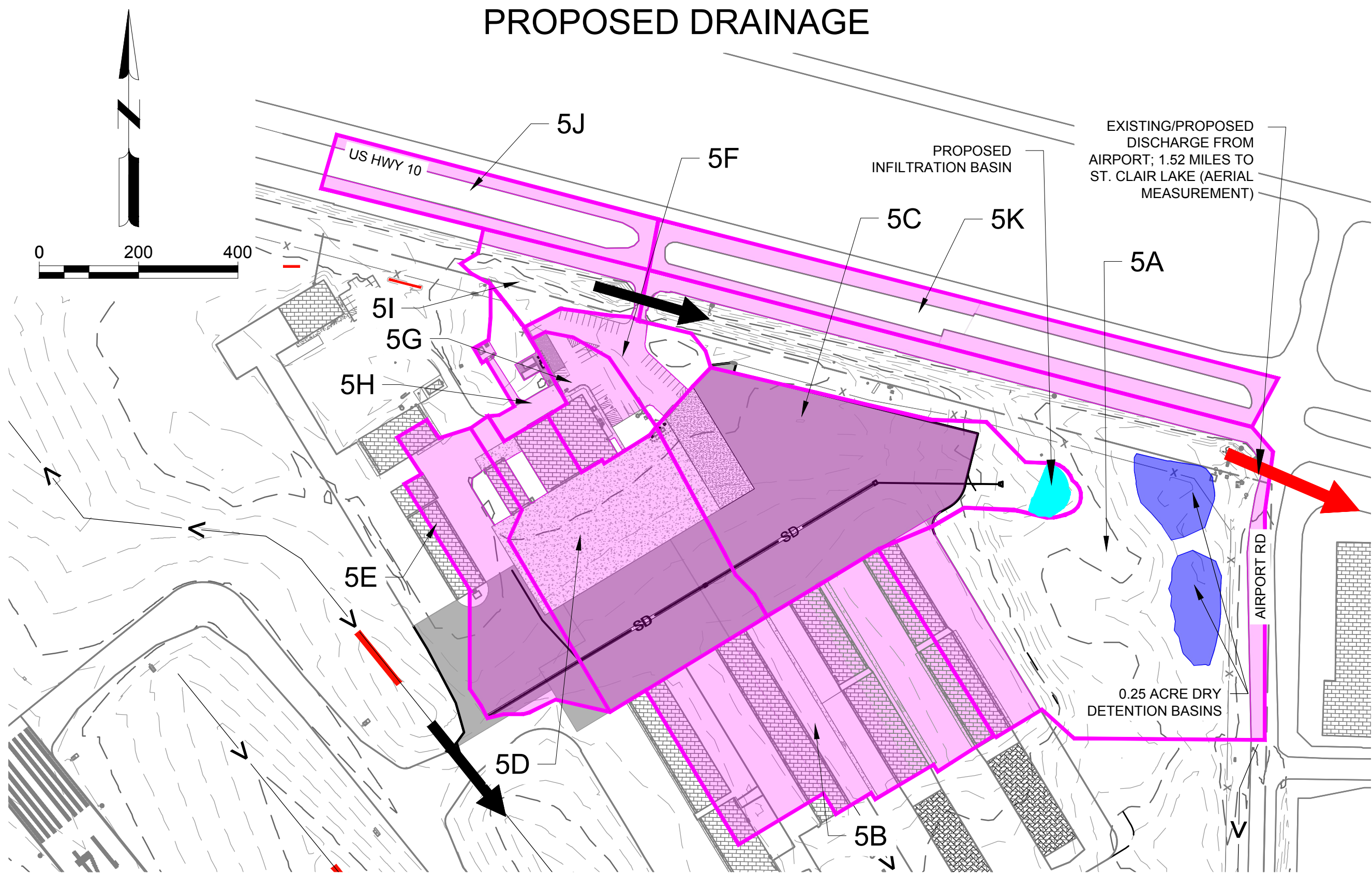
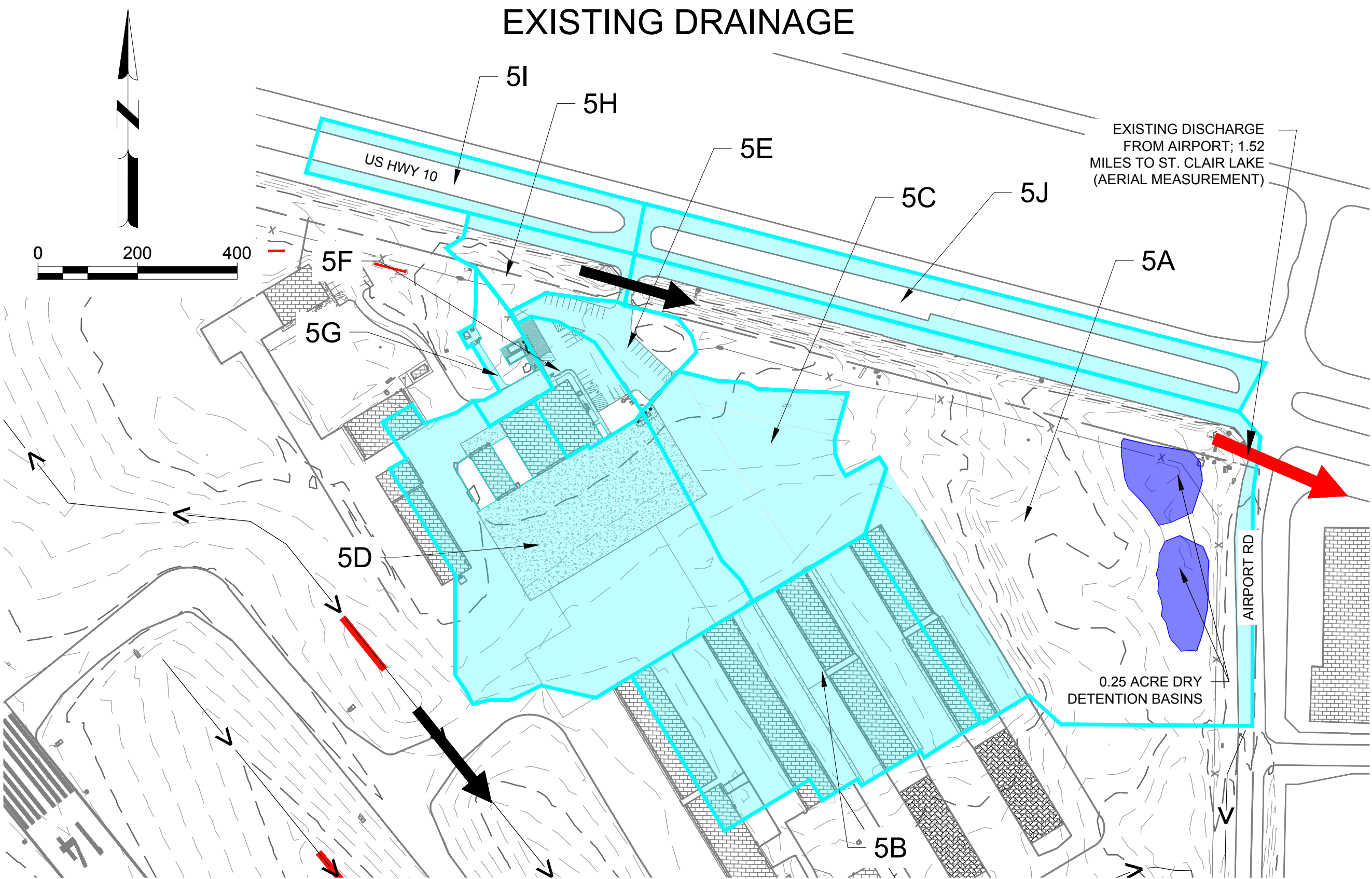
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ALL REQUIREMENTS OF THE NPDES AND PELICAN RIVER WATERSHED DISTRICT (PRWD) PERMITS ARE BEING MET AT ALL TIMES. THE EROSION CONTROL PLAN ALONG WITH THE SWPPP MUST BE KEPT ON-SITE UNTIL NOTICE OF TERMINATION IS FILED WITH THE MPCA AND PRWD.
- THE CONTRACTOR IS RESPONSIBLE FOR THE IMPLEMENTATION AND MAINTENANCE OF ALL BMP'S UNTIL WORK HAS BEEN COMPLETED, SITE HAS UNDERGONE FINAL STABILIZATION, AND THE NOTICE OF TERMINATION HAS BEEN SUBMITTED TO THE MPCA AND PRWD. EROSION CONTROL DEVICES SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT AND SHALL BE REMOVED AFTER THE SITE HAS UNDERGONE FINAL STABILIZATION.
- SEQUENCE CONSTRUCTION TO MINIMIZE EXPOSURE TIME OF A CLEARED AREA.
- ALL STREETS IN AND ADJACENT TO THE PROJECT SHALL ALWAYS REMAIN CLEAN AND PASSABLE.
- SEDIMENT CONTROL BMP'S MUST BE IN PLACE AND FUNCTIONING BEFORE ANY PHASE OF CONSTRUCTION BEGINS, INCLUDING BUT NOT LIMITED TO CLEARING, GRADING, FILLING, EXCAVATION, OR ANY CHANGE IN EXISTING COVER.
- ALL STOCKPILES MUST HAVE PERIMETER SEDIMENT CONTROL IMPLEMENTED AND MAINTAINED.
- DUST CONTROL MEASURES MUST BE PROVIDED AT ALL TIMES DURING CONSTRUCTION.
- DIVERT ALL SURFACE WATER FLOWING TOWARD THE CONSTRUCTION AREAS AROUND THE CONSTRUCTION AREA.
- A RAIN GAUGE SHALL BE POSITIONED AT THE CONTRACTOR'S CONSTRUCTION SITE ENTRANCE AND MAINTAINED FOR THE DURATION OF THE PROJECT.
- PERMANENT TURF ESTABLISHMENT SHALL BE PLACED WITHIN TIME FRAMES LISTED IN MNDOT SPEC. BOOK (2020 EDITION).
- ALL STORM DRAINAGE OUTLETS SHALL BE STABILIZED BEFORE DISCHARGE POINTS BECOME OPERATIONAL.
- FINAL STABILIZATION SHALL BE INITIATED IMMEDIATELY BUT BE COMPLETED NO LATER THAN WITHIN 14-DAYS OF ACHIEVING FINAL GRADE.
- OUTLETS INTO SURFACE WATERS SHALL BE STABILIZED WITH ENERGY DISSIPATION WITHIN 24 HOURS OF BEING CONSTRUCTED.
- CONCRETE WASHOUT OPERATIONS MUST BE DONE IN ACCORDANCE WITH ALL PERTINENT PRWD REGULATIONS AND ONLY IN THE DESIGNATED AREA.
- SEDIMENT CONTROL LOG SHALL FOLLOW, AS CLOSE AS POSSIBLE, A SINGLE CONTOUR OF THE EXISTING GRADE.

## TURF ESTABLISHMENT NOTES:

- SEEDING DATES: SEEDING SHALL BE IN ACCORDANCE WITH THE DATES IN THE MNDOT SPEC. BOOK (2020 EDITION) AND THE MNDOT SEEDING MANUAL (2024 EDITION). ALL DISTURBED AREAS OF THE PROJECT SHALL BE SEEDED WITH MnDOT MIXTURE RESIDENTIAL TURFGRASS (RT) AND TYPE 3 SLOW-RELEASE FERTILIZER, ANALYSIS 22-5-10 AND APPLIED AT A RATE OF 65 LBS PER ACRE SEEDED (INCIDENTAL TO SEEDING).
- ALL TOPSOIL STRIPPED WILL BE SALVAGED FOR REUSE ON THE PROJECT. RE-APPLIED THICKNESS WILL BE A MINIMUM OF 4 INCHES WITHIN THE GRADING LIMITS.
- ALL AREAS, EXCLUDING UTILITIES, TREE AND ROCK IMPEDIMENTS, COMPACTED GRANULAR EMBANKMENTS AND OTHER NON-SUITABLE AREAS, THAT ARE TO RECEIVE VEGETATION (TEMPORARY OR PERMANENT) SHALL RECEIVE SEED BED PREPARATION PER THE T-901 AND T-905 SPECIFICATIONS.
- SEED BED PREPARATION SHALL BE DONE AFTER TOPSOIL PLACEMENT AND BEFORE SEEDING, FERTILIZER, AND MULCHING APPLICATIONS.
- FERTILIZING: ALL SOILS SHALL BE FERTILIZED TO MAXIMIZE PLANT ESTABLISHMENT AND GROWTH.
- EROSION CONTROL BLANKETS: PLACE THE BLANKETS WITHIN 24 HOURS AFTER SOWING OF THE SEED ON THAT AREA. EROSION CONTROL BLANKETS SHALL BE USED TO STABILIZE ALL SLOPES GREATER THAN 1:3 (UNLESS NOTED ON THE PLANS) AND ALL DITCH BOTTOMS.
- WATER APPLICATION, TEMPORARY IRRIGATION: TO MAXIMIZE VEGETATION ESTABLISHMENT, CONTRACTOR TO WATER NEW SEED AS NECESSARY (INCIDENTAL TO PROJECT).
- FINAL STABILIZATION SHALL BE INITIATED IMMEDIATELY BUT BE COMPLETED NO LATER THAN WITHIN 14-DAYS OF ACHIEVING FINAL GRADE.



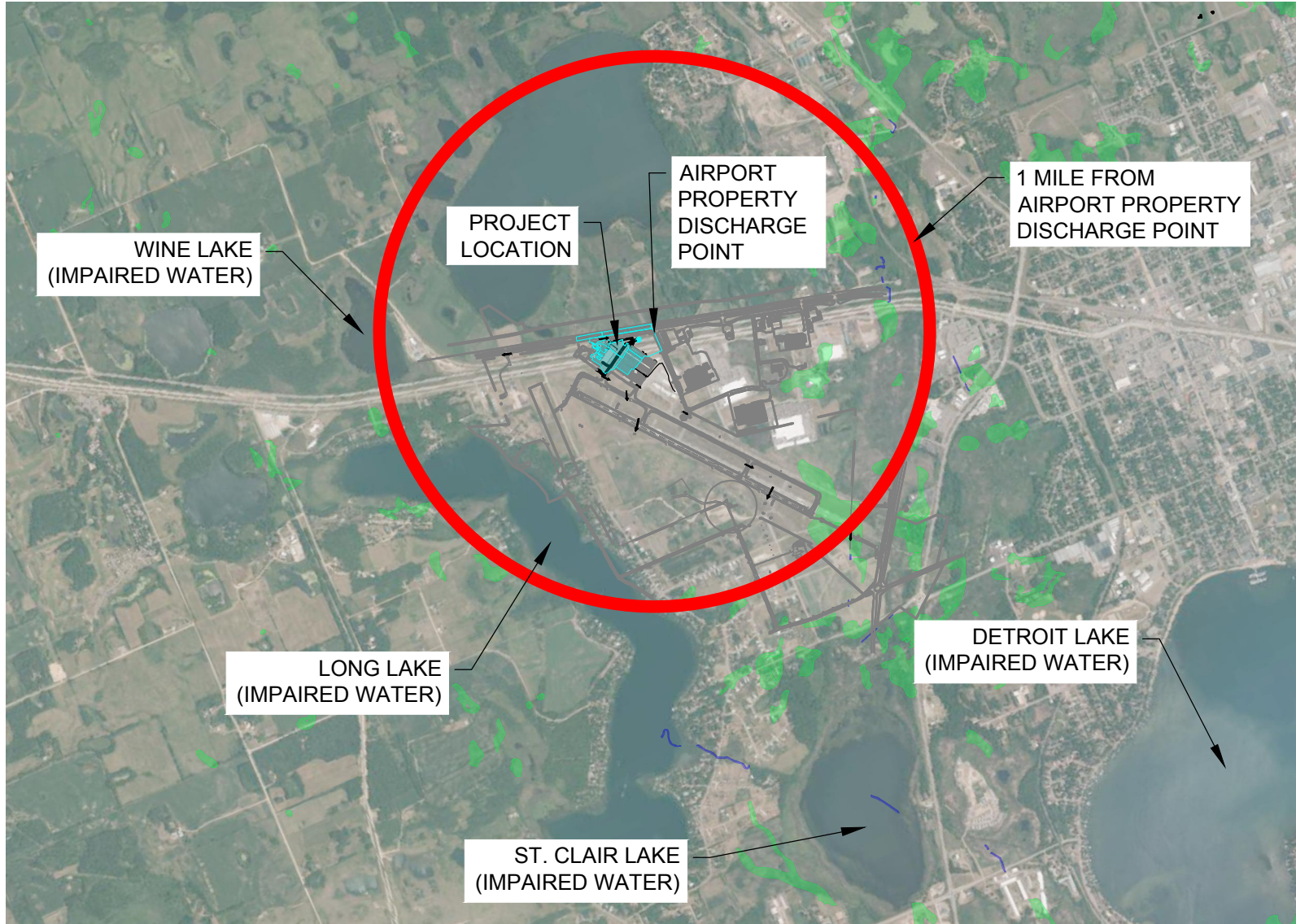
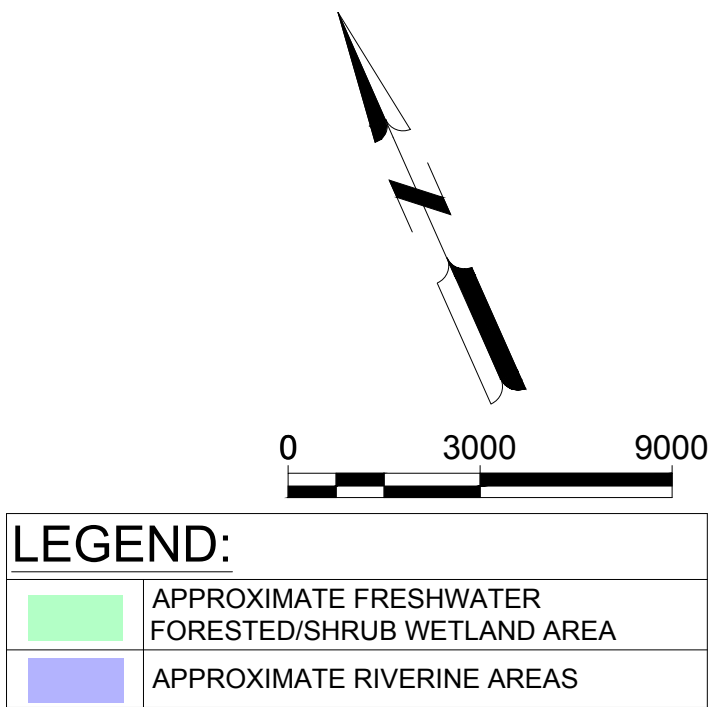
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EXISTING DRAINAGE			
SUBCATCHMENT	TOTAL SUBCATCHMENT AREA (ACRES)	TOTAL IMPERVIOUS AREA (ACRES)	TOTAL PERVIOUS AREA (ACRES)
5A	7.731	1.489	6.242
5B	2.879	2.879	0.000
5C	1.716	1.716	0.000
5D	3.654	3.553	0.101
5E	0.47	0.427	0.043
5F	0.481	0.335	0.146
5G	0.326	0.167	.0159
5H	0.552	0.156	0.396
5I	0.941	0.468	0.43
5J	1.736	0.998	0.738

LEGEND:	
	CULVERT/OVERFLOW
	AIRPORT PROPERTY DISCHARGE POINT
	EXISTING AIRPORT PROPERTY LINE
	SWALE
	EXISTING SUBCATCHMENT BOUNDARY
	PROPOSED SUBCATCHMENT BOUNDARY
	EXISTING INFILTRATION TRENCH
	EXISTING DETENTION BASIN
	WETLAND
SUBCATCHMENT X	AIRPORT SUBCATCHMENT DESIGNATION
	EXISTING IMPERVIOUS SURFACE
	PROPOSED IMPERVIOUS SURFACE

PROPOSED DRAINAGE			
SUBCATCHMENT	TOTAL SUBCATCHMENT AREA (ACRES)	TOTAL IMPERVIOUS AREA (ACRES)	TOTAL PERVIOUS AREA (ACRES)
5A	6.639	1.429	5.210
5B	2.805	2.399	0.406
5C	2.398	2.398	0.000
5D	2.340	2.289	0.051
5E	1.315	1.262	0.053
5F	0.470	0.324	0.146
5G	0.481	0.426	0.055
5H	0.326	0.167	0.159
5I	0.552	0.156	0.396
5J	0.941	0.468	0.473
5K	1.736	0.998	0.738



# Mead & Hunt

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*Taylor F. Peterson*  
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## DETROIT LAKES - BECKER COUNTY AIRPORT TERMINAL APRON RECONSTRUCTION & EXPANSION

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SHEET CONTENTS  
STORMWATER  
POLLUTION  
PREVENTION PLAN

SHEET NO. 14 of 32

# C-041



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STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

GENERAL CONSTRUCTION ACTIVITY INFORMATION

PROJECT NAME:

Terminal Apron Reconstruction & Expansion

ADDRESS:

24813 US Highway 10

CITY:

Detroit Lakes, MN

WATERSHED:

St. Clair Lake

ENVIRONMENTAL REVIEW:

The proposed work for this project received approval in the form of a documented CatEX issued by the FAA on 4/25/2025.

NDPES PERMIT:

To be procured by the construction contractor after award of contract.

CONSTRUCTION ACTIVITY:

The project will involve full depth reconstruction of the existing bituminous apron, expanding the apron to the north for additional aircraft parking, removal of existing underground drainage infrastructure and installation of a new underground storm sewer network and underdrain tile. The new pavement section will consist of granular embankment, recycled asphalt aggregate base course, and new bituminous and concrete surface pavements. The project will also involve relocating existing taxiway edge lights, constructing a new infiltration basin for permanent stormwater treatment, pavement marking, and turf establishment.

SEQUENCE OF CONSTRUCTION:

1. Install Initial BMP's; 2. Grading & demolition; 3. Infrastructure installation; 4. Paving Operations; 5. establish permanent ground cover; 6. remove temporary BMP's

Contractor to supply construction phasing narrative and estimated preliminary quantities of all erosion prevention and sediment control BMP's anticipated at the start of the project and for the life of the project, and location of areas where construction will be phased to minimize duration of exposed soil areas.

SOIL TYPE(S):

According to a review of the USDA Natural Resource Conservation Service soils maps, on-site soils consist of sand and sandy loam. These soils are classified as hydrologic group C; therefore the site has soils that are well-drained with high rates of water infiltration.

CHANGES TO The SWPPP shall be revised when:

1. There is a change in construction operations which may affect the discharge of pollutants to surface water, groundwater, or storm sewer system.

2. There is a change in the project duration.

3. Any new contractor and or subcontractor will implement a measure of the SWPPP.

4. SWPPP is not achieving the general objectives of controlling pollutants or the SWPPP is not consistent with the terms and conditions of the permit.

5. The MPCA determines that discharge may cause or contribute to non-attainment of any applicable water quality standards or the SWPPP does not incorporate the requirements related to any approved total maximum daily load (TMDL).

DEWATERING:

Dewatering activities are not expected to occur at the project site. If dewatering does occur, the SWPPP shall be revised to address the need for appropriate BMP's.

LAND FEATURE CHANGES

TOTAL AREA TO BE DISTURBED: 5.59 Acres

PRE-CONSTRUCTION IMPERVIOUS AREA: 3.56 Acres

POST-CONSTRUCTION IMPERVIOUS AREA: 4.33 Acres

NET INCREASE OF IMPERVIOUS AREA: 0.77 Acres

PERMANENT STORMWATER MANAGEMENT SYSTEM - New Infiltration Basin

WATER QUALITY VOLUME: 17,840 CF of infiltration required

RECEIVING WATERS - Unnamed Wetland

See sheet C-041 for locations of surface waters and wetlands within one mile of the site that are likely to receive stormwater runoff from the project site both during and after construction.

1. Stormwater runoff from subcatchment 1 collects in the dry detention basin at the northeast corner of the airport property. Durnig large storm events, excess runoff discharges the property through a culvert under Airport Road and into the unnamed wetland east of Walmart. This surface water flows east into Country Ditch 14 where it flows through a culvert under Willow Street and into St. Clair Lake.

PROJECT PLANS

See sheets B-051 through B-053 for soil boring logs. The predominant soil types within this project are coarse grained sands.

See sheet C-041 for project location and for locations of surface waters and wetlands within one mile of the site that are likely to receive stormwater runoff from the project site both during and after construction.

See sheets C-021 and C-101 for construction limits, existing and final grades, and direction of flow.

See sheet C-021 for erosion prevention and sediment control BMP plans, details, and quantities needed.

STABILIZATION TIME FRAMES		
AREA	TIME FRAME	NOTES
Last 200 feet of drainage ditch or swale	Within 24 hours of connection to surface water or property edge	1, 2, 3
Remaining portions of drainage ditch or swale	14 days	1, 3
Pipe and culvert outlets	24 hours	
Exposed soils and stockpiles	14 days	1
Within 200 feet of a public water	24 Hours (not required this project)	

1. Initiate stabilization immediately when construction has temporarily or permanently ceased on any portion of the site. Complete stabilization within the time frame listed. In many instances this will require stabilization to occur more than once during the course of the project. Temporary soil stockpiles without significant clay or silt and stockpiled and constructed road base are exempt from the stabilization requirement.

2. Stabilize wetted perimeter of ditch (I.E. where the ditch gets wet).

3. Application of mulch, hydromulch, tackifier and polyacrylamide are not acceptable stabilization methods in these areas.

4. Stabilize all areas of the site prior to the onset of winter. Any work still being performed will be mulched or blanketed within the time frames in the NPDES permit.

5. Topsoil berms must be stabilized to be considered perimeter control BMP's. Use rapid stabilization method 3. The seed mix used in the rapid stabilization may be substituted as follows:

A. Single year construction between May 1 - August 1, seed with MnDOT mixture Oats (O)

B. Single year construction between August 1 - October 1, seed with MnDOT mixture Winter Wheat (WW)

C. Multi year temporary stabilization, seed with MnDOT mixture Winter Wheat (WW)

6. Keep ditches and exposed soils in an even rough graded condition in order to be able to apply erosion control mulches, hydromulches, and blankets.

7. The site does not drain towards an impaired water within 1 mile of any stormwater discharge point from the airport property.

CONSTRUCTION ACTIVITY REQUIREMENTS

1. Amend the SWPPP and document all changes to the SWPPP and associated plan sheets in a timely manner. SWPPP amendments and site plans will be prepared by the Contractor and submitted to the Owner for review and written approval by the Owner or the Owner's designated representative. Store the SWPPP and all amendments on site at all times.

2. The Contractor will build ponds and install erosion control BMP's before putting them into active service to the maximum extent practicable.

3. Burning of any material is not allowed on the airport property.

4. Do not disturb areas outside of the construction limits. Delineate areas not to be disturbed and wetlands (even areas that are permitted for construction) prior to starting ground disturbing activities. If it becomes necessary to disturb areas outside of the construction limits, obtain written permission from the resident project representative (RPR) prior to proceeding. Preserve natural buffers shown on the plans.

5. Route stormwater around unstabilized areas of the site whenever feasible. Provide erosion control and velocity dissipation devices as needed to keep channels from eroding and to prevent nuisance conditions at the outlet.

6. Direct discharge from BMP's to vegetated areas whenever feasible. Provide erosion control and velocity dissipation devises as needed to keep channels from eroding and to prevent nuisance conditions at the outlet.

7. Locate perimeter control on the contour to capture overland, low-velocity sheet flows down gradient of all exposed soils and prior to discharging to surface waters. Place J-hooks at a maximum of 650-foot intervals.

8. Ditch checks will be placed as indicated on the plans during all phases of construction.

9. Contractor shall clean, remove and dispose of sediment, and/or replace storm drain inlet protection on a routine basis to ensure the device is fully functional prior to the next forecasted precipitation event (30% or greater).

10. Discharge turbid or sediment laden water to temporary sediment basins whenever feasible. In the event that it is not feasible to discharge the sediment laden water to a temporary sediment basin, the water must be treated so that it does not cause a nuisance condition in the receiving waters or to downstream landowners. Clean out all permanent stormwater basins regardless of whether used as a temporary sediment basins/traps to the design capacity after completing all up-gradient land disturbing activity. Use a skimmer for basin draining.

11. Provide stabilization in any trenches cut for dewatering or site draining purposes.

12. Provide perimeter control around all stockpiles. Place BMP's a minimum of 5 feet from the toe of slopes where feasible. Do not place stockpiles in natural buffer areas, surface waters or stormwater conveyances.

13. Protect storm sewer inlets at all times with the appropriate inlet protection for each specific phase of construction. Provide inlet protection devices with emergency overflow capabilities. Silt fence placed in the inlet grate is not an acceptable inlet protection BMP for grading operations. Silt fence placed in the grate is only allowed for short intervals during milling or paving operations. Inlet protection devices may need to be placed multiple times in the same location over the life of the Contract. Keep all storm sewer inlet protection devices in good functional condition at all times. Replace inlet protection device with a suitable alternative if the RPR deems an inlet protection device to be nonfunctional, in poor condition, ineffective, or not appropriate for the current construction activities.

14. Place construction exits, as necessary, to prevent tracking of sediment onto paved surfaces both on and off the project site. Provide construction exits of sufficient size to prevent track out. Maintain construction exits when evidence of tracking is discovered. Regular street sweeping is not an acceptable alternative to proper construction exit installation and maintenance.

15. Remove sediment from stormwater system at the end of the project.

16. Preserve a natural 50 foot buffer or (if buffer infeasible) provide redundant sediment controls when a surface water is located within 50 feet of land disturbance and stormwater flows to the surface water.

17. Methods and equipment to minimize soil compaction during construction and remaining pervious upon completion of construction will be utilized. When decompaction is to occur, soil surface will be decompacted through soil amendment and/or ripping to a depth of 18-inches prior to revegetation.

POLLUTION PREVENTION

Potential sources of pollutants from construction activities include, but not limited to:

1. Sediment and fugitive dust generated from clearing and grubbing, import/export operations, removal/compaction, mass/fine grading, excavations, trenching, topsoil striping and stockpiling, wet/dry pavement cutting, apron construction.

2. Basic/acidic PH levels from concrete paving, manhole/cleanout structures, foundations, electrical duct banks, wet/dry pavement cutting, concrete washout/cleanout.

3. Excess nutrients from landscaping installations, soil additives, fertilization, mulching.

4. Hydrocarbons from runway construction, demolition/removals, wet/dry pavement cutting.

Contractor will comply will all of the pollution prevention and management measures identified in the NPDES-CSW permit, part 12.1. Storage and disposal of construction and hazardous wastes must be in compliance with MPCA regulations.

A. Position and stake down all portable toilets so they cannot be tipped or knocked over. Supply adequate secondary containment.

B. Secondary containment is needed around all stationary equipment (generators, pumps, light plants, etc.) Provide containment for all hazardous materials and toxic waste.

C. No engine degreasing is allowed on site.

D. Vehicle and equipment washing to occur in designated area as determined by the Contractor submittal of a management plan for these activities.

E. Properly clean up and report all spills as required by the MPCA and MnDOT specifications.

F. Spill kits shall be included with all fueling sources and maintenance activities. Secondary containment measures shall be installed and maintained by the Contractor.

G. Provide a secure storage area with restricted access for all hazardous materials and toxic waste. Return all hazardous materials and toxic waste to the designated storage area the end of the working day unless infeasible. Store all hazardous materials and toxic waste (including but not limited to oil, diesel fuel, gasoline, hydraulic fluids, paint, petroleum based products, wood preservatives, additives, curing compounds, and acids) in sealed containers with secondary containment. Clean up spills immediately.

H. Store, collect, and dispose of all solid waste.

I. Slurry from concrete and runway grooving operations must be vacuumed up immediately. Concrete washout containment shall be provided on site. No concrete washout shall come in contact with the ground and must be properly disposed of at the designated washout location chosen by the Contractor. The containment method must be leak-proof with an impermeable liner. On a regular basis during concrete work, solid concrete that has accumulated on-site shall be broken up, removed, and hauled away.

J. A sign must be installed adjacent to the concrete washout facility.

K. Create and follow a written disposal plan for all waste materials. Include in the plan how the material will be disposed of and the location of the disposal site. Submit plan to the RPR prior to construction.

L. Use methods and operational procedures that prevent discharge or placement of bituminous grinding, cuttings, millings, and other bituminous wastes from areas of existing or future vegetated soils and from all water conveyance systems, including inlets, culverts, and ditches.

M. Good housekeeping and spill control practices shall be followed during construction to minimize stormwater contamination from petroleum products, fertilizers, paints, and concrete. All spills shall be cleaned up immediately upon discovery. Spills large enough to reach the storm conveyance system will be reported to the MPCA State Duty Officer.

RESPONSIBLE PERSONS:

The SWPPP shall be available at the site while construction is occurring and shall be made available upon request by a State, Local, or Federal official.

SWPP PREPARATION:

This SWPPP was prepared by Taylor Peterson of Mead & Hunt. A copy of their erosion and sediment control program certification is available upon request.

CHAIN OF COMMAND:

The Contractor shall be responsible for the NPDES Construction Permit.

The Contractor shall develop a chain of command with all operations on the site to ensure that the SWPPP will be implemented and shall oversee the implementation of the SWPPP, inspection, and maintenance of erosion prevention and sediment control BMP's until the construction project is complete, the entire site has undergone final stabilization, and the notice of termination has been submitted to the MPCA.

CONTRACTOR'S IMPLEMENTATION RESPONSIBLE PERSONS:

Name: TBD

Phone: TBD Email: TBD

EMERGENCY 24-HOUR CONTACT: TBD

Phone: TBD Email: TBD

INSPECTION AND MAINTENANCE

The Contractor shall be responsible for performing the following inspections and maintenance.

1. All nonfunctional, BMP's must be repaired, replaced or supplemented with functional BMP's within 24 hours after discovery or otherwise in accordance with the NPDES Permit requirements. Place any additional erosion control measures deemed necessary by the RPR or MPCA within 24 hours notice.

2. Routinely inspect the site once every 7 days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours. Rainfall on site shall be measured by a rain gauge supplied by the Contractor.

3. In areas of project where final stabilization is complete, inspections will be reduced to once per month. These areas shall be inspected by the Contractor for a minimum period of 12-nonwinter months and within 24 hours of first spring runoff, or prior to resuming construction following any winter stoppage.

4. As per MnDOT Spec. 2573, the Contractor shall prepare and submit a written weekly schedule of proposed erosion control activities for the RPR's approval.

5. Records: The Contractor shall keep a summary of maintenance/observation log reports to be recorded after each site visit/observation. Submit the written observation report monthly to the RPR. Records of each inspection and maintenance activity shall include:

a. Date and time of inspections.

b. Name of person(s) conducting the inspections.

c. Findings of inspections, including the location where corrective actions are needed.

d. Corrective actions taken.

e. Date and amount of rainfall events greater then 0.5 inches.

f. If any discharge is observed during inspection and description of discharge and photos of the discharge.

6. Maintenance silt fences and other temporary erosion and sediment controls in working order throughout the Project and make repairs as needed.

7. When sediment reaches 1/3 the height of the BMP, the sediment must be removed within 24 hours.

8. Construction site vehicle exit locations: all tracked sediment onto paved surfaces must be removed within 24 hours of discovery.

9. Inlet protection devices shall be repaired when they become non-functional or sediment reaches one-half the height and/or depth of the device.

10. Temporary and permanent sediment basins must be drained and sediment removed once the sediment collected reaches one half the storage volume within 72 hours of discovery, or as soon as field conditions allow.

11. All sediment deposited within surface waters or stormwater conveyances must be removed and re-established within 7 days of discovery. The SWPPP must be amended to prevent future sediment or chemical related incidents.

12. Dust control shall be implemented as needed once site grading has begun and during windy conditions while site grading is occurring.

13. Place construction exits, as necessary, to prevent tracking of sediment onto paved surfaces both on and off the project site. Provide construction exits of sufficient size to prevent track out. Maintain construction exits when evidence of tracking is discovered. Regular street sweeping is not an acceptable alternative to proper construction exit installation and maintenance.

14. Methods and equipment to minimize soil compaction during construction and remaining pervious upon completion of construction will be utilized. When decompaction is to occur, soil surface will be decompacted through soil amendment and/or ripping to a depth of 18-inches prior to revegetation.

FINAL STABILIZATION

Final stabilization is achieved when NPDES CGP Part 13.2. are completed prior to submission of the notice of termination (NOT) to MPCA.

1. For areas that will not be paved, final stabilization is shown on Sheet C-021. Final stabilization generally includes permanent seeding with mulch and/or erosion control blankets and energy dissipation devices. Seeding and mulching will be applied immediately after the final design grades are achieved on portions of the site.

2. Stabilization by uniform perennial vegetative cover with a density of 70% shall be achieved over the entire pervious surface (including ditches and swales) prior to the removal of temporary BMP's.

3. All temporary synthetic and structural BMP's shall be removed.

4. Clean out sediment from conveyances and sedimentation basin/traps. Return to design capacity. Any sediment that has accumulated shall be removed and hauled off-site.

5. The permanent stormwater management system is constructed and is operating as designed.

NOTICE OF TERMINATION

Submit Notice of Termination within 30 days if one or more of the following conditions have been met:

1. Final stabilization has been achieved on all portions of the site which the Contractor is responsible for including the removal of all temporary measures and meeting the requirements of final stabilization.

2. Another Owner/Contractor has assumed control over all portions of the site that have not achieved final stabilization.

3. Permanent stormwater treatment systems have been cleaned of accumulated sediment and are operating as designated.

LONG-TERM MAINTENANCE PLAN

The Owner shall be responsible for the long-term operation and maintenance of the stormwater BMP measures on the site.

1. Infiltration basins and dry detention basins shall be inspected at a minimum in the spring, fall, and winter. All sediment, trash, and debris shall be removed and disposed of off site. During the winter months, inspect the infiltration basins and dry detention basins to ensure plowed snow is not being stored in the basin or trench areas.

2. All dead vegetation and weeds shall be removed. Live vegetation shall be trimmed and/or mowed as necessary so as not to serve as a wildlife attractant.

3. Should dead vegetation need to be removed, the area shall be immediately re-seeded and re-mulched in order to re-establish vegetation.

4. Inspect the pre-treatment area and overflow area of each infiltration trench and basin. Repair erosion as necessary with seed and mulch to establish vegetation and stabilize the soil.

5. Newly seeded areas shall be watered manually in times of low rain throughout the first year so as to promote 100% vegetation establishment.

Mead & Hunt

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7900 International Drive,  
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Bloomington, MN 55425  
phone: 952-941-5619  
meadhunt.com

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

Signature: Taylor Peterson

Print Name: TAYLOR F. PETERSON

DATE: 05/07/2025 LICENSE #: 24801

DETROIT LAKES - BECKER COUNTY AIRPORT  
TERMINAL APRON RECONSTRUCTION & EXPANSION  
24813 US HIGHWAY 10  
DETROIT LAKES, MN 56501

ISSUED

05/07/25

ISSUED FOR

BID

AIP NO.:

3-27-0021-26-25

M&H NO.:

3197100-242527.01

DATE:

MAY 7, 2025

DESIGNED BY:

JDK

DRAWN BY:

KSH

CHECKED BY:

TFP

DO NOT SCALE DRAWINGS

SHEET CONTENTS

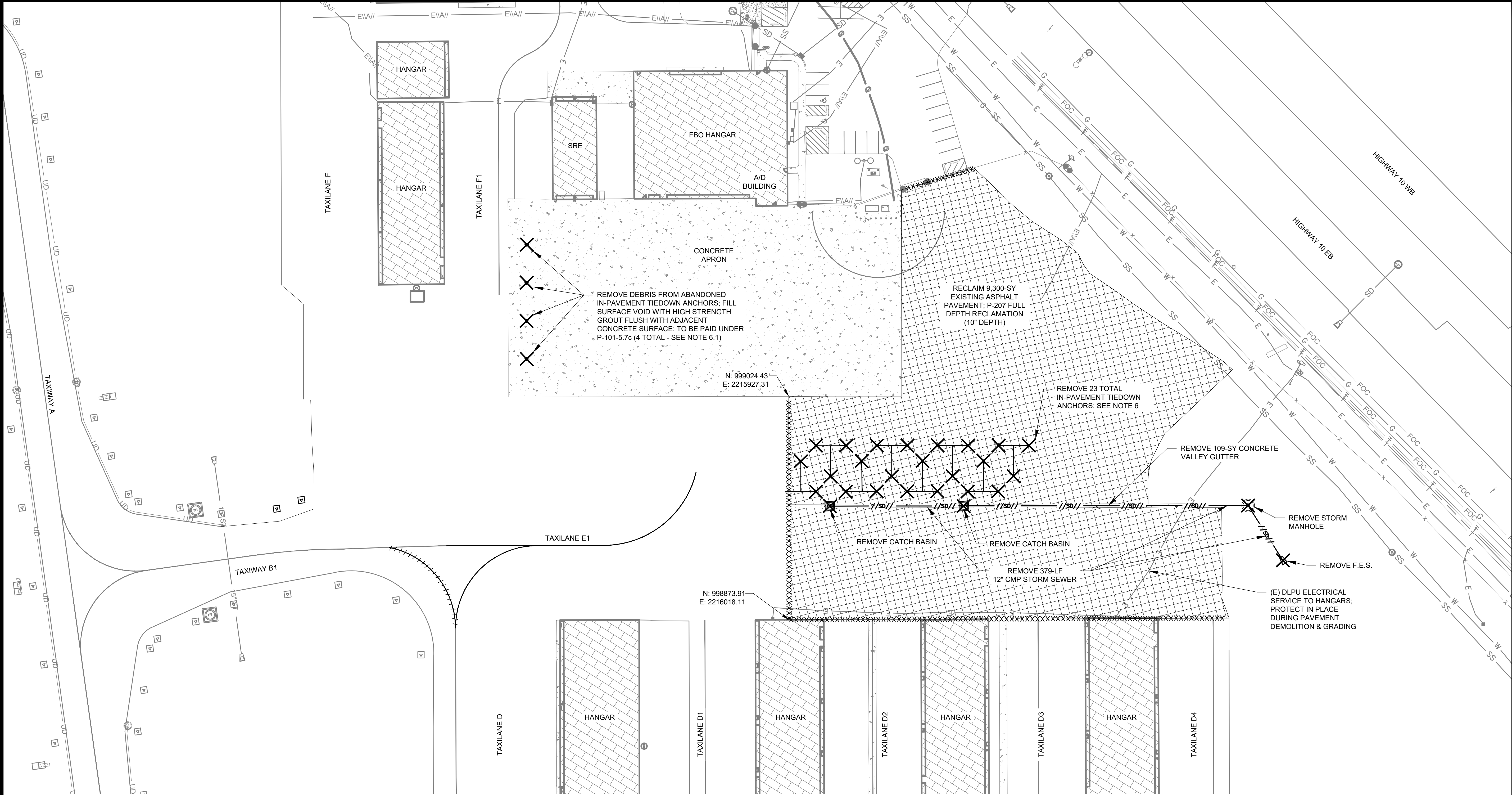
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POLLUTION  
PREVENTION PLAN  
NOTE

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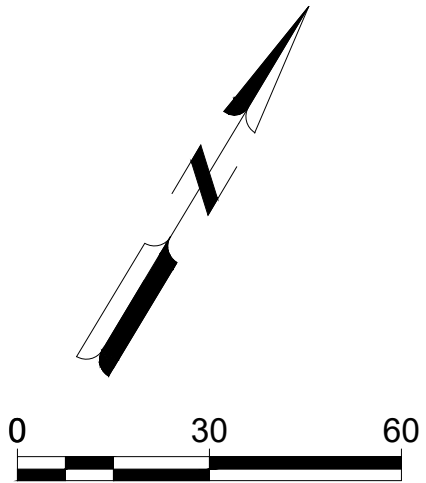




DEMOLITION PLAN NOTES:

- EXISTING UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING THE ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. NEITHER THE OWNER OR THE ENGINEER ASSUME ANY RESPONSIBILITY WITH RESPECT TO THE ACCURACY, OR COMPLETENESS OF THE INFORMATION PROVIDED.
- THE CONTRACTOR MUST LOCATE THE EXISTING UNDERGROUND POWER CABLES PRIOR TO BEGINNING DEMOLITION WORK AS THE EXACT ROUTES ARE UNKNOWN. THE CONTRACTOR MUST PROTECT THE EXISTING UNDERGROUND POWER CABLES THROUGHOUT THE PROJECT. ANY CABLES DAMAGED BY THE CONTRACTOR'S WORK MUST BE REPAIRED IMMEDIATELY AND IN KIND BY THE CONTRACTOR AT THEIR EXPENSE.
- THE CONTRACTOR MUST NOTIFY THE PROPER OWNER OF THEIR OPERATIONAL PLANS AFFECTING EACH UTILITY. THE CONTRACTOR MUST MAKE ARRANGEMENTS FOR DETAILED INFORMATION AND ASSISTANCE IN LOCATING ALL UTILITIES WITH THE RESPECTIVE RESPONSIBLE PARTIES. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE RESPECTIVE UTILITY COMPANY AND THE ENGINEER. ANY UTILITIES DISTURBED BY THE CONTRACTOR'S CARELESSNESS MUST BE RESTORED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER AND ENGINEER.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR DOCUMENTING THE EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE SUSTAINED DUE TO THE CONTRACTOR'S EQUIPMENT, PERSONNEL, OR CONSTRUCTION PROCESSES MUST BE REPAIRED IMMEDIATELY BY THE CONTRACTOR AT NO COST TO THE OWNER.
- THE CONTRACTOR WILL BE REQUIRED TO PROMPTLY REPAIR CONSTRUCTION DAMAGED PAVEMENT ADJACENT TO PROJECT LIMITS. ANY EXISTING JOINT SEALANT THAT IS DAMAGED MUST BE RESEALED AND IS CONSIDERED INCIDENTAL TO REMOVALS.
- EXISTING AIRCRAFT TIEDOWN REMOVAL SHALL CONSIST OF REMOVING THE ENTIRE TIE DOWN ANCHOR AND CONCRETE ENCASEMENT.
  - EXISTING CONCRETE SURFACE AND ARE AROUND THE METAL TIEDOWN ANCHOR SHALL BE FULLY CLEANED AND ALL LOOSE MATERIAL REMOVED. CONTRACTOR SHALL USE A BONDING AGENT TO ENSURE GOOD CONTACT BETWEEN EXISTING PAVEMENT AND PATCH. GROUT AND PATCH SHALL BE FILLED WITHIN AND AROUND THE ANCHOR AND FINISHED LEVEL WITH THE ADJACENT CONCRETE SURFACE PAVEMENT. THIS WORK SHALL BE PAID FOR UNDER SCHEDULE 1 BID ITEM 13 P-101-5.7c REMOVE AIRCRAFT TIE-DOWN ANCHOR, PER EACH.
- ALL COORDINATES ARE MINNESOTA STATE PLANES CENTRAL ZONE.

LEGEND:	
· XXXXXXXXXXXX	SAWCUT EXISTING ASPHALT OR CONCRETE PAVEMENT, FULL DEPTH
	P-207 FULL DEPTH PAVEMENT ASPHALT RECLAMATION
—//SD//—	REMOVE STORM SEWER PIPE
X	REMOVE



DETROIT LAKES - BECKER COUNTY AIRPORT  
TERMINAL APRON RECONSTRUCTION &  
EXPANSION  
24813 US HIGHWAY 10  
DETROIT LAKES, MN 56501

ISSUED 05/07/25 ISSUED FOR BID

AIP NO.: 3-27-0021-26-25  
MSH NO.: 3197100-242527.01  
DATE: MAY 7, 2025  
DESIGNED BY: JDK  
DRAWN BY: KSH  
CHECKED BY: TFP  
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SHEET CONTENTS  
DEMOLITION PLAN -  
PHASE 1

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DETROIT LAKES - BECKER COUNTY AIRPORT  
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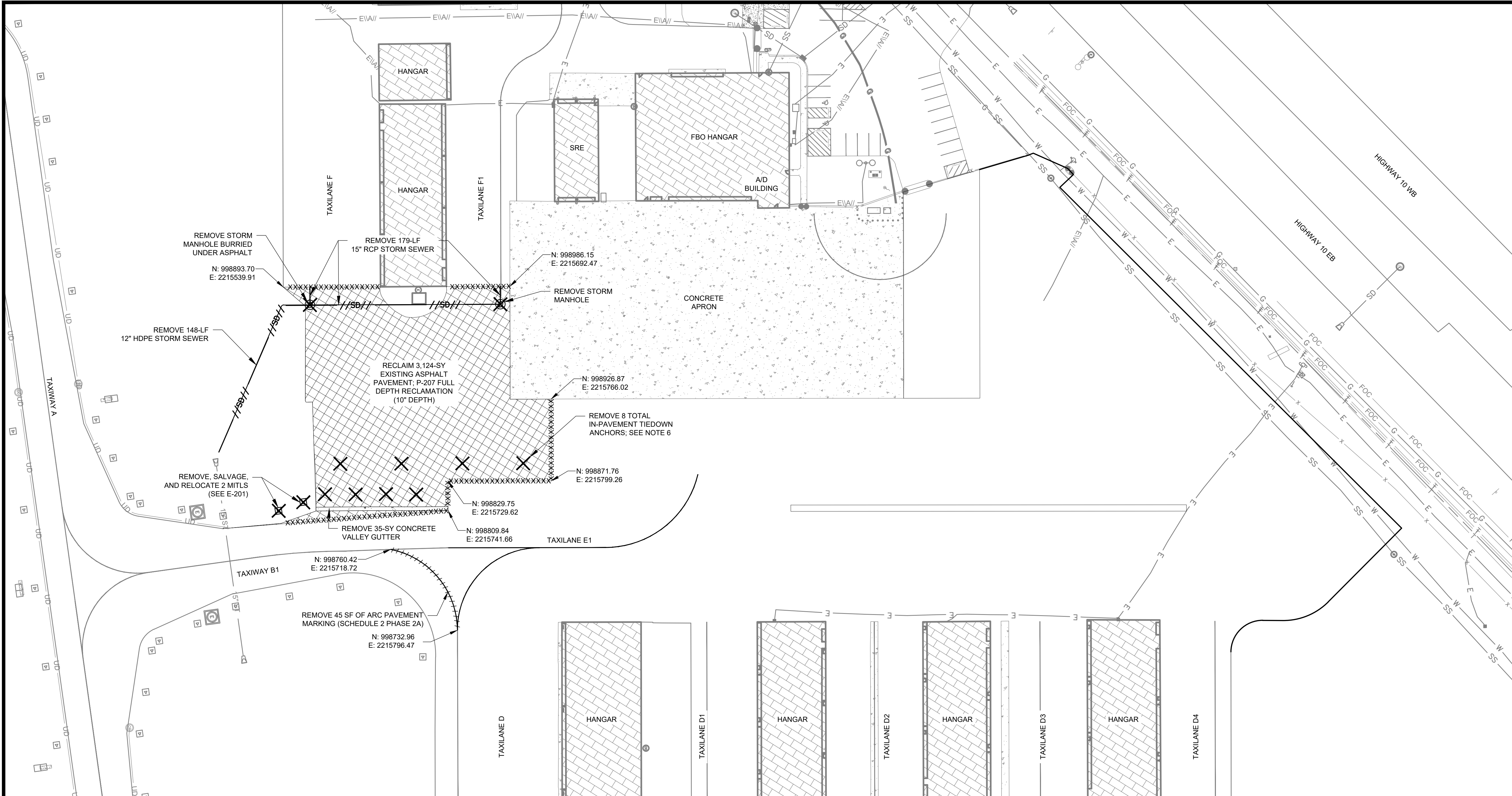
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DEMOLITION PLAN -  
PHASE 2A

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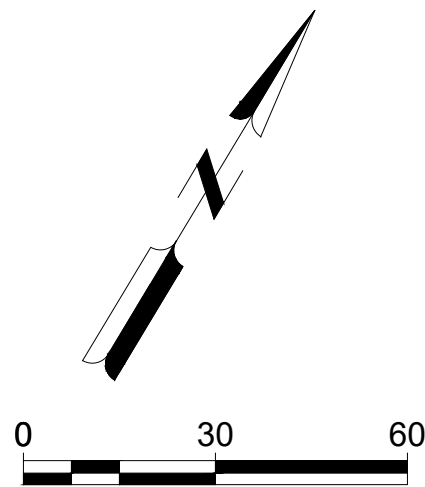
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DEMOLITION PLAN NOTES:

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LEGEND:	
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	P-207 FULL DEPTH PAVEMENT ASPHALT RECLAMATION
— //SD// —	REMOVE STORM SEWER PIPE
×	REMOVE
	REMOVE





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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

SIGNATURE: \_\_\_\_\_  
PRINT NAME: TAYLOR F. PETERSON  
E: 05/07/2025 LICENSE #: 54901

**TERMINAL AP  
EXPANSION**  
24813 US HIGHWAY 10  
DETROIT LAKES, MN 55007

05/07/25 ISSUED FOR  
BID

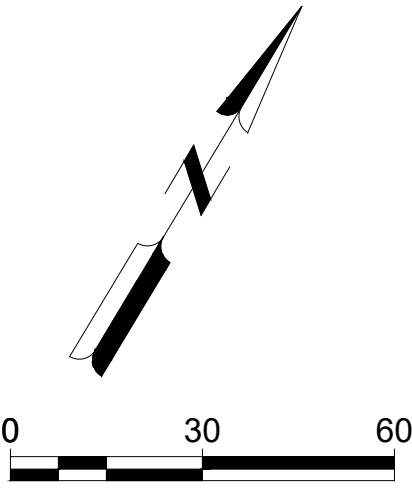
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
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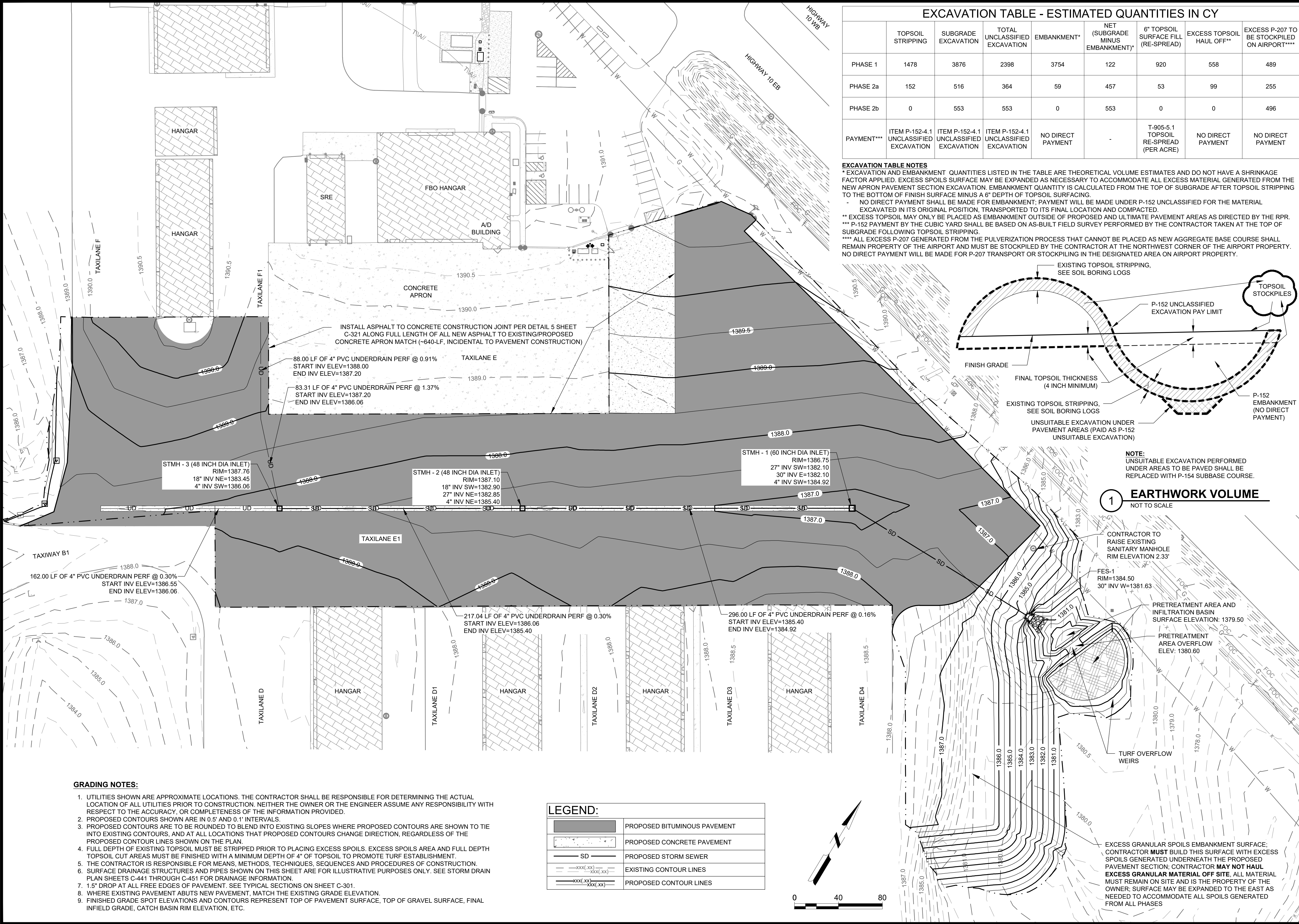
C-053



1. EXISTING UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING THE ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. NEITHER THE OWNER OR THE ENGINEER ASSUME ANY RESPONSIBILITY WITH RESPECT TO THE ACCURACY, OR COMPLETENESS OF THE INFORMATION PROVIDED.
2. THE CONTRACTOR MUST LOCATE THE EXISTING UNDERGROUND POWER CABLES PRIOR TO BEGINNING DEMOLITION WORK AS THE EXACT ROUTES ARE UNKNOWN. THE CONTRACTOR MUST PROTECT THE EXISTING UNDERGROUND POWER CABLES THROUGHOUT THE PROJECT. ANY CABLES DAMAGED BY THE CONTRACTOR'S WORK MUST BE REPAIRED IMMEDIATELY AND IN KIND BY THE CONTRACTOR AT THEIR EXPENSE.
3. THE CONTRACTOR MUST NOTIFY THE PROPER OWNER OF THEIR OPERATIONAL PLANS AFFECTING EACH UTILITY. THE CONTRACTOR MUST MAKE ARRANGEMENTS FOR DETAILED INFORMATION AND ASSISTANCE IN LOCATING ALL UTILITIES WITHIN THE PROJECT'S RESPECTIVE PARTS. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE RESPECTIVE UTILITY COMPANY AND THE ENGINEER. ANY UTILITIES DISTURBED BY THE CONTRACTOR'S CARELESSNESS MUST BE RESTORED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER AND ENGINEER.
4. THE CONTRACTOR WILL BE RESPONSIBLE FOR DOCUMENTING THE EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION, ANY DAMAGE SUSTAINED DUE TO THE CONTRACTOR'S EQUIPMENT, PERSONNEL, OR CONSTRUCTION PROCESSES MUST BE REPAIRED IMMEDIATELY BY THE CONTRACTOR AT NO COST TO THE OWNER.
5. THE CONTRACTOR WILL BE REQUIRED TO PROMPTLY REPAIR CONSTRUCTION DAMAGED PAVEMENT ADJACENT TO PROJECT LIMITS. ANY EXISTING JOINT SEALANT THAT IS DAMAGED MUST BE RESEALED AND IS CONSIDERED INCIDENTAL TO REMOVALS.
6. EXISTING AIRCRAFT TIEDOWN REMOVAL SHALL CONSIST OF REMOVING THE ENTIRE TIE DOWN ANCHOR AND CONCRETE ENCASEMENT.
7. ALL COORDINATES ARE MINNESOTA STATE PLANES CENTRAL ZONE.

LEGEND:	
· XXXXXXXXXXXX	SAWCUT EXISTING ASPHALT OR CONCRETE PAVEMENT, FULL DEPTH
	P-207 FULL DEPTH PAVEMENT ASPHALT RECLAMATION
	REMOVE STORM SEWER PIPE
	REMOVE

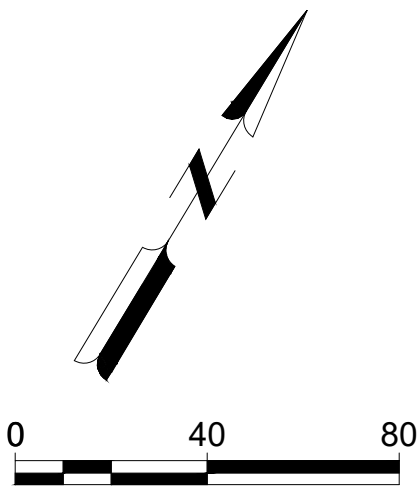




GRADING NOTES:

- 1. UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. NEITHER THE OWNER OR THE ENGINEER ASSUME ANY RESPONSIBILITY WITH RESPECT TO THE ACCURACY, OR COMPLETENESS OF THE INFORMATION PROVIDED.
- 2. PROPOSED CONTOURS SHOWN ARE IN 0.5' AND 0.1' INTERVALS.
- 3. PROPOSED CONTOURS ARE TO BE ROUNDED TO BLEND INTO EXISTING SLOPES WHERE PROPOSED CONTOURS ARE SHOWN TO TIE INTO EXISTING CONTOURS, AND AT ALL LOCATIONS THAT PROPOSED CONTOURS CHANGE DIRECTION, REGARDLESS OF THE PROPOSED CONTOUR LINES SHOWN ON THE PLAN.
- 4. FULL DEPTH OF EXISTING TOPSOIL MUST BE STRIPPED PRIOR TO PLACING EXCESS SPOILS. EXCESS SPOILS AREA AND FULL DEPTH TOPSOIL CUT AREAS MUST BE FINISHED WITH A MINIMUM DEPTH OF 4" OF TOPSOIL TO PROMOTE TURF ESTABLISHMENT.
- 5. THE CONTRACTOR IS RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION.
- 6. SURFACE DRAINAGE STRUCTURES AND PIPES SHOWN ON THIS SHEET ARE FOR ILLUSTRATIVE PURPOSES ONLY. SEE STORM DRAIN PLAN SHEETS C-441 THROUGH C-451 FOR DRAINAGE INFORMATION.
- 7. 1.5" DROP AT ALL FREE EDGES OF PAVEMENT. SEE TYPICAL SECTIONS ON SHEET C-301.
- 8. WHERE EXISTING PAVEMENT ABUTS NEW PAVEMENT, MATCH THE EXISTING GRADE ELEVATION.
- 9. FINISHED GRADE SPOT ELEVATIONS AND CONTOURS REPRESENT TOP OF PAVEMENT SURFACE, TOP OF GRAVEL SURFACE, FINAL INFIELD GRADE, CATCH BASIN RIM ELEVATION, ETC.

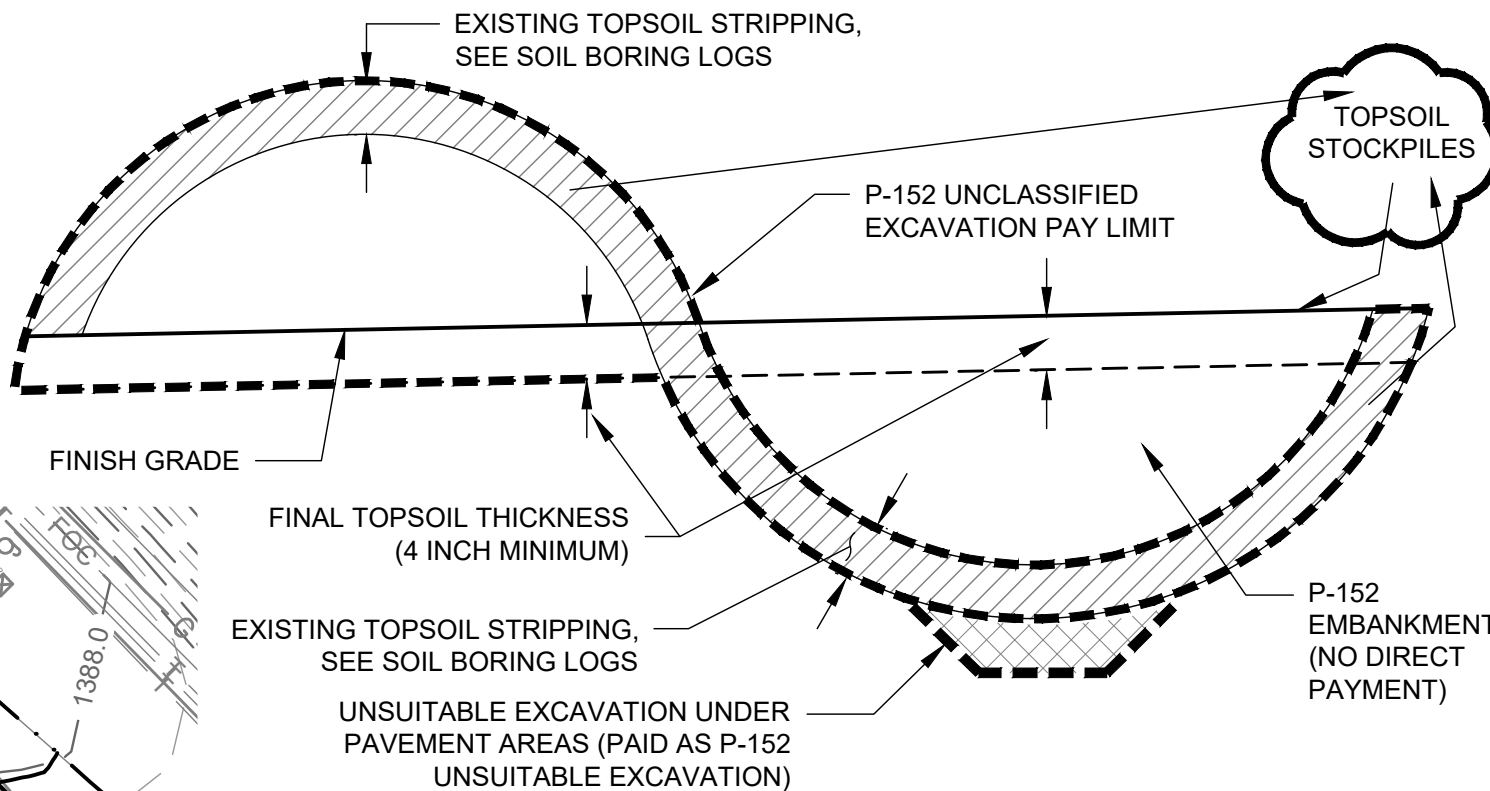
LEGEND:	
	PROPOSED BITUMINOUS PAVEMENT
	PROPOSED CONCRETE PAVEMENT
	PROPOSED STORM SEWER
	EXISTING CONTOUR LINES
	PROPOSED CONTOUR LINES



EXCAVATION TABLE - ESTIMATED QUANTITIES IN CY								
	TOPSOIL STRIPPING	SUBGRADE EXCAVATION	TOTAL UNCLASSIFIED EXCAVATION	EMBANKMENT*	NET (SUBGRADE MINUS EMBANKMENT)*	6" TOPSOIL SURFACE FILL (RE-SPREAD)	EXCESS TOPSOIL HAUL OFF**	EXCESS P-207 TO BE STOCKPILED ON AIRPORT****
PHASE 1	1478	3876	2398	3754	122	920	558	489
PHASE 2a	152	516	364	59	457	53	99	255
PHASE 2b	0	553	553	0	553	0	0	496
PAYMENT***	ITEM P-152-4.1 UNCLASSIFIED EXCAVATION	ITEM P-152-4.1 UNCLASSIFIED EXCAVATION	ITEM P-152-4.1 UNCLASSIFIED EXCAVATION	NO DIRECT PAYMENT	-	T-905-5.1 TOPSOIL RE-SPREAD (PER ACRE)	NO DIRECT PAYMENT	NO DIRECT PAYMENT

EXCAVATION TABLE NOTES

- \* EXCAVATION AND EMBANKMENT QUANTITIES LISTED IN THE TABLE ARE THEORETICAL VOLUME ESTIMATES AND DO NOT HAVE A SHRINKAGE FACTOR APPLIED. EXCESS SPOILS SURFACE MAY BE EXPANDED AS NECESSARY TO ACCOMMODATE ALL EXCESS MATERIAL GENERATED FROM THE NEW APRON PAVEMENT SECTION EXCAVATION. EMBANKMENT QUANTITY IS CALCULATED FROM THE TOP OF SUBGRADE AFTER TOPSOIL STRIPPING TO THE BOTTOM OF FINISH SURFACE MINUS A 6" DEPTH OF TOPSOIL SURFACING.
- NO DIRECT PAYMENT SHALL BE MADE FOR EMBANKMENT; PAYMENT WILL BE MADE UNDER P-152 UNCLASSIFIED FOR THE MATERIAL EXCAVATED IN ITS ORIGINAL POSITION, TRANSPORTED TO ITS FINAL LOCATION AND COMPACTED.
- \*\* EXCESS TOPSOIL MAY ONLY BE PLACED AS EMBANKMENT OUTSIDE OF PROPOSED AND ULTIMATE PAVEMENT AREAS AS DIRECTED BY THE RPR.
- \*\*\* P-152 PAYMENT BY THE CUBIC YARD SHALL BE BASED ON AS-BUILT FIELD SURVEY PERFORMED BY THE CONTRACTOR TAKEN AT THE TOP OF SUBGRADE FOLLOWING TOPSOIL STRIPPING.
- \*\*\*\* ALL EXCESS P-207 GENERATED FROM THE PULVERIZATION PROCESS THAT CANNOT BE PLACED AS NEW AGGREGATE BASE COURSE SHALL REMAIN PROPERTY OF THE AIRPORT AND MUST BE STOCKPILED BY THE CONTRACTOR AT THE NORTHWEST CORNER OF THE AIRPORT PROPERTY. NO DIRECT PAYMENT WILL BE MADE FOR P-207 TRANSPORT OR STOCKPILING IN THE DESIGNATED AREA ON AIRPORT PROPERTY.



NOTE:  
UNSATURABLE EXCAVATION PERFORMED UNDER AREAS TO BE PAVED SHALL BE REPLACED WITH P-154 SUBBASE COURSE.

1 EARTHWORK VOLUME  
NOT TO SCALE

CONTRACTOR TO RAISE EXISTING SANITARY MANHOLE RIM ELEVATION 2.33'

FES-1  
RIM=1384.50  
30" INV W=1381.63

PRETREATMENT AREA AND INFILTRATION BASIN SURFACE ELEVATION: 1379.50

PRETREATMENT AREA OVERFLOW ELEV: 1380.60

TURF OVERFLOW WEIRS

EXCESS GRANULAR SPOILS EMBANKMENT SURFACE; CONTRACTOR **MUST** BUILD THIS SURFACE WITH EXCESS SPOILS GENERATED UNDERNEATH THE PROPOSED PAVEMENT SECTION; CONTRACTOR **MAY NOT HAUL EXCESS GRANULAR MATERIAL OFF SITE**. ALL MATERIAL MUST REMAIN ON SITE AND IS THE PROPERTY OF THE OWNER; SURFACE MAY BE EXPANDED TO THE EAST AS NEEDED TO ACCOMMODATE ALL SPOILS GENERATED FROM ALL PHASES

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PRINT NAME: TAYLOR F. PETERSON  
DATE: 05/07/2025 LICENSE #: 24801

DETROIT LAKES - BECKER COUNTY AIRPORT  
TERMINAL APRON RECONSTRUCTION & EXPANSION  
24813 US HIGHWAY 10  
DETROIT LAKES, MN 56501

ISSUED 05/07/25 ISSUED FOR BID

AIP NO.: 3-27-0021-26-25  
MSH NO.: 3197100-242527.01  
DATE: MAY 7, 2025  
DESIGNED BY: JDC  
DRAWN BY: KSH  
CHECKED BY: TFP  
DO NOT SCALE DRAWINGS

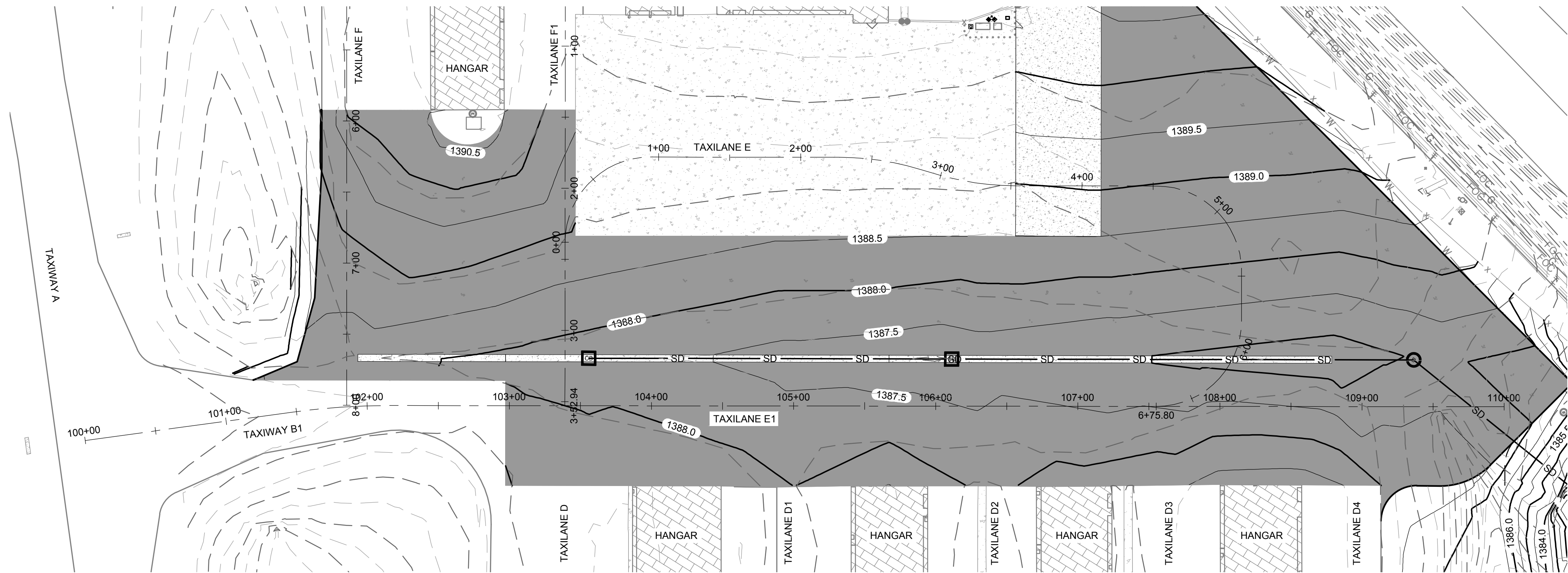
SHEET CONTENTS  
GRADING & DRAINAGE PLAN

SHEET NO. 19 of 32

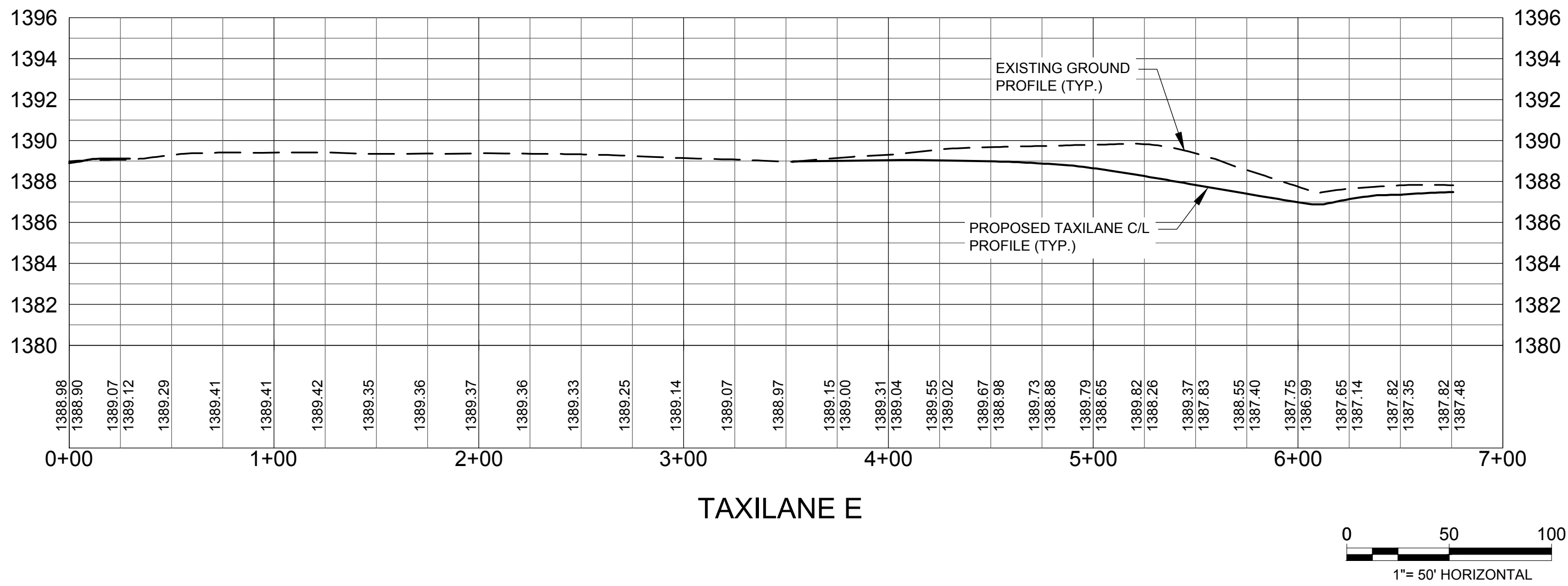
C-101



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TAXILANE E



TAXILANE E

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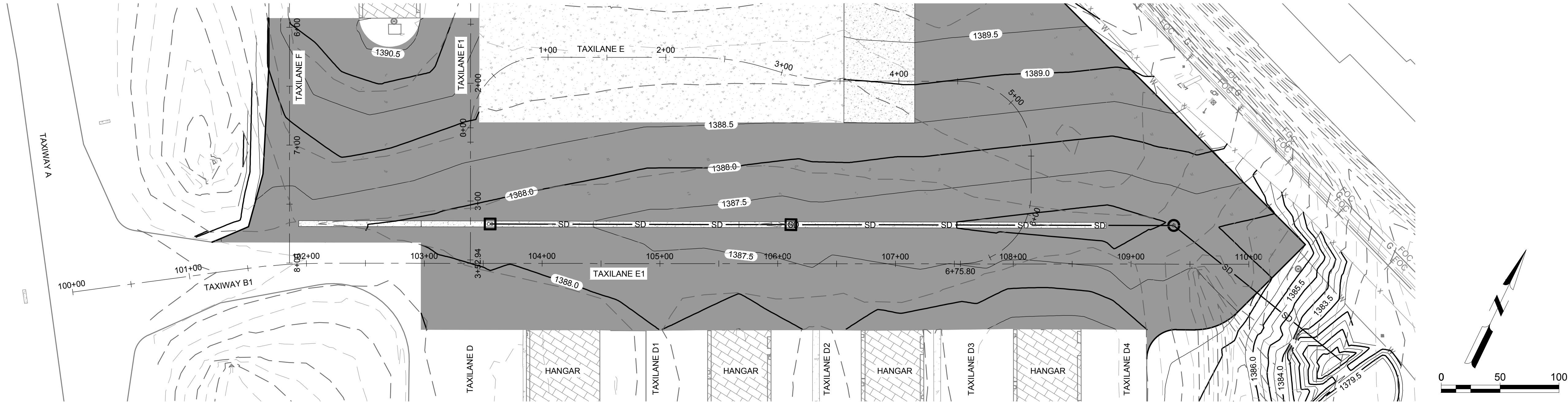
SHEET CONTENTS  
TAXILANE E PLAN AND PROFILE

SHEET NO. 20 of 32

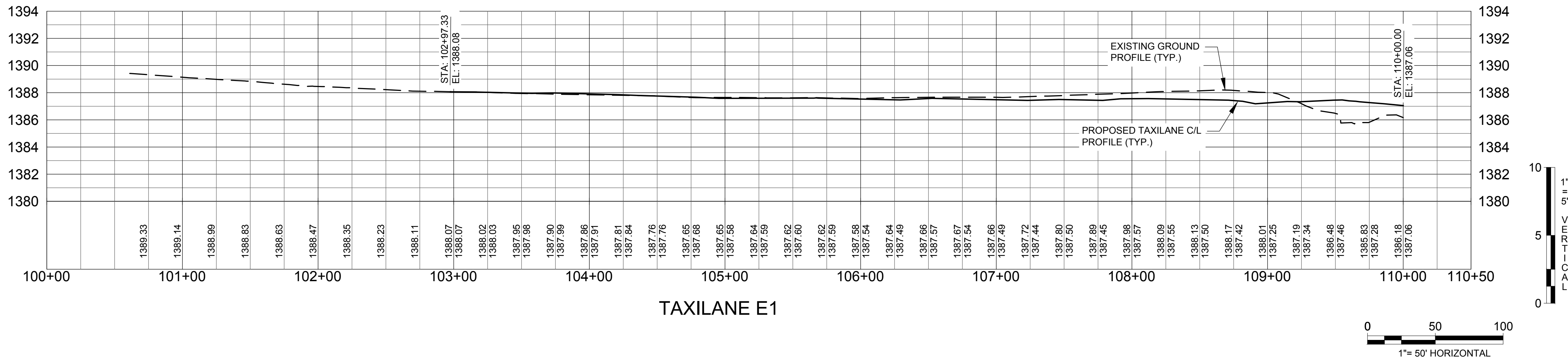
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TAXILANE E1



TAXILANE E1

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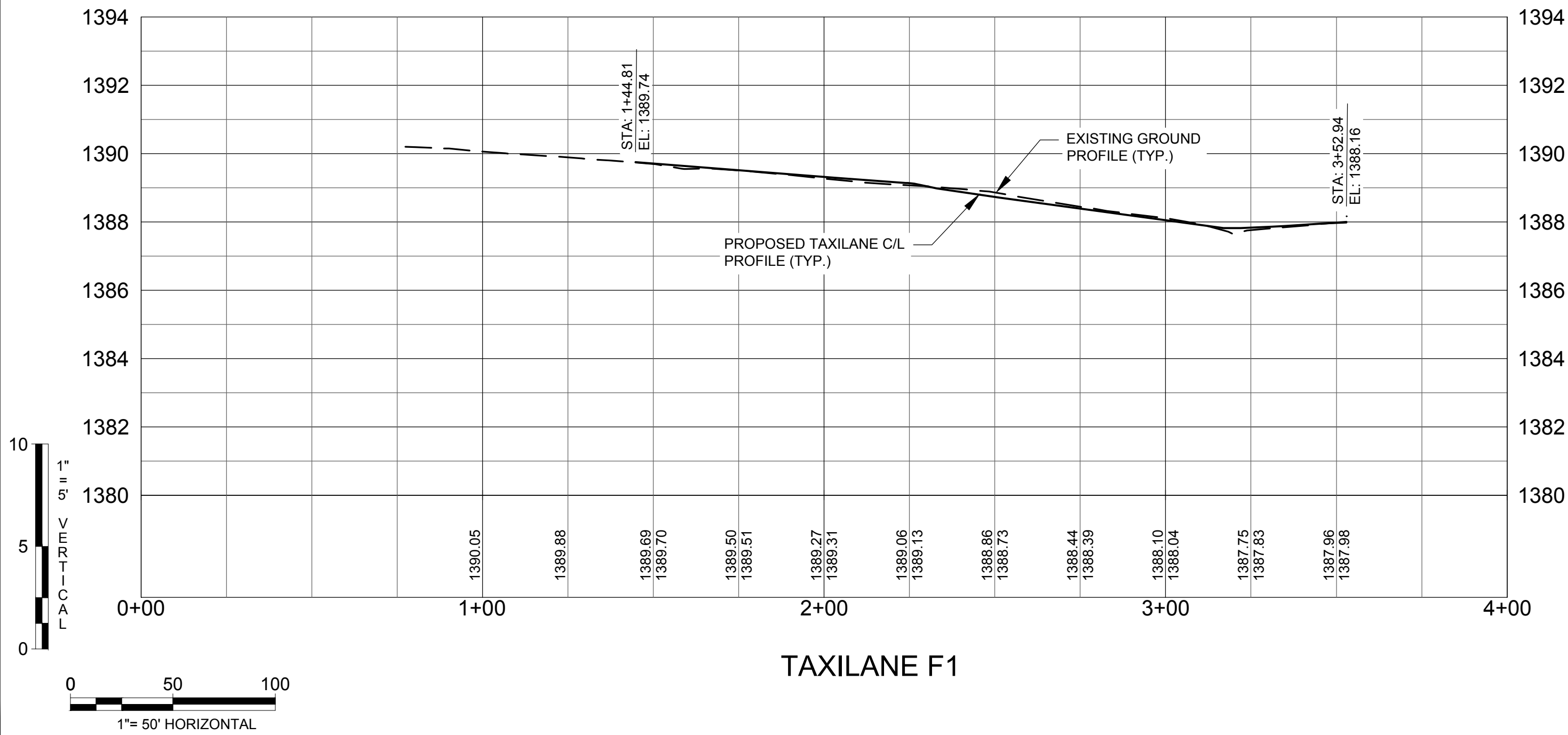
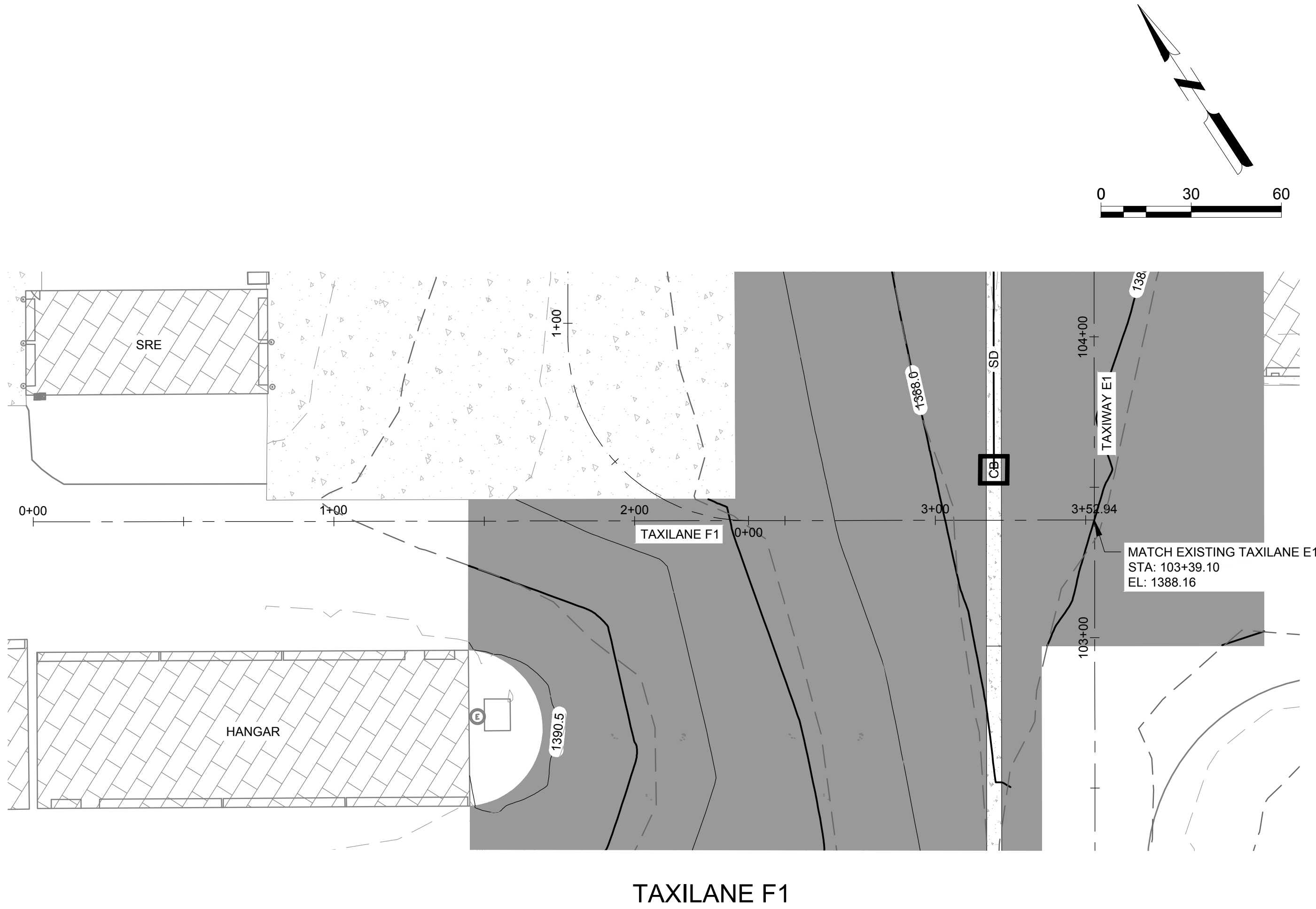
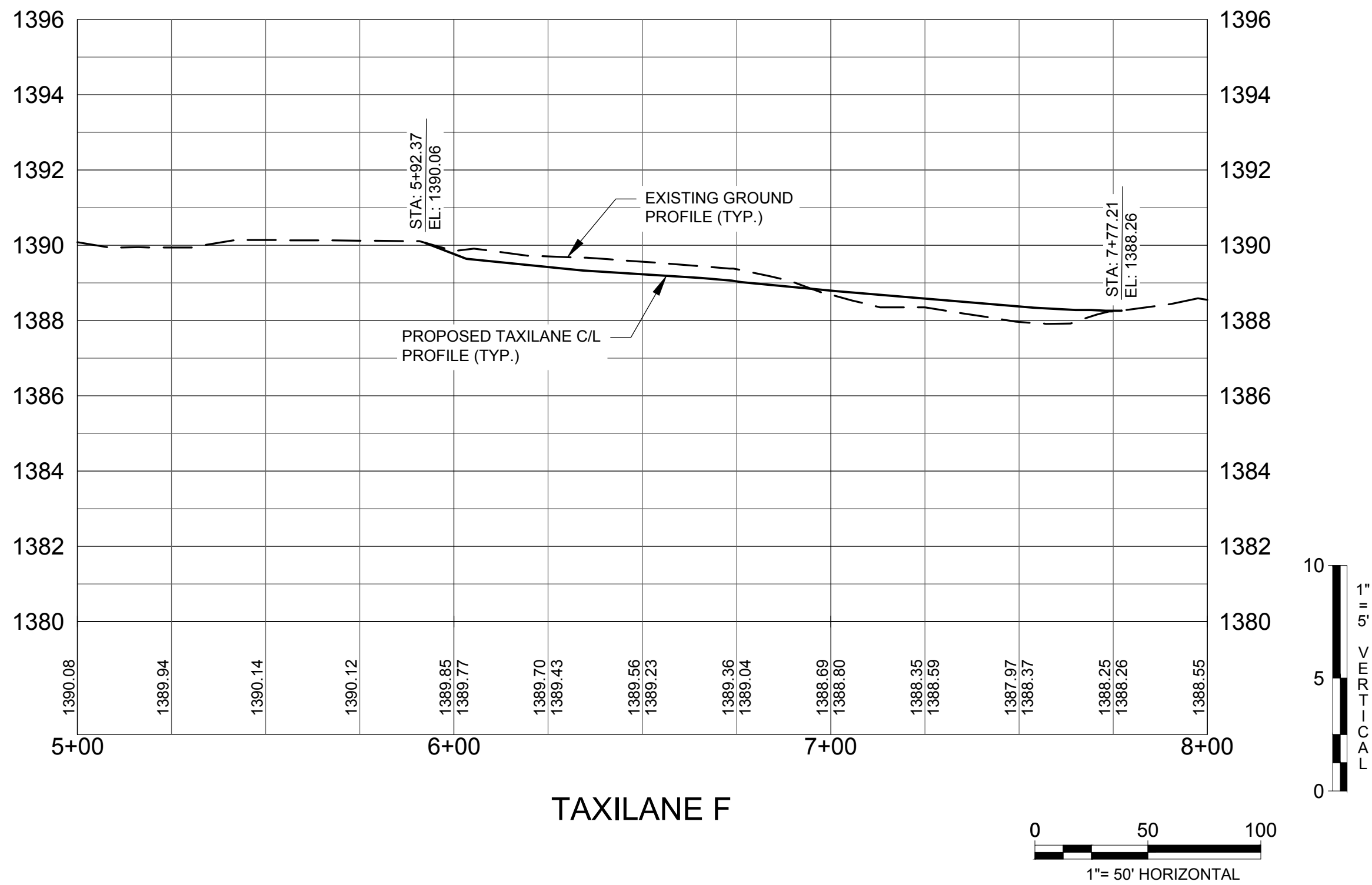
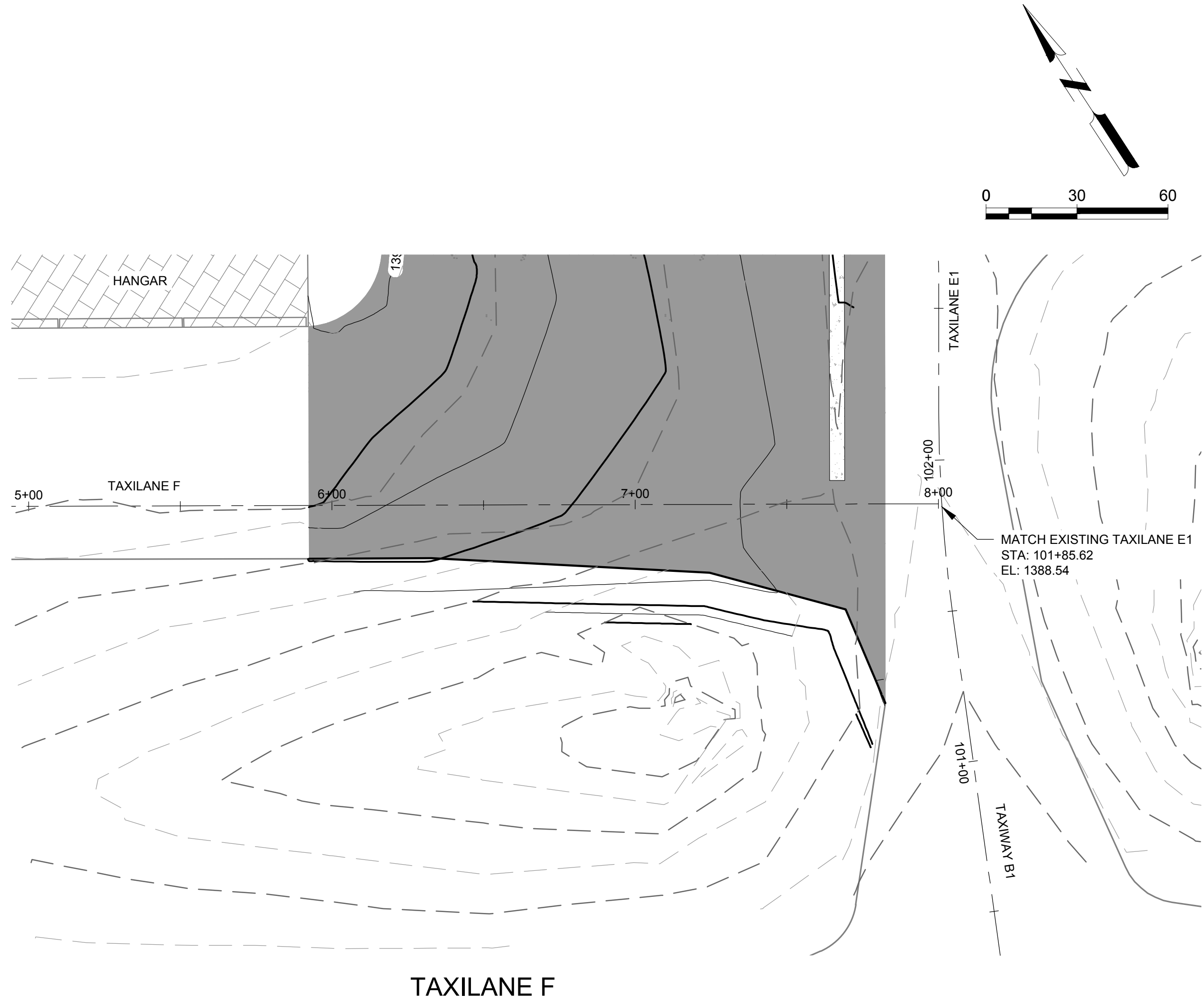
SHEET CONTENTS  
TAXILANE E1 PLAN  
AND PROFILE

SHEET NO. 21 of 32

**C-202**



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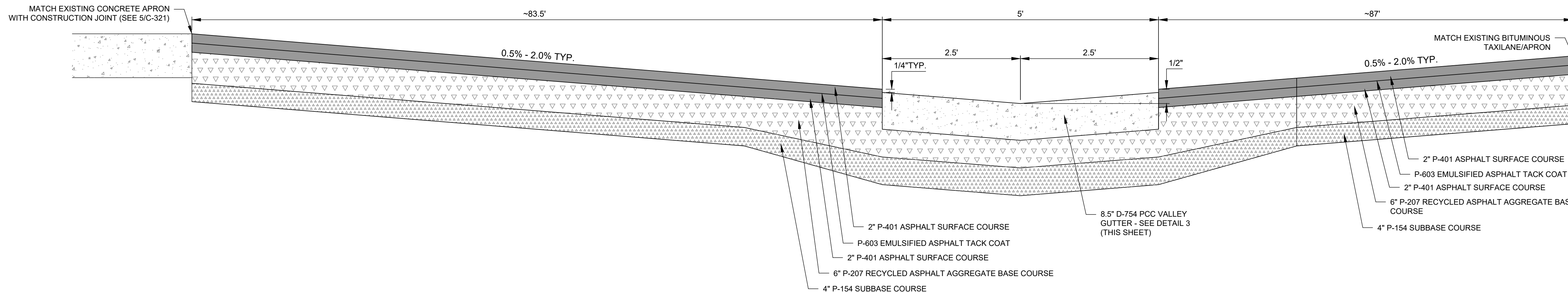
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DATE: MAY 7, 2025  
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SHEET CONTENTS  
TAXILANE F & F1 PLAN  
AND PROFILE

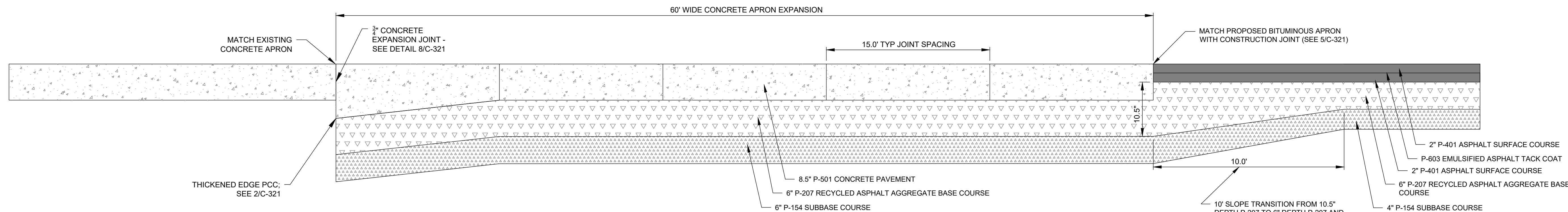
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**C-203**

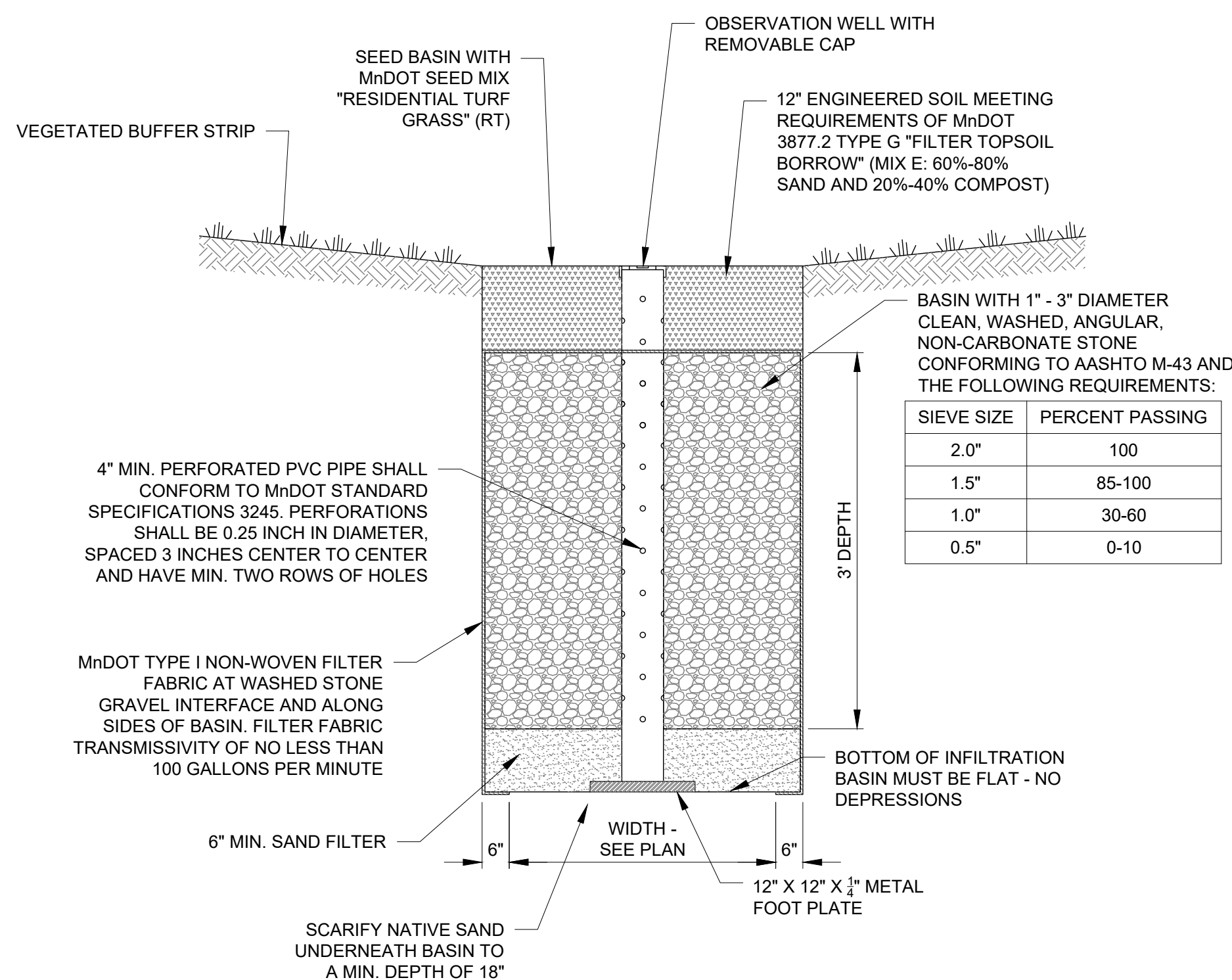




1 PROPOSED BITUMINOUS APRON RECONSTRUCTION PAVEMENT SECTION  
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2 PROPOSED CONCRETE APRON EXPANSION PAVEMENT SECTION  
NOT TO SCALE



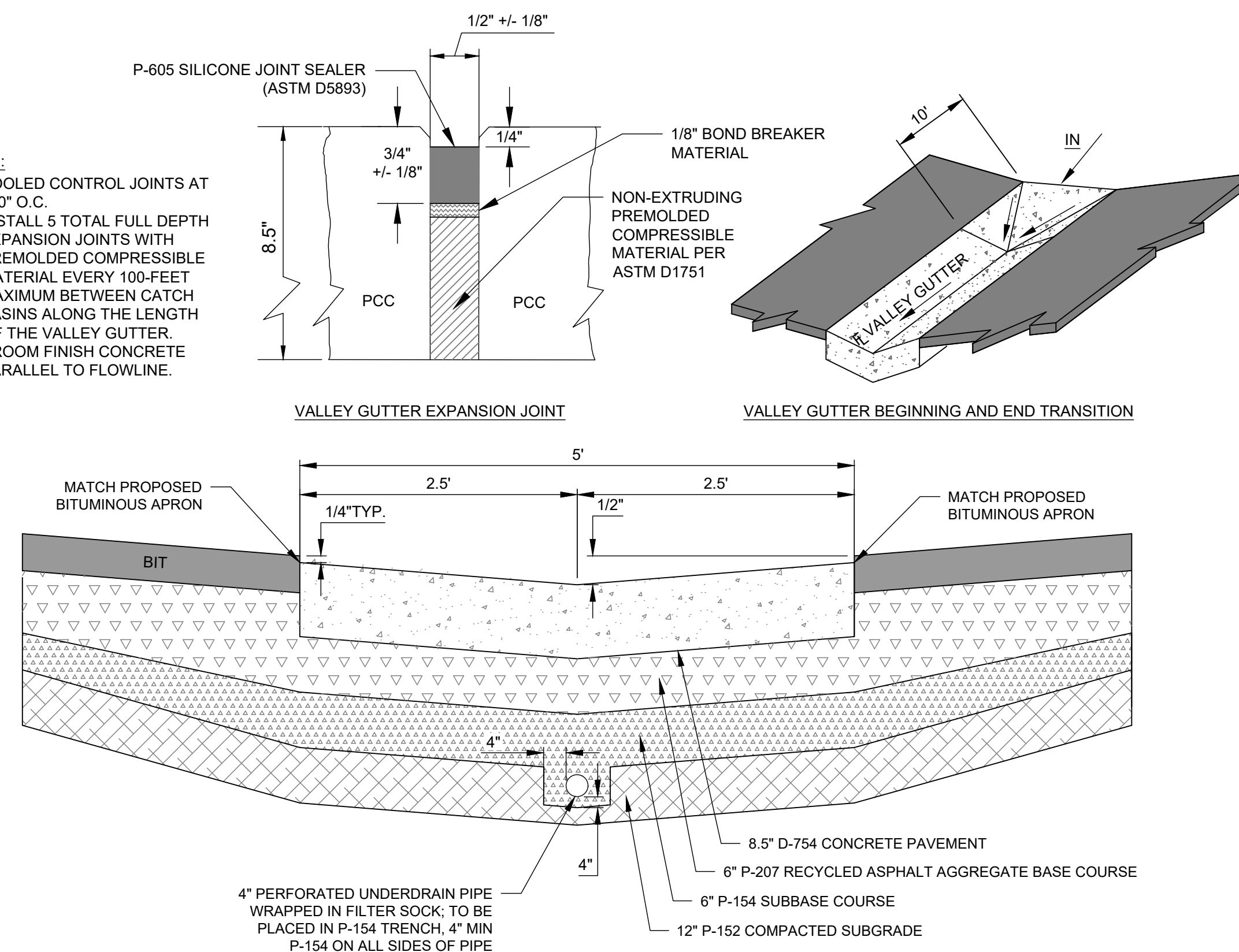
4 INFILTRATION BASIN DETAIL  
NOT TO SCALE

INFILTRATION BASIN NOTES:

- ONCE CONSTRUCTION IN THE CONTRIBUTING DRAINAGE AREA HAS BEEN COMPLETED AND THE SITE IS STABILIZED, EXCAVATE THE INFILTRATION BASIN TO FINAL GRADE AND COMPLETE CONSTRUCTION OF THE INFILTRATION BASIN.
- GRADING OF THE INFILTRATION BASIN SHALL BE ACCOMPLISHED USING LOW-IMPACT EARTH-MOVING EQUIPMENT TO PREVENT COMPACTION OF THE UNDERLYING SOILS. WIDE TRACKED VEHICLES SUCH AS BACK HOES, SMALL DOZERS AND BOBCATS ARE RECOMMENDED.
- EXCAVATE THE INFILTRATION BASIN TO THE SPECIFIED DEPTH (ELEVATION) WITH A TOOTHED BUCKET BACKHOE. ALL NATIVE MATERIAL BELOW THE SPECIFIED ELEVATION SHALL BE LOOSENEED (DECOMPACTED) TO A MINIMUM DEPTH OF 18 INCHES PRIOR TO PLACING FILL MATERIALS.
- GRADE TO THE DEPTH (ELEVATION) SPECIFIED IN THE CONSTRUCTION DOCUMENTS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- IN THE EVENT THAT SEDIMENT IS INTRODUCED INTO THE BMP DURING OR IMMEDIATELY FOLLOWING EXCAVATION, THE SEDIMENT WILL NEED TO BE REMOVED FROM THE INFILTRATION BASIN PRIOR TO INITIATING THE NEXT STEP IN THE INFILTRATION BASIN CONSTRUCTION PROCESS.
- MATERIAL EXCAVATED FROM THE INFILTRATION BASIN SHALL BE DISPOSED OF ON-SITE AT LOCATIONS DESIGNATED BY ENGINEER.
- CLEAN, WASHED 1 TO 3-INCH GRAVEL SHALL BE PLACED IN THE BOTTOM OF THE INFILTRATION BASIN TO THE DEPTH SPECIFIED. GRAVEL SHOULD BE PLACED IN LIFTS AND LIGHTLY COMPACTED WITH PLATE COMPACTORS.
- INSTALLATION OF INFILTRATION PRACTICES SHALL BE DONE DURING PERIODS OF DRY WEATHER AND COMPLETED BEFORE A RAINFALL EVENT.
- THE BOTTOM EXCAVATION SURFACE OF INFILTRATION AREAS SHALL BE LEVEL WITHOUT DIPS OR SWALES.
- ENGINEERED SOIL SHALL REMAIN UNCONTAMINATED (NOT MIXED WITH OTHER SOIL) BEFORE AND DURING INSTALLATION.

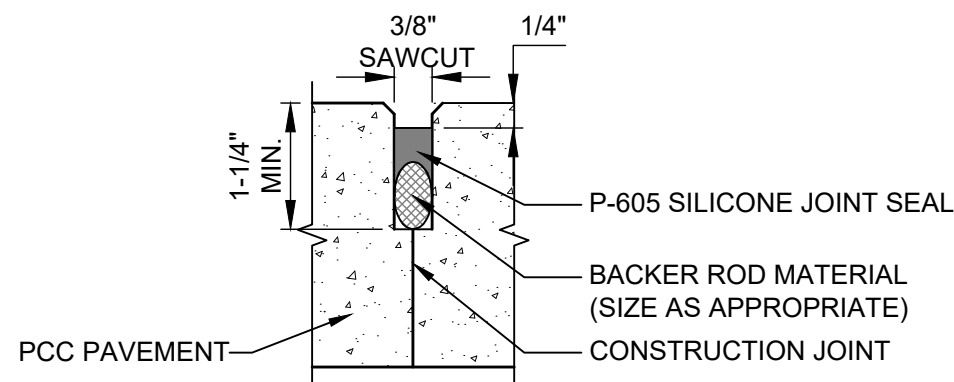
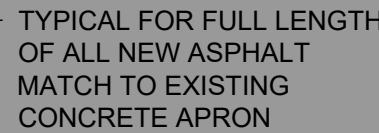
NOTES:

- TOOLED CONTROL JOINTS AT 5'-0" O.C.
- INSTALL 5 TOTAL FULL DEPTH EXPANSION JOINTS WITH PREMOLDED COMPRESSIBLE MATERIAL EVERY 100-FEET MAXIMUM BETWEEN CATCH BASINS ALONG THE LENGTH OF THE VALLEY GUTTER.
- BROOM FINISH CONCRETE PARALLEL TO FLOWLINE.

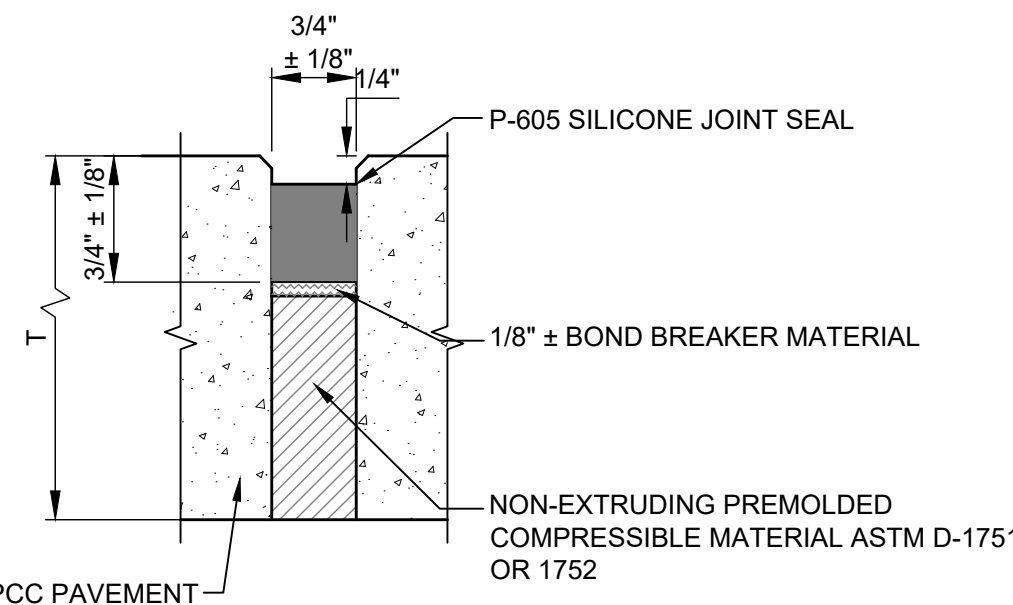
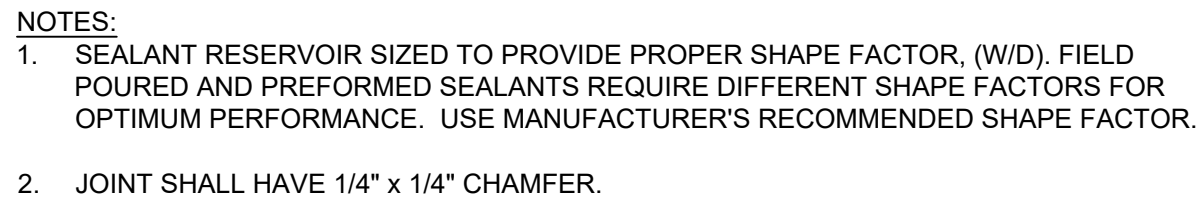
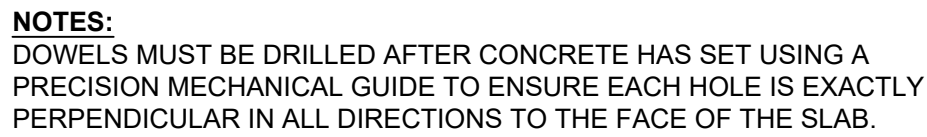


3 PROPOSED CONCRETE VALLEY GUTTER TYPICAL SECTION  
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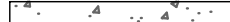
1. SEALANT RESERVOIR SIZED TO PROVIDE PROPER SHAPE FACTOR, (W/D). FIELD POURED AND PREFORMED SEALANTS REQUIRE DIFFERENT SHAPE FACTORS FOR OPTIMUM PERFORMANCE. USE MANUFACTURER'S RECOMMENDED SHAPE FACTOR.
2. BACKER ROD MATERIAL MUST BE COMPATIBLE WITH THE TYPE OF LIQUID SEALANT USED AND SIZED TO PROVIDE THE DESIRED SHAPE FACTOR (W/D).
3. JOINT SHALL HAVE 1/4" x 1/4" CHAMFER.



1. SEALANT RESERVOIR SIZED TO PROVIDE PROPER SHAPE FACTOR, (W/D). FIELD POURED AND PREFORMED SEALANTS REQUIRE DIFFERENT SHAPE FACTORS FOR OPTIMUM PERFORMANCE. USE MANUFACTURER'S RECOMMENDED SHAPE FACTOR.
2. JOINT SHALL HAVE 1/4" x 1/4" CHAMFER.



DOWELS MAY BE SOLID BAR OR HIGH-STRENGTH PIPE. HIGH-STRENGTH PIPE DOWELS MUST BE PLUGGED ON EACH END WITH A TIGHT-FITTING PLASTIC CAP OR MORTAR MIX. DOWELS SHALL BE SMOOTH AND GREASED.

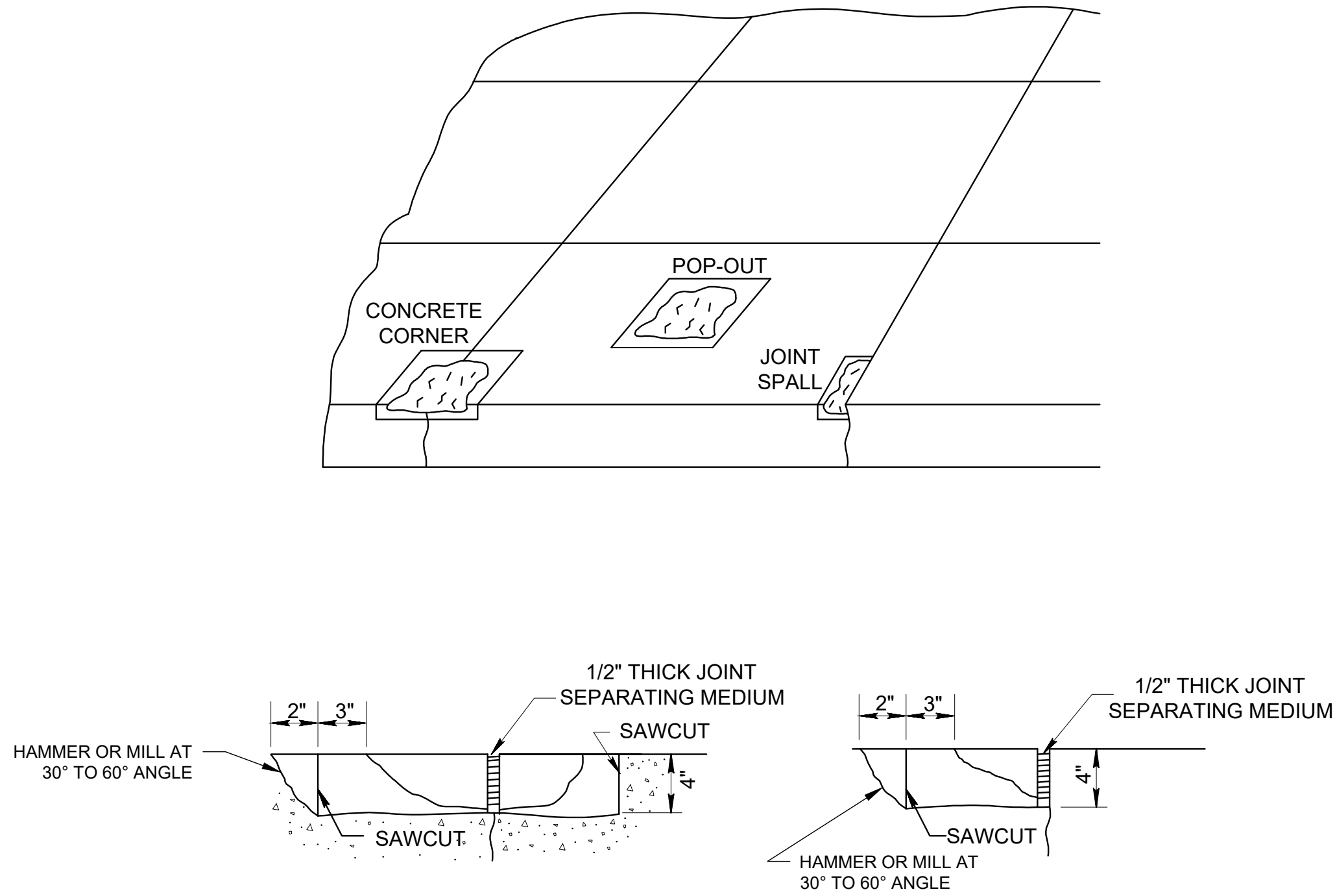
LEGEND:	
	PROPOSED BITUMINOUS PAVEMENT
	PROPOSED CONCRETE PAVEMENT
	REINFORCED CONCRETE PAVEMENT
	TYPE "A" THICKENED EDGE - SEE 2/C-321

1. INITIAL SAW CUT ON CONTRACTION JOINTS SHOULD BE T/4 (ON AN AGGREGATE BASE), T/3 (ON STABILIZED BASE) OR T/6 TO T/5 (MINIMUM 1 INCH) WHEN USING EARLY ENTRY SAW.
2. JOINTS SHALL NOT INTERSECT THE EDGE OF THE PAVEMENT NOR ANY OTHER JOINT AT AN ANGLE OF LESS THAN 90-DEGREES.
3. DOWEL BASKETS SHALL BE FIRMLY ATTACHED TO THE EXISTING UNDERLYING COURSE PRIOR TO PLACING PCC.
4. DOWEL AND TIE BAR DRILLING METHOD SHALL BE CAPABLE OF MAINTAINING DRILL HOLES PARALLEL TO THE CONCRETE SURFACE AND NORMAL TO THE JOINT LINE WITHIN 1/4-INCH AT THE END OF THE DOWEL. DRILL HOLES SHALL BE ACCURATELY LAID OUT SO THAT THE MAXIMUM DEVIATION DOES NOT EXCEED 1-INCH IN THE HORIZONTAL DIRECTION AND 1/4-INCH IN THE VERTICAL DIRECTION.
5. SEALANT DIMENSION DEPTH MAY VARY BASED ON MANUFACTURER RECOMMENDATIONS.
6. IF THE CONTRACTOR'S PAVING OPERATIONS REQUIRE INSTALLATION OF A CONSTRUCTION JOINT, THE JOINT MUST BE CONSTRUCTED AS A DOWELED CONTRACTION JOINT PER DETAIL 3 THIS SHEET. DOWEL BARS MUST BE DRILLED INTO THE CONCRETE PRIOR TO PAVING THE NEW LANE.

C-321

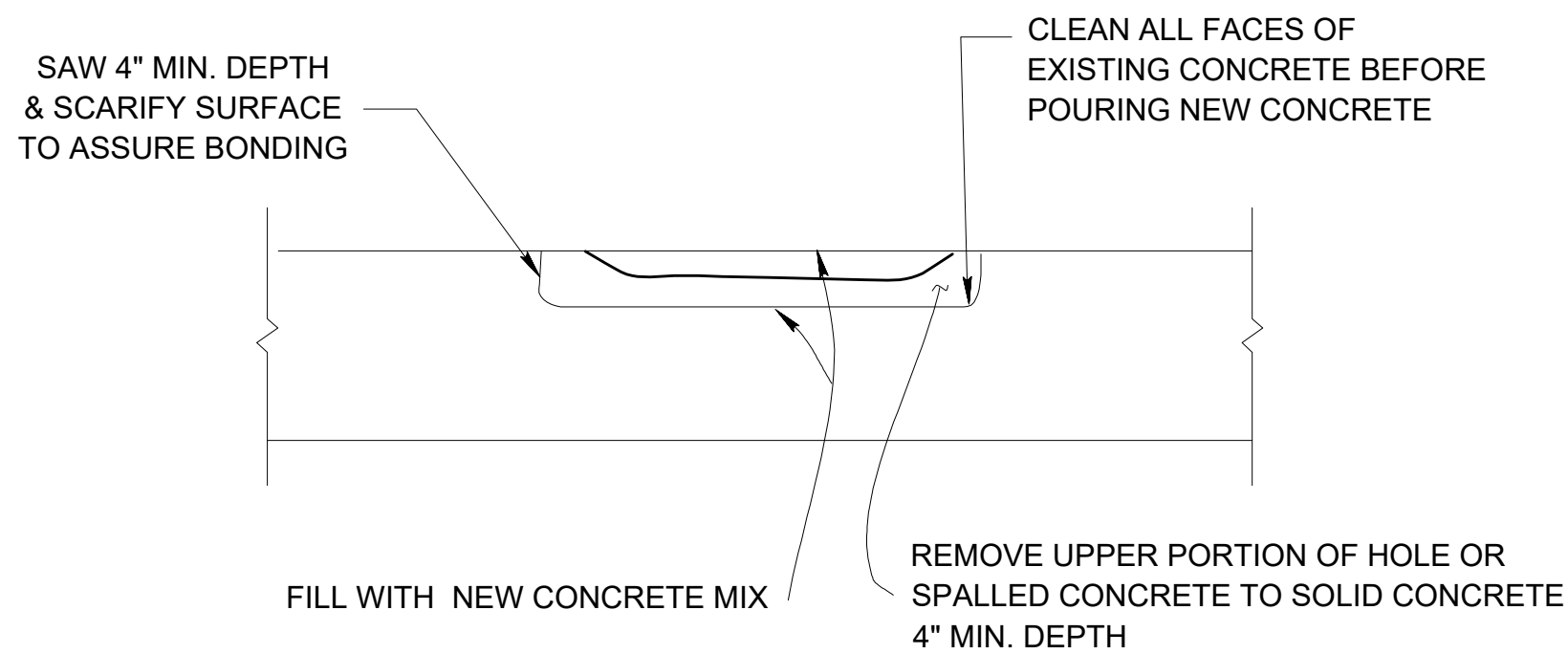


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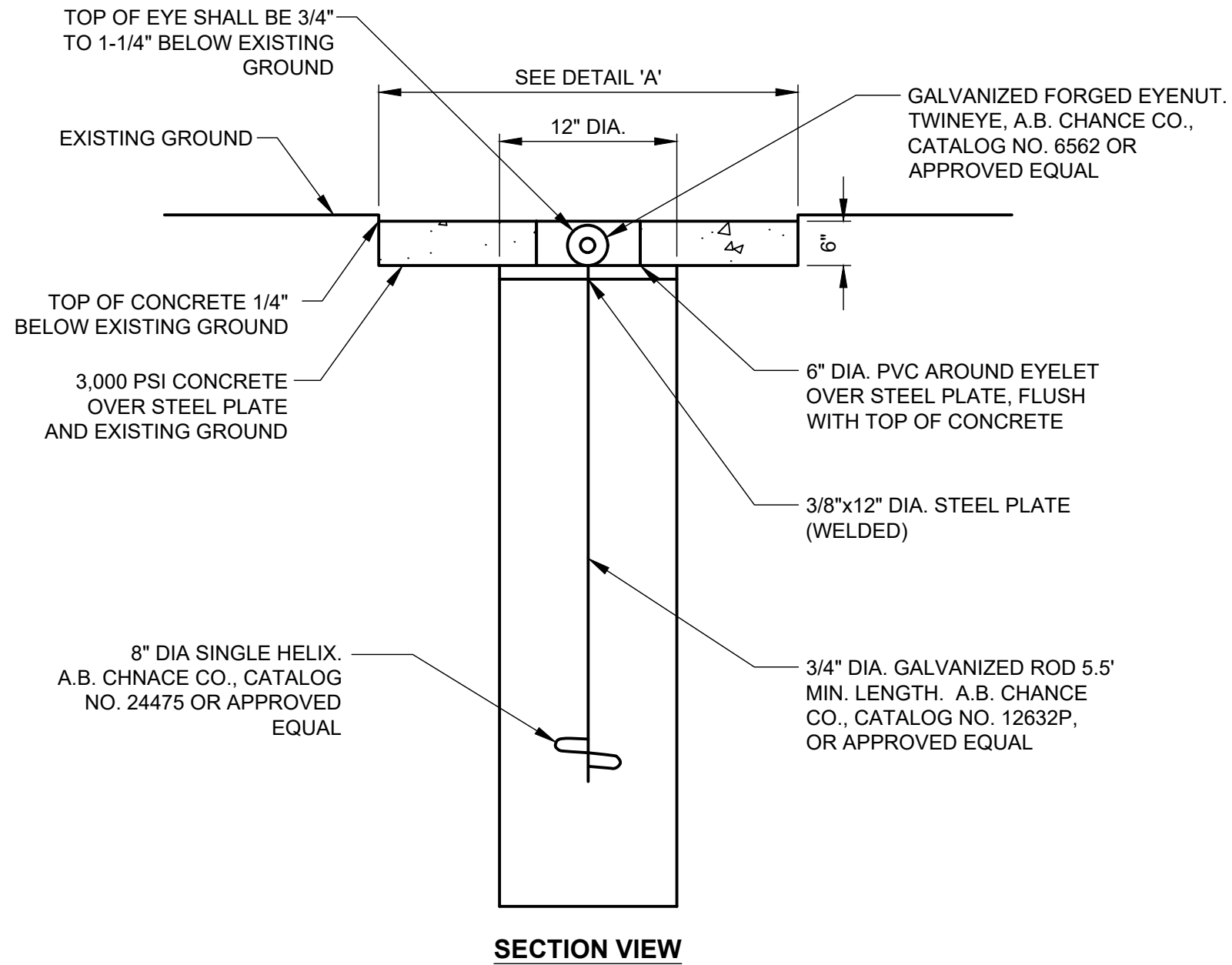
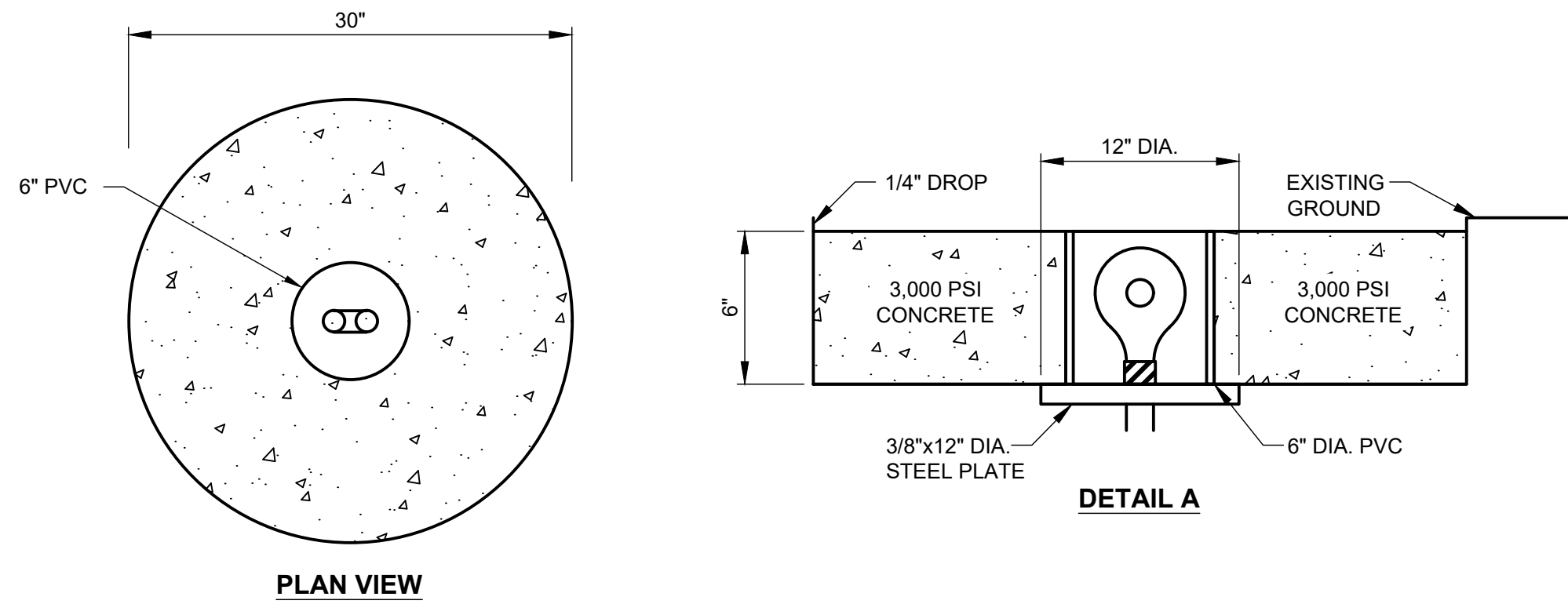


NOTES:

1. MAKE VERTICAL SAWCUT 4" DEEP APROX. 3" FROM DISTRESSED AREA. REMOVE ALL CONCRETE AND LOOSE MATERIAL WITHIN SAWED AREA TO SOUND CONCRETE OR 4" MINIMUM DEPTH. USE A BONDING AGENT TO ENSURE GOOD CONTACT BETWEEN EXISTING PAVEMENT AND PATCH. GROUT AND PATCH WITH 2" SLUMP CONCRETE (NS02). AFTER PATCH HAS CURED, SAW AND CLEAN JOINT BEFORE APPLICATION OF JOINT SEALANT.
2. ALL SAWCUTTING INCIDENTAL TO P-101-5.8 (CONCRETE CORNER, POP OUT, OR JOINT SPALL REPAIR).



2 CONCRETE CORNER / POP OUT / JOINT SPALL REPAIR DETAIL  
NOT TO SCALE



1 AIRCRAFT TIE-DOWN DETAIL - IN ASPHALT PAVEMENT  
NOT TO SCALE

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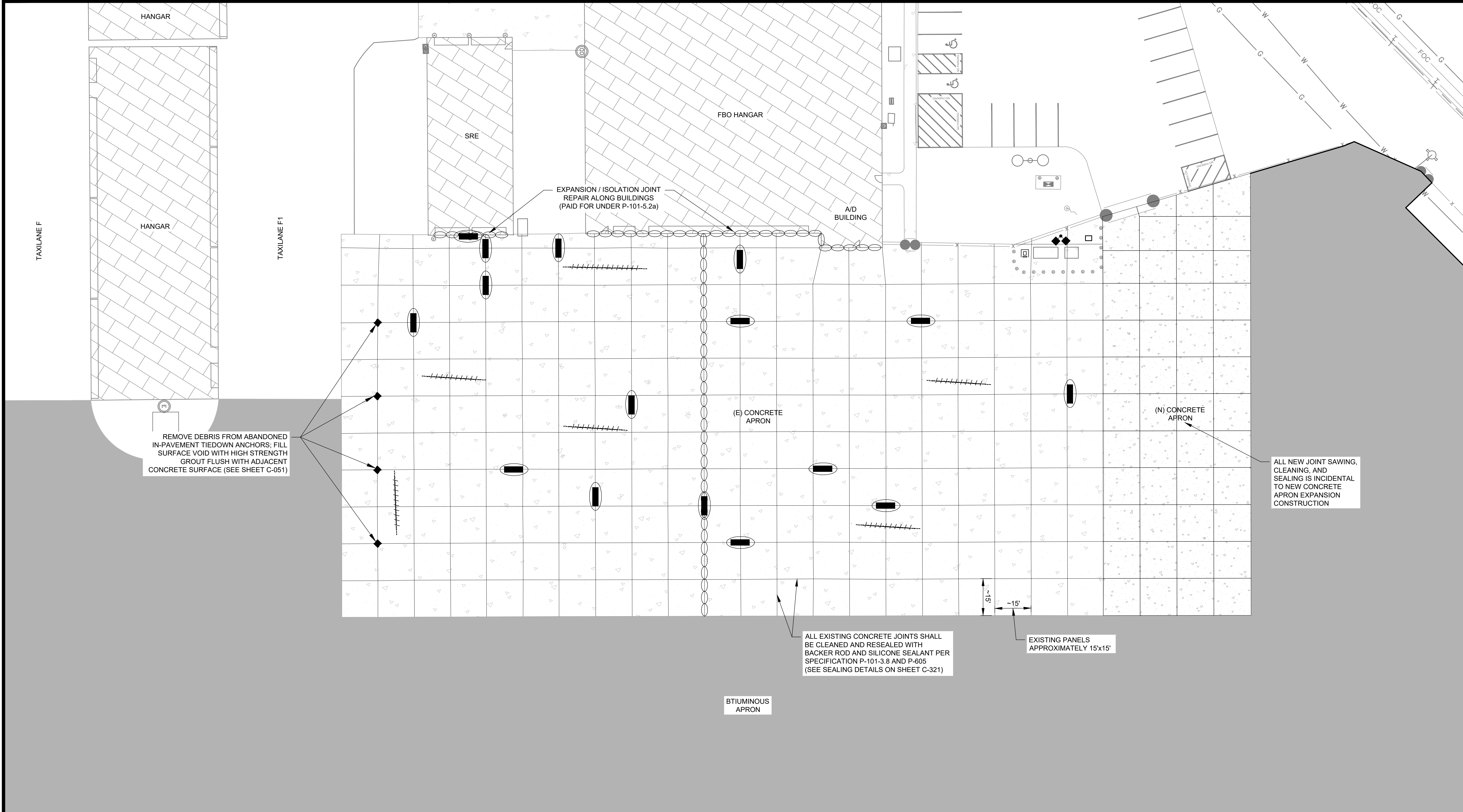
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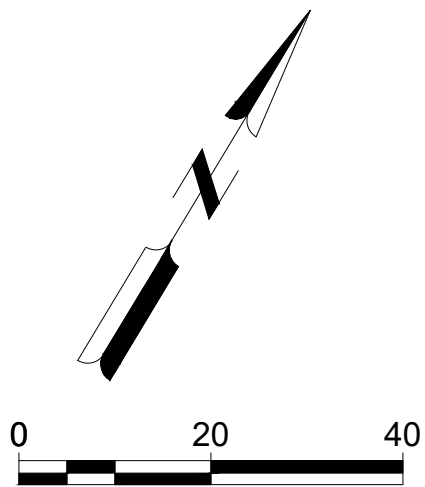


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LEGEND

-  JOINT SPALL / CORNER / POP OUT REPAIR (SEE 2/C-351)
-  RANDOM CONCRETE CRACK ROUTING, CLEANING & SEALING (SEE 7/C-321)
-  EXPANSION / ISOLATION JOINT REPAIR (SEE 8/C-321)



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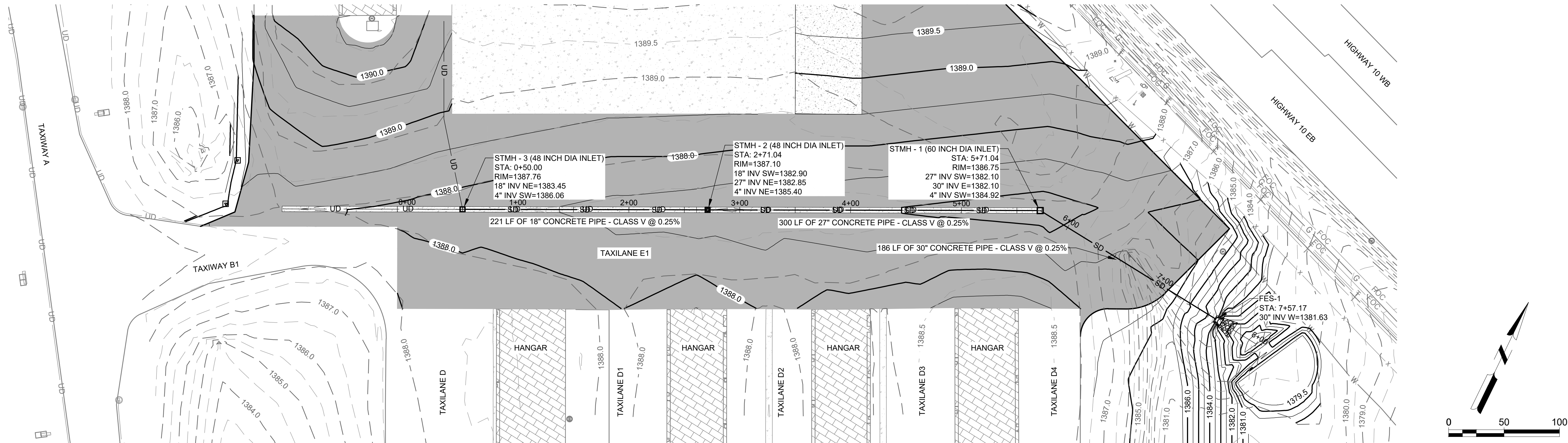
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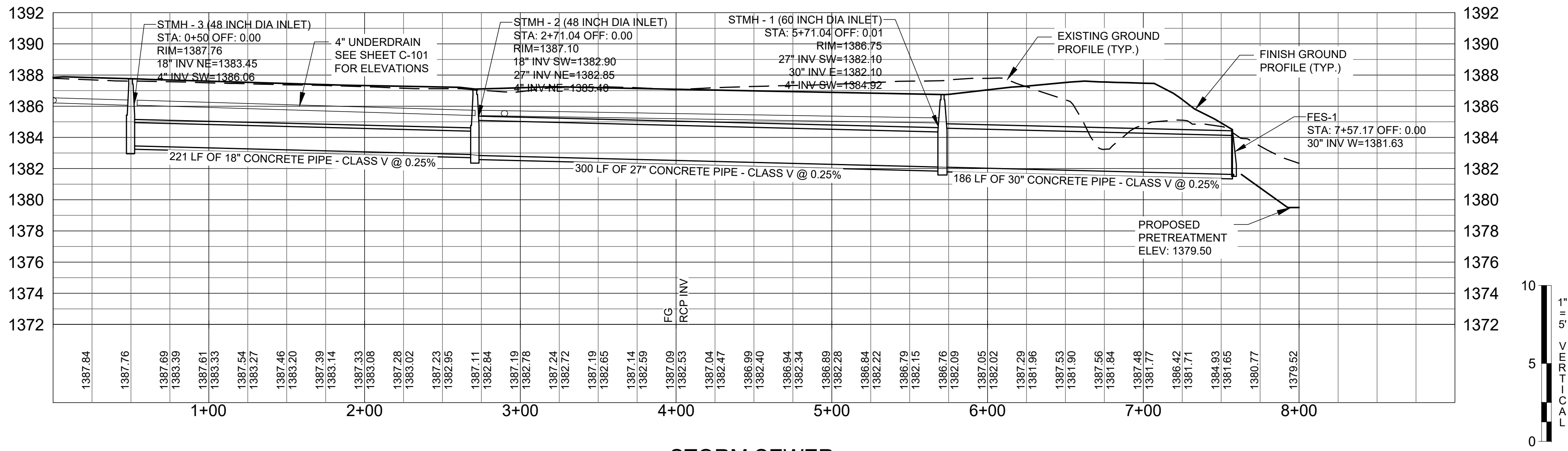
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STORM SEWER



STORM SEWER

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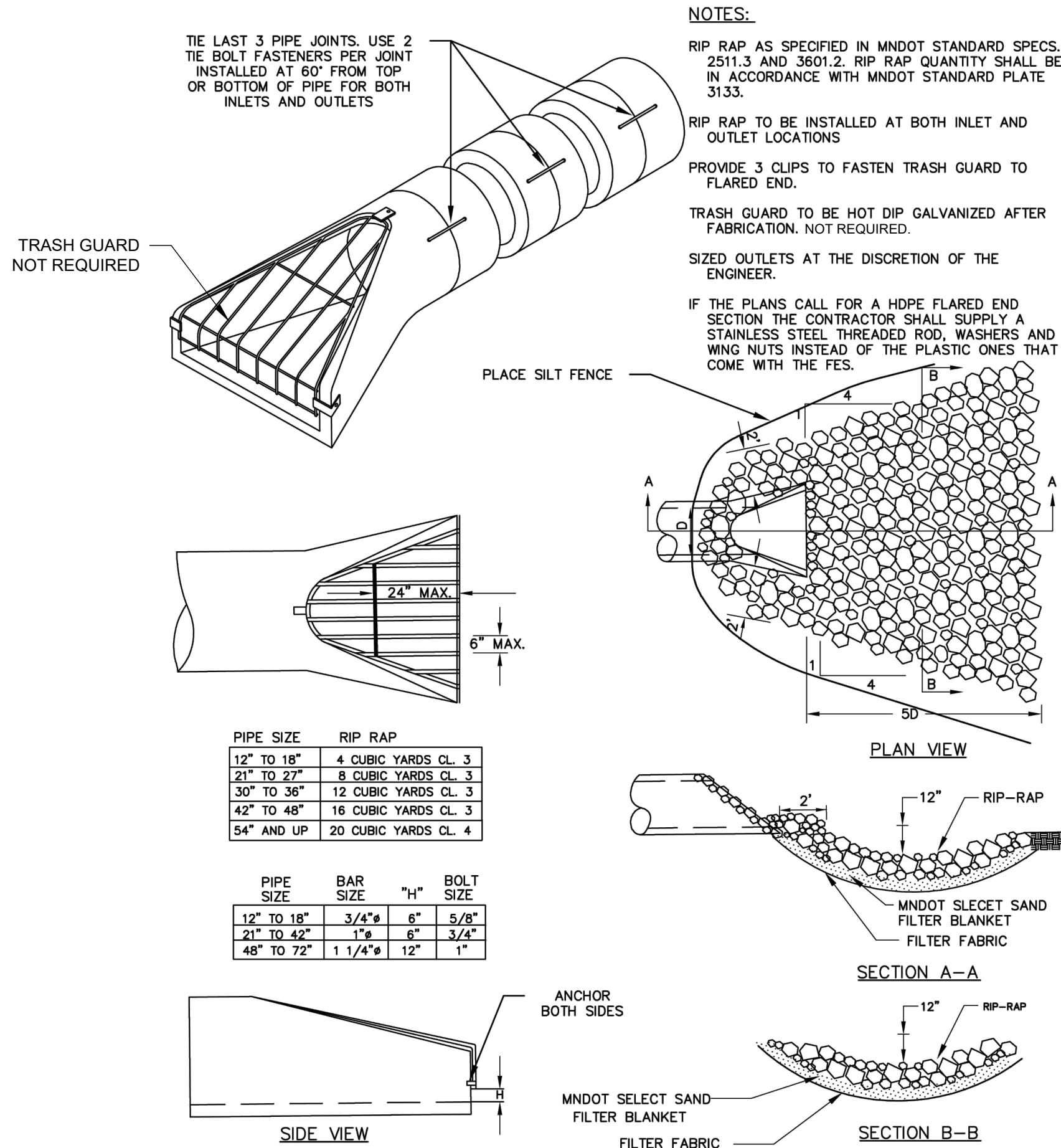
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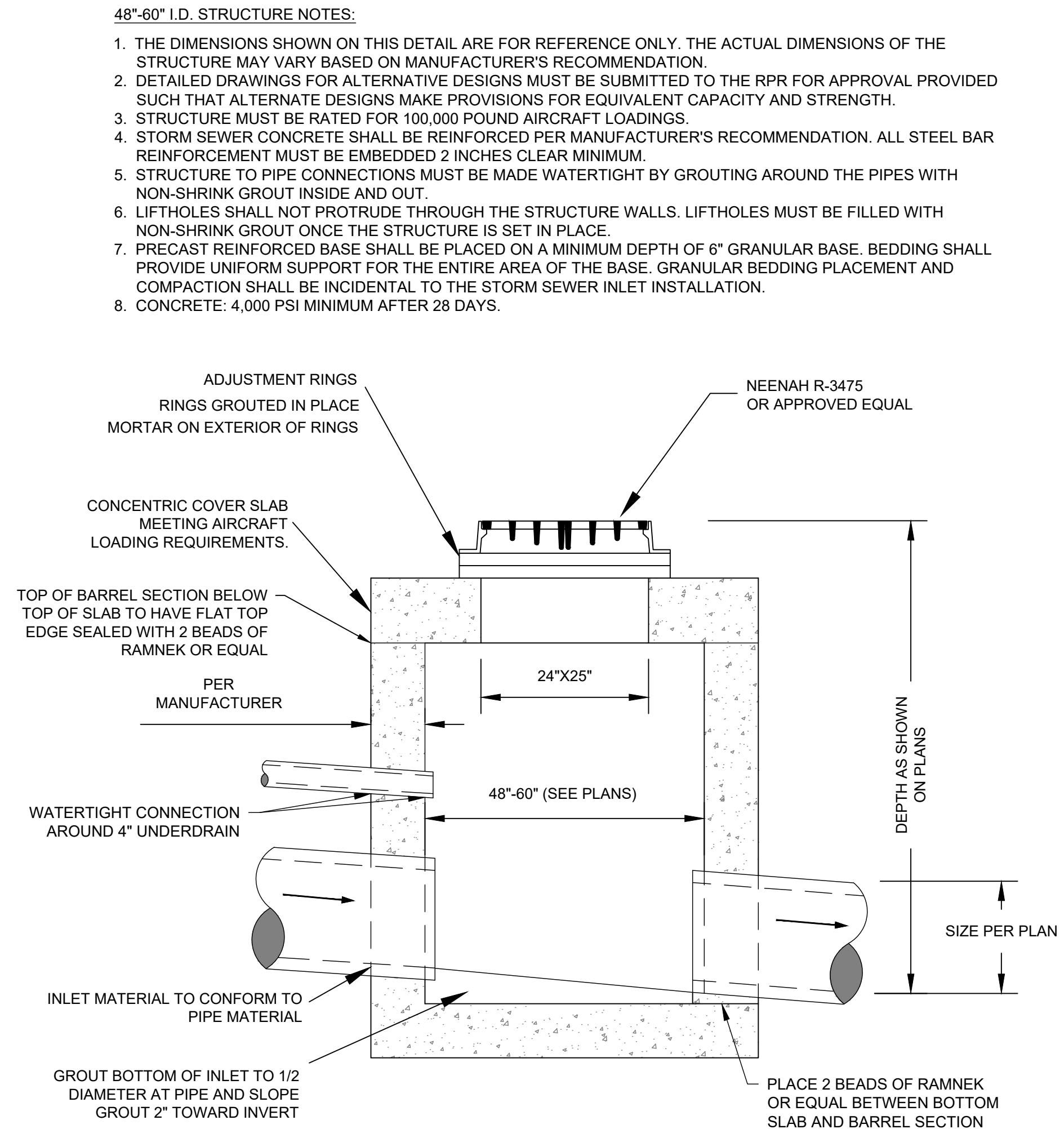
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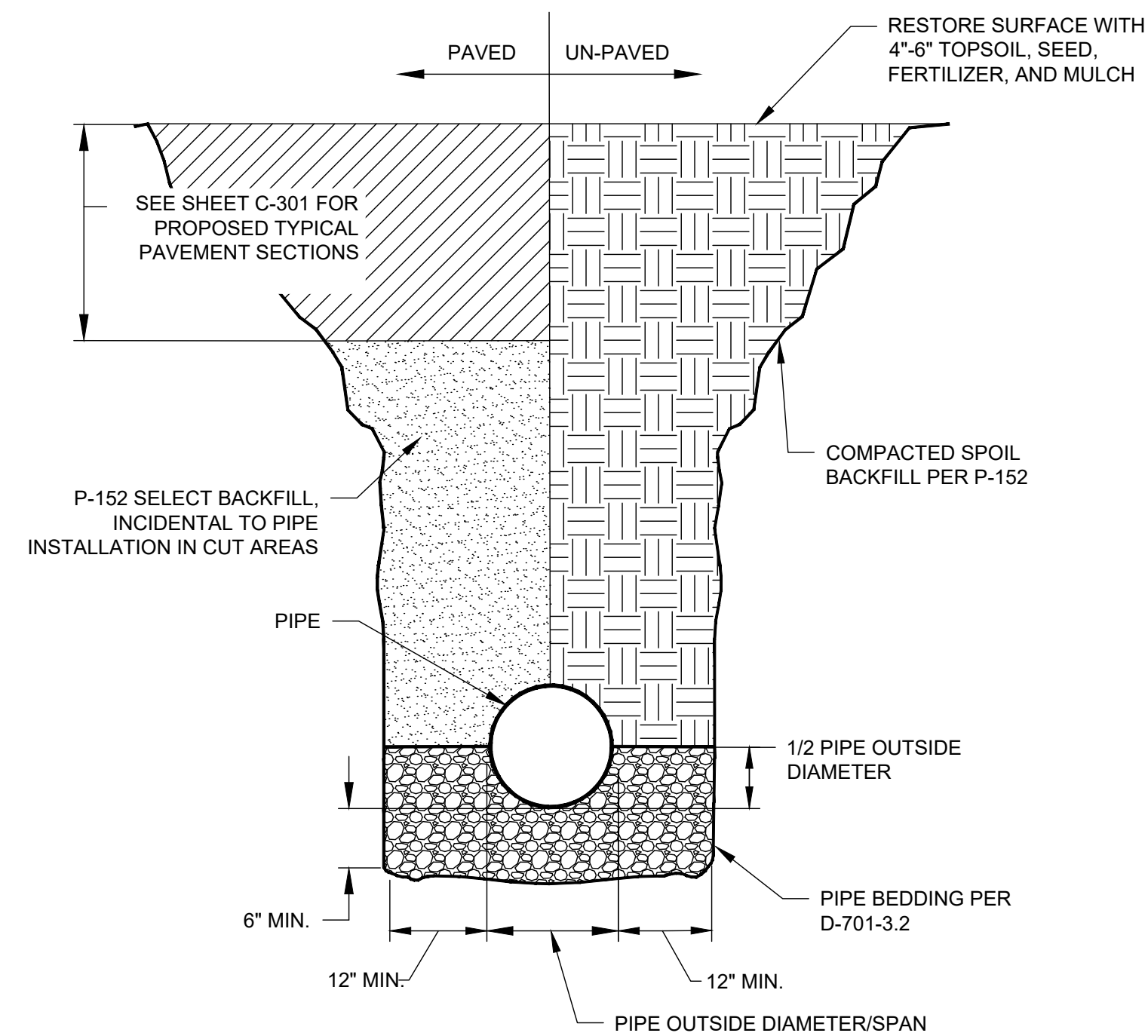
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3 FLARED END SECTION & RIPRAP DETAIL  
NO SCALE



1 AIRCRAFT RATED INLET DETAIL  
NO SCALE



- NOTE:
1. AT A MINIMUM, THE LAST THREE (3) PIPE JOINTS ON EITHER END OF THE RUN SHALL BE TIED. USE TWO (2) TIE BOLT FASTENERS PER JOINT. INSTALL TIE BARS AT 60" FROM TOP OR BOTTOM OUTSIDE OF PIPE.

2 TYPICAL RCP STORM SEWER TRENCH DETAIL  
NO SCALE

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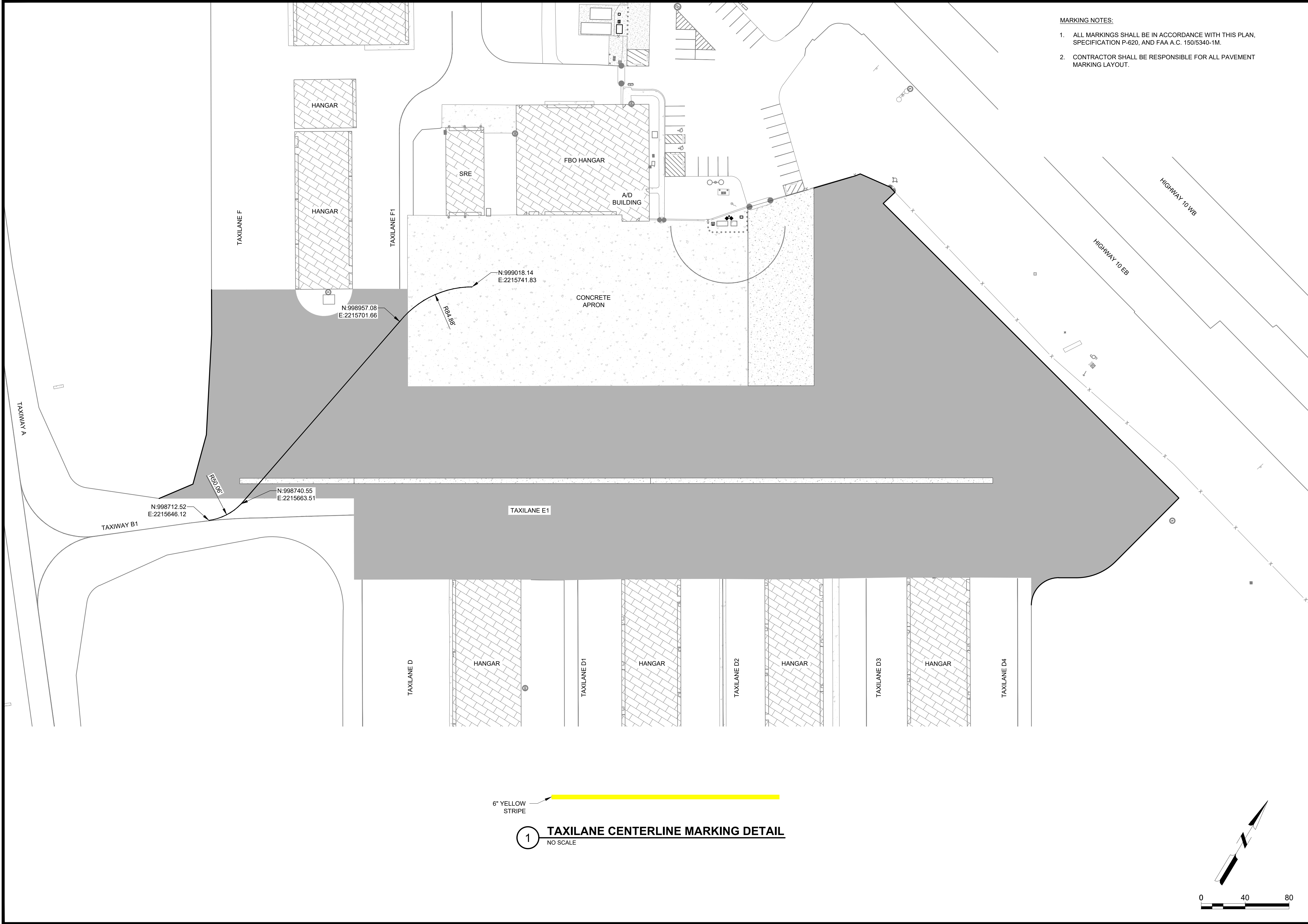
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5/7/2025 6:33:12 PM



- MARKING NOTES:**
1. ALL MARKINGS SHALL BE IN ACCORDANCE WITH THIS PLAN, SPECIFICATION P-620, AND FAA A.C. 150/5340-1M.
  2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PAVEMENT MARKING LAYOUT.

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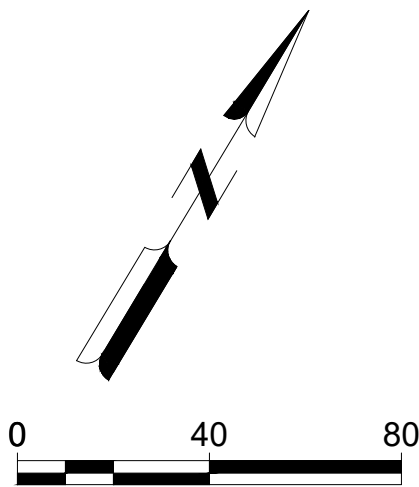
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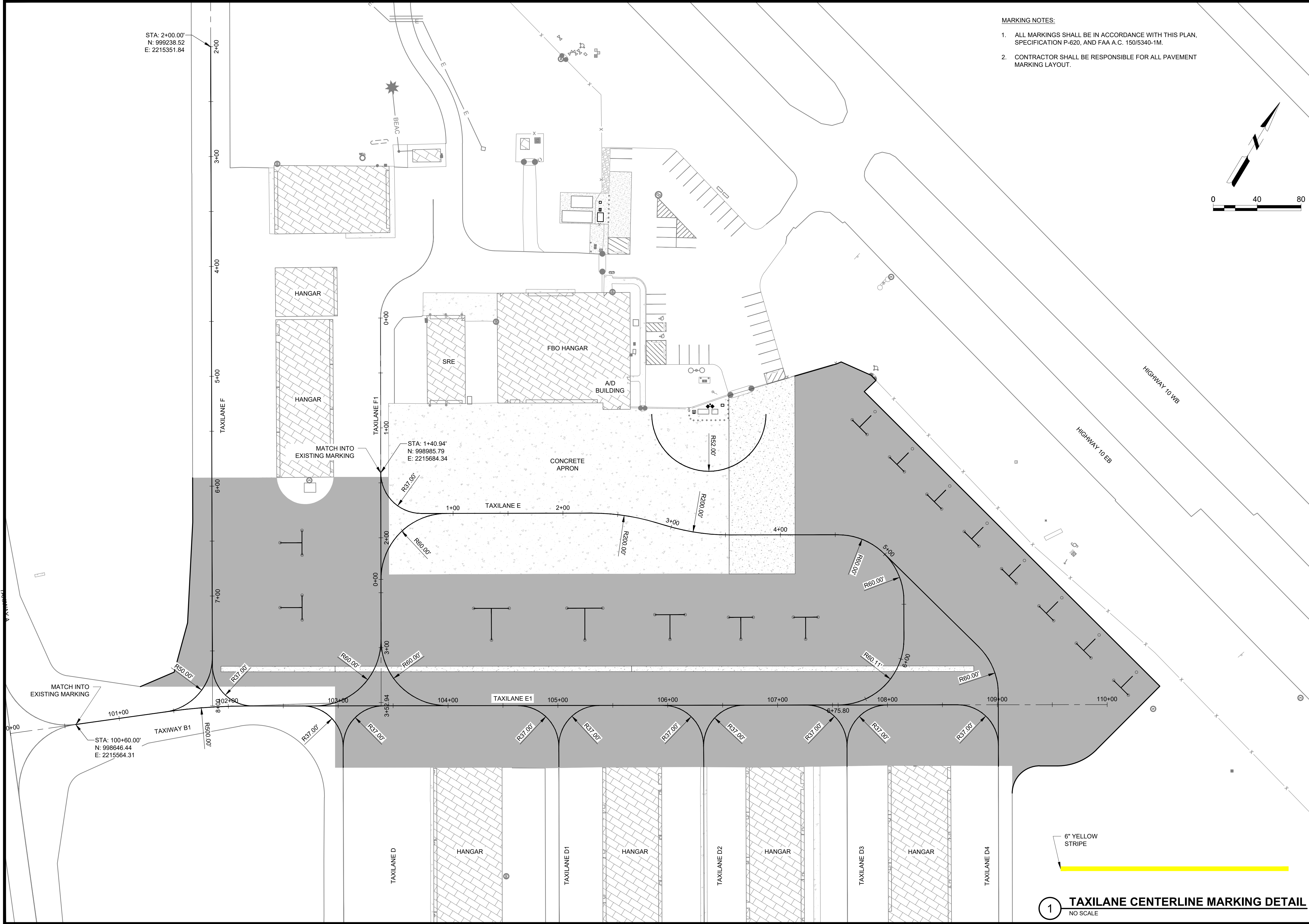
**C-651**

6" YELLOW STRIPE  
**1 TAXILANE CENTERLINE MARKING DETAIL**  
NO SCALE



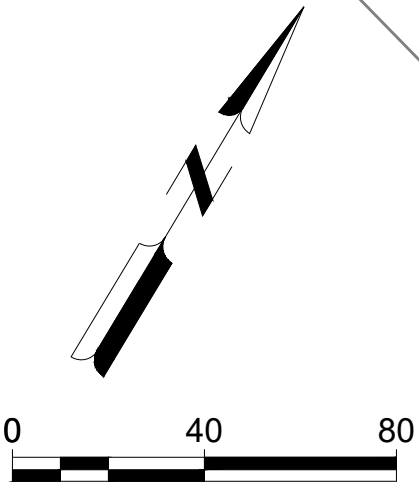


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MARKING NOTES:

1. ALL MARKINGS SHALL BE IN ACCORDANCE WITH THIS PLAN, SPECIFICATION P-620, AND FAA A.C. 150/5340-1M.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PAVEMENT MARKING LAYOUT.



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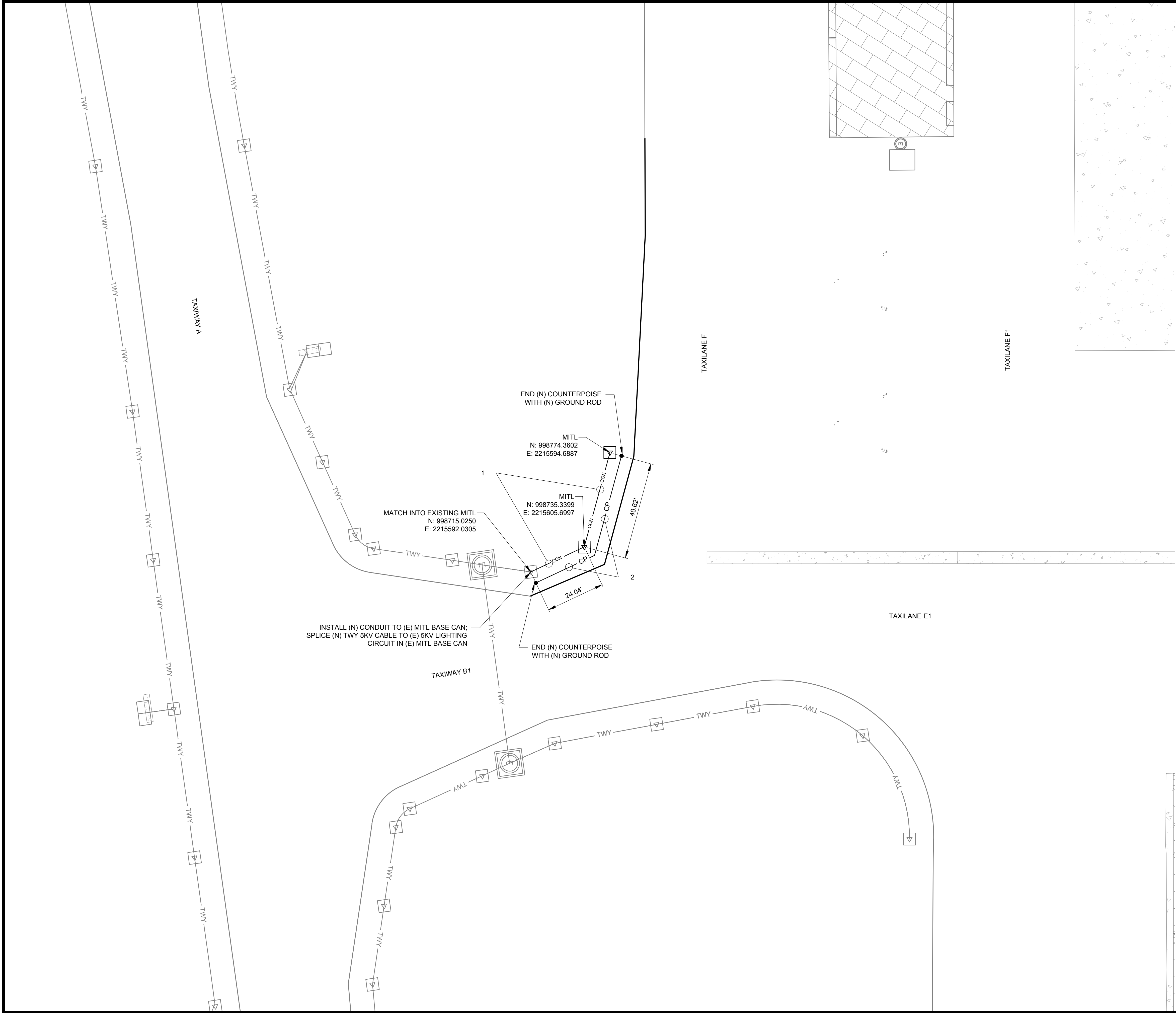
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**C-652**

**1 TAXILANE CENTERLINE MARKING DETAIL**  
NO SCALE





- NOTES:
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. KNOWN UTILITIES INCLUDE BUT ARE NOT LIMITED TO UNDERGROUND ELECTRIC AND COMMUNICATION CABLE. INFORMATION REGARDING THESE UTILITIES AND THEIR LOCATIONS WAS OBTAINED FROM EXISTING RECORDS. NEITHER THE OWNER NOR THE ENGINEER ASSUME ANY RESPONSIBILITY CONCERNING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED.
  - ONCE LOCATED, THE CONTRACTOR SHALL MAINTAIN UTILITY MARKINGS THROUGHOUT THE ENTIRE PROJECT.
  - WITHIN EACH I-867 BASE CAN, THE CONTRACTOR SHALL (1) LEAVE A 3' LOOP ON EITHER SIDE OF A SPLICE FOR EACH CIRCUIT, AND (2) PERMANENTLY LABEL EACH CIRCUIT.
  - COLOR CODE WIRING IDENTIFICATION TAPE AS FOLLOWS:
    - WHEN FACING LIGHT WITH BACK TO PAVEMENT, CABLE TO THE LEFT IS CODED **RED** AND CABLE TO THE RIGHT IS CODED **BLUE**.
  - THE CONTRACTOR WILL BE REQUIRED TO MEGGER TEST ALL CONSTRUCTION TO ENSURE PROPER INSULATION. MEGGER TESTS MUST BE SUBMITTED TO SAID ENGINEER AFTER TESTING IS DONE.
  - ANY LIGHTING EQUIPMENT, CIRCUITS, COUNTERPOISE, OR AIRPORT FACILITY DAMAGED AS A RESULT OF THIS PROJECT SHALL BE REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR AND TO THE SATISFACTION OF THE RPP.

LEGEND:

	EXISTING RELOCATED TAXIWAY EDGE LIGHT - SEE DETAIL 1/E-601
	PROPOSED 2" SCHEDULE 40 ELECTRICAL CONDUIT
	PROPOSED #6 AWG SOLID BARE COPPER COUNTERPOISE WIRE
	EXISTING 5KV TAXIWAY CIRCUIT IN 2" PVC CONDUIT
	EXISTING TAXIWAY EDGE LIGHT
	EXISTING ELECTRICAL MANHOLE

CIRCUIT CHART:

1	2- 1/C, #8 5KV, L-824, TYPE C - TWY CIRCUIT IN 2" SCHEDULE 40 CONDUIT
2	#6 AWG SOLID BARE COPPER COUNTERPOISE WIRE, DIRECT BURY

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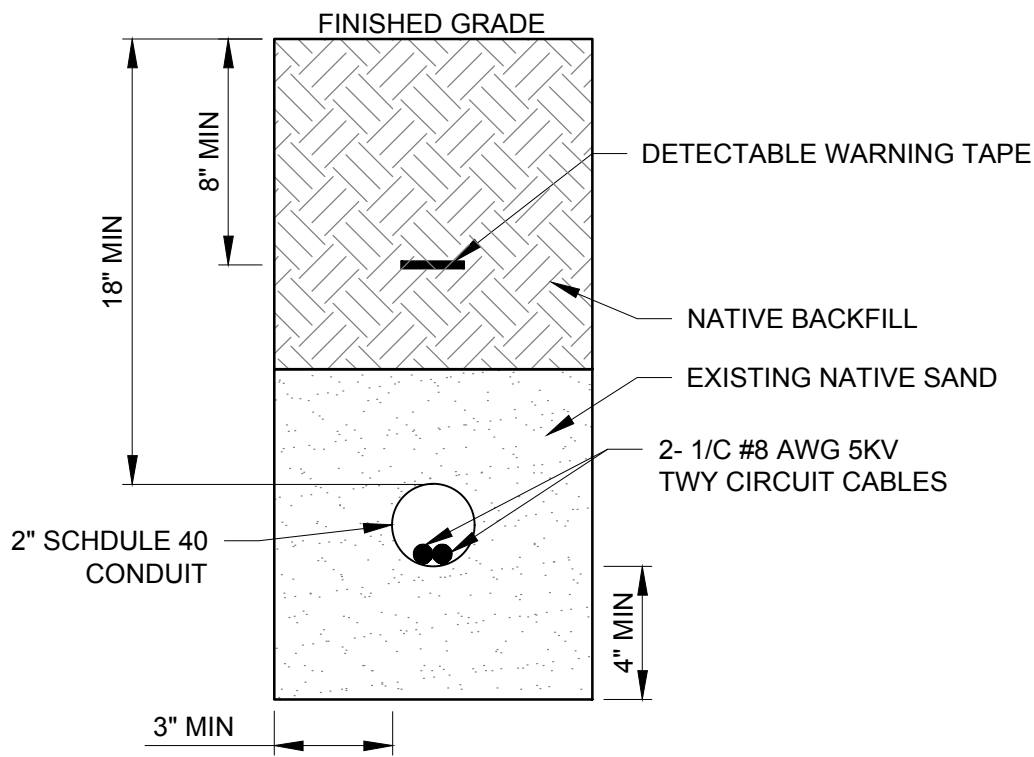
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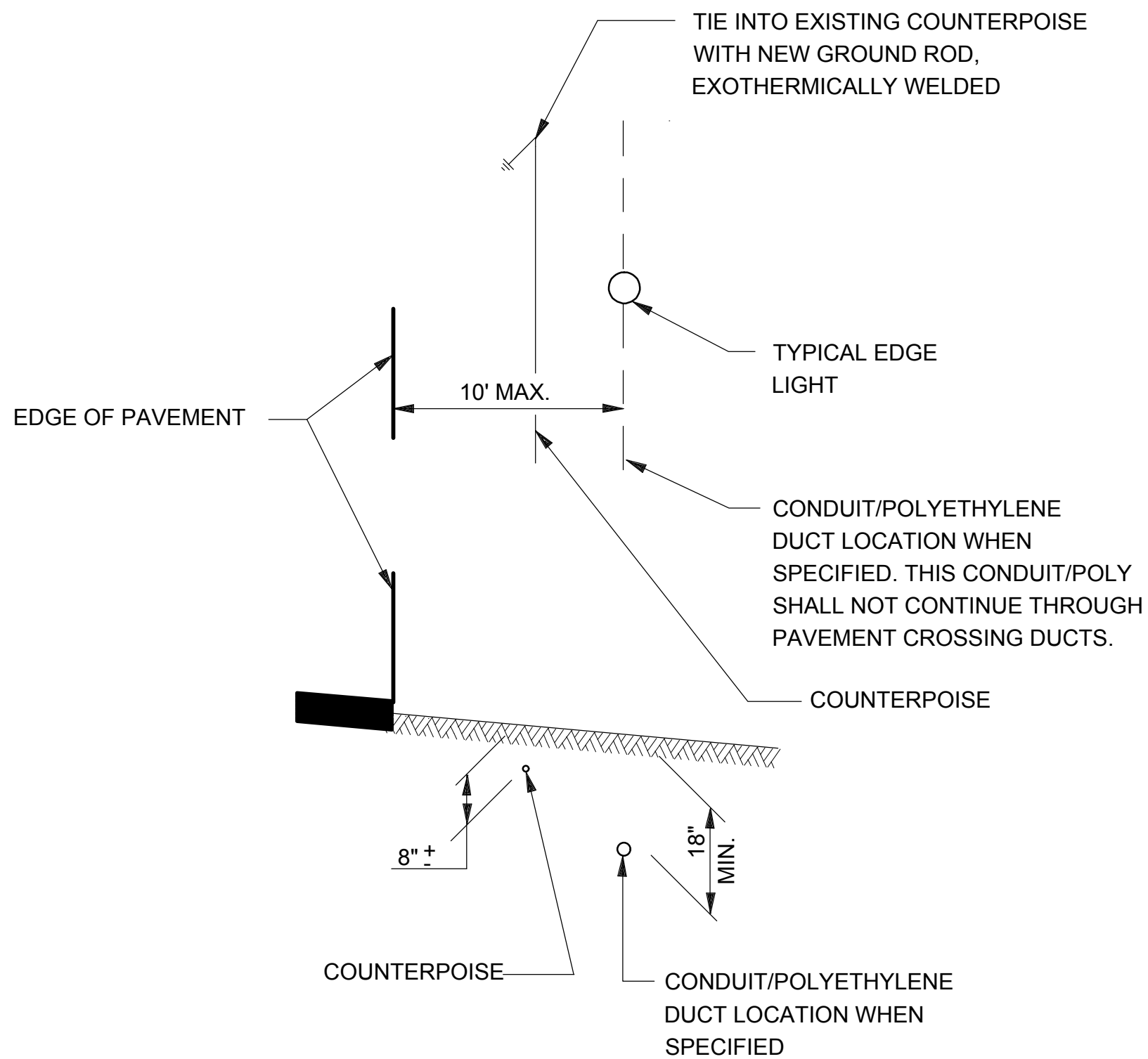
X:\1917\00242527\01\TECH\DRAWINGS\E-601 ELECTRICAL DETAILS.DWG  
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- NOTES:
- WHERE CABLE AND/OR CONDUIT RUNS ARE ADJACENT TO PAVEMENT, COUNTERPOISE IS INSTALLED 8" BELOW GRADE AND LOCATED HALF THE DISTANCE FROM EDGE OF PAVEMENT TO THE CONDUIT RUNS.

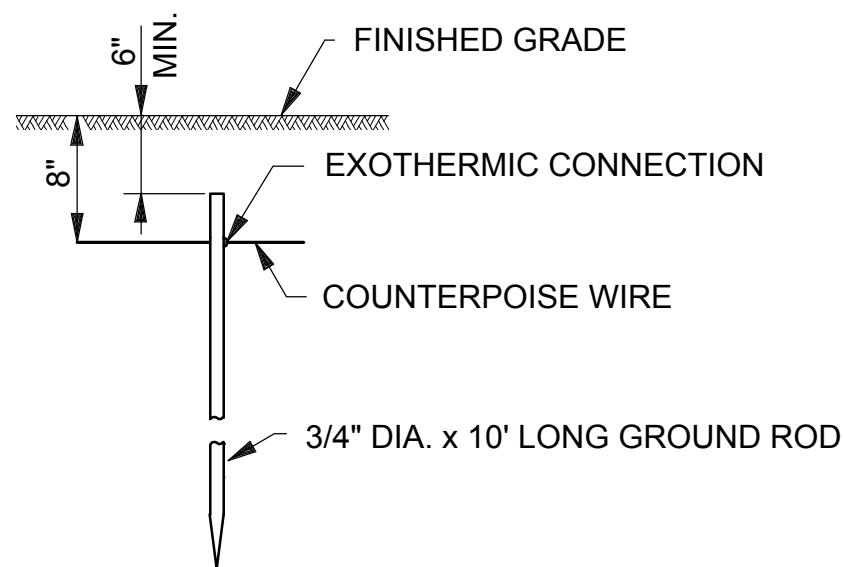
### 3 DIRECT BURY CONDUIT INSTALLATION

NO SCALE



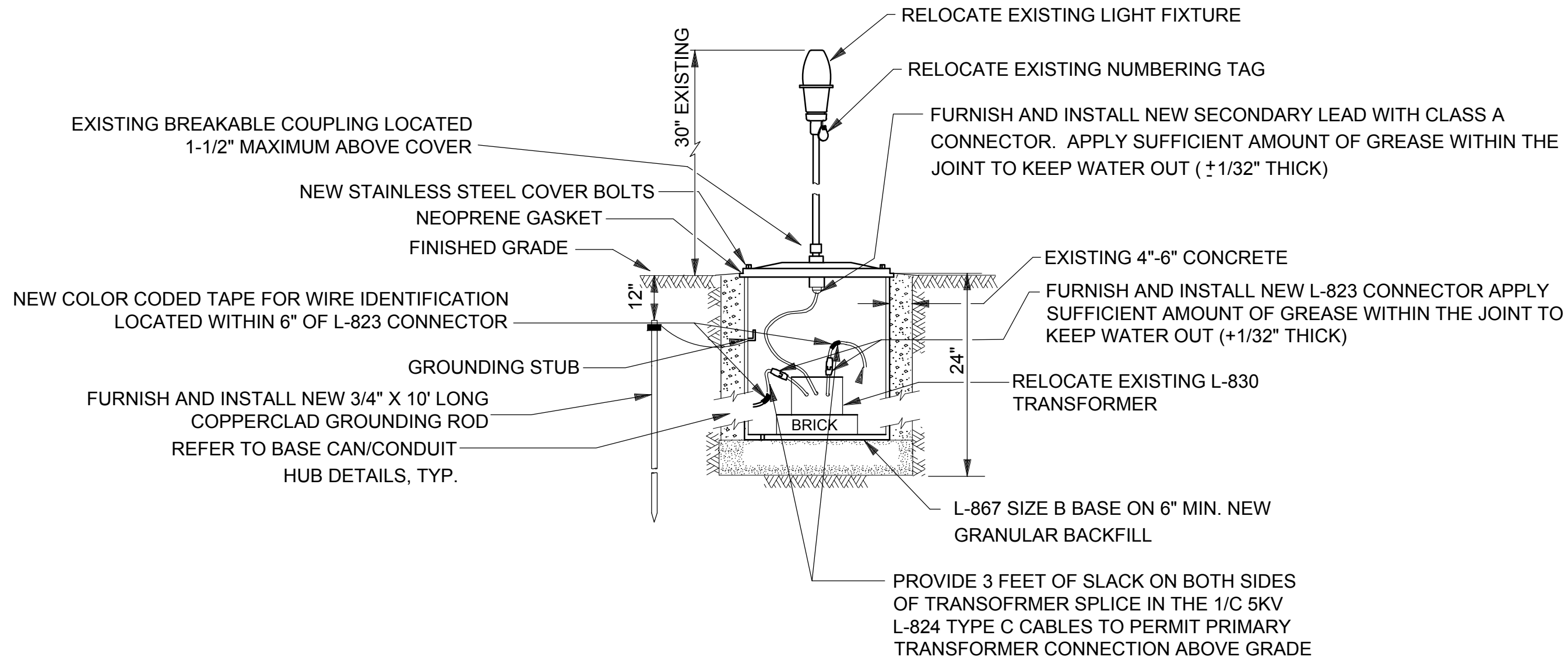
### 4 COUNTERPOISE INSTALLATION DETAIL

NO SCALE



### 5 GROUND ROD DETAIL

NO SCALE



- NOTES:
- COLOR CODE WIRE IDENTIFICATION TAPE AS FOLLOWS:
    - WHEN FACING LIGHT WITH BACK TO PAVEMENT, CABLE TO THE LEFT IS CODED **RED** AND CABLE TO THE RIGHT IS CODED **BLUE**
  - NON-METALLIC COMPONENTS IN THE LIGHT FIXTURE STEMS AND BREAKABLE COUPLINGS ARE NOT PERMITTED.
  - ALL HARDWARE SHALL BE STAINLESS STEEL.
  - ALL MACHINE THREADED CONNECTIONS SHALL HAVE ANTI-SEIZING COMPOUND.

### 1 EXISTING L-867 BASE MOUNTED TAXIWAY EDGE LIGHT DETAIL - TO BE RELOCATED

NOT TO SCALE

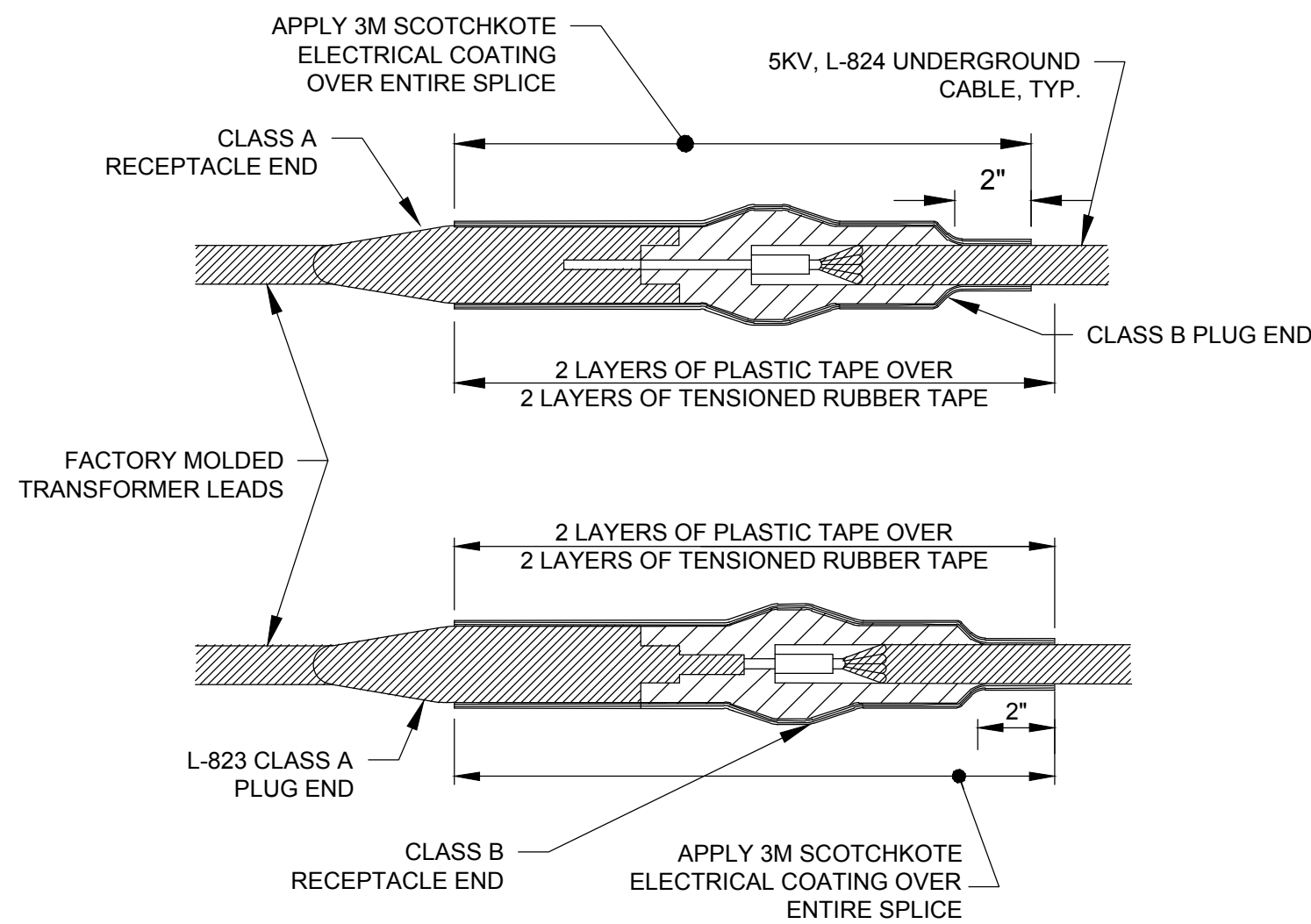


FIGURE A  
FOR L-823 PLUG SPLICES AT TAXIWAY / RUNWAY LIGHTS AND GUIDANCE SIGNS

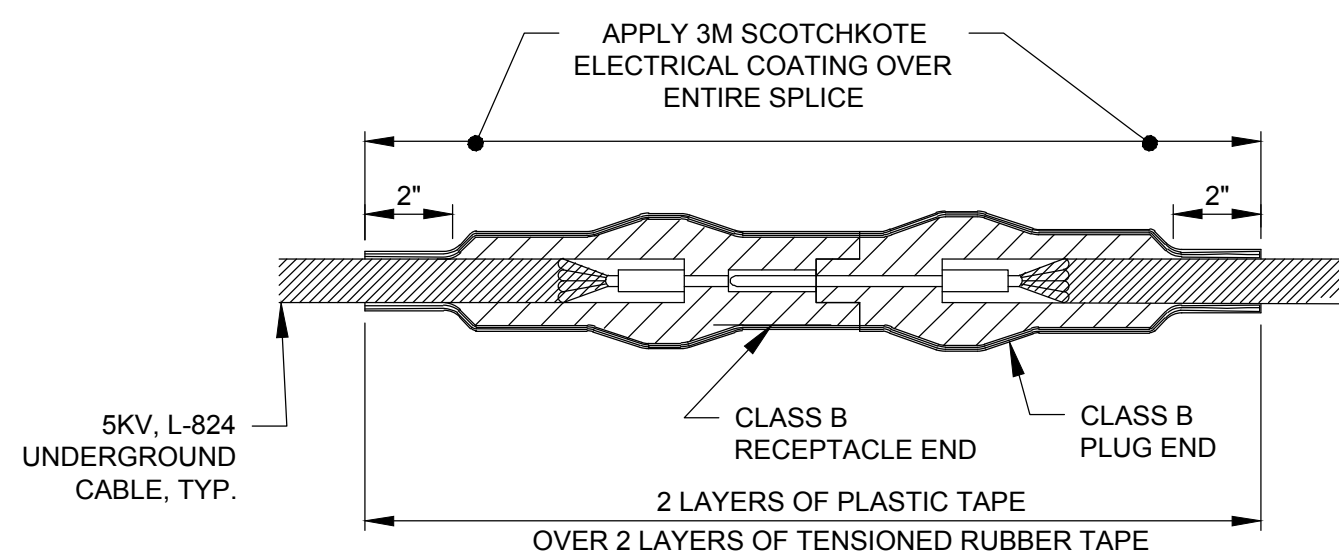


FIGURE AA  
FOR L-823 CONNECTORS USED AT L-830 ISOLATION  
TRANSFORMERS JUNCTION WITH 5KV LOOP CIRCUIT

- NOTE:
- L-823 SPLICE KITS SHALL BE "COMPLETE" OR "SUPER" KITS.

### 2 NEW L-823 CABLE SPLICE WATERPROOFING DETAILS

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# PROJECT MANUAL

## VOLUME 1 of 1

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FAA AIP No. 3-27-0021-26-25  
MnDOT SP No. A0301-93

FOR THE CONSTRUCTION OF  
Terminal Apron Reconstruction & Expansion

Mead & Hunt, Inc.  
Project # 3197100-242527.01

### Detroit Lakes - Becker County Airport

Prepared for:  
Detroit Lakes - Becker County Airport Commission

**Mead&Hunt**

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**SPECIFICATIONS FOR**  
**TERMINAL APRON RECONSTRUCTION & EXPANSION**  
**AT THE**  
**DETROIT LAKES - BECKER COUNTY AIRPORT**  
**DETROIT LAKES, MINNESOTA**

**FAA AIP 3-27-0021-26-25**  
**MnDOT SP No. A0301-93**

I HEREBY CERTIFY THAT THESE SPECIFICATIONS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.



**SIGNATURE:** \_\_\_\_\_

**NAME:** TAYLOR PETERSON, PE

**REGISTRATION NO:** 54901

**DATE:** May 7, 2025



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 TERMINAL APRON RECONSTRUCTION & EXPANSION  
 AT THE  
 DETROIT LAKES - BECKER COUNTY AIRPORT  
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NS-02 Maintenance and Restoration of Haul Roads .....	NS-02-1
NS-03 Locate and Protect Existing Circuits .....	NS-03-1
NS-04 Infiltration Basin .....	NS-04-1
NS-05 Aircraft Tie-Downs .....	NS-05-1

**Appendices**

- A. Construction Safety and Phasing Plan (CSPP)



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## Part 1

# Advertisement and Bidders Instructions



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ADVERTISEMENT FOR BIDS FOR CONSTRUCTION WORK  
DETROIT LAKES - BECKER COUNTY AIRPORT / FAA AIP NO. 3-27-0021-26-25 / SP NO. A0301-93  
TERMINAL APRON RECONSTRUCTION & EXPANSION

NOTICE OF PUBLIC HEARING ON PROPOSED PLANS, SPECIFICATIONS, FORM OF CONTRACT AND ESTIMATED COST OF IMPROVEMENTS FOR THE TERMINAL APRON RECONSTRUCTION & EXPANSION, FAA AIP NO. 3-27-0021-26-25 AT THE DETROIT LAKES - BECKER COUNTY AIRPORT IN DETROIT LAKES, MINNESOTA AND THE TAKING OF BIDS FOR SAID IMPROVEMENTS.

The Detroit Lakes - Becker County Airport Commission is seeking a construction contractor for the Terminal Apron Reconstruction & Expansion at the Detroit Lakes - Becker County Airport. Sealed bids, subject to the conditions herein, will be received by the City in the council chambers of the city administration building at 1025 Roosevelt Ave, Detroit Lakes, MN 56501 no later than **10 a.m. CDT on Wednesday, June 4th, 2025**. The received bids will be publicly read aloud immediately thereafter by the City within the council chambers of the city administration building at 1025 Roosevelt Ave, Detroit Lakes, MN 56501.

A pre-bid meeting will be held at **9 a.m. CDT on Wednesday, May 21st, 2025** in the Detroit Lakes - Becker County Airport Arrival/Departure Building Conference Room, 24813 US Highway 10, Detroit Lakes, MN 55601. A tour of the project site will be conducted immediately following the pre-bid meeting. Bidders are not required to attend this pre-bid meeting; however, attendance is recommended.

The right is reserved, as the interest of the Detroit Lakes - Becker County Airport Commission may require, to reject all bids, to waive minor irregularities and informalities in bids received, and to accept or reject any bid. The award of contract, if it is to be awarded, shall be made within 120 calendar days of the date specified for public bid opening.

Major items and approximate quantities on which bids will be received include:

**Schedules 1 & 2: East terminal apron reconstruction & expansion; concrete apron maintenance**

P-101	Rout, Clean and Seal Concrete Joint or Crack	6,650 LF
P-152	Unclassified Excavation	5,280 CY
P-154	Subbase Course	2,480 CY
P-207	In-Place Full Depth Recycled (FDR) Asphalt Aggregate Base Course	17,030 SY
P-207	Place and Compact FDR Base Course – 6" Depth	3,570 CY
P-401	HMA Asphalt Surface Course	3,930 TON
P-501	Concrete Pavement – 8.5"	1,145 SY
D-701	18"-30" Diameter RCP Storm Sewer, Class V	710 LF
D-754	Structural Concrete, Reinforced (Flatwork, Valley Gutter)	92 CY
T-901	Topsoil Respread, Seeding, & Hydromulching	1.5 ACRE
L-125	Relocate Medium Intensity Taxiway Edge Light & Conduit	3 EACH
NS-04	Infiltration Basin	310 CY
NS-05	Aircraft Tie-Down Anchor, In-Pavement	45 EACH

The Issuing Office for the Bidding Documents is Mead & Hunt, Inc., 7900 International Drive, Suite 980, Bloomington, Minnesota 55425, Phone: 952-941-5619. Each bid proposal shall be made out on the form furnished by the City and obtained from [www.questcdn.com](http://www.questcdn.com) and must be accompanied in a separate sealed envelope by either certified check drawn on a solvent Minnesota bank, a bid bond executed by a corporation authorized to contract as a surety in the State of Minnesota, or a share draft drawn on a solvent Minnesota credit union, in an amount not less than 5% of the bid amount. The bid security should be made payable to the "Detroit Lakes - Becker County Airport Commission" and must not contain any conditions either in the body or as an endorsement thereon. The bid security shall be forfeited to the



Detroit Lakes - Becker County Airport Commission as liquidated damages in the event the successful bidder fails or refuses to enter into a contract within ten (10) days after the award of contract and the maintenance of said work, if required, pursuant to the provisions of this notice and other contract documents. The Detroit Lakes - Becker County Airport Commission will accept a bid bond approved by the Minnesota Department of Transportation and/or the United States government.

The successful bidder will be required to furnish separate performance and payment bonds in amounts equal to one hundred percent (100%) of the contract price, said bonds to be issued by a responsible surety approved by the Detroit Lakes - Becker County Airport Commission.

The work under this contract for this construction shall be started within 10 days after the "Construction Notice to Proceed" is issued. Work shall be completed within **100 Working Days**.

Federal Provisions apply to this bid proposal and award contract. The Federal Provisions are included in the provisions section of the "Contract Legal Documents and Specifications," including but not limited to:

1. Affirmative Action (41 CFR Part 60-4; Executive Order 11246)
2. Buy American Preference (49 USC § 50101; Executive Order 14005; Bipartisan Infrastructure Law (Pub. L No. 117-58); Build America; Buy America (BABA))
3. Civil Rights – Title VI Assurance (49 USC § 47123; FAA Order 1400.11)
4. Davis-Bacon Act (2 CFR Part 200, Appendix II (D); 29 CFR Part 5; 49 USC § 47112 (b); 40 USC § 3141-3144, 3146, and 3147)
5. Debarment and Suspension (2 CFR Part 180 (Subpart B); 2 CFR Part 200, Appendix II(H); 2 CFR Part 1200; DOT Order 4200.5; Executive Orders 12549 and 12689)
6. Disadvantaged Business Enterprise (49 CFR Part 26)
7. Federal Fair Labor Standards Act (29 USC § 201, et seq; 2 CFR § 200.430)
8. Foreign Trade Restriction (49 CFR Part 30; 49 USC § 50104)
9. Lobbying and Influencing Federal Employees (49 CFR Part 20, Appendix A; 31 USC § 1352 – Byrd Anti-Lobbying Amendment; 2 CFR part 200- Appendix II(I))
10. Procurement of Recovered Materials (2 CFR § 200.323; 2 CFR Part 200, Appendix II (J); 40 CFR Part 247; 42 USC § 6901, et seq (Resource Conservation and Recovery Act (RCRA)))
11. Government-wide Requirements for Drug-free Workplace (49 CFR Part 32; Drug-Free Workplace Act of 1988(41 USC § 8101-8106, as amended)
12. The contractor shall comply with the requirement of Executive Order 13513, Federal Leadership on Reducing Text Messaging While Driving, October 1, 2009, and DOT Order 3902.10, Text Messaging While Driving, December 30, 2009. Banning Texting While Driving is applicable to all sub-grants, contracts, and subcontracts.

The specific requirements for the above Federal Provisions are incorporated by reference and are included in the Federal Requirements section of the Specifications.

The successful bidder will be required to submit a Certification of Non-segregated Facilities and to notify prospective subcontractors of the requirement for such certification where the subcontract exceeds \$10,000.

The bidder shall make good faith efforts, as defined in Appendix A of 49 CFR Part 26, Regulations of the Office of Secretary of Transportation, to subcontract **3.37** of the total dollar value of the prime contract to small business concerns owned and controlled by socially and economically disadvantaged individuals (Disadvantaged Business Enterprises (DBEs)). The apparent successful bidder will be required to submit information concerning the DBE's that will participate in this contract. The information shall include the name and address of each DBE, a description of the work to be performed by each named firm, and the dollar value of the contract. If the bidder fails to achieve the contract goal stated herein, it will be required to provide documentation demonstrating that it made good faith efforts in attempting to do so. A bid that fails to meet these requirements will be considered non-responsive.



Plans and specifications governing the construction of the proposed airport improvements have been prepared by Mead & Hunt, Inc., Bloomington, Minnesota. Plans and specifications and the proceedings of the City referring to and defining said proposed improvements are hereby made a part of the Notice by reference, and the proposed contract shall be executed in compliance therewith. Copies of the said plans and specifications are available electronically via the QuestCDN website.

Complete digital project bidding documents are available at [www.questcdn.com](http://www.questcdn.com). You may download the digital plan documents for \$25.00 by inputting Quest project **#9678971** on the website's Project Search page. Those wishing to download the bidding documents electronically do so at their own risk for completeness of the bidding documents. Please contact QuestCDN.com at 952-233-1632 or [info@questcdn.com](mailto:info@questcdn.com) for assistance in free membership registration, downloading, and working with this digital project information.

Published upon order of Detroit Lakes - Becker County Airport Commission  
Of the City of Detroit Lakes, Minnesota



## INSTRUCTIONS TO BIDDERS

### Engineer

Wherever the term "Engineer" appears in these specifications, it shall be understood to mean Mead & Hunt, Inc., or their duly authorized representatives, such representatives acting severally within the scope of the duties entrusted to them.

### Owner

Whenever the term "Owner" appears in these specifications it shall mean the Detroit Lakes - Becker County Airport Commission.

### Drawings

The drawings as listed in the Special Provisions which show the details of the work specified herein, are designated the "Plans" and form an integral part of the specifications and contract documents.

### Proposals Requirements and Conditions

#### *Prequalification*

The Owner may request the low bidder shall furnish the owner satisfactory evidence of his/her competency to perform the proposed work within 10 days of bid opening prior to contract award. Such evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's experience on similar work, a list of equipment that would be available for the work, and a list of key personnel that would be available. In addition, the low bidder may be requested to furnish the owner with satisfactory evidence of his/her financial responsibility. Such evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the Contractor's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether his/her financial responsibility is the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect (bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

Unless otherwise specified, a bidder may submit evidence that he is prequalified with the State Highway Division and is on the current "bidder's list" of the state in which the proposed work is located. Such evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports hereinbefore specified.

Bidders are *not* required to submit "evidence of competency" and "evidence of financial responsibility" to the Owner at the time of the bid opening.

#### *Proposal Form*

Proposals must be submitted on forms (included in these Specifications) furnished by the Engineer endorsed:

To: Detroit Lakes - Becker County Airport Commission  
1025 Roosevelt Ave, Detroit Lakes, MN 56501  
Bid for Terminal Apron Reconstruction & Expansion  
FAA Project No. 3-27-0021-26-25 / MnDOT SP A0301-93

The following items are required to be turned in with the bid proposal package (page 2-1 through 2-36 of these specifications):

1. Bidders' checklist.
2. Bid proposal form.
3. Schedule of prices.
4. Acknowledgement of addendum.



5. Bidders' certifications (complete and sign all certifications and supplemental information on pages 2-12 through 2-23 of these specifications).
6. DBE utilization statement and good faith efforts worksheet.
7. State of Minnesota responsible contractor form.
8. Bid Bond form.

#### *Proposal Quantities*

Proposals must be filled out with ink or typewriter, and without erasure, interlineations, or changes, and if not made in accordance with information for Bidders, will be subject to rejection as irregular, yet the Owner reserves the right to waive any irregularity. Unit prices must be written out in words as well as numbers.

#### *Examination of Plans and Specifications and Site*

It is expressly agreed that by submitting a proposal the bidder acknowledges that he/she has examined the location or site of the proposed improvements and the plans and specifications and has satisfied him/herself as to the feasibility and correctness of the same and accepts all the terms and conditions thereof. The bidder must contact the airport staff to plan for examining the construction site.

#### *Proposal Preparation*

The proposal will be made on the name of the principal, and if a partnership, the names of all partners shall be given. Exact post office address shall be given in all cases.

#### *Irregular Proposals*

Proposals shall be considered irregular for the following reasons:

- a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.
- b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.
- c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.
- d. If the proposal contains unit prices that are obviously unbalanced.
- e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

#### *Bid Guarantee*

See Advertisement for Bid for requirements and responsibility. Each separate proposal shall be accompanied by a certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such a check, or collateral, shall be made payable to the Detroit Lakes - Becker County Airport Commission.

#### *Delivery of Proposal*

Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport (Detroit Lakes - Becker County Airport, Detroit Lakes, Minnesota), and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed with an additional envelope. No proposal will be considered unless received at the place specified in the advertisement before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

#### *Withdrawal of Proposal*

A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing or by telegram before the time specified for opening bids. Revised proposals must be received at the place specified in the



advertisement before the time specified for opening all bids.

#### *Opening of Proposal*

Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

#### *Disqualification of Bidders*

A bidder shall be considered disqualified for any of the following reasons:

- a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.
- b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.
- c. If the bidder is in "default" for any reason specified in the subsection titled ISSUANCE OF PROPOSAL FORMS of Section 20 of AC 150/5370-10H.

#### Award and Execution of Contract

##### *Consideration of Proposals*

The Owner will proceed without unnecessary delay to consider the proposal and reserves the right to accept or reject any or all bids, to pass upon the regularity or waive any irregularities of the bidders and the acceptability of the surety offered.

This is a unit price contract, and the proper extension of unit prices and the totaling of these unit price extensions shall be used in determining the apparent low bid.

##### *Award of Contract*

Since this is a Federal Aid project, the Owner will pass a resolution accepting the low bid, subject to Federal Aviation Administration approval; said resolution shall not be binding upon the Owner until the Federal Aviation Administration's approval and authority to award the contract has been received.

##### *Cancellation of Award*

The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with the subsection titled APPROVAL OF CONTRACT of Section 30 of AC 150/5370-10H.

##### *Return of Proposal Guaranty*

Proposal guarantees of the lowest two or more bidders may be retained until a contract is awarded or rejection made, but not to exceed **120 days** after opening of bids. Other proposal guarantees shall be returned after the canvas and tabulation of bids is completed.

##### *Contract Bonds*

At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this section, the surety bond or bonds shall be in sum equal to the full amount of the contract.

##### *Execution of Contract*

The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return such signed contract to the owner, along with the fully executed surety bond or bonds as specified in Section 30 of AC 150/5370-10H, titled REQUIREMENTS OF CONTRACT BONDS, within 15 calendar



days from the date mailed or otherwise delivered to the successful bidder. If the contract is mailed, special handling is recommended.

#### *Contract Approval*

Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

#### *Failure to Execute Contract*

Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the 15-calendar day period specified in Section 30 of AC 150/5370-10H titled REQUIREMENTS OF CONTRACT BONDS, shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidation of damages to the Owner.

#### Submittal Requirements for Disadvantaged Business Enterprise (DBE) [49 CFR Part 26]

The requirements of 49 CFR Part 26, Regulations of the U.S. Department of Transportation, apply to this contract. It is the policy of the City of Rochester, Minnesota 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. The 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 contract goal of **3.37** has been established for this contract. The bidder/offeror shall make good faith efforts, as defined in 49 CFR Part 26, to meet the contract goal for DBE participation in the performance of this contract. A bidder or proposers' failure to show a good faith effort to achieve the specified contract goal for the participation of Disadvantaged Business Enterprises in the completion of this project will be grounds for finding the bid or proposal non-responsive.

The bidder/offeror will be required to submit the following information: (1) the names and addresses of DBE firms that will participate in the contract; (2) a description of the work that each DBE firm 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 goal; (5) Written confirmation from the DBE that it is participating in the contract as provided in the commitment made under (4); and (6) if the contract goal is not met, evidence of good faith efforts.

Bidders/proposers will be prohibited from entering into agreements with a DBE in which the DBE promises not to provide subcontracting quotations to other bidders/proposers.

Failure to conduct the DBE obligations and requirements described in the contract documents and in any reference, regulations constitute a breach of contract.

#### Time for Completion

The work under this contract for this construction shall be started within 10 days after the "Construction Notice to Proceed" is issued. Authorization of the Work to commence is anticipated on or about Spring 2026, pending available federal funding. **Work shall be completed within 100 Working Days.**

#### Standard Specifications

The *Standard for Specifying Construction of Airports (AC 150/5370-10H)*, Department of Transportation, Federal Aviation Administration, Washington, D.C., may be viewed online at [www.faa.gov](http://www.faa.gov). Applicable portions of the "Standards" are reproduced and contained in these Contract Documents.

Contractors desiring personal copies of these Standard Specifications may order them from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.



- a. Pay Items having numbers beginning with C, D, F, L, P, and T shall be executed under the requirements of the FAA AC 5370-10H, *Standard Specification for Airport Construction*.
- b. Pay Items having numbers beginning with NS shall be executed under the non-standard technical specifications section included in the contract documents.

#### Liquidated Damages

Liquidated damages for failure to complete the project within the specified time period shall be \$2,000 per working day for each day after the time set for completion.

#### Right-of-Way

The Owner will furnish all property of right-of-way for all construction taking place on airport property.

#### Payment

Payment shall be made in accordance with Sections 90-06 and 90-09 of AC 150/5370-10H.

#### Minimum Wage Rates

Minimum wage rates to be paid laborers and mechanics have been determined by the Department of Labor and are listed in the Wage Rate section of these specifications.

#### Pre-bid Meeting

A pre-bid meeting will be held at **9 a.m. CDT on Wednesday, May 21st, 2025** in the Detroit Lakes - Becker County Airport Arrival/Departure Building Conference Room. A tour of the project site will be conducted immediately following the pre-bid meeting. Bidders are not required to attend this pre-bid meeting; however, attendance is recommended.

#### Pre-Construction Meeting

When the low bidder has been determined and the award of contract made, the Contractor, Owner, Engineer, Federal Aviation Administration representative, and other interested persons will be requested to attend and participate in a pre-construction meeting. Specific details of safety requirements, maintaining air traffic, administrative details, wage rates and payroll reporting, construction procedures, construction materials, and other pertinent factors of the project will be discussed.

#### Construction Activities and Aircraft Operations

The Project will take place inside of the Aircraft Operations Area (AOA). See plan set for safety notes and operations plans. Work times and phasing shall be scheduled with the Owner and Engineer. The Contractor will be required to comply with the *Construction Safety and Phasing Plan* for the project and submit a Safety Plan Compliance Document. See technical specification NS-01 and Appendix A for more details.



## Part 2

### Proposal and Contract Forms



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## PART 2A - BID DOCUMENTS

### BIDDER'S CHECK LIST

Bidder's attention is called to the following forms, which must be executed in full as required with the bid:

- ☐ CONTRACT PROPOSAL: Each bidder shall complete the contract proposal in its entirety and sign.
- ☐ BID SCHEDULE: Each bidder shall complete the bid schedule in its entirety. Prices in the bid schedule must be shown in the spaces provided and must be expressed in both words and figures. Where conflict occurs, written or typed words shall prevail.
- ☐ ADDENDA: Each bidder shall acknowledge receipt of all addendums on the contract proposal (located at the end of the schedule of prices).
- ☐ FEDERAL CONTRACT PROVISIONS: By checking this box, the bidder or offeror acknowledges acceptance and compliance with all Federal Contract Provisions listed in Part 1 and Part 2.
- ☐ CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS: Each bidder shall complete the form, located in Part 2a, in its entirety.
- ☐ EQUAL OPPORTUNITY REPORT STATEMENT: Each bidder shall check the appropriate boxes, sign, and date the form provided in Part 2a.
- ☐ CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS: Each bidder shall complete the form, located in Part 2a, in its entirety.
- ☐ BUY AMERICAN CERTIFICATION: Each bidder shall check the appropriate boxes and sign the form located in Part 2a.
- ☐ AFFIRMATIVE ACTION PROGRAM: Each bidder shall complete the form, located in Part 2a, in its entirety.
- ☐ CERTIFICATION REGARDING FOREIGN TRADE RESTRICTIONS: Each bidder shall complete the form, located in Part 2a, in its entirety.
- ☐ SUBCONTRACTOR/MATERIAL SUPPLIER LIST: Each bidder shall complete the form, located in Part 2a, in its entirety.
- ☐ DBE UTILIZATION STATEMENT: This form, provided in Part 2a, shall be submitted for each DBE firm intended to perform work on the project.



- ☐ GOOD FAITH EFFORTS: This form, provided in Part 2a, shall be submitted to document good faith efforts to meet the Disadvantage Business Enterprise goals on the project.
- ☐ STATE OF MINNESOTA RESPONSIBLE CONTRACTOR CERTIFICATE: Submit a signed copy of the MN responsible contractor certificate provided in Part 2a with all first-tier subcontractors listed.
- ☐ BID GUARANTEE: The amount of the bid bond (Surety bond) shall not be less than 5% of the total bid, including any alternates.

**The Detroit Lakes - Becker County Airport Commission may request that the low bidder submit the following written statements of qualifications within 10 days after the bid opening date:**

#### EVIDENCE OF COMPETENCY

Low bidder shall submit "evidence of competency" to the Owner within 10 days of bid opening (See FAA General Provisions Section 20-02 of the project specifications for details).

#### EVIDENCE OF FINANCIAL RESPONSIBILITY

Low bidder shall submit "evidence of financial responsibility" to the Owner within 10 days of bid opening (See FAA General Provisions Section 20-02 of the project specifications for details).

.....

The successful bidder will be required to provide the following after the notice of award:

- Signed Contract
- Performance and Maintenance Bond (100%)
- Payment Bond (100%)
- Signed and Executed DBE Letters of Intent

## PROPOSAL FORM

### Bidder Acknowledgements

Proposal of \_\_\_\_\_  
(Name of Bidder)

of \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
(City) (State) (Zip)

Proposal for the Construction of the Terminal Apron Reconstruction & Expansion project at Detroit Lakes - Becker County Airport, Detroit Lakes, Minnesota.

TO: Detroit Lakes - Becker County Airport Commission, Minnesota

(I) (We) hereby certify that (I am) (we are) the only person or persons interested in this proposal as principals; that an examination has been made of the plans, specifications and contract forms, including the supplemental requirements contained herein, and of the site of the work; (I) (we) understand that the quantities of the work as shown herein are approximate only and are subject to increase or decrease, and further understand that all quantities of work, whether increased or decreased, are to be performed at the unit price stipulated herein; (I) (we) propose to furnish all necessary machinery, equipment, tools, labor, and other means of construction and to furnish all materials specified, in the manner and the time prescribed, and to do the work at the prices herein set out.

To do the work in accordance with the Plans, Contract Documents, and the *Standards for Specifying Construction of Airports* (AC 150/5370-10H) by the Department of Transportation, Federal Aviation Administration, as incorporated herein.

To do all "extra work" which may be required to complete the work contemplated at unit prices or lump sums to be agreed upon in writing prior to starting such work, or if such prices or sums cannot be agreed upon, to perform such work on a force account basis as provided in the General Provisions in the specifications.

As an evidence of good faith in submitting this proposal, the undersigned encloses a proposal guarantee in the minimum amount of 5% of the bid amount which, in case he refuses or fails to accept an award and to enter into a contract and file the required bonds within the prescribed time, shall be forfeited to the City of Detroit Lakes, Minnesota.

It is a condition of this contract, and shall be made a condition of each subcontract entered into pursuant to this contract, that the Contractor and any subcontractor shall not require any laborer or mechanic employed in performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to his health or safety, as determined under construction safety and health standards (Title 29, Code of Federal Regulations, Part 1518, 36 F.R. 7340) promulgated by the United States Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act, 82 Stat. 96.

The undersigned agrees to execute the Standard Form of Contract upon written notice of acceptance of the bid as accepted and give bond with good and sufficient surety or sureties and in the required amounts within 15 days for signature or forfeit the proposal guarantee furnished herewith.

The undersigned understands that the breakdown of Proposal items into various categories of work is for the convenience of the Owner and one Contract will be awarded for the listed work.

To begin work, a Notice-to-Proceed will be issued in the spring of 2026, to be completed within the contract period shown below or to pay liquidated damages of \$2,000 per working day for each day after



the time set for completion.

Anticipated Start Date

10 days from Notice-to-Proceed or as directed by the Owner (Approximately Spring 2026).

Anticipated Completion Time

Within 100 Working Days for all work phases and bid packages.

Davis Bacon Act - 29 CFR Part 5.5 applies to this project, therefore, it is understood that the schedule of minimum wage rates, as established by the Secretary of Labor and included in the Special Provisions under Wage Rates is to govern on this project, and the undersigned certifies that he has examined this schedule of wage rates and that the prices bid are based on such established wage rates.

EEO Compliance Reports - 41 CFR Part 60-1.7

Reporting Requirements: Pursuant to Executive Order 11246 and Federal Regulation 49 CFR Part 60-1.7, the CONTRACTOR and its subcontractors shall, within 30 days after award of contract, file with the Joint Reporting Committee of the Equal Employment Opportunity, a compliance report on Standard Form 100 (EEO-1) if said report has not been submitted within the twelve months preceding the date of award. This report may be completed on-line at <http://www.eeoc.gov/eeo1survey/index.html>. This report is required if the CONTRACTOR or its subcontractors meet the following criteria:

- a. It is not exempt from the provisions described in 49 CFR Part 60-5.1.
- b. It has fifty or more employees.
- c. Is a prime contractor or first tier subcontractor.
- d. Has a contract, subcontract, or purchase order amounting to \$50,000 or more.

## SCHEDULE OF BID PRICES

### SCHEDULE 1: EAST TERMINAL APRON RECONSTRUCTION & EXPANSION; CONCRETE APRON MAINTENANCE

Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
1	C-100	1	LS	Contractor Quality Control Program			
2	C-102-5.1a	500	LF	Installation and Removal of Silt Fence, Type MS			
3	C-102-5.1b	600	LF	Sediment Control Log			
4	C-102-5.1c	1	EA	Stabilized Construction Exit			
5	C-102-5.1e	2	EA	Storm Drain Inlet Protection			
6	C-105-6.1a	1	LS	Mobilization			



Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
7	C-105-6.1b	1	LS	Temporary RPR Field Office for Construction			
8	P-101-5.1	109	SY	Remove Concrete Valley Gutter, Full Depth			
9	P-101-5.2a	6400	LF	Rout, Clean, & Seal Concrete Joint			
10	P-101-5.2b	250	LF	Rout, Clean, & Seal Concrete Surface Crack			
11	P-101-5.7a	379	LF	Remove Storm Sewer Pipe			
12	P-101-5.7b	4	EA	Remove Storm Sewer Structure			
13	P-101-5.7c	27	EA	Remove Aircraft Tie- Down Anchor			

Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
14	P-101-5.8	20	EA	Concrete Corner, Pop Out, or Joint Spall Repair			
15	P-101-5.9	1	EA	Raise Existing Sanitary Manhole Rim Elevation			
16	P-152-4.1a	5460	CY	Unclassified Excavation			
17	P-152-4.1b	125	CY	Unsuitable Excavation			
18	P-152-4.1c	560	CY	Excess Topsoil Excavation - Haul Off Site			
19	P-154-5.1	1510	CY	Subbase Course			
20	P-207-5.1a	9300	SY	In-place Full Depth Recycled (FDR) asphalt aggregate base course			



Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
21	P-207-5.1b	2135	CY	Place and Compact FDR Base Course - 6" Depth			
22	P-401-8.1	3020	TON	Asphalt Surface Course			
23	P-501-8.1a	1063	SY	Concrete Pavement, 8.5"			
24	P-501-8.1b	82	SY	Concrete Pavement, 8.5" - reinforced			
25	P-603-5.1	1175	GAL	Emulsified Asphalt Tack Coat			
26	P-620-5.1	300	SF	Marking, Reflectorized, Yellow, Waterborne, Type I			
27	D-701-5.1b	300	LF	27-Inch RCP Storm Sewer, Class V			

Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
28	D-701-5.1c	187	LF	30-Inch RCP Storm Sewer, Class V			
29	D-705-5.1	296	LF	4-Inch Pipe Underdrain, Perforated PVC Complete, Including Filter Sock			
30	D-751-5.1a	1	EA	48-Inch I.D. Storm Sewer Inlet			
31	D-751-5.1b	1	EA	60-Inch I.D. Storm Sewer Inlet			
32	D-752-5.1	1	EA	Precast Flared End Section for 30-Inch RCP, Class V			
33	D-754-5.1	41	CY	Structural Concrete, Reinforced (Flatwork)			
34	T-901-5.1a	1.8	ACRE	Seeding, MnDOT Mixture Residential Turf Grass (RT)			



Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
35	T-901-5.1b	1.2	ACRE	Seeding, MnDOT Mixture Winter Wheat (WW)			
36	T-901-5.2a	6880	SY	Hydraulic Stabilized Fiber Matrix (SFM)			
37	T-901-5.2b	950	SY	Hydraulic Bonded Fiber Matrix (BFM)			
38	T-901-5.2c	850	SY	Erosion Control Blanket, Category 3N			
39	T-901-5.3	12	CY	Random Riprap Class III			
40	T-905-5.1	1.8	ACRE	Topsoil Respread (Obtained On Site or Removed from Stockpile)			
41	NS-01-4.1	1	LS	Airfield Safety and Traffic Control			

Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
42	NS-02-5.1	1	LS	Maintenance and Restoration of Haul Roads			
43	NS-03-4.1	1	LS	Locate and Protect Existing Circuits			
44	NS-04-5.1	290	CY	Infiltration Basin			
45	NS-05-4.1	33	EA	Aircraft Tie-Down Anchor, In-Pavement			

<b>SCHEDULE 1 TOTAL</b>	<b>WRITTEN</b>	<b>NUMERICAL</b>



**SCHEDULE 2: WEST TERMINAL APRON RECONSTRUCTION & EXPANSION**

Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
1	C-100	1	LS	Contractor Quality Control Program			
2	C-102-5.1a	210	LF	Installation and Removal of Silt Fence, Type MS			
3	C-102-5.1c	1	EA	Stabilized Construction Exit			
4	C-102-5.1d	1	EA	Culvert End Control			
5	C-102-5.1e	1	EA	Storm Drain Inlet Protection			
6	C-105-6.1a	1	LS	Mobilization			
7	P-101-5.1	125	SY	Remove Concrete Valley Gutter, Full Depth			

Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
8	P-101-5.7a	327	LF	Remove Storm Sewer Pipe			
9	P-101-5.7b	2	EA	Remove Storm Sewer Structure			
10	P-101-5.7c	15	EA	Remove Aircraft Tie-Down Anchor			
11	P-152-4.1a	1250	CY	Unclassified Excavation			
12	P-152-4.1b	90	CY	Unsuitable Excavation			
13	P-152-4.1c	100	CY	Excess Topsoil Excavation - Haul Off Site			
14	P-154-5.1	1000	CY	Subbase Course			



Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
15	P-207-5.1a	7724	SY	In-place Full Depth Recycled (FDR) asphalt aggregate base course			
16	P-207-5.1b	1450	CY	Place and Compact FDR Base Course - 6" Depth			
17	P-401-8.1	2250	TON	Asphalt Surface Course			
18	P-603-5.1	875	GAL	Emulsified Asphalt Tack Coat			
19	P-620-5.1	2080	SF	Marking, Reflectorized, Yellow, Waterborne, Type I			
20	P-620-5.3	220	SF	Remove Pavement Marking			
21	D-701-5.1a	222	LF	18-Inch RCP Storm Sewer, Class V			

Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
22	D-705-5.1	552	LF	4-Inch Pipe Underdrain, Perforated PVC Complete, Including Filter Sock			
23	D-754-5.1	50	CY	Structural Concrete, Reinforced (Flatwork			
24	T-901-5.1a	0.2	ACRE	Seeding, MnDOT Mixture Residential Turf Grass (RT)			
25	T-901-5.1b	0.2	ACRE	Seeding, MnDOT Mixture Winter Wheat (WW)			
26	T-901-5.2a	190	SY	Hydraulic Stabilized Fiber Matrix (SFM)			
27	T-901-5.2b	470	SY	Hydraulic Bonded Fiber Matrix (BFM)			
28	T-905-5.1	0.2	ACRE	Topsoil Respread (Obtained On Site or Removed from Stockpile)			



Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
29	L-108-5.3	160	LF	No.8 AWG, 5kV, L-824, Type C Cable, Installed In Conduit			
30	L-108-5.3	80	LF	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed in Trench, Including Connections/Terminations and Ground Rods			
31	L-110-5.2	80	LF	Non-Encased Electrical Conduit, 1W-2", Schedule 40 PVC, Type II			
32	L-125-5.1	2	EA	Relocate Medium Intensity Taxiway Edge Light (MITL), Elevated			
33	NS-01-4.1	1	LS	Airfield Safety and Traffic Control			
34	NS-02-5.1	1	LS	Maintenance and Restoration of Haul Roads			
35	NS-03-4.1	1	LS	Locate and Protect Existing Circuits			

Item No.	Spec No.	Quantity	Unit	Description	Written Unit Price	Numerical Unit Price	Numerical Total Cost
36	NS-05-4.1	12	EA	Aircraft Tie-Down Anchor, In-Pavement			

SCHEDULE 2 TOTAL	WRITTEN	NUMERICAL

Summary	Total Price (Written)	Total
TOTAL SCHEDULE 1	\$	\$
TOTAL SCHEDULE 2	\$	\$
TOTAL SCHEUDLE 1 + SCHEDULE 2	\$	\$



Receipt of the following Addenda are acknowledged:

The bidder shall complete the following statements by checking the appropriate boxes:

The bidder ☐ has ☐ has not participated in a previous contract subject to the nondiscrimination clause prescribed by Executive Order 10925, or Executive Order 11114, or Executive Order 11246, as amended.

The bidder ☐ has ☐ has not submitted compliance reports in connection with any such contract as required by applicable instructions.

If the bidder has participated in a previous contract subject to the nondiscrimination clause and has not submitted compliance reports as required by applicable instruction, the bidder shall submit a compliance report on Standard Form 100, "Employer Information Report EEO-1", with the bid proposal.

Failure to complete this statement and/or submit the required non-discrimination information on previous contracts may result in rejection of the bid.

The undersigned understands that this proposal is binding for a period of 120 after the opening of the bids to permit the Owner to consult with the Federal Aviation Administration and to receive the Administration's concurrence in the award of contract.

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Bye-Date

Letting Date: 10:00 a.m. CDT on Wednesday, June 4th, 2025  
Letting Time: 10 a.m. CDT  
Letting Place: council chambers of the city administration building  
1025 Roosevelt Ave, Detroit Lakes, MN 56501

## **BIDDER CERTIFICATIONS**

### **NON-COLLUSION AFFIDAVIT**

#### **TITLE 23 UNITED STATES CODE SECTION 112 AND PUBLIC CONTRACT CODE SECTION 7106**

In accordance with Title 23 United States Code Section 112 and Public Contract Code 7106, the Bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: The above Non-Collusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Non-Collusion Affidavit.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

### **NOTICE TO ALL BIDDERS**

To report on rigging activities, call: 1-800-424-9071

The U.S. Department of Transportation (USDOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., Eastern Time. Anyone with knowledge of bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of USDOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the USDOT Inspector General. All information will be treated confidentially, and caller anonymity will be respected.



### **CERTIFICATION OF OFFERER/BIDDER REGARDING DEBARMENT**

(Ref: 2 CFR Part 180 (Subpart B); 2 CFR Part 200, Appendix II (H); 2 CFR Part 1200; DOT Order 4200.5; Executive Orders 12549 and 12689)

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

### **CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT**

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a "covered transaction", must verify each lower tier participant of a "covered transaction" under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: <http://www.sam.gov>
2. Collecting a certification statement like the Certification of Offeror/Bidder Regarding Debarment, above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract

If the Federal Aviation Administration later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

### **CERTIFICATION REGARDING LOBBYING**

(Ref: 31 USC § 1352; 2 CFR Part 200, Appendix II (I); 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 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 PROHIBITION OF SEGREGATED FACILITIES**

(Ref: 41 CFR § 60-1; 2 CFR Part 200, Appendix II (C))

The federally assisted construction contractor certifies that:

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Employment Opportunity clause in this contract.

(b) "Segregated facilities," as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Employment Opportunity clause of this contract.



**CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS**

(Ref: 2 CFR § 200.322; 2 CFR Part 200, Appendix II (L))

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

SIGNATURE OF BIDDER:

(Seal if Bid is By Corporation)

SUBMITTED ON (DATE) \_\_\_\_\_

BIDDERS SIGNATURE \_\_\_\_\_

By

\_\_\_\_\_  
Name and Title of Authorized Agent (print)

\_\_\_\_\_  
Signature of Authorized Agent

\_\_\_\_\_  
Name of Company

\_\_\_\_\_  
Address of Company

\_\_\_\_\_  
Telephone

### **EQUAL EMPLOYMENT OPPORTUNITY REPORT STATEMENT**

Each bidder shall complete and sign the Equal Employment Opportunity Report Statement. A bid may be considered unresponsive and may be rejected, in the Owner's sole discretion, if the bidder fails to provide the fully executed statement or fails to furnish the required data. The bidder shall also, prior to award, furnish such other pertinent information regarding its own employment policies and practices as well as those of its proposed subcontractors as the FAA, the Owner, or the Executive Vice Chairman of the President's Committee may require.

The bidder shall furnish similar statements executed by each of its first tier and second tier subcontractors and shall obtain similar compliance by each subcontractor, before awarding subcontracts. No subcontract shall be awarded to any non-complying subcontractor.

### **EQUAL EMPLOYMENT OPPORTUNITY REPORT STATEMENT**

As Required in 41 CFR 60-1.7(b)

The bidder shall complete the following statements by checking the appropriate options (bracketed information). Failure to complete these statements may be grounds for rejection of the bid:

1. The Bidder [Has] [Has Not] developed and has on file at each establishment affirmative action programs pursuant to 41 CFR 60-1.40 and 41 CFR 60-2.
2. The Bidder [Has] [Has Not] participated in any previous contract or subcontract subject to the equal opportunity clause prescribed by Executive order 11246, as amended.
3. The Bidder [Has] [Has Not] filed with the Joint Reporting Committee the annual compliance report on Standard Form 100 (EEO-1 Report).
4. The Bidder [Does] [Does Not] employ fifty or more employees.

Date: \_\_\_\_\_

\_\_\_\_\_  
Company

\_\_\_\_\_  
Authorized Agent (print)

\_\_\_\_\_  
Signature of Authorized Agent



**CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY  
CONVICTIONS**

(Ref: Section 8113 of the Consolidated Appropriations Act; 2022 (Public Law 117-103); DOT Order  
4200.6)

The applicant must complete the following two certification statements. The applicant must indicate its status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) 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 (    ) is not (    ) 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 (    ) is not (    ) 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 USC § 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.

Date: \_\_\_\_\_

\_\_\_\_\_  
Company

\_\_\_\_\_  
Authorized Agent (print)

\_\_\_\_\_  
Signature of Authorized Agent

## **BUY AMERICAN CERTIFICATION**

(Title 49 U.S.C. Item 50101, Executive Order 14005, Bipartisan Infrastructure Law (Pub. L No. 117-58),  
Build America, Buy America (BABA))

Project name: Terminal Apron Reconstruction & Expansion

Airport name: Detroit Lakes - Becker County Airport

AIP number: AIP NO. 3-27-0021-26-25

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.



## **Certification of Compliance with FAA Buy American Preference – Construction Projects**

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with its proposal. The bidder or offeror must indicate how it intends to comply with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e., not both) by inserting a checkmark (✓) or the letter "X."

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:

- a) Only installing iron, steel and manufactured products produced in the United States.
- b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.
- c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
- d) 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:

- a) To provide to the Airport Sponsor or the FAA evidence that documents the source and origin of the iron, steel, and/or manufactured product.
- b) To faithfully comply with providing U.S. domestic products.
- c) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
- d) Certify that all construction materials used in the project are manufactured in the U.S.

☐ The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for 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:

- a) To submit to the Airport Sponsor or FAA within fifteen calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
- b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
- c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
- d) To furnish U.S. domestic product for any waiver request that the FAA rejects.
- e) To refrain from seeking a waiver request after the establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

## Required Documentation

Type 2 Waiver (Nonavailability) - The iron, steel, manufactured goods or construction materials or manufactured goods are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
- b) Record of thorough market research, consideration (where appropriate) of qualifying alternate items, products, or materials including a description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement. This includes the timing of the research and conclusions reached on the availability of sources.

Type 3 Waiver – The cost of components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the “facility/project.” The required documentation for a Type 3 waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including:
  - 1. Listing of all manufactured products that are not comprised of 100 percent U.S. 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).
  - 2. Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
  - 3. Percentage of non-domestic component and subcomponent cost as compared to total “facility” component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

Type 4 Waiver (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods, or construction materials would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

- a) A completed Content Percentage Worksheet and Final Assembly Questionnaire from
- b) At minimum two comparable equal bids and/or offers.
- c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component.
- d) Completed waiver applications for each comparable bid and/or offer.

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.

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Date

---

Signature

---

Company Name

---

Title



## SUBCONTRACTOR/MATERIAL SUPPLIER LIST

The Bidder shall provide information on all subcontractors/material suppliers bidding or quoting on subcontracts for this project. Bidders are required to complete and submit this form with their bid. If no subcontractor is listed below, the bidder acknowledges that it does not intend to use any subcontractor to perform those items of work.

Name and Address of Subcontractor	Description of Work & Reference to Bid Items	Licensed in: Yes / No / State			Certified DBE Yes / No		Bid Amount	Date Firm Established	*GRS

Attach additional pages, as necessary.

**\*GRS - Annual Gross Receipts**

Enter one for less than \$1 million.

Enter two for more than \$1 million but less than \$5 million.

Enter three for more than \$5 million but less than \$10 million.

Enter four for more than \$10 million but less than \$15 million.

Enter five for more than \$15 million

## **AFFIRMATIVE ACTION PROGRAM**

**(REFERENCE: 41 CFR PART 60-4, EXECUTIVE ORDER 11246)**

The bidder hereby certifies that he is in compliance with the Civil Rights Act of 1964, Executive Order No. 11246, Employment Practices Act, and any other applicable Federal and State laws and regulations relating to equal opportunity employment.

Bidder's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Name and Title of Signer: \_\_\_\_\_

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

NOTE: The contractor to whom the Contract is awarded shall submit a statement each month certifying that he is in conformance with the Affirmative Action Program.



**CERTIFICATION REGARDING FOREIGN TRADE RESTRICTIONS**  
**(Ref: 49 CFR Part 30.13)**

The contractor or subcontractor, by submission of an offer and/or execution of a contract, certifies that it:

- a. 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 published by the Office of the United States Trade Representative (USTR).
- b. has not knowingly entered any contract or subcontract for this project with a person that is a citizen or national of a foreign country on said list or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list.
- c. has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

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 a contractor or subcontractor who is unable to certify to the above. If the contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on said list for use on the project, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract to the Government at no cost.

Further, the contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor unless it has knowledge that the certification is erroneous.

The contractor shall provide immediate written notice to the sponsor if the contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The subcontractor agrees to provide a written notice to the contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

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

Nothing contained in the foregoing shall be construed to require the establishment of a system of records 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.

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, United States Code, Section 1001.

---

Date

---

Signature

## DBE UTILIZATION STATEMENT

### Disadvantage Business Enterprise

The undersigned bidder/offeror has satisfied the requirements of the bid specification in the following manner. *(Please mark the appropriate box)*

- ☐ The bidder/offeror is committed to a minimum of 3.37 DBE utilization on this contract.
- ☐ The bidder/offeror, while unable to meet the DBE goal of 3.37, hereby commits to a minimum of \_\_\_\_\_% DBE utilization on this contract and submits documentation, as an attachment demonstrating good faith efforts (GFE).

The undersigned hereby further assures that the information included herein is true and correct, and that the DBE firm(s) listed herein have agreed to perform a commercially useful function in the work items noted for each firm. The undersigned further understands that no changes to this statement may be made without prior approval from the Civil Right Staff of the Federal Aviation Administration.

\_\_\_\_\_  
Bidder's/Offeror's Firm Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

### DBE UTILIZATION SUMMARY

	Contract Amount	DBE Amount	Contract Percentage
DBE Prime Contractor	\$_____ x 1.00 = \$_____		__ %
DBE Subcontractor	\$_____ x 1.00 = \$_____		__ %
DBE Supplier	\$_____ x 0.60 = \$_____		__ %
DBE Manufacturer	\$_____ x 1.00 = \$_____		__ %
Total Amount DBE		\$_____	__ %
DBE Goal		\$_____	__ %

\* If the total proposed DBE participation is less than the established DBE goal, Bidder must provide written documentation of the good faith efforts as required by 49 CFR Part 26.

## **DISADVANTAGED BUSINESS ENTERPRISE (DBE) GOOD FAITH EFFORTS PROCEDURES**

The obligation of the bidder is to make good faith efforts. The bidder can demonstrate that it has done so either by meeting the contract goal or documenting good faith efforts.

The DBE is responsible for determining whether a bidder who has not met the contract goal has documented sufficient good faith efforts to be regarded as responsive. We will ensure that all information is complete and accurate and adequately documents the bidder's good faith efforts before we commit to the performance of the contract by the bidder.

The Detroit Lakes - Becker County Airport Commission will require all bidders to submit the following information at the time of bid:

1. The names and addresses of DBE firms that will participate in the 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 and signed documentation of commitment to use a DBE subcontractor whose participation it submits to meet a contract goal.
5. Written and signed confirmation from the DBE that it is participating in the contract as provided in the prime contractor's commitment and
6. If the contract goal is not met, evidence of good faith efforts.

### Administrative reconsideration

Within ten business days of being informed by the DBE that it is not responsive because it has not documented sufficient good faith efforts, a bidder may request administrative reconsideration. The bidder should make this request in writing to the following reconsideration official:

Detroit Lakes - Becker County Airport Commission  
Detroit Lakes - Becker County Airport  
24813 US Highway 10, Detroit Lakes, MN 55601  
(218)-847-3233

As part of this reconsideration, the bidder will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so. The bidder will have the opportunity to meet in person with our reconsideration official to discuss the issue of whether it met the goal or made adequate good faith efforts to do. The Detroit Lakes - Becker County Airport Commission will send the bidder a written decision on reconsideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. The result of the reconsideration process is not administratively appealable to the Department of Transportation.

We require the contractor that is awarded the contract to make available upon request a copy of all DBE subcontracts. The subcontractor shall ensure that all subcontracts or an agreement with DBEs to supply labor or materials require that the subcontract and all lower tier subcontractors be performed in accordance with this part's provisions.



## DBE CERTIFICATE OF GOOD FAITH EFFORTS / BIDDERS LIST

Project No.: FAA AIP No. 3-27-0021-26-25 / MnDOT No. A0301-93

Prime Contractor: \_\_\_\_\_ Low Bid: \_\_\_\_\_ Goal: 3.37

Total DBE Commitment: \$ \_\_\_\_\_ ( \_\_\_\_\_ %)

List your solicitations of ALL subcontractors, suppliers, and service providers.

Subcontractor/Supplier/Service provider	DBE?		Phone	Date/Method of contact		Description Of work	\$ amount of quote
	Yes	No		Date	Letter/Phone		
1.							\$
2.							\$
3.							\$
4.							\$
5.							\$
6.							\$
7.							\$
8.							\$
9.							\$
10.							\$

Detroit Lakes - Becker County Airport  
 Detroit Lakes,  
 Reconstruction & Expansion  
 FAA AIP 3-27-0021-26-25 / SP A0301-93

Good Faith Efforts / Bidders List  
 Minnesota Terminal Apron

Issued for Bid

(Make additional copies of this form as necessary)

The following language shall be included in the solicitation document for any projects covered under Minn. Stat. § 16C.285:

The term “responsible contractor” as used in this document means a contractor as defined in Minnesota Statutes section 16C.285, subdivision three. Any prime contractor or subcontractor that does not meet the minimum criteria in subdivision three or fails to verify that it meets those criteria is not a responsible contractor and is not eligible to be awarded a construction contract for the project or to perform work on the project. A false statement under oath verifying compliance with any of the minimum criteria shall render the prime contractor or subcontractor that makes the false statement ineligible to be awarded a construction contract on the project and may result in termination of a contract awarded to a prime contractor or subcontractor that submits a false statement. A prime contractor shall submit to the contracting authority, upon request, copies of the signed verifications of compliance from all subcontractors of any tier pursuant to subdivision three, clause (7).



# STATE OF MINNESOTA - RESPONSIBLE CONTRACTOR CERTIFICATE

## MnDOT State Project Number A0301-93

A responsible contractor is defined in Minnesota Statutes §16C.285, subdivision 3. Any prime contractor or subcontractor who does not meet the minimum criteria under Minnesota Statutes §16C.285, subdivision 3, or who fails to verify that it meets those criteria, is not a responsible contractor and is not eligible to be awarded a construction contract for the project or to perform work on the project. A false statement under oath verifying compliance with any of the minimum criteria shall render the prime contractor or subcontractor that makes the false statement ineligible to be awarded a construction contract for the project and may result in termination of a contract awarded to a prime contractor or subcontractor that makes a false statement. A prime contractor shall submit to the contracting authority upon request copies of the signed verifications of compliance from all subcontractors of any tier pursuant to subdivision three, clause seven.

The following is a list of the first-tier subcontractors retained to work on this project (use reverse side for additional space), and I have obtained responsible contractor certificates from each for this project:

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By signing this statement, I, \_\_\_\_\_ (typed or printed name), \_\_\_\_\_ (title) certify that I am an owner or officer of the company and do verify under oath that my company is in compliance with each of the minimum criteria listed in the law.

\_\_\_\_\_  
(name and business address of the person, partnership or corporation submitting this proposal)

Signed: \_\_\_\_\_  
(bidder or authorized representative) Date

Subscribed and sworn to before me this  
\_\_\_\_\_ day of \_\_\_\_\_, 2025

\_\_\_\_\_  
Notary Public

My Commission Expires \_\_\_\_\_

**PART 2B SAMPLE FORMS**  
**TO BE PROVIDED *AFTER* NOTICE OF AWARD**

## CONSTRUCTION CONTRACT

THIS AGREEMENT made and entered into by and between the Detroit Lakes - Becker County Airport Commission, hereinafter referred to as the "Owner", and  
(a corporation organized and existing under the laws of the State of Minnesota) of \_\_\_\_\_, in the City of \_\_\_\_\_, in the State of \_\_\_\_\_, hereinafter referred to as the "Contractor".

WITNESSETH:

That the Contractor, for and in consideration of the sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), payable as set forth in the specifications constituting a part of this Contract, hereby agrees to construct in accordance with the plans and specification therefore, including addenda numbers \_\_\_\_\_ and drawing(s) numbered \_\_\_\_\_ inclusive, and in the locations designated in the Public Notice of Hearing and Letting (Advertisement for Bids), various items of airport work, as listed in detail in the Proposal Form and as briefly summarized below:

### DETROIT LAKES - BECKER COUNTY AIRPORT – TERMINAL APRON RECONSTRUCTION & EXPANSION

all in accordance with the Plans, Specifications, Notice of Hearing and Letting, Special Provisions, General Provisions, Construction Details and Proposal Form. Said Specifications and Plans are hereby made a part of and the basis of this agreement and a true copy of said Plans and Specifications is now on file with the City Clerk, Detroit Lakes, Minnesota.

That, in consideration of the foregoing, the owner hereby agrees to pay the Contractor promptly and according to the requirements of the specifications the amount set forth and according to the conditions as set forth in the specifications.

That it is understood that the parties named herein are the only persons interested in this Contract as principals.

That the Contractor has examined the site of the proposed work, plans and specifications, special provisions, and other contract documents in order that s/he might become familiar with the character, quality, and quantity of the work to be performed, the materials to be furnished and the requirements of the specifications, special provisions, construction details and contract documents.

That in the event any surety upon any bond furnished in connection with this Contract becomes unacceptable to the Owner, or if any such surety shall fail to furnish reports as to his financial condition from time to time as requested by the Owner, the Contractor agrees to furnish promptly such additional security as may be required from time to time to protect the interest of the Owner or of persons supplying labor or materials in the prosecution of the work contemplated by the Contract.



That the Contractor shall not commence any work to be performed under this Contract until he has obtained from responsible insurance companies all insurance required, as set forth in the Special Provisions, and that the Contractor shall maintain this insurance in full force and effect until the work to be performed under this contract has been accepted by the Owner.

That the Contractor shall not start working on any alterations requiring a supplemental agreement until the agreement setting forth the adjusted price shall be executed by the Owner and the Contractor.

That the Contractor, at all times, shall observe and comply with all federal, state, and local laws and regulations at the airport, codes, ordinances and regulations in any manner affecting the conduct of the work; and the Contractor and his surety shall indemnify and save harmless the Owner and all his officers, agents, and servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employees.

That the Contractor agrees that only domestic steel and manufactured products will be used by the Contractor, subcontractors, material persons, and suppliers in the performance of this contract, as defined below:

The following terms apply to this clause:

1. Steel and manufactured products. As used in this clause, steel and manufactured products include (1) those produced in the United States or (2) a manufactured product produced in the United States, if the cost of its components mined, produced, or manufactured in the United States exceeds 60 percent of the cost of all its components and final assembly has taken place in the United States.
2. Components. As used in this clause, components mean those articles, materials, and supplies incorporated directly into steel and manufactured products.
3. Cost of Components. This means the costs for production of the components, exclusive of final assembly labor costs.

That it is further understood and agreed by the parties to this Contract that the above work shall not start until approximately ten (10) days after the Notice to Proceed is issued, or as directed by the Owner, and shall be completed within the specified time and that the time of commencing and completion of said work is the essence of this Contract. Failure to complete work within the time specified shall result in the payment of liquidated damages as listed in the Instructions to Bidders of these Specifications.

It is hereby further agreed that any reference herein to the "Contract" shall include all "Contract Documents" as the same are listed and described in Paragraph 5 of the Special Provisions issued in connection with the Detroit Lakes - Becker County Airport, Potential FAA AIP Project No. 3-27-0021-26-25, and said "Contract" length herein, and that this contract is limited to the items in the Proposal Form as signed by the "Contractor" and included in the "Contract Documents".

It is further understood that any action in court against the Contractor or sureties on his bond, because of damages to property or individuals by said Contract, or his workmen, or because of the violation of any provisions of the specifications, or on account of the failure of said Contractor to fully comply with these provisions, shall be brought in the District Court of the State of Minnesota in and for Becker County.

It is a condition of this Contract, and shall be made a condition of each subcontract entered into pursuant to this Contract, that the Contractor and any Subcontractor shall not require any laborer or mechanic employed in performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to his health or safety, as determined under construction safety and health standards (Title 29, Code of Federal Regulations, Part 1518, 36 F. R. 7340) promulgated by the United States Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act, 82 Stat. 96.

It is understood that the following conditions concerning lobbying and influencing federal employees will be in effect:

1. No Federal appropriated funds shall be paid, by or on behalf of the contractor, 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 the making of any Federal grant and the amendment or modification of any Federal grant.
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 any Federal Grant, the contractor shall complete and submit Standard Form-LLL, "Disclosure of Lobby Activities," in accordance with its instructions.

#### Certification of Eligibility-Davis Bacon Act (29 CFR Part 5.5)

- (i) By entering this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

#### Certification of Nonsegregated Facilities

The federally assisted construction contractor certifies that she or he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that she or he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor certifies that she or he will not maintain or provide, for his employees, segregated facilities at any of his establishments and that she or he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The federally assisted construction 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, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directives or are, in fact, segregated on the basis of race, color, religion, or national origin because of habit, local

custom, or any other reason. The federally assisted construction contractor agrees that (except where she or he has obtained identical certifications from proposed subcontractors for specific time periods) she or he 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 she or he will retain such certifications in his files.

CONTRACT AUTHORIZATION:

IT WITNESS WHEREOF the parties hereto have set their hands for the purpose herein expressed to this and three other instruments of like tenor as of the \_\_\_\_ day of \_\_\_\_\_, 2025.

Attest:

\_\_\_\_\_  
Print Name / Title

\_\_\_\_\_  
Signature

*The above person is authorized to sign for the  
Detroit Lakes - Becker County Airport  
Commission and bind the terms hereof.*

Witness:

\_\_\_\_\_  
Print Name / Contractor / Title

\_\_\_\_\_  
Signature

*The above person is authorized to sign for the  
Contractor and bind the terms hereof.*

\_\_\_\_\_  
Address

\_\_\_\_\_  
City, State Zip



## PERFORMANCE AND MAINTENANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS, That we, the undersigned

\_\_\_\_\_  
(Hereinafter called the "Principal")

of \_\_\_\_\_  
a (Corporation) (Partnership) (Individual)

duly authorized by the law to do business as a Construction Contractor in the State of Minnesota and

\_\_\_\_\_ (hereinafter called the "Surety") a Corporation duly authorized to do a Surety business under the laws of the State of Minnesota, are held and firmly bound unto Detroit Lakes, Minnesota (hereinafter called the "Obligee"), in the penal sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), lawful money of the United States, for the payment of which well and truly to be made unto said Obligee, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents, as follows:

The conditions of this obligation are such that, whereas on the \_\_\_\_\_ day of \_\_\_\_\_, 2025, the said Principal entered into a written agreement with said Obligee for the Terminal Apron Reconstruction & Expansion project at Detroit Lakes - Becker County Airport, Detroit Lakes, Minnesota, as set forth in detail in the Notice of Hearing and Letting, Proposal, Plans, Specifications and other related contract documents referred to in said Agreement, all of which are hereby made a part hereof as if written herein at length.

NOW, THEREFORE, if the said Principal shall well and truly perform and complete said project in strict accordance with said agreement, Notice of Public Hearing and Letting (Advertisement for Bids), Proposal, Plans, Specifications and related documents shall comply with all the requirements of the laws of the State of Minnesota, shall pay as they become due all just claims for work or requirements performed and materials furnished in connection with said Agreement, and shall defend, indemnify and save harmless said Obligee, against any and all liens, encumbrances, damages, claims, demands, expenses, costs and charges of every kind, including patent infringement claims arising out of or in relation to the performance of said work and the provisions of said Agreement, and shall guarantee the work against defects in workmanship and material during the construction and for one (1) year after the time of acceptance of the work, and make good such guarantee; then these presents shall be void; otherwise they shall remain in full force and effect.

This obligation is made for the use of said Obligee and for use and benefit of all persons who may perform any work or labor or furnish any material in the execution of said Agreement.

The Principal and Sureties on this bond hereby agree to pay to all persons, firms, or corporations having contracts directly with the principal or with sub-contractors all just claims due them for labor performed or

materials furnished, in the performance of the Contract on account of which this bond is given when the same are not satisfied out of the portion of the contract price which the public corporation retains until completion of the public improvement but the Principal and Sureties shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established as provided by law.

Every Surety on this bond shall be deemed and held, any contract to the contrary notwithstanding, to consent without notice:

1. To the extension of time to the Contractor in which to perform the contract.
2. To any change in the plans, specifications, or contract when such change does not involve an increase of more than twenty-five percent (25%) of the total contract price and shall be released only as to such an excess increase.

The said Surety, for value received, hereby stipulates, and agrees that no change, extension of time, alteration, or addition to the terms of the Agreement or to the work to be performed thereunder or the specifications accompanying the same, shall in anyway effect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Agreement or to the work or to the specifications.

IN TESTIMONY WHEREOF, the parties hereunto have caused the execution hereof as of the

\_\_\_\_ day of \_\_\_\_\_, 2025

ATTEST

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
(Principal)

By \_\_\_\_\_

Title \_\_\_\_\_

ATTEST

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
(Surety)

By \_\_\_\_\_

\_\_\_\_\_

## PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

that \_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_, hereinafter called Principal,

and \_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

hereinafter called Surety, are held, and firmly bound unto Detroit Lakes - Becker County Airport Commission, hereinafter called OWNER, in the penal sum of Dollars, (\$ \_\_\_\_\_), in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_, 2025, which is hereto made a part hereof for the construction of:

Detroit Lakes - Becker County Airport - Terminal Apron Reconstruction & Expansion

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such Contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, no final settlement between the OWNER and the CONTRACTOR shall abridge



the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed this \_\_\_\_\_ day of \_\_\_\_\_, 2025

ATTEST:

\_\_\_\_\_

(SEAL)

\_\_\_\_\_  
Principal

By \_\_\_\_\_

\_\_\_\_\_  
(Address

\_\_\_\_\_

\_\_\_\_\_  
(Surety)

ATTEST:

\_\_\_\_\_

(SEAL)

By \_\_\_\_\_  
(Attorney-in-Fact)

\_\_\_\_\_  
(Address)

\_\_\_\_\_

\_\_\_\_\_

**DBE LETTER OF INTENT**  
**Disadvantage Business Enterprise**

*(This page shall be submitted for each DBE firm)*

Bidder / Offer Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

DBE Firm: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

DBE Contact Person: Name: \_\_\_\_\_ Phone: ( \_\_\_\_\_ )

DBE Certifying Agency: Expiration \_\_\_\_\_ Date: \_\_\_\_\_

*Each DBE Firm shall submit evidence (such as a photocopy) of their certification status.*

Classification: ☐ Prime Contractor      ☐ Subcontractor      ☐ Joint Venture  
☐ Manufacturer      ☐ Supplier

Work item(s) to be performed by DBE	Description of Work Item	Quantity	Total

The bidder/offeror is committed to utilizing the above-named DBE firm for the work described above. The estimated participation is as follows:

DBE contract amount: \$ \_\_\_\_\_ Percent of total contract: \_\_\_\_\_ %

**AFFIRMATION:**

The above-named DBE firm affirms that it will perform the portion of the contract for the estimated dollar value as stated above.

By: \_\_\_\_\_

*(Signature)*

*(Title)*

\* In the event the bidder/offeror does not receive award of the prime contract, all representations in this Letter of Intent and Affirmation shall be null and void.

## ATTACHMENT 1

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. Compliance with Regulations. The contractor shall comply with the Regulations relative to nondiscrimination in Federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (thereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
2. Nondiscrimination. The contractor, regarding the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
3. Solicitations for Subcontracts, Including Procurement of Materials and Equipment. In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
4. Information and Reports. The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information and its facilities as may be determined by the sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such regulation, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information the contractor shall certify to the sponsor or the Federal Aviation Administration as appropriate and shall set forth what efforts it has made to obtain the information.
5. Sanctions for Noncompliance. In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
  - a. withholding payments to the contractor under the contract until the contractor complies, and/or
  - b. cancellation, termination, or suspension of the contract, in whole or in part.
6. Contract Assurance.

*Contract Assurance (§26.13) - 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 conduct applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to conduct 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.*



7. Prompt Payment Clause.

*Prompt Payment (§26.29) - The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 30 days from the receipt of each payment the prime contractor receives from city of Detroit Lakes, Minnesota. The prime contractor agrees further to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the city of Rochester, Minnesota. This clause applies to both DBE and non-DBE subcontractors.*

8. Incorporation of Provisions. The contractor shall include the provisions of paragraphs 1 through 7 in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the sponsor to enter into such litigation to protect the interests of the sponsor and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.



**FAA  
Airports**

## **Federal Contract Provisions for Airport Improvement Program Projects**

(Last Issued on May 2023)

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## Contract Guidance

This project is funded by the Federal Aviation Administration. Federal laws and regulations require that projects funded by federal assistance programs must include specific contract provisions. Contractor(s) including subcontractors are required to:

- Include certain provisions in their subcontracts and sub-tier agreements.
  - Mandatory Language – Whenever a clause or provision has mandatory text, Contractors and subcontractors must incorporate the text of the provision without change, except where specific adaptive input is necessary.
- Incorporate the applicable requirements of these contract provisions by reference for work done under any purchase orders, rental agreements and other agreements for supplies or services.

The prime contractor shall be responsible for compliance with these contract provisions by any subcontractor, lower-tier subcontractor or service provider.

### Failure to Comply with Provisions

Contractors' failure to comply with the terms of these contract provisions may be sufficient grounds to:

- 1) Withhold progress payments or final payment;
- 2) Terminate the contract for cause;
- 3) Seek suspension/debarment; or
- 4) Take other actions determined to be appropriate by the Sponsor or the FAA.

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## **A1 ACCESS TO RECORDS AND REPORTS**

(Source: 2 CFR § 200.334, 2 CFR § 200.337, FAA Order 5100.38)

FAA policy extends these requirements to the Sponsor's contracts and subcontracts of AIP funded projects.

### **ACCESS TO RECORDS AND REPORTS**

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Owner, the Federal Aviation Administration and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

## **A2 AFFIRMATIVE ACTION REQUIREMENT**

(Source: 41 CFR Part 60-4, Executive Order 11246)

### **NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY**

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

#### **Timetables**

Goals for minority participation for each trade: 0.7%

Goals for female participation in each trade: 6.9%

These goals are applicable to all of the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.



3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the “covered area” is Detroit Lakes, Minnesota in Becker County.

### **A3 BREACH OF CONTRACT TERMS**

(Source: 2 CFR Part 200, Appendix II(A))

**Contract Types – This provision is required for all contracts** that exceed the simplified acquisition threshold as stated in 2 CFR Part 200, Appendix II (A). This threshold is occasionally adjusted for inflation and is \$250,000.

#### **BREACH OF CONTRACT TERMS**

Any violation or breach of terms of this contract on the part of the *Contractor* or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

Owner will provide *Contractor* written notice that describes the nature of the breach and corrective actions the *Contractor* must undertake in order to avoid termination of the contract. Owner reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the Owner elects to terminate the contract. The Owner’s notice will identify a specific date by which the *Contractor* must correct the breach. Owner may proceed with termination of the contract if the *Contractor* fails to correct the breach by the deadline indicated in the Owner’s notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

### **A4 BUY AMERICAN PREFERENCE**

(Source: Title 49 USC § 50101; Executive Order 14005, *Ensuring the Future is Made in All of America by All of America’s Workers*; Bipartisan Infrastructure Law (Pub. L. No. 117-58), Build America, Buy America (BABA)

The Buy American Preference incorporates statutory requirements and policies outlined in the in 49 USC § 50101, Executive Order 14005, and BABA.

Section 50101 of 49 USC requires that all steel and manufactured goods used on AIP projects be produced in the United States. This section also gives the FAA the ability to issue a waiver to a Sponsor to use non-domestic material on an AIP funded project subject to meeting certain conditions. A Sponsor may request that the FAA issue a waiver from the Buy American Preference requirements if the FAA finds that:

- 1) Applying the provision is not in the public interest.

- 2) The steel or manufactured goods are not available in sufficient quantity or quality in the United States.
- 3) The cost of components and subcomponents produced in the United States is more than 60 percent of the total components of a facility or equipment, and final assembly has taken place in the United States. Items that have an FAA standard specification item number (such as specific airport lighting equipment) are considered the equipment.
- 4) Applying this provision would increase the cost of the overall project by more than 25 percent.

Executive Order 14005 advances the Administration’s priority to use terms and conditions of Federal financial assistance awards to maximize the use of goods, products, and materials produced in, and services offered in, the United States. The Order directs, to the extent appropriate and consistent with applicable law, agencies shall partner with the Hollings Manufacturing Extension Partnership (MEP) to conduct supplier scouting in order to identify American companies that are able to produce goods, products, and materials in the United States that meet Federal procurement needs, prior to consideration of using non-domestic products.

The Bipartisan Infrastructure Law, Build America, Buy America (BABA) Act strengthens Made in America Laws and bolsters America’s industrial base, protects national security, and supports high-paying jobs. Under BABA, iron, steel and certain construction materials are required to be 100% produced in the United States.

Under the Bipartisan Infrastructure Law (Pub. L. No. 117-58) BABA three waivers are available for iron and steel, manufactured products, and construction materials when a Federal agency finds that –

- 1) Applying the domestic content procurement preference would be inconsistent with the public interest (a “public interest waiver”);
- 2) Types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality (a “nonavailability waiver”); or
- 3) The inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent (an “unreasonable cost waiver”).

BABA defines construction materials, items that are or consists primarily of non-ferrous metals, plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables), glass (including optic glass), lumber or drywall.

Items that consist of two or more of the aforementioned materials that have been combined together through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed through a manufacturing process, should be treated as manufactured products, rather than as construction materials. For example, a plastic framed sliding window should be treated as a manufactured product while plate glass should be treated as a construction material.

The Buy America Preference requirements flow down from the Sponsor to first tier contractors, who are responsible for ensuring that lower tier contractors and subcontractors are also in compliance.

**Note:** The Buy American Preference does not apply to temporary equipment a contractor uses as a tool of its trade and which does not remain as part of the project.

## Required Documentation

**The FAA Buy American Requests.** All applications (requests) for an FAA Buy American Preference Waiver includes, at minimum, a completed Content Percentage Worksheet and Final Assembly Questionnaire. Additional information may be requested from the applicant by the FAA. Airport Sponsors, consultants, construction contractors, or equipment manufacturers are responsible for completing and submitting waiver applications. The FAA is unable to make a determination on waiver requests with incomplete information. Sponsors must confirm with the bidder or offeror to assess the adequacy of the waiver request and associated information prior to forwarding a waiver request to the FAA for action. All FAA waivers forms are available from the FAA Buy American Requirements webpage.

**Proprietary Confidentiality.** Exemption 4 of the Freedom of Information Act protects trade secrets and commercial or financial information obtained from a person [that is] privileged or confidential. Proprietary manufacturing and design information submitted to the Federal Aviation Administration for the purposes of receiving a Buy American Waiver shall not be disclosed outside the FAA. The FAA will provide a written notification to the Airport Sponsor, manufacturer(s), contractor(s) or supplier(s) when a waiver determination is complete.

**Buy American Conformance Lists.** The FAA Office of Airports maintains listings of projects and products that have received a waiver from the Buy American Preference requirements for project specific and nationwide use. Each of these conformance lists is available online at [www.faa.gov/airports/aip/buy\\_american/](http://www.faa.gov/airports/aip/buy_american/). Products listed on the FAA Nationwide Buy American Conformance list do not require additional submittal of domestic content information. Nationwide waivers expire five years from the date issued, unless revoked earlier by the FAA.

## Contract Types –

- **Construction Projects** involving the replacement, rehabilitation, reconstruction of airfield surfaces such as on runways, taxiways, taxilanes, aprons, roadways, parking lots, etc.
- **Equipment and Buildings Projects** involving and including the acquisition of equipment such as snow removal equipment, navigational aids, wind cones, and the construction of buildings such as hangars, terminal development, lighting vaults, aircraft rescue & firefighting buildings, etc. - Insert the Certificate of Compliance with FAA Buy American Preference Based on Equipment/Building Projects.

## FAA BUY AMERICAN PREFERENCE

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws,<sup>1</sup> U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for

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<sup>1</sup> Per Executive Order 14005 “Made in America Laws” means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to “Buy America” or “Buy American,” that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.



the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

**The bidder or offeror must complete and submit the certification of compliance with FAA’s Buy American Preference, BABA and Made in America laws included herein with their bid or offer. (See Proposal Forms).** The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA’s Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

## **A5 CIVIL RIGHTS - GENERAL**

(Source: 49 USC § 47123)

**Insert this in every contract or agreement**

### **GENERAL CIVIL RIGHTS PROVISIONS**

In all its activities within the scope of its airport program, the Contractor agrees to comply with pertinent statutes, Executive Orders, and such rules as identified in Title VI List of Pertinent Nondiscrimination Acts and Authorities to ensure that no person shall, on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

## **A6 CIVIL RIGHTS – TITLE VI ASSURANCE**

(Source: 49 USC § 47123; FAA Order 1400.11)

Title VI of the Civil Rights Act of 1964, as amended, (Title VI) prohibits discrimination on the grounds of race, color, or national origin under any program or activity receiving Federal financial assistance.

The text of each individual clause comes from the U.S. Department of Transportation [Order DOT 1050.2](#), Standard Title VI Assurances and Nondiscrimination Provisions, effective April 24, 2013. Where the clause refers to the applicable activity, project, or program, it means the AIP project.

**Insert this list in every contract or agreement**

### **Title VI List of Pertinent Nondiscrimination Acts and Authorities**

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “Contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d *et seq.*, 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination in Federally-Assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 *et seq.*), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27 (Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance);
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 *et seq.*) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-259) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990 (42 USC § 12101, *et seq.*) (prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration’s Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations);
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs [70 Fed. Reg. 74087 (2005)];
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC § 1681, *et seq.*).

### **Compliance with Nondiscrimination Requirements:**

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “Contractor”), agrees as follows:

1. **Compliance with Regulations:** The Contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts and Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, national origin (including limited

English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.

3. **Solicitations for Subcontracts, including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the contractor's obligations under this contract and the Nondiscrimination Acts and Authorities on the grounds of race, color, or national origin.
4. **Information and Reports:** The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts and Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the Sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a Contractor's noncompliance with the non-discrimination provisions of this contract, the Sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
  - a. Withholding payments to the Contractor under the contract until the Contractor complies; and/or
  - b. Cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions: The Contractor will include the provisions of paragraphs one through six in every subcontract,** including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the Sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the Sponsor to enter into any litigation to protect the interests of the Sponsor. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

## **A7 CLEAN AIR AND WATER POLLUTION CONTROL**

(Source: 2 CFR Part 200, Appendix II(G); 42 USC § 7401, et seq 33; USC § 1251, et seq)

**Contract Types – This provision is required for all contracts and lower tier contracts that exceed \$150,000.**

### **CLEAN AIR AND WATER POLLUTION CONTROL**

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 USC §§ 7401-7671q) and the Federal Water Pollution Control Act as amended



(33 USC §§ 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

**Contractor** must include this requirement in all subcontracts that exceed \$150,000.

## **A8 CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS**

(Source: 2 CFR Part 200, Appendix II(E); 2 CFR § 5.5(b); 40 USC § 3702; 40 USC § 3704)

Contract Work Hours and Safety Standards Act Requirements (CWHSSA) (40 USC §§ 3702 & 3704) requires contractors and subcontractors on covered contracts to pay laborers and mechanics employed in the performance of the contracts not less than one and one-half times their basic rate of pay for all hours worked over 40 in a workweek. CWHSSA prohibits unsanitary, hazardous, or dangerous working conditions on federally-assisted projects. The Wage and Hour Division (WHD) within the U.S. Department of Labor (DOL) enforces the compensation requirements of this Act, while DOL's Occupational Safety and Health Administration (OSHA) enforces the safety and health requirements.

**This provision applies to all contracts and lower tier contracts that exceed \$100,000, and employ laborers, mechanics, watchmen, and guards.**

### **CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS**

#### **1. Overtime Requirements.**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

#### **2. Violation; Liability for Unpaid Wages; Liquidated Damages.**

In the event of any violation of the clause set forth in paragraph (1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this clause, in the sum of \$29 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

#### **3. Withholding for Unpaid Wages and Liquidated Damages.**

The Federal Aviation Administration (FAA) or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-

assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this clause.

#### 4. Subcontractors.

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this clause.

### **A9 COPELAND “ANTI-KICKBACK” ACT**

(Source: 2 CFR Part 200, Appendix II(D); 29 CFR Parts 3 and 5)

**This provision applies to all construction contracts and subcontracts financed under the AIP that exceed \$2,000.**

#### **COPELAND “ANTI-KICKBACK” ACT**

Contractor must comply with the requirements of the Copeland “Anti-Kickback” Act (18 USC 874 and 40 USC 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the Owner, a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

### **A10 DAVIS-BACON REQUIREMENTS**

(Source: 2 CFR Part 200, Appendix II(D); 29 CFR Part 5; 49 USC § 47112(b); 40 USC §§ 3141-3144, 3146, and 3147)

The Davis-Bacon Act (40 USC §§ 3141-3144, 3146, and 3147) ensures that laborers and mechanics employed under the contract receive pay no less than the locally prevailing wages and fringe benefits as determined by the Department of Labor.

**Incorporate into all construction contracts and subcontracts that exceed \$2,000 and include funding from the AIP.**

#### **DAVIS-BACON REQUIREMENTS**

##### 1. Minimum Wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination;
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers, or mechanics to be employed in the classification, or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.



(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding. The Federal Aviation Administration or the Sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the Contractor, Sponsor, Applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

### 3. Payrolls and Basic Records.

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records that show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit the payrolls to the applicant, Sponsor, or

Owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR § 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at <https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit them to the applicant, Sponsor, or Owner, as the case may be, for transmission to the Federal Aviation Administration, the Contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, Sponsor, or Owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i), and that such information is correct and complete;

(2) That each laborer and mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The Contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Sponsor, the Federal Aviation Administration, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to

submit the required records or to make them available, the Federal agency may, after written notice to the Contractor, Sponsor, applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR § 5.12.

#### 4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the

provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination that provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees, and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

#### 5. Compliance with Copeland Act Requirements.

The Contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

#### 6. Subcontracts.

The Contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR §§ 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR § 5.5.

#### 7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR § 5.12.

#### 8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

#### 9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

#### 10. Certification of Eligibility.



- (i) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR § 5.12(a)(1).
- (ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR § 5.12(a)(1).
- (iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 USC § 1001.

#### **A11 DEBARMENT AND SUSPENSION**

(Source: 2 CFR Part 180 (Subpart B); 2 CFR Part 200, Appendix II(H); 2 CFR Part 1200; DOT Order 4200.5; Executive Orders 12549 and 12689)

**This provision must be included in any AIP-funded contract, regardless of tier, that is awarded by a contractor, subcontractor, supplier, consultant if the amount of the contract is equal to or exceeds \$25,000.**

#### **CERTIFICATION OF OFFEROR/BIDDER REGARDING DEBARMENT**

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

#### **CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT**

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a "covered transaction", must confirm each lower tier participant of a "covered transaction" under the project is not presently debarred or otherwise disqualified from participation in this federally-assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: <http://www.sam.gov>  
Collecting a certification statement similar to the Certification of Offeror /Bidder Regarding Debarment, above.
2. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the Federal Aviation Administration later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

#### **A12 DISADVANTAGED BUSINESS ENTERPRISE**

(Source: 49 CFR Part 26)

Contract Assurance (49 CFR § 26.13)

The Contractor, subrecipient 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, which may include, but is not limited to:

- 1) Withholding monthly progress payments;
- 2) Assessing sanctions;
- 3) Liquidated damages; and/or
- 4) Disqualifying the Contractor from future bidding as non-responsible.

**Prompt Payment (49 CFR § 26.29)**

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 30 days from the receipt of each payment the prime contractor receives from the Detroit Lakes – Becker County Airport Commission. The prime contractor agrees further to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Detroit Lakes – Becker County Airport Commission.. This clause applies to both DBE and non-DBE subcontractors.

**Termination of DBE Subcontracts (49 CFR § 26.53(f))**

The prime contractor must not terminate a DBE subcontractor listed in response to this project's Notice to Bidders / Bid Advertisement (or an approved substitute DBE firm) without prior written consent of the Detroit Lakes – Becker County Airport Commission. . This includes, but is not limited to, instances in which the prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains written consent of the Detroit Lakes – Becker County Airport Commission.. Unless Detroit Lakes – Becker County Airport Commission consent is provided, the prime contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

Detroit Lakes – Becker County Airport Commission may provide such written consent only if the Detroit Lakes – Becker County Airport Commission agrees, for reasons stated in the concurrence document, that the prime contractor has good cause to terminate the DBE firm. For purposes of this paragraph, good cause includes the circumstances listed in 49 CFR §26.53.

Before transmitting to the Detroit Lakes – Becker County Airport Commission its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to the Detroit Lakes – Becker County Airport Commission, of its intent to request to terminate and/or substitute, and the reason for the request.

The prime contractor must give the DBE five days to respond to the prime contractor's notice and advise the Detroit Lakes – Becker County Airport Commission and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why [the Detroit Lakes – Becker County Airport Commission should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), the Detroit Lakes – Becker County Airport Commission may provide a response period shorter than five days.

In addition to post-award terminations, the provisions of this section apply to preaward deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.

### **A13 DISTRACTED DRIVING**

(Source: Executive Order 13513, DOT Order 3902.10)

**Insert this provision in all AIP funded contracts that exceed the micro-purchase threshold of 2 CFR § 200.320 (currently set at \$10,000).**

#### **TEXTING WHEN DRIVING**

In accordance with Executive Order 13513, “Federal Leadership on Reducing Text Messaging While Driving”, (10/1/2009) and DOT Order 3902.10, “Text Messaging While Driving”, (12/30/2009), the Federal Aviation Administration encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or subgrant.

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding \$10,000 that involve driving a motor vehicle in performance of work activities associated with the project.

### **A14 PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT**

(Source: 2 CFR § 200, Appendix II(K); 2 CFR § 200.216)

*Sponsors and subgrant recipients are prohibited from using AIP grant funds to:*

- a) Procure or obtain,*
- b) Extend or renew a contract to procure or obtain, or*
- c) Enter into a contract to procure or obtain certain covered telecommunications equipment.*

*These restrictions apply to telecommunication equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system or as critical technology as part of any system. Covered telecommunications equipment is equipment produced or provided by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of either).*

**Include the following provision in all AIP funded contracts and lower-tier contracts.**

#### **PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT**

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to use and procurement of certain telecommunications and video surveillance services or equipment in compliance with the National Defense Authorization Act [Public Law 115-232 § 889(f)(1)].

### **A15 DRUG FREE WORKPLACE REQUIREMENTS**

(Source: 49 CFR Part 32; Drug-Free Workplace Act of 1988 (41 USC § 8101-8106, as amended))

The Drug-Free Workplace Act of 1988 requires some Federal contractors and *all* Federal grantees to agree that they will provide drug-free workplaces as a condition of receiving a contract or grant from a

Federal agency. This provision applies to all AIP funded projects, but not to the contracts between the grantee (the Sponsor) and a contractor, subcontractors, suppliers, or subgrantees.

## **A16 EQUAL EMPLOYMENT OPPORTUNITY (EEO)**

(Source: 2 CFR Part 200, Appendix II(C); 41 CFR § 60-1.4; 41 CFR § 60-4.3; Executive Order 11246)

**Contractor must incorporate these clauses without modification in any contract or subcontract when the amount exceeds \$10,000.**

The purpose of this provision is to provide equal opportunity for all persons, without regard to race, color, religion, sex, or national origin who are employed or seeking employment with contractors performing under a federally-assisted construction contract. There are two provisions — a contract clause and a specification clause.

### **EQUAL OPPORTUNITY CONTRACT CLAUSE**

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff, or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the Contractor's commitments under this section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.



(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: *Provided*, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

#### **STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS**

1. As used in these specifications:

- a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;
- c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
- d. "Minority" includes:
  - (1) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
  - (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
  - (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

**2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications** and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR part 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to

achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

- a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
- c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other contractors and subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on



behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR part 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

## **A17 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)**

(Source: 29 USC § 201, et seq, 2 CFR § 200.430)

The U.S. Department of Labor (DOL) Wage and Hour Division administers the Fair Labor Standards Act (FLSA). This act prescribes federal standards for basic minimum wage, overtime pay, record keeping, and child labor standards.

**All consultants, subconsultants, contractors, and subcontractors employed under this federally assisted project must comply with the FLSA.**

### **FEDERAL FAIR LABOR STANDARDS ACT CLAUSE**

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, et seq, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The *Contractor* has full responsibility to monitor compliance to the referenced statute or regulation. The *Contractor* must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

## **A18 LOBBYING AND INFLUENCING FEDERAL EMPLOYEES**

(Source: 31 USC § 1352 – Byrd Anti-Lobbying Amendment; 2 CFR Part 200, Appendix II(I); 49 CFR Part 20, Appendix A)

**Contractor must include Lobbying Certification and this language (not modified) in subcontracts exceeding \$100,000.**

### **CERTIFICATION REGARDING LOBBYING**

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.

## **A19 PROHIBITION OF SEGREGATED FACILITIES**

(Source: 2 CFR Part 200, Appendix II(C); 41 CFR Part 60-1)

**This clause must be included in any AIP funded projects that contains the Equal Employment Opportunity clause of 41 CFR § 60-1.4. This obligation flows down to subcontract and sub-tier purchase orders containing the Equal Employment Opportunity clause.**

### **PROHIBITION OF SEGREGATED FACILITIES**

- (a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Employment Opportunity clause in this contract.
- (b) “Segregated facilities,” as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.
- (c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Employment Opportunity clause of this contract.

## **A20 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970**

(Source: 29 CFR Part 1910)

**All contracts and subcontracts that result from this solicitation** incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. The employer must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The employer retains full responsibility to monitor its compliance and their subcontractor’s compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (29 CFR Part 1910). The employer must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

## **A21 PROCUREMENT OF RECOVERED MATERIALS**

(Source: 2 CFR § 200.323, 2 CFR Part 200, Appendix II(J), 40 CFR Part 247, 42 USC § 6901, et seq (Resource Conservation and Recovery Act (RCRA))

### **PROCUREMENT OF RECOVERED MATERIALS**

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

- 1) The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or
- 2) The contractor has procured \$10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at [www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products](http://www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products).

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

- a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
- b) Fails to meet reasonable contract performance requirements; or
- c) Is only available at an unreasonable price.

## **A22 RIGHT TO INVENTIONS**

(Source: 2 CFR Part 200, Appendix II(F); 37 CFR Part 401)

Not applicable.

## **A23 SEISMIC SAFETY**

(Source: 49 CFR Part 41)

Not applicable.

## **A24 TAX DELINQUENCY AND FELONY CONVICTIONS**

(Source: Section 8113 of the Consolidated Appropriations Act, 2022 (Public Law 117-103) and similar provisions in subsequent appropriations acts; DOT Order 4200.6 – Appropriations Act Requirements for Procurement and Non-Procurement Regarding Tax Delinquency and Felony Convictions)

**This provision applies to all contracts funded in whole or part with AIP.**

### **CERTIFICATION OF OFFEROR/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 (✓) 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 ( ) is not ( ) 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 ( ) 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 USC § 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.

## **A25 TERMINATION OF CONTRACT**

(Source: 2 CFR Part 200, Appendix II(B); FAA Advisory Circular 150/5370-10, Section 80-09)

**Contract Types – All contracts and subcontracts in excess of \$10,000 must address *termination for cause and termination for convenience*.** The provision must address the manner (i.e., notice, opportunity to cure, and effective date) by which the contract will be affected and the basis for settlement (e.g., incurred expenses, completed work, profit, etc.).

### **TERMINATION FOR CONVENIENCE (CONSTRUCTION & EQUIPMENT CONTRACTS)**

The Owner may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of Owner. Upon receipt of a written notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

1. Contractor must immediately discontinue work as specified in the written notice.

2. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
3. Discontinue orders for materials and services except as directed by the written notice.
4. Deliver to the Owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work, and as directed in the written notice.
5. Complete performance of the work not terminated by the notice.
6. Take action as directed by the Owner to protect and preserve property and work related to this contract that Owner will take possession.

Owner agrees to pay Contractor for:

1. Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
2. Documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;
3. Reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and
4. Reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provide are in addition to any other rights and remedies provided by law or under this contract.

### **TERMINATION FOR CAUSE (CONSTRUCTION)**

Section 80-09 of FAA Advisory Circular 150/5370-10 establishes standard language for conditions, rights, and remedies associated with Owner termination of this contract for cause due to default of the Contractor.

## **A26 TRADE RESTRICTION CERTIFICATION**

(Source: 49 USC § 50104, 49 CFR Part 30)

**Contractor will incorporate this provision for certification without modification in all lower tier subcontracts.** (The trade restriction certification and clause apply to all AIP funded projects.)

Unless waived by the Secretary of Transportation, AIP funds may not be used on a product or service from a foreign country included in the current list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (USTR).

### **TRADE RESTRICTION CERTIFICATION**

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

- 1) 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 § 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.

## **A27 VETERAN'S PREFERENCE**

(Source: 49 USC § 47112(c))

This provision applies to all AIP funded projects that involve labor to carry out the project.

### **VETERAN'S PREFERENCE**

In the employment of labor (excluding executive, administrative, and supervisory positions), **the Contractor and all sub-tier contractors** must give preference to covered veterans as defined within

Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 USC § 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

## **A28 DOMESTIC PREFERENCES FOR PROCUREMENTS**

(Source: 2 CFR § 200.322; 2 CFR Part 200, Appendix II(L))

**Must be included in all subawards, including all contracts and purchase orders for work or products under the grant.**

### **CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS**

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

## **END OF FEDERAL CONTRACT PROVISIONS**



## Part 3

### Provisions

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## SPECIAL PROVISIONS

1. Precedence within the Specification  
Should any items of these Special Provisions conflict with any other items of Contract Documents, these Special Provisions shall govern.
2. Location of the Work  
The Detroit Lakes - Becker County Airport is located at 24813 US Highway 10, Detroit Lakes, MN 55601, 56501.
3. Description of the Work  
Terminal Apron Reconstruction & Expansion includes the following:  
  
Schedule 1: East terminal apron reconstruction & expansion; concrete apron maintenance  
  
Schedule 2: West terminal apron reconstruction & expansion
4. Construction Phasing and Time of Completion  
The project is to be completed in 100 Working Days.
5. Closures  
All closures/safety area work shall be in accordance with the most current version of the FAA Advisory Circular (AC) 150/5370-2, "*Operational Safety on Airports during Construction*" and the Construction Operations and Safety Plan included in Appendix A of these Specifications.
6. Operations on Airport  
FAA Advisory Circular "*Operational Safety on Airports during Construction*" (AC.No.150/5370-2 or current version) is available at [www.faa.gov](http://www.faa.gov).
7. Approved Plans  
Each sheet of the following listed and approved plans, prepared by Mead & Hunt, Inc., acting for the Detroit Lakes - Becker County Airport Commission, Minnesota is hereby made a part of the Contract:
8. Contract Documents

A. Public Hearing Notice (Advertisement for Bid)	(Bound herein)
B. Instructions to Bidders	"
C. Proposal Form	"
D. DBE Letter of Intent	"
E. Bidders Certifications	"
F. Contract	"
G. DBE Utilization Statement	"
H. Performance and Maintenance Bond	"
I. Payment Bond	"
J. Special Provisions	"
K. General Provisions	"
L. Wage Rates	"
M. Technical Specifications	"
9. Wage Rates  
U.S. Dept. of Labor (DOL) Wage Determination is found [www.access.gpo.gov/davisbacon](http://www.access.gpo.gov/davisbacon). The determinations are updated regularly and needs to be observed. The bidder shall comply with appropriate DOL and Minnesota Department of Labor and Industry (DOLI) wage rate modifications. Minnesota wage rate information can be found at [www.dli.mn.gov/LS/PrevWage.asp](http://www.dli.mn.gov/LS/PrevWage.asp)

The bidder is responsible for ascertaining the rates payable to such classifications and whether area practice requires their use in accomplishing the work.

The highest of either Davis-Bacon Wages or Minnesota State Prevailing Wages are required for this project including overtime, weekend, and holiday work. It may be necessary for the Contractor to use a combination of pay scales to comply with the highest rate contingent on job classifications and work.

10. Minority and Female Participation

The federal goals for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows: Minority: 1.4 Female: 6.9

11. DBE Goals

The airport sponsor has established, in connection with this contract, the goal of 3.37 of the original contract amount for the utilization of small business concerns owned and controlled by socially and economically disadvantaged individuals (DBE's).

12. Debarred, Disqualified and Suspended Contractors.

It is the Contractor's responsibility to avoid using a debarred, disqualified or excluded parties as a subcontractor or material supplier on a contract awarded by the Owner. Contractor agrees it shall not utilize either directly or indirectly any contractor, corporation, partnership, or business however organized, which is disqualified, debarred, or on the United States Government "excluded parties list.

Certification Statement -

As a "covered transaction" under 2 CFR Part 180, the bidder:

1. Certifies by submission of their proposal that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.
2. Agrees to comply with 2 CFR Part 1200 and 2 CFR Part 180, Subpart C by administering each lower tier subcontract that exceeds \$25,000 as a "covered transaction". As such, the successful bidder must verify each lower tier participant of a "covered transaction" under the Project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder shall accomplish this by:
  - a. Checking the Exclusion Extract located on the System for Award Management (SAM) at <http://sam.gov>.
  - b. Collecting a certification statement similar to paragraph (a)
  - c. Inserting a clause or condition in the covered transaction with the lower tier contract:  
"If the FAA later determines that an individual failed to tell a higher tier that they were excluded or disqualified at the time they entered the covered transaction with that person, the FAA may pursue any available remedy, including suspension and debarment."

13. Marking and Mailing Bids

Bids received prior to the time of opening will be securely kept unopened. The officer whose duty it is to open them will decide when the specified time has arrived and no bid received thereafter will be considered; except that when a bid arrives by mail after the time fixed for opening but before award is made, and it is shown to the satisfaction of the officer authorized to make the award that the non-arrival on time was due solely to the delay in the mails for which the bidder was not responsible, such bid will be received and considered. No responsibility will attach to an officer for the premature opening of a bid not properly addressed and identified. Unless specifically authorized, telegraphic bids will not be considered, but modifications by telegraph of



bids already submitted will be considered if received prior to the hour set for the opening.

A. Withdrawal of Bids

Bids may be withdrawn on written or telegraphic request received from the bidder prior to the time fixed for opening. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

B. Bidders Present

At the time fixed for opening of bids, their contents will be made public for the information of bidders and others properly interested who may be present either in person or by representative.

C. Error in Bid

Bidders or their authorized agents are expected to examine the maps, drawings, specifications, circulars, schedule, and all other instructions pertaining to the work which will be open to their inspection. Failure to do so will be at the bidder's own risk and he cannot secure relief on the plea of error in the bid. In case of error in the extension of prices, the unit price will govern.

14. Product Names Stipulated

Catalog numbers and product names are given for identification purposes only and the Contractor may use equivalent materials of other reputable manufacturers that are similar in design and equal in performance, subject to receiving prior approval of the Engineer.

The Contractor shall furnish a certificate from the manufacturer on all materials designated as conforming to FAA Specifications and specifications approved by the Federal Aviation Administration. This certificate shall state that the material furnished complies with the designated specifications for this equipment.

15. Standard Specifications

Applicable portions of the FAA *Standards for Specifying Construction of Airports* (FAA AC 150/5370-10H or current version) are contained within these Contract Documents.

16. Award of Contract

All items of the Proposal as listed are tied together. If the work is awarded, it will be awarded in accordance with the provisions of Section 30-02 of the General Provisions. The Owner reserves the right to accept or reject any or all bids.

17. The following insurance requirements are applicable to the project.

The Contractor must purchase and maintain such liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from any and all claims which may arise out of or result from Contractor's performance and furnishing of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed or furnished by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable.

The contractor shall purchase and maintain insurance of the following types of coverage and limits of liability:

1. Worker's Compensation Insurance. The Contractor shall procure and shall maintain during the life of this Contract, Workers Compensation Insurance for all employees to be engaged in work on the project under this Contract, and in case any such work is sublet, the Contractor shall require the Subcontractor similarly to provide Workers Compensation Insurance for all the latter employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Worker's Compensation Insurance. In case any class is not protected under the Worker's Compensation Statute,

the Contractor shall provide and shall cause each Subcontractor to provide adequate insurance for the protection of such of his employees not otherwise protected.

Employer's Liability:

Bodily injury, each accident:	<u>\$500,000</u>
Bodily injury by disease, each employee:	<u>\$500,000</u>
Bodily injury/disease aggregate:	<u>\$1,000,000</u>

2. Contractor's Commercial General Liability:

General Aggregate:	<u>\$1,000,000</u>
Products-Completed Operations Aggregate:	<u>\$1,000,000</u>
Personal and Advertising Injury:	<u>\$1,000,000</u>
Each Occurrence (Bodily Injury and Property Damage):	<u>\$500,000</u>

3. Automobile Liability:

<u>Bodily Injury:</u>	
Each person:	<u>\$1,000,000</u>
Each accident:	<u>\$1,000,000</u>

Property Damage:

Each accident:	<u>\$500,000</u>
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or

Combined Single Limit of:	<u>\$500,000</u>
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4. Excess or Umbrella Liability:

Per Occurrence:	<u>\$1,000,000</u>
General Aggregate:	<u>\$2,000,000</u>

A. Certificate of Insurance

PRODUCT DATA SHEET 0 - Contractor shall provide, prior to the commencement of the project, a certificate of insurance illustrating compliance with the insurance requirements outlined above. This certificate and the insurance policies required shall contain a provision that coverage afforded under the policies will not be cancelled or allowed to expire until at least 30\* days prior written notice has been given to the Owner/Certificate Holder.

10\*-day notice for non-payment of premium

B. Additional Insured

The Contractor shall secure and maintain such insurance which shall indemnify and save harmless the Owner and the Engineer and their officers, agents, and employees from and against all claims for bodily injury, death or property damage which may arise from the Contractor's operations under this contract, whether such operations be by himself or by any sub-contractor or by anyone directly or indirectly employed by the Contractor and sub-contractor. The cost of such insurance covering the Owner and Engineer/Architect is not eligible for FAA reimbursement. The Contractor shall submit documentation of this cost for reimbursement from other funds.

18. Hindrance or Delay

The Contractor shall not be entitled to any claim for damages on account of hindrance or delay from any cause whatsoever; but, if occasioned by any act or omission over which the Contractor has no control or on the part of the Owner, such hindrance or delay may entitle the Contractor to an extension of time in which to complete the work which shall be determined by the Engineer provided that the contractor shall give notice in writing to the Engineer of the cause of such delay within 10 calendar days after happening of the same.

19. NPDES & Local Watershed District Construction Stormwater Permits  
This contract for the Terminal Apron Reconstruction & Expansion project will affect approximately 5.6 acres of land. The Contractor is responsible for applying for and procuring a NPDES construction stormwater discharge permit from the Minnesota Pollution Control Agency (MPCA). The Contractor will be responsible for complying with all requirements of the project SWPPP and the Federal and MPCA's "General Stormwater Permit for Construction Activity" as well as the Pelican River Watershed District and City of Detroit Lakes Land Disturbance permits. Copies of the application and permit coverage letter must be available for the Owner and Engineer. The NPDES permit must be paid for and submitted by the Contractor. The PRWD and land disturbance permits will be procured by the Owner.
20. Weekly Progress Meetings  
Construction progress meetings shall be held weekly to discuss and coordinate safety and construction activity. The time and place of the meetings will be determined at the pre-construction meeting. The Contractor's project manager, superintendent, and subcontractors, as appropriate, shall attend the meeting. The Contractor will be required to submit an updated project schedule at each construction meeting.
21. Construction Water  
The source of construction water for the project shall be coordinated by the Contractor. The Contractor shall pay water and meter fees; and make all necessary arrangements with appropriate local utility to secure construction water for the duration of the contract. No direct payment will be made for this work. The Contractor shall include all costs associated with construction water in the price of the work. If a new well is needed at the mobile batch plant site, the Contractor will be solely responsible for coordinating the installation of the new well and paying all costs associated with its setup and maintenance throughout the project.
22. Airport Safety & Traffic Control  
The cost of maintaining the Aircraft and Vehicular traffic specified in General Provision 40-05 and as shown in the plans will be measured and paid for as described in pay *Item NS-01 Airfield Safety & Traffic Control*.
23. Guarantee  
It is expressly agreed by the Contractor that if in carrying out this contract the workmanship, materials and manner of construction provided in and contemplated by this contract, and the plans, profiles, and specifications accompanying and forming a part of the same are followed and carried out, the improvements contemplated herein will remain in good condition for the period of one (1) year, or as indicated elsewhere in the specifications, from the date of acceptance, ordinary wear accepted; and that if said improvement does not remain in said condition for such length of time, it will be because of defects in workmanship, materials or manner of construction, and the Contractor hereby expressly agrees and guarantees that such improvement and every part thereof in good condition during said time, ordinary wear accepted, will be made by the Contractor without additional charge or cost to the Detroit Lakes - Becker County Airport Commission.  
  
The determination of the necessity for repairs above mentioned rests entirely with the Engineer whose decision upon the matter shall be final and obligatory upon the Contractor.
24. Measurement and Payment  
Measurement and payment will only be made for Pay Items included in the Schedule of Prices. The cost of all Work required by the Contract Documents is included in the Pay Items contained

in the Schedule of Prices.

25. Certified Payroll Requirements

The Contractor shall submit two (2) copies of all certified payroll, including subcontractors, to the Engineer each week. Failure to submit complete certified payroll in a timely manner may delay progress payments. For certified payroll to be considered for review, the submittal must contain the following information in a clear, logical manner:

- a.) A weekly payroll record showing the name, address, social security number, appropriate work classification (title and group number indicated in the applicable wage rates; see Division II, Section 5), straight time and overtime hours worked, and the actual wages paid. Optional Form WH-347 is available for this purpose.
- b.) Each payroll submitted shall be accompanied by a "Statement of Compliance", signed by the agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

“ . . . that each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.”
- c.) A fringe benefit statement showing appropriate fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.
- d.) AIP No. 3-27-0021-26-25 / SP No. A0301-93 *clearly noted* on each submittal.



## **FAA WAGE AND LABOR REQUIREMENTS**

The following wage and labor requirements of the Federal Aviation Administration (FAA) apply to this Contract.

1. Airport Improvement Program  
The work in this Contract is included in Terminal Apron Reconstruction & Expansion which is being undertaken and accomplished by the Detroit Lakes - Becker County Airport Commission, 1025 Roosevelt Ave, Detroit Lakes, MN 56501, in accordance with the terms and conditions of a grant agreement between the Detroit Lakes - Becker County Airport Commission and the United States, under the Airport and Airway Development Act of 1970 (84 Stat. 219) and Part 152 of the Federal Aviation Regulations (14 CFR Part 152), pursuant to which the United States has agreed to pay a certain percentage of the costs of the project that are determined to be allowable project costs under that Act. The United States is not a party to this Contract and no reference in this Contract to the FAA or any representative thereof, or to any rights granted to the FAA or any representative thereof, or the United States, by the Contract, makes the United States a party to this Contract.
2. Consent of Assignment  
The Contractor shall obtain the prior written consent of the Detroit Lakes - Becker County Airport Commission to any proposed assignment of any interest in or part of this Contract.
3. Convict Labor  
No convict labor may be employed under this Contract.
4. Veteran's Preference  
Title 49 U.S.C. 47112(c), in the employment of labor (except in executive, administrative, and supervisory positions), preference shall be given to Veterans of the Vietnam era and disabled veterans as defined in Section 515(c)(1) and (2) of the Airport and Airway Improvement Act of 1982. However, this preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates.
5. Withholding: Sponsor from Contractor  
Whether or not payments or advances to the Detroit Lakes - Becker County Airport Commission are withheld or suspended by the FAA, the City may withhold or cause to be withheld from the Contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics employed by the Contractor or any Subcontractor on the work the full amount of wages required by this Contract.
6. Nonpayment of Wages  
If the Contractor or Subcontractor fails to pay any laborer or mechanic employed or working on the site of the work any of the wages required by this Contract, the Detroit Lakes - Becker County Airport Commission may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment or advance of funds until the violations cease.
7. FAA Inspection and Review  
The Contractor shall allow any authorized representative of the FAA to inspect and review any work or materials used in the performance of this Contract.
8. Subcontracts  
The Contractor shall insert in each of his Subcontracts the provisions contained in paragraphs 1, 3, 4, 5, 6, and 7, and a clause requiring the Subcontractors to include these provisions in any lower tier Subcontracts which they may enter into, together with a clause requiring this insertion in any further Subcontracts that may in turn be made.

9. Contract Termination

A breach of paragraphs 6, 7 and 8 may be grounds for termination of the Contract.

## Wage Rates

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Superseded General Decision Number: MN20240234

State: Minnesota

Construction Types: Heavy and Highway

Counties: Becker, Big Stone, Clay, Douglas, Grant, Mahnommen, Otter Tail, Pope, Stevens, Swift, Traverse and Wilkin Counties in Minnesota.

#### Heavy and Highway Construction Projects

Please refer to Minnesota Rules 5200.1100, 5200.1101, and 5200.1102 for definitions of labor classifications on this wage determination, and direct any questions regarding such classifications to the Branch of Construction Wage Determinations.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none"><li>◆ Executive Order 14026 generally applies to the contract.</li><li>◆ The contractor must pay all covered workers at least \$17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.</li></ul>
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none"><li>◆ Executive Order 13658 generally applies to the contract.</li><li>◆ The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours performing on that contract in 2025.</li></ul>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/03/2025
1	01/24/2025

\* SAMN2024-004 11/18/2024

	Rates	Fringes
ARTICULATED HAULER.....	\$ 33.58	26.79
BOILERMAKER.....	\$ 48.35	31.93
BOOM TRUCK.....	\$ 30.21	22.55
BRICKLAYER.....	\$ 35.88	23.20
CARPENTER.....	\$ 36.49	28.29
CEMENT MASON.....	\$ 45.17	24.22
ELECTRICIAN.....	\$ 46.00	30.00
FLAG PERSON.....	\$ 27.50	20.74
GROUND PERSON.....	\$ 40.14	0.00
HEATING AND FROST INSULATORS.....	\$ 17.50 **	0.00
IRONWORKER.....	\$ 41.19	35.68
LABORER: Common or General (GENERAL LABOR WORK).....	\$ 32.23	22.88
LABORER: Landscape (GARDENER, SOD LAYER AND NURSERY OPERATOR).....	\$ 25.00	0.00
LABORER: Skilled (ASSISTING SKILLED CRAFT JOURNEYMAN).....	\$ 32.23	22.88
LANDSCAPING EQUIPMENT (INCLUDES HYDRO SEEDER OR MULCHER, SOD ROLLER, FARM TRACTOR WITH ATTACHMENT SPECIFICALLY SEEDING, SODDING, OR PLANT, AND TWO-FRAMED FORKLIFT (EXCLUDING FRONT, POSIT-TRACK, AND SKID STEER LOADERS), NO EARTHWORK OR GRADING FOR ELEVATIONS).....	\$ 25.00	2.00
LINEMAN.....	\$ 36.26	6.93
MILLWRIGHT.....	\$ 44.38	28.92
OFF-ROAD TRUCK.....	\$ 51.13	3.48
PAINTER (INCLUDING HAND BRUSHED, HAND SPRAYED, AND		

THE TAPING OF PAVEMENT MARKINGS).....\$ 32.38	25.28
PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT ((ONE OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR TRAILER MOUNTED UNITS).....\$ 35.00	13.24
Piledriver (INCLUDING VIBRATORY DRIVER OR EXTRACTOR FOR PILING AND SHEETING OPERATIONS).....\$ 45.71	29.73
PIPEFITTER/STEAMFITTER.....\$ 47.91	20.04
PIPELAYER (WATER, SEWER AND GAS).....\$ 35.73	22.88
PLUMBER.....\$ 44.78	23.04
POWER EQUIPMENT OPERATOR: (Highway/Heavy Group 2).....\$ 34.94	26.79
HELICOPTER PILOT; CONCRETE PUMP; ALL CRANES WITH OVER 135-FOOT BOOM, EXCLUDING JIB; DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR OTHER SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS THREE CUBIC YARDS AND OVER MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS; GRADER OR MOTOR PATROL; PILE DRIVING; TUGBOAT 100 H.P. AND OVER WHEN LICENSE REQUIRED	
POWER EQUIPMENT OPERATOR: (Highway/Heavy Group 3).....\$ 33.92	26.79
ASPHALT BITUMINOUS STABILIZER PLANT; CABLEWAY; CONCRETE MIXER, STATIONARY PLANT; DERRICK (GUY OR STIFFLEG)(POWER)(SKIDS OR STATIONARY); DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS, UP TO THREE CUBIC YARDS MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS; DREDGE OR ENGINEERS, DREDGE (POWER) AND ENGINEER; FRONT END LOADER, FIVE CUBIC YARDS AND OVER INCLUDING ATTACHMENTS; LOCOMOTIVE CRANE OPERATOR; MIXER (PAVING) CONCRETE PAVING, ROAD MOLE, INCLUDING MUCKING OPERATIONS, CONWAY OR SIMILAR TYPE; MECHANIC ON POWER EQUIPMENT; TRACTOR, BOOM TYPE; TANDEM SCRAPER; TRUCK CRANE, CRAWLER CRANE; TUGBOAT 100 H.P AND OVER	
POWER EQUIPMENT OPERATOR: (Highway/Heavy Group 4).....\$ 33.58	26.79
AIR TRACK ROCK DRILL; AUTOMATIC ROAD MACHINE (CMI OR SIMILAR); BACKFILLER OPERATOR; CONCRETE BATCH PLANT OPERATOR; BITUMINOUS ROLLERS, RUBBER TIED OR STEEL DRUMMED (EIGHT TONS AND OVER); BITUMINOUS SPREADER AND FINISHING MACHINES (POWER), INCLUDING PAVERS, MACRO SURFACING AND MICRO SURFACING, OR SIMILAR TYPES (OPERATOR AND SCREED PERSON); BROKK OR R.T.C. REMOTE CONTROL OR SIMILAR TYPE WITH ALL ATTACHMENTS; CAT CHALLENGER TRACTORS OR SIMILAR TYPES PULLING ROCK WAGONS, BULLDOZERS AND SCRAPERS; CHIP HARVESTER AND TREE CUTTER; CONCRETE DISTRIBUTOR AND SPREADER FINISHING MACHINE, LONGITUDINAL FLOAT, JOINT MACHINE, AND SPRAY MACHINE; CONCRETE MIXER ON JOBSITE; CONCRETE MOBIL; CRUSHING PLANT (GRAVEL AND STONE) OR GRAVEL WASHING, CRUSHING AND SCREENING PLANT; CURB MACHINE; DIRECTIONAL BORING MACHINE; DOPE MACHINE (PIPELINE); DRILL RIGS, HEAVY ROTARY OR CHURN OR CABLE DRILL; DUAL TRACTOR; ELEVATING GRADER; FORK LIFT OR STRADDLE CARRIER; FORK LIFT OR LUMBER STACKER; FRONT END, SKID STEER OVER 1 TO 5 C YD; GPS REMOTE OPERATING OF EQUIPMENT;	

HOIST ENGINEER (POWER); HYDRAULIC TREE PLANTER; LAUNCHER PERSON (TANKER PERSON OR PILOT LICENSE); LOCOMOTIVE; MILLING, GRINDING, PLANNING, FINE GRADE, OR TRIMMER MACHINE; MULTIPLE MACHINES, SUCH AS AIR COMPRESSORS, WELDING MACHINES, GENERATORS, PUMPS; PAVEMENT BREAKER OR TAMPING MACHINE (POWER DRIVEN) MIGHTY MITE OR SIMILAR TYPE; PICKUP SWEEPER, ONE CUBIC YARD AND OVER HOPPER CAPACITY; PIPELINE WRAPPING, CLEANING OR BENDING MACHINE; POWER PLANT ENGINEER, 100 KWH AND OVER; POWER ACTUATED HORIZONTAL BORING MACHINE, OVER SIX INCHES; PUGMILL; PUMPCRETE; RUBBER-TIRED FARM TRACTOR WITH BACKHOE INCLUDING ATTACHMENTS; SCRAPER; SELF-PROPELLED SOIL STABILIZER; SLIP FORM (POWER DRIVEN) (PAVING); TIE TAMPER AND BALLAST MACHINE; TRACTOR, BULLDOZER; TRACTOR, WHEEL TYPE, OVER 50 H.P. WITH PTO UNRELATED TO LANDSCAPING; TRENCHING MACHINE (SEWER, WATER, GAS) EXCLUDES WALK BEHIND TRENCHER; TUB GRINDER, MORBARK, OR SIMILAR TYPE; WELL POINT DISMANTLING OR INSTALLATION

POWER EQUIPMENT OPERATOR:

(Highway/Heavy Group 5).....\$ 31.71 26.79  
 AIR COMPRESSOR, 600 CFM OR OVER; BITUMINOUS ROLLER (UNDER EIGHT TONS); CONCRETE SAW (MULTIPLE BLADE) (POWER OPERATED); FORM TRENCH DIGGER (POWER); FRONT END, SKID STEER UP TO 1C YD; GUNITE GUNALL; HYDRAULIC LOG SPLITTER; LOADER (BARBER GREENE OR SIMILAR TYPE); POST HOLE DRIVING MACHINE/POST HOLE AUGER; POWER ACTUATED AUGER AND BORING MACHINE; POWER ACTUATED JACK; PUMP; SELF-PROPELLED CHIP SPREADER (FLAHERTY OR SIMILAR); SHEEP FOOT COMPACTOR WITH BLADE . 200 H.P. AND OVER; SHOULDERING MACHINE (POWER) APSCO OR SIMILAR TYPE INCLUDING SELF-PROPELLED SAND AND CHIP SPREADER; STUMP CHIPPER AND TREE CHIPPER; TREE FARMER (MACHINE)

POWER EQUIPMENT OPERATOR:

(Highway/Heavy Group 6).....\$ 31.06 26.79  
 CAT, CHALLENGER, OR SIMILAR TYPE OF TRACTORS, WHEN PULLING DISK OR ROLLER; CONVEYOR; DREDGE DECK HAND; FIRE PERSON OR TANK CAR HEATER; GRAVEL SCREENING PLANT (PORTABLE NOT CRUSHING OR WASHING); GREASER (TRACTOR); LEVER PERSON; OILER (POWER SHOVEL, CRANE, TRUCK CRANE, DRAGLINE, CRUSHERS, AND MILLING MACHINES, OR OTHER SIMILAR HEAVY EQUIPMENT); POWER SWEEPER; SHEEP FOOT ROLLER AND ROLLERS ON GRAVEL COMPACTION, INCLUDING VIBRATING ROLLERS; TRACTOR, WHEEL TYPE, OVER 50 H.P., UNRELATED TO LANDSCAPING

SHEET METAL WORKER.....\$ 27.00 3.33

Survey Field Technician

(OPERATE TOTAL STATION, GPS RECEIVER, LEVEL, ROD OR RANGE POLES, STEEL TAPE MEASUREMENT; MARK AND DRIVE STAKES; HAND OR POWER DIGGING FOR AND IDENTIFICATION OF MARKERS OR MONUMENTS; PERFORM AND CHECK CALCULATIONS; REVIEW AND UNDERSTAND CONSTRUCTION PLANS AND LAND SURVEY MATERIALS).....\$ 21.39 14.90

TRAFFIC CONTROL PERSON

(TEMPORARY SIGNAGE).....\$ 23.04 17.10

TRUCK DRIVER (Group 1).....\$ 28.92 21.35  
 MECHANIC; TRACTOR TRAILER DRIVER; TRUCK DRIVER (HAULING MACHINERY INCLUDING OPERATION OF HAND AND POWER OPERATED WINCHES)



TRUCK DRIVER (Group 2).....\$ 35.66	18.07
FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK	
TRUCK DRIVER (Group 3).....\$ 31.93	25.00
BITUMINOUS DISTRIBUTOR DRIVER; BITUMINOUS DISTRIBUTOR (ONE PERSON OPERATION); THREE AXLE UNITS	
TRUCK DRIVER (Group 4).....\$ 31.93	25.00
BITUMINOUS DISTRIBUTOR SPRAY OPERATOR (REAR AND OILER); DUMP PERSON; GREASER; PILOT CAR DRIVER; RUBBER-TIRED, SELF-PROPELLED PACKER UNDER 8 TONS; TWO AXLE UNIT; SLURRY OPERATOR; TANK TRUCK HELPER (GAS, OIL, ROAD OIL, AND WATER); TRACTOR OPERATOR, UNDER 50 H.P.	
UNDERGROUND AND OPEN DITCH	
LABORER (EIGHT FEET BELOW	
STARTING GRADE LEVEL).....\$ 29.00	20.74

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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\*\* Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.75) or 13658 (\$13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

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The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical

order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

#### Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

#### Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

#### Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

#### State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

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#### WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to [davisbaconinfo@dol.gov](mailto:davisbaconinfo@dol.gov) or by mail to:

Branch of Wage Surveys  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to [BCWD-Office@dol.gov](mailto:BCWD-Office@dol.gov) or by mail to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to [dba.reconsideration@dol.gov](mailto:dba.reconsideration@dol.gov) or by mail to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that

the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210.

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END OF GENERAL DECISION"



MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY PREVAILING WAGES FOR STATE FUNDED CONSTRUCTION PROJECTS



THIS NOTICE MUST BE POSTED ON THE JOBSITE IN A CONSPICUOUS PLACE

**Construction Type: Highway and Heavy**

**Region Number: 04**

Counties within region:

- BECKER-03
- BIG STONE-06
- CLAY-14
- DOUGLAS-21
- GRANT-26
- MAHNOMEN-43
- OTTERTAIL-56
- POPE-61
- STEVENS-75
- SWIFT-76
- TRAVERSE-78
- WILKIN-84

Effective: 2024-11-18

This project is covered by Minnesota prevailing wage statutes. Wage rates listed below are the minimum hourly rates to be paid on this project.

All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at a rate of one and one half (1 1/2) times the basic hourly rate. *Note: Overtime pay after eight (8) hours on the project must be paid even if the worker does not exceed forty (40) hours in the work week.*

Violations on MnDOT highways and road projects should be reported to:

Department of Transportation  
Office of Construction  
Transportation Building MS650  
John Ireland Blvd  
St. Paul, MN 55155  
(651) 366-4209

All other prevailing wage violations and questions should be sent to:

Department of Labor and Industry  
Prevailing Wage Section  
443 Lafayette Road N  
St Paul, MN 55155  
(651) 284-5091  
[DLI.PrevWage@state.mn.us](mailto:DLI.PrevWage@state.mn.us)

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
<b>LABORERS (101 - 112) (SPECIAL CRAFTS 701 - 730)</b>					
101	LABORER, COMMON (GENERAL LABOR WORK)	2024-11-18	32.23	22.88	55.11
		2025-05-01	34.50	24.26	58.76

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
102	LABORER, SKILLED (ASSISTING SKILLED CRAFT JOURNEYMAN)	2024-11-18	32.23	22.88	55.11
		2025-05-01	34.50	24.26	58.76
103	LABORER, LANDSCAPING (GARDENER, SOD LAYER AND NURSERY OPERATOR)	2024-11-18	25.00	0.00	25.00
104	FLAG PERSON	2024-11-18	27.50	20.74	48.24
105	WATCH PERSON	FOR RATE CALL 651-284-5091 OR EMAIL <a href="mailto:DLLPREVWAGE@STATE.MN.US">DLLPREVWAGE@STATE.MN.US</a>			
106	BLASTER	FOR RATE CALL 651-284-5091 OR EMAIL <a href="mailto:DLLPREVWAGE@STATE.MN.US">DLLPREVWAGE@STATE.MN.US</a>			
107	PIPELAYER (WATER, SEWER AND GAS)	2024-11-18	35.73	22.88	58.61
		2025-05-01	38.00	24.26	62.26
108	TUNNEL MINER	FOR RATE CALL 651-284-5091 OR EMAIL <a href="mailto:DLLPREVWAGE@STATE.MN.US">DLLPREVWAGE@STATE.MN.US</a>			
109	UNDERGROUND AND OPEN DITCH LABORER (EIGHT FEET BELOW STARTING GRADE LEVEL)	2024-11-18	29.00	20.74	49.74
110	SURVEY FIELD TECHNICIAN (OPERATE TOTAL STATION, GPS RECEIVER, LEVEL, ROD OR RANGE POLES, STEEL TAPE MEASUREMENT; MARK AND DRIVE STAKES; HAND OR POWER DIGGING FOR AND IDENTIFICATION OF MARKERS OR MONUMENTS; PERFORM AND CHECK CALCULATIONS; REVIEW AND UNDERSTAND CONSTRUCTION PLANS AND LAND SURVEY MATERIALS). THIS CLASSIFICATION DOES NOT APPLY TO THE WORK PERFORMED ON A PREVAILING WAGE PROJECT BY A LAND SURVEYOR WHO IS LICENSED PURSUANT TO MINNESOTA STATUTES, SECTIONS 326.02 TO 326.15.	2024-11-18	21.39	14.90	36.29
111	TRAFFIC CONTROL PERSON (TEMPORARY SIGNAGE)	2024-11-18	23.04	17.10	40.14
112		2024-11-18	22.15	12.77	34.92

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
	QUALITY CONTROL TESTER (FIELD AND COVERED OFF-SITE FACILITIES; TESTING OF AGGREGATE, ASPHALT, AND CONCRETE MATERIALS); LIMITED TO MN DOT HIGHWAY AND HEAVY CONSTRUCTION PROJECTS WHERE THE MN DOT HAS RETAINED QUALITY ASSURANCE PROFESSIONALS TO REVIEW AND INTERPRET THE RESULTS OF QUALITY CONTROL TESTERS. SERVICES PROVIDED BY THE CONTRACTOR.				
<b>SPECIAL EQUIPMENT (201 - 204)</b>					
201	ARTICULATED HAULER	2024-11-18	33.58	26.79	60.37
		2025-05-05	34.60	29.17	63.77
202	BOOM TRUCK	2024-11-18	30.21	22.55	52.76
203	LANDSCAPING EQUIPMENT, INCLUDES HYDRO SEEDER OR MULCHER, SOD ROLLER, FARM TRACTOR WITH ATTACHMENT SPECIFICALLY SEEDING, SODDING, OR PLANT, AND TWO-FRAMED FORKLIFT (EXCLUDING FRONT, POSIT-TRACK, AND SKID STEER LOADERS), NO EARTHWORK OR GRADING FOR ELEVATIONS	2024-11-18	25.00	2.00	27.00
204	OFF-ROAD TRUCK	2024-11-18	51.13	3.48	54.61
205	PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT (ONE OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR TRAILER MOUNTED UNITS.	2024-11-18	35.00	13.24	48.24
<b>HIGHWAY/HEAVY POWER EQUIPMENT OPERATOR</b>					
<b>GROUP 2</b>		2024-11-18	34.94	26.79	61.73
		2025-05-05	36.03	29.17	65.20
302	HELICOPTER PILOT (HIGHWAY AND HEAVY ONLY)				
303	CONCRETE PUMP (HIGHWAY AND HEAVY ONLY)				
304	ALL CRANES WITH OVER 135-FOOT BOOM, EXCLUDING JIB (HIGHWAY AND HEAVY ONLY)				

LABOR CODE AND CLASS	EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
305				
				DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR OTHER SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS THREE CUBIC YARDS AND OVER MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS. (HIGHWAY AND HEAVY ONLY)
306				GRADER OR MOTOR PATROL
307				PILE DRIVING (HIGHWAY AND HEAVY ONLY)
308				TUGBOAT 100 H.P. AND OVER WHEN LICENSE REQUIRED (HIGHWAY AND HEAVY ONLY)
<b>GROUP 3</b>	2024-11-18	33.92	26.79	60.71
	2025-05-05	34.96	29.17	64.13
309				ASPHALT BITUMINOUS STABILIZER PLANT
310				CABLEWAY
311				CONCRETE MIXER, STATIONARY PLANT (HIGHWAY AND HEAVY ONLY)
312				DERRICK (GUY OR STIFFLEG)(POWER)(SKIDS OR STATIONARY) (HIGHWAY AND HEAVY ONLY)
313				DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS, UP TO THREE CUBIC YARDS MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS (HIGHWAY AND HEAVY ONLY)
314				DREDGE OR ENGINEERS, DREDGE (POWER) AND ENGINEER
315				FRONT END LOADER, FIVE CUBIC YARDS AND OVER INCLUDING ATTACHMENTS. (HIGHWAY AND HEAVY ONLY)
316				LOCOMOTIVE CRANE OPERATOR
317				MIXER (PAVING) CONCRETE PAVING, ROAD MOLE, INCLUDING MUCKING OPERATIONS, CONWAY OR SIMILAR TYPE
318				MECHANIC . WELDER ON POWER EQUIPMENT (HIGHWAY AND HEAVY ONLY)
319				TRACTOR . BOOM TYPE (HIGHWAY AND HEAVY ONLY)
320				TANDEM SCRAPER
321				TRUCK CRANE . CRAWLER CRANE (HIGHWAY AND HEAVY ONLY)
322				TUGBOAT 100 H.P AND OVER (HIGHWAY AND HEAVY ONLY)
<b>GROUP 4</b>	2024-11-18	33.58	26.79	60.37
	2025-05-05	34.60	29.17	63.77
323				AIR TRACK ROCK DRILL
324				AUTOMATIC ROAD MACHINE (CMI OR SIMILAR) (HIGHWAY AND HEAVY ONLY)
325				BACKFILLER OPERATOR
326				CONCRETE BATCH PLANT OPERATOR (HIGHWAY AND HEAVY ONLY)
327				BITUMINOUS ROLLERS, RUBBER TIRED OR STEEL DRUMMED (EIGHT TONS AND OVER)
328				BITUMINOUS SPREADER AND FINISHING MACHINES (POWER), INCLUDING PAVERS, MACRO SURFACING AND MICRO SURFACING, OR SIMILAR TYPES (OPERATOR AND SCREED PERSON)
329				BROKK OR R.T.C. REMOTE CONTROL OR SIMILAR TYPE WITH ALL ATTACHMENTS
330				CAT CHALLENGER TRACTORS OR SIMILAR TYPES PULLING ROCK WAGONS, BULLDOZERS AND SCRAPERS
331				CHIP HARVESTER AND TREE CUTTER
332				CONCRETE DISTRIBUTOR AND SPREADER FINISHING MACHINE, LONGITUDINAL FLOAT, JOINT MACHINE, AND SPRAY MACHINE
333				CONCRETE MIXER ON JOBSITE (HIGHWAY AND HEAVY ONLY)

LABOR CODE AND CLASS	EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
334	CONCRETE MOBIL (HIGHWAY AND HEAVY ONLY)			
335	CRUSHING PLANT (GRAVEL AND STONE) OR GRAVEL WASHING, CRUSHING AND SCREENING PLANT			
336	CURB MACHINE			
337	DIRECTIONAL BORING MACHINE			
338	DOPE MACHINE (PIPELINE)			
339	DRILL RIGS, HEAVY ROTARY OR CHURN OR CABLE DRILL (HIGHWAY AND HEAVY ONLY)			
340	DUAL TRACTOR			
341	ELEVATING GRADER			
342	FORK LIFT OR STRADDLE CARRIER (HIGHWAY AND HEAVY ONLY)			
343	FORK LIFT OR LUMBER STACKER (HIGHWAY AND HEAVY ONLY)			
344	FRONT END, SKID STEER OVER 1 TO 5 C YD			
345	GPS REMOTE OPERATING OF EQUIPMENT			
346	HOIST ENGINEER (POWER) (HIGHWAY AND HEAVY ONLY)			
347	HYDRAULIC TREE PLANTER			
348	LAUNCHER PERSON (TANKER PERSON OR PILOT LICENSE)			
349	LOCOMOTIVE (HIGHWAY AND HEAVY ONLY)			
350	MILLING, GRINDING, PLANNING, FINE GRADE, OR TRIMMER MACHINE			
351	MULTIPLE MACHINES, SUCH AS AIR COMPRESSORS, WELDING MACHINES, GENERATORS, PUMPS (HIGHWAY AND HEAVY ONLY)			
352	PAVEMENT BREAKER OR TAMPING MACHINE (POWER DRIVEN) MIGHTY MITE OR SIMILAR TYPE			
353	PICKUP SWEEPER, ONE CUBIC YARD AND OVER HOPPER CAPACITY(HIGHWAY AND HEAVY ONLY)			
354	PIPELINE WRAPPING, CLEANING OR BENDING MACHINE			
355	POWER PLANT ENGINEER, 100 KWH AND OVER (HIGHWAY AND HEAVY ONLY)			
356	POWER ACTUATED HORIZONTAL BORING MACHINE, OVER SIX INCHES			
357	PUGMILL			
358	PUMPCRETE (HIGHWAY AND HEAVY ONLY)			
359	RUBBER-TIRED FARM TRACTOR WITH BACKHOE INCLUDING ATTACHMENTS (HIGHWAY AND HEAVY ONLY)			
360	SCRAPER			
361	SELF-PROPELLED SOIL STABILIZER			
362	SLIP FORM (POWER DRIVEN) (PAVING)			
363	TIE TAMPER AND BALLAST MACHINE			
364	TRACTOR, BULLDOZER (HIGHWAY AND HEAVY ONLY)			
365	TRACTOR, WHEEL TYPE, OVER 50 H.P. WITH PTO UNRELATED TO LANDSCAPING (HIGHWAY AND HEAVY ONLY)			
366	TRENCHING MACHINE (SEWER, WATER, GAS) EXCLUDES WALK BEHIND TRENCHER (HIGHWAY AND HEAVY ONLY)			
367	TUB GRINDER, MORBARK, OR SIMILAR TYPE			
368	WELL POINT DISMANTLING OR INSTALLATION (HIGHWAY AND HEAVY ONLY)			
<b>GROUP 5</b>	2024-11-18	31.71	26.79	58.50



LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
		2025-05-05	32.64	29.17	61.81
369	AIR COMPRESSOR, 600 CFM OR OVER (HIGHWAY AND HEAVY ONLY)				
370	BITUMINOUS ROLLER (UNDER EIGHT TONS)				
371	CONCRETE SAW (MULTIPLE BLADE) (POWER OPERATED)				
372	FORM TRENCH DIGGER (POWER)				
373	FRONT END, SKID STEER UP TO 1C YD				
374	GUNITE GUNALL (HIGHWAY AND HEAVY ONLY)				
375	HYDRAULIC LOG SPLITTER				
376	LOADER (BARBER GREENE OR SIMILAR TYPE)				
377	POST HOLE DRIVING MACHINE/POST HOLE AUGER				
378	POWER ACTUATED AUGER AND BORING MACHINE				
379	POWER ACTUATED JACK				
380	PUMP (HIGHWAY AND HEAVY ONLY)				
381	SELF-PROPELLED CHIP SPREADER (FLAHERTY OR SIMILAR)				
382	SHEEP FOOT COMPACTOR WITH BLADE . 200 H.P. AND OVER				
383	SHOULDERING MACHINE (POWER) APSCO OR SIMILAR TYPE INCLUDING SELF-PROPELLED SAND AND CHIP SPREADER				
384	STUMP CHIPPER AND TREE CHIPPER				
385	TREE FARMER (MACHINE)				
<b>GROUP 6</b>		2024-11-18	31.06	26.79	57.85
		2025-05-05	31.95	29.17	61.12
387	CAT, CHALLENGER, OR SIMILAR TYPE OF TRACTORS, WHEN PULLING DISK OR ROLLER				
388	CONVEYOR (HIGHWAY AND HEAVY ONLY)				
389	DREDGE DECK HAND				
390	FIRE PERSON OR TANK CAR HEATER (HIGHWAY AND HEAVY ONLY)				
391	GRAVEL SCREENING PLANT (PORTABLE NOT CRUSHING OR WASHING)				
392	GREASER (TRACTOR) (HIGHWAY AND HEAVY ONLY)				
393	LEVER PERSON				
394	OILER (POWER SHOVEL, CRANE, TRUCK CRANE, DRAGLINE, CRUSHERS, AND MILLING MACHINES, OR OTHER SIMILAR HEAVY EQUIPMENT) (HIGHWAY AND HEAVY ONLY)				
395	POWER SWEEPER				
396	SHEEP FOOT ROLLER AND ROLLERS ON GRAVEL COMPACTION, INCLUDING VIBRATING ROLLERS				
397	TRACTOR, WHEEL TYPE, OVER 50 H.P., UNRELATED TO LANDSCAPING				
<b>TRUCK DRIVERS</b>					
<b>GROUP 1</b>		2024-11-18	28.92	21.35	50.27
601	MECHANIC . WELDER				
602	TRACTOR TRAILER DRIVER				
603					

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
TRUCK DRIVER (HAULING MACHINERY INCLUDING OPERATION OF HAND AND POWER OPERATED WINCHES)					
<b>GROUP 2</b>		2024-11-18	35.66	18.07	53.73
604	FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK				
<b>GROUP 3</b>		2024-11-18	31.93	25.00	56.93
605	BITUMINOUS DISTRIBUTOR DRIVER				
606	BITUMINOUS DISTRIBUTOR (ONE PERSON OPERATION)				
607	THREE AXLE UNITS				
<b>GROUP 4</b>		2024-11-18	31.93	25.00	56.93
608	BITUMINOUS DISTRIBUTOR SPRAY OPERATOR (REAR AND OILER)				
609	DUMP PERSON				
610	GREASER				
611	PILOT CAR DRIVER				
612	RUBBER-TIRED, SELF-PROPELLED PACKER UNDER 8 TONS				
613	TWO AXLE UNIT				
614	SLURRY OPERATOR				
615	TANK TRUCK HELPER (GAS, OIL, ROAD OIL, AND WATER)				
616	TRACTOR OPERATOR, UNDER 50 H.P.				
<b>SPECIAL CRAFTS</b>					
701	HEATING AND FROST INSULATORS	2024-11-18	17.50	0.00	17.50
702	BOILERMAKERS	2024-11-18	46.00	31.93	77.93
		2025-01-01	48.35	31.93	80.28
703	BRICKLAYERS	2024-11-18	35.88	23.20	59.08
704	CARPENTERS	2024-11-18	36.49	28.29	64.78
		2025-01-01	36.49	28.29	64.78
		2025-05-01	41.69	28.29	69.98
705	CARPET LAYERS (LINOLEUM)	FOR RATE CALL 651-284-5091 OR EMAIL <a href="mailto:DLLPREVWAGE@STATE.MN.US">DLLPREVWAGE@STATE.MN.US</a>			
706	CEMENT MASONS	2024-11-18	45.17	24.22	69.39
707	ELECTRICIANS	2024-11-18	46.00	30.00	76.00
		2025-07-01	50.86	30.00	80.86

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
711	GROUND PERSON	2024-11-18	40.14	0.00	40.14
712	IRONWORKERS	2024-11-18	41.19	35.68	76.87
713	LINEMAN	2024-11-18	36.26	6.93	43.19
714	MILLWRIGHT	2024-11-18	44.38	28.92	73.30
		2025-01-01	44.38	28.92	73.30
		2025-05-01	48.13	29.41	77.54
715	PAINTERS (INCLUDING HAND BRUSHED, HAND SPRAYED, AND THE TAPING OF PAVEMENT MARKINGS)	2024-11-18	32.38	25.28	57.66
		2025-05-01	34.98	25.28	60.26
716	PILEDRIIVER (INCLUDING VIBRATORY DRIVER OR EXTRACTOR FOR PILING AND SHEETING OPERATIONS)	2024-11-18	45.71	29.73	75.44
		2025-01-01	45.71	29.73	75.44
		2025-05-01	49.46	30.23	79.69
717	PIPEFITTERS . STEAMFITTERS	2024-11-18	47.91	20.04	67.95
719	PLUMBERS	2024-11-18	44.78	23.04	67.82
721	SHEET METAL WORKERS	2024-11-18	27.00	3.33	30.33
723	TERRAZZO WORKERS	FOR RATE CALL 651-284-5091 OR EMAIL <a href="mailto:DL.PREVWAGE@STATE.MN.US">DL.PREVWAGE@STATE.MN.US</a>			
724	TILE SETTERS	FOR RATE CALL 651-284-5091 OR EMAIL <a href="mailto:DL.PREVWAGE@STATE.MN.US">DL.PREVWAGE@STATE.MN.US</a>			
725	TILE FINISHERS	FOR RATE CALL 651-284-5091 OR EMAIL <a href="mailto:DL.PREVWAGE@STATE.MN.US">DL.PREVWAGE@STATE.MN.US</a>			
727	WIRING SYSTEM TECHNICIAN	FOR RATE CALL 651-284-5091 OR EMAIL <a href="mailto:DL.PREVWAGE@STATE.MN.US">DL.PREVWAGE@STATE.MN.US</a>			
728	WIRING SYSTEMS INSTALLER	FOR RATE CALL 651-284-5091 OR EMAIL <a href="mailto:DL.PREVWAGE@STATE.MN.US">DL.PREVWAGE@STATE.MN.US</a>			

LABOR CODE AND CLASS	EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
729 ASBESTOS ABATEMENT WORKER	FOR RATE CALL 651-284-5091 OR EMAIL <u><a href="mailto:DLI.PREVWAGE@STATE.MN.US">DLI.PREVWAGE@STATE.MN.US</a></u>			
730 SIGN ERECTOR	FOR RATE CALL 651-284-5091 OR EMAIL <u><a href="mailto:DLI.PREVWAGE@STATE.MN.US">DLI.PREVWAGE@STATE.MN.US</a></u>			

## Part 1 – General Contract Provisions

### Section 10 Definition of Terms

When the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be defined as follows:

Paragraph Number	Term	Definition
10-01	AASHTO	The American Association of State Highway and Transportation Officials.
10-02	Access Road	The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.
10-03	Advertisement	A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.
10-04	Airport	Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a heliport.
10-05	Airport Improvement Program (AIP)	A grant-in-aid program, administered by the Federal Aviation Administration (FAA).
10-06	Air Operations Area (AOA)	The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
10-07	Apron	Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
10-08	ASTM International (ASTM)	Formerly known as the American Society for Testing and Materials (ASTM).
10-09	Award	The Owner's notice to the successful bidder of the acceptance of the submitted bid.



<b>Paragraph Number</b>	<b>Term</b>	<b>Definition</b>
<b>10-10</b>	<b>Bidder</b>	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.
<b>10-11</b>	<b>Building Area</b>	An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
<b>10-12</b>	<b>Calendar Day</b>	Every day shown on the calendar.
<b>10-13</b>	<b>Certificate of Analysis (COA)</b>	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.
<b>10-14</b>	<b>Certificate of Compliance (COC)</b>	The manufacturer's certification states that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
<b>10-15</b>	<b>Change Order</b>	A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.
<b>10-16</b>	<b>Contract</b>	<p>A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment.</p> <p>The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda.</p>
<b>10-17</b>	<b>Contract Item (Pay Item)</b>	A specific unit of work for which a price is provided in the contract.
<b>10-18</b>	<b>Contract Time</b>	The number of calendar days or working days (stated in the proposal) allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of several calendar or working days, the contract shall be completed by that date.

<b>Paragraph Number</b>	<b>Term</b>	<b>Definition</b>
<b>10-19</b>	<b>Contractor</b>	The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
<b>10-20</b>	<b>Contractors Quality Control (QC) Facilities</b>	The Contractor's QC facilities are in accordance with the Contractor Quality Control Program (CQCP).
<b>10-21</b>	<b>Contractor Quality Control Program (CQCP)</b>	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
<b>10-22</b>	<b>Control Strip</b>	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
<b>10-23</b>	<b>Construction Safety and Phasing Plan (CSPP)</b>	The overall plan for safety and phasing of a construction project developed by the airport operator or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
<b>10-24</b>	<b>Drainage System</b>	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
<b>10-25</b>	<b>Engineer</b>	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
<b>10-26</b>	<b>Equipment</b>	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
<b>10-27</b>	<b>Extra Work</b>	An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified.

<b>Paragraph Number</b>	<b>Term</b>	<b>Definition</b>
<b>10-28</b>	<b>FAA</b>	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.
<b>10-29</b>	<b>Federal Specifications</b>	The federal specifications and standards, commercial item descriptions, supplements, amendments, and indices prepared and issued by the General Services Administration.
<b>10-30</b>	<b>Force Account</b>	<p><b>a.</b> Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis.</p> <p><b>b.</b> Owner Force Account - Work performed for the project by the Owner's employees.</p>
<b>10-31</b>	<b>Intention of Terms</b>	<p>Whenever, in these specifications or on the plans, the words “directed,” “required,” “permitted,” “ordered,” “designated,” “prescribed,” or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or Resident Project Representative (RPR) is intended; and similarly, the words “approved,” “acceptable,” “satisfactory,” or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or RPR, subject in each case to the final determination of the Owner.</p> <p>Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.</p>
<b>10-32</b>	<b>Lighting</b>	A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.
<b>10-33</b>	<b>Major and Minor Contract Items</b>	A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.
<b>10-34</b>	<b>Materials</b>	Any substance specified for use in the construction of the contract work.

<b>Paragraph Number</b>	<b>Term</b>	<b>Definition</b>
<b>10-35</b>	<b>Modification of Standards (MOS)</b>	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
<b>10-36</b>	<b>Notice to Proceed (NTP)</b>	A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.
<b>10-37</b>	<b>Owner</b>	The term “Owner” shall mean the party of the first part or the contracting agency signatory to the contract. Where the term “Owner” is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is the Detroit Lakes – Becker County Airport Commission.
<b>10-38</b>	<b>Passenger Facility Charge (PFC)</b>	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
<b>10-39</b>	<b>Pavement Structure</b>	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
<b>10-40</b>	<b>Payment bond</b>	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
<b>10-41</b>	<b>Performance bond</b>	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
<b>10-42</b>	<b>Plans</b>	The official drawings or exact reproductions that show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as 'contract drawings.'
<b>10-43</b>	<b>Project</b>	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
<b>10-44</b>	<b>Proposal</b>	The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.

<b>Paragraph Number</b>	<b>Term</b>	<b>Definition</b>
<b>10-45</b>	<b>Proposal guaranty</b>	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
<b>10-46</b>	<b>Quality Assurance (QA)</b>	The owner's responsibility to assure that construction work completed complies with specifications for payment.
<b>10-47</b>	<b>Quality Control (QC)</b>	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
<b>10-48</b>	<b>Quality Assurance (QA) Inspector</b>	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
<b>10-49</b>	<b>Quality Assurance (QA) Laboratory</b>	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
<b>10-50</b>	<b>Resident Project Representative (RPR)</b>	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor and acting directly or through an authorized representative.
<b>10-51</b>	<b>Runway</b>	The area at the airport prepared for the landing and takeoff of aircraft.
<b>10-52</b>	<b>Runway Safety Area (RSA)</b>	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
<b>10-53</b>	<b>Safety Plan Compliance Document (SPCD)</b>	Details how the Contractor will comply with the CSPP.
<b>10-54</b>	<b>Specifications</b>	A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.



<b>Paragraph Number</b>	<b>Term</b>	<b>Definition</b>
<b>10-55</b>	<b>Sponsor</b>	A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.
<b>10-56</b>	<b>Structures</b>	Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
<b>10-57</b>	<b>Subgrade</b>	The soil that forms the pavement foundation.
<b>10-58</b>	<b>Superintendent</b>	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.
<b>10-59</b>	<b>Supplemental Agreement</b>	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%; (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
<b>10-60</b>	<b>Surety</b>	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
<b>10-61</b>	<b>Taxilane</b>	A taxiway designed for low-speed movement of aircraft between aircraft parking areas and terminal areas.
<b>10-62</b>	<b>Taxiway</b>	The portion of the air operations area of an airport that has been designated by competent airport authorities for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
<b>10-63</b>	<b>Taxiway/Taxilane Safety Area (TSA)</b>	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.

<b>Paragraph Number</b>	<b>Term</b>	<b>Definition</b>
<b>10-64</b>	<b>Work</b>	The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.
<b>10-65</b>	<b>Working day</b>	A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.
<b>10-66</b>	<b>Owner Defined terms</b>	None.

**END OF SECTION 10**

## Section 20 Proposal Requirements and Conditions

**20-01 Advertisement (Notice to Bidders).** The "Advertisement for Bids" included in the front of this Specifications 'Book' has been published at such places and at such times as required by local law or ordinances and is made a part of the "Contract Documents."

The Bid Advertisement provides the following information for Bidders:

- time and place for submitting sealed proposals;
- description of the proposed work;
- instructions about obtaining proposal forms, plans, and specifications;
- Contractor's requirements (license, registration, etc.);
- required Federal Provisions solicitation language;
- the proposal guaranty required; and
- the Owner's right to reject all bids.

**20-02 Qualification of bidders.** Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner if requested within 10 days of bid opening.

Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.

Each bidder shall furnish the Owner with satisfactory evidence of their financial responsibility. Evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether their financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

Unless otherwise specified, a bidder may submit evidence that they are prequalified with the State Highway Division and are on the current "bidder's list" of the state in which the proposed work is located. Evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.

**20-03 Contents of proposal forms.** The Owner's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The Owner will accept only those Proposals properly executed on physical forms or electronic forms provided by the Owner. Bidder actions that may cause the Owner to deem a proposal irregular are given in paragraph 20-09 *Irregular proposals*.

Mobilization is limited to 10 percent of the total project cost.

A prebid conference is required on this project to discuss as a minimum, the following items: material requirements; submittals; Quality Control/Quality Assurance requirements; the construction safety and phasing plan including airport access and staging areas; and unique airfield paving construction requirements. The prebid conference will be held at the Detroit Lakes-Becker County Airport Arrival/Departure building conference room, 24813 US Highway 10, Detroit Lakes, MN 56501 at 9:00 am on Wednesday, May 21<sup>st</sup>. A tour of the project site will be conducted immediately following the

prebid meeting. Bidders are not required to attend this prebid meeting; however, attendance is recommended.

**20-04 Issuance of proposal forms.** The Owner reserves the right to refuse to issue a proposal form to a prospective bidder if the bidder is in default for any of the following reasons:

- a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.
- b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.
- c. Documented record of Contractor default under previous contracts with the Owner.
- d. Documented record of unsatisfactory work on previous contracts with the Owner.

**20-05 Interpretation of estimated proposal quantities.** An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as provided in Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

**20-06 Examination of plans, specifications, and site.** The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves with the character, quality, and quantities of work to be performed, materials to be furnished, and to the requirements of the proposed contract. The submission of the proposal shall be prima facie evidence that the bidder has conducted such an examination and is satisfied with the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders. It is understood and agreed that such subsurface information, whether included in the plans, specifications, or otherwise made available to the bidder, was obtained and is intended for the Owner's design and estimating purposes only. Such information has been made available for the convenience of all bidders. It is further understood and agreed that each bidder is solely responsible for all assumptions, deductions, or conclusions which the bidder may make or obtain from their own examination of the boring logs and other records of subsurface investigations and tests that are furnished by the Owner.

**20-07 Preparation of proposal.** The bidder shall submit their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals which they propose for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

The bidder shall correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their authority to do so and that the signature is binding upon the firm or corporation.

**20-08 Responsive and responsible bidder.** A responsive bid conforms to all significant terms and conditions contained in the Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 2 CFR § 200.318(h). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

**20-09 Irregular proposals.** Proposals should be considered irregular for the following reasons:

- a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.
- b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.
- c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.
- d. If the proposal contains unit prices that are obviously unbalanced.
- e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.
- f. If the applicable Disadvantaged Business Enterprise information is incomplete.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

**20-10 Bid guarantee.** Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bonds, checks, or collateral shall be made payable to the Owner.

**20-11 Delivery of proposal.** Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed with an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

**20-12 Withdrawal or revision of proposals.** A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing, by fax, or by email before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

**20-13 Public opening of proposals.** Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

**20-14 Disqualification of bidders.** A bidder shall be considered disqualified for any of the following reasons:

- a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.



**b.** Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.

**c.** If the bidder is in “default” for any reason specified in paragraph 20-04, *Issuance of Proposal Forms*, of this section.

**20-15 Discrepancies and Omissions.** A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner’s Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner’s Engineer a written request for interpretation no later than 5 days prior to bid opening.

Any interpretation of the project bid documents by the Owner’s Engineer will be by written addendum issued by the Owner. The Owner will not consider any instructions, clarifications or interpretations of the bidding documents in any manner other than the written addendum.

## **END OF SECTION 20**

## Section 30 Award and Execution of Contract

**30-01 Consideration of proposals.** After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.

b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

**30-02 Award of contract.** The award of a contract, if it is to be awarded, shall be made within **120** calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.

If the Owner elects to proceed with an award of contract, the Owner will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price.

The Contractor must submit unit prices for all bid items associated with Schedule 1 and Schedule 2. An apparent low bidder will be determined for Schedule 1 only, and a supplemental apparent low bidder will be determined by totaling Schedule 1 and Schedule 2. The award of a contract for Schedule 1, or Schedule 1 and Schedule 2 will be contingent on the availability of federal and state funding.

**30-03 Cancellation of award.** The Owner reserves the right to cancel the award without liability to the bidder, except for the return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

**30-04 Return of proposal guaranty.** All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in paragraph 30-01, *Consideration of Proposals*. Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds*.

**30-05 Requirements of contract bonds.** At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be at a sum equal to the full amount of the contract.

**30-06 Execution of contract.** The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds*, of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder.

**30-07 Approval of contract.** Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

**30-08 Failure to execute contract.** Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract*, of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.

**END OF SECTION 30**

## Section 40 Scope of Work

**40-01 Intent of contract.** The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

**40-02 Alteration of work and quantities.** The Owner reserves the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or RPR shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

For purpose of this section, a significant change in character of work means: any change that is outside the current contract scope of work; any change (increase or decrease) in the total contract cost by more than 25%; or any change in the total cost of a major contract item by more than 25%.

Work alterations and quantity variances that do not meet the definition of significant change in the character of work shall not invalidate the contract nor release the surety. Contractor agrees to accept payment for such work alterations and quantity variances in accordance with Section 90, paragraph 90-03, *Compensation for Altered Quantities*.

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

**40-03 Omitted items.** The Owner, the Owner's Engineer or the RPR may provide written notice to the Contractor to omit from the work any contract item that does not meet the definition of major contract item. Major contract items may be omitted by a supplemental agreement. Such omissions of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, *Payment for Omitted Items*.

**40-04 Extra work.** Should acceptable completion of the contract require the Contractor to perform an item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, Owner may issue a Change Order to cover the necessary extra work. Change orders for extra work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order and shall contain any adjustment to the contract time that, in the RPR's opinion, is necessary for completion of the extra work.

When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. Extra work that is necessary for acceptable completion of the project but is not within the general scope of the work covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, *Supplemental Agreement*.

If extra work is essential to maintaining the project's critical path, RPR may order the Contractor to commence the extra work under a Time and Material contract method. Once sufficient detail is available

to establish the level of effort necessary for the extra work, the Owner shall initiate a change order or supplemental agreement to cover the extra work.

Any claim for payment of extra work that is not covered by a written agreement (change order or supplemental agreement) shall be rejected by the Owner.

**40-05 Maintenance of traffic.** It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, *Limitation of Operations*. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in Section 70, paragraph 70-15, *Contractor's Responsibility for Utility Service and Facilities of Others*.

b. With respect to their own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD).

c. When the contract requires the maintenance of an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep the road, street, or highway open to all traffic and shall provide maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (<http://mutcd.fhwa.dot.gov/>), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

**40-06 Removal of existing structures.** All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Resident Project Representative (RPR) shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the RPR in accordance with the provisions of the contract.

Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

**40-07 Rights in and use of materials found in the work.** Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines,



grades, or grading sections, the use of which is intended by the terms of the contract to be embankment, the Contractor may at their own option either:

- a. Use such material in another contract item, providing such use is approved by the RPR and is in conformance with the contract specifications applicable to such use; or,
- b. Remove such material from the site, upon written approval of the RPR; or
- c. Use such material for the Contractor's own temporary construction on site; or,
- d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the RPR's approval in advance of such use.

Should the RPR approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at their expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for use of such material used in the work or removed from the site.

Should the RPR approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of their own exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

**40-08 Final cleanup.** Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The Contractor shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of the property Owner.

#### **END OF SECTION 40**

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## Section 50 Control of Work

**50-01 Authority of the Resident Project Representative (RPR).** The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The RPR does not have the authority to accept work that does not conform to specification requirements.

**50-02 Conformity with plans and specifications.** All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans, or specifications.

If the RPR finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in their opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the RPR will advise the Owner of their determination that the affected work be accepted and remain in place. The RPR will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.

If the RPR finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the RPR's written orders.

The term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the RPR's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the RPR's opinion, such compliance is essential to provide an acceptable finished portion of the work.

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

The RPR will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

**50-03 Coordination of contract, plans, and specifications.** The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. If electronic files are provided and used on the project and there is a conflict between the electronic files and hard copy plans, the hard copy plans shall govern. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within

standard test methods, the Contractor shall immediately ask the RPR for an interpretation and decision, and such decision shall be final.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, Contractor shall immediately notify the Owner or the designated representative in writing requesting their written interpretation and decision.

#### **50-04 List of Special Provisions.**

##### **ORDER OF PRECEDENCE**

1. Permits issued by jurisdictional regulatory agencies.
2. Change Orders.
3. Addenda.
4. Contract.
5. Notice to Proceed.
6. Notice of Award.
7. Project Specific Requirements for Airport Construction, Part 3a (Special Provisions).
8. Appendix A, Construction Safety and Phasing Plan.
9. FAA Standard Technical Specifications, Part 4.
10. FAA General Contract Provisions (AC 150-5370-10H), Part 3b.
11. Federal Contract provisions for FAA AIP Projects, Part 2c.
12. City's General Conditions.
13. Drawings/Plans.
14. Contractor's Bid Proposal and Attachments.
15. Notice Inviting Bids.
16. Instructions to Bidders.
17. City's Construction Standard Details.
18. Any documents prepared by and on behalf of a third party that were not prepared specifically for this Project, including the Greenbook Standard Specifications, the MnDOT Standard Specifications, and the MnDOT Special Provisions.

**50-05 Cooperation of Contractor.** The Contractor shall be supplied with two hard copies or an electronic PDF of the plans and specifications. The Contractor shall always have available on the construction site one hardcopy each of the plans and specifications. Additional hard copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof and shall cooperate with the RPR and their inspectors and with other Contractors in every way possible. The Contractor shall always have a competent superintendent on the work who is fully authorized as their agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the RPR or their authorized representative.

**50-06 Cooperation between Contractors.** The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct the work not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with their own contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange their work and shall place and dispose of the materials being used to not interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join their work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

**50-07 Construction layout and stakes.** The Engineer/RPR shall establish necessary horizontal and vertical control. The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor. Contractor is responsible for preserving the integrity of horizontal and vertical controls established by Engineer/RPR. In case of negligence on the part of the Contractor or their employees, resulting in the destruction of any horizontal and vertical control, the resulting costs will be deducted as a liquidated damage against the Contractor.

Prior to the start of construction, the Contractor will check all control points for horizontal and vertical accuracy and certify in writing to the RPR that the Contractor concurs with survey control established for the project. All lines, grades and measurements from control points necessary for the proper execution and control of the work on this project will be provided to the RPR. The Contractor is responsible to establish all layout required for the construction of the project.

Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s): electronically or written.

Laser, GPS, String line, or other automatic control shall be checked with temporary control as necessary. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the Owner.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses. The cost shall be included in the price of the bid for the various items of the Contract.

**50-08 Authority and duties of Quality Assurance (QA) inspectors.** QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

QA Inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the RPR for a decision.

**50-09 Inspection of the work.** All materials and each part or detail of the work shall be subject to inspection. The RPR shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the RPR requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or



examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor's expense.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) Owner, authorized representatives of the Owners of such facilities shall have the right to inspect such work. Such an inspection shall in no sense make any facility owner a party to the contract and shall in no way interfere with the rights of the parties to this contract.

**50-10 Removal of unacceptable and unauthorized work.** All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications*.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of Section 70, paragraph 70-14, *Contractor's Responsibility for Work*.

No removal work made under the provision of this paragraph shall be done without lines and grades having been established by the RPR. Work done contrary to the instructions of the RPR, work done beyond the lines shown on the plans or as established by the RPR, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

**50-11 Load restrictions.** The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions for any damage caused by the Contractor's equipment and personnel.

**50-12 Maintenance during construction.** The Contractor shall maintain the work during construction and until the work is accepted. Maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

**50-13 Failure to maintain the work.** Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, *Maintenance during Construction*, the RPR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the RPR's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner, shall be recovered as a liquidated damage against the Contractor.

**50-14 Partial acceptance.** If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the RPR to make final inspection of that unit. If the RPR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the RPR may accept it as being complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

**50-15 Final acceptance.** Upon due notice from the Contractor of presumptive completion of the entire project, the RPR and Owner will conduct an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The RPR shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the RPR will notify the Contractor, and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such an event, the RPR will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

**50-16 Claims for adjustment and disputes.** If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the RPR has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within 10 calendar days, submit a written claim to the RPR who will present it to the Owner for consideration in accordance with local laws or ordinances.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute final payment based on differences in measurements or computations.

**50-17 Value Engineering Cost Proposal.**

The provisions of this paragraph apply only to contracts awarded to the lowest bidder pursuant to competitive bidding.

On projects with original contract amounts in excess of \$100,000, the Contractor may submit to the RPR, in writing, proposals for modifying the plans, specifications or other requirements of the contract for the

sole purpose of reducing the cost of construction. The value engineering cost proposal shall not impair, in any manner, the essential functions or characteristics of the project, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, design and safety standards. This provision shall not apply unless the proposal submitted is specifically identified by the Contractor as being presented for consideration as a value engineering proposal.

Not eligible for value engineering cost proposals are changes in the basic design of a pavement type, runway and taxiway lighting, visual aids, hydraulic capacity of drainage facilities, or changes in grade or alignment that reduce the geometric standards of the project.

As a minimum, the following information shall be submitted by the Contractor with each proposal:

- a. A description of both existing contract requirements for performing the work and the proposed changes, with a discussion of the comparative advantages and disadvantages of each.
- b. An itemization of the contract requirements that must be changed if the proposal is adopted.
- c. A detailed estimate of the cost of performing the work under the existing contract and under the proposed changes.
- d. A statement of the time by which a change order adopting the proposal must be issued.
- e. A statement of the effect adoption of the proposal will have on the time for completion of the contract.
- f. The contract items of work affected by the proposed changes, including any quantity variation attributable to them.

The Contractor may withdraw, in whole or in part, any value engineering cost proposal not accepted by the RPR, within the period specified in the proposal. The provisions of this subsection shall not be construed to require the RPR to consider any value engineering cost proposal that may be submitted.

The Contractor shall continue to perform the work in accordance with the requirements of the contract until a change order incorporating the value engineering cost proposal has been issued. If a change order has not been issued by the date upon which the Contractor's value engineering cost proposal specifies that a decision should be made, or such other date as the Contractor may subsequently have requested in writing, such value engineering cost proposal shall be deemed rejected.

The RPR shall be the sole judge of the acceptability of a value engineering cost proposal and of the estimated net savings from the adoption of all or any part of such proposal. In determining the estimated net savings, the RPR may disregard the contract bid prices if, in the RPR's judgment, such prices do not represent a fair measure of the value of the work to be performed or deleted.

The Owner may require the Contractor to share in the Owner's costs of investigating a value engineering cost proposal submitted by the Contractor as a condition of considering such proposal. Where such a condition is imposed, the Contractor shall acknowledge acceptance of it in writing. Such an acceptance shall constitute full authority for the Owner to deduct the cost of investigating a value engineering cost proposal from the amounts payable to the Contractor under the contract.

If the Contractor's value engineering cost proposal is accepted in whole or in part, such acceptance will be by a contract change order that shall specifically state that it is executed pursuant to this paragraph. Such a change order shall incorporate the changes in the plans and specifications which are necessary to permit the value engineering cost proposal or such part of it as has been accepted and shall include any conditions upon which the RPR's approval is based. The change order shall also set forth the estimated net savings attributable to the value engineering cost proposal. The net savings shall be determined as the difference in costs between the original contract costs for the involved work items and the costs occurring as a result of the proposed change. The change order shall also establish the net savings agreed upon and

shall provide for adjustment in the contract price that will divide the net savings equally between the Contractor and the Owner.

The Contractor's 50% share of the net savings shall constitute full compensation to the Contractor for the value engineering cost proposal and the performance of the work.

Acceptance of the value engineering cost proposal and performance of the work shall not extend the time of completion of the contract unless specifically provided for in the contract change order.

**END OF SECTION 50**

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## Section 60 Control of Materials

**60-01 Source of supply and quality requirements.** The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish documentation to the RPR as to the origin, composition, and manufacture of all materials to be used in the work. Documentation shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the RPR's option, materials may be approved at the source of supply before delivery. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that meets the requirements of the specifications; and is listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program and Addendum*, which is in effect on the date of advertisement.

**60-02 Samples, tests, and cited specifications.** All materials used in the work shall be inspected, tested, and approved by the RPR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the RPR shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the RPR, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests will be made by and at the expense of the Owner in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), federal specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the RPR. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the RPR.

A copy of all Contractor QC test data shall be provided to the RPR daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

The Contractor shall employ a Quality Control (QC) testing organization to perform all Contractor required QC tests in accordance with Item C-100 Contractor Quality Control Program (CQCP).

**60-03 Certification of compliance/analysis (COC/COA).** The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by the manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be approved by the RPR.

When a material or assembly is specified by “brand name or equal” and the Contractor elects to furnish the specified “or equal,” the Contractor shall be required to furnish the manufacturer’s certificate of compliance for each lot of such material or assembly delivered to the work. Such a certificate of compliance shall clearly identify each lot delivered and shall certify as to:

- a. Conformance to the specified performance, testing, quality or dimensional requirements; and,
- b. Suitability of the material or assembly for the use intended in the contract work.

The RPR shall be the sole judge as to whether the proposed “or equal” is suitable for use in the work.

The RPR reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

**60-04 Plant inspection.** The RPR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the RPR conduct plant inspections, the following conditions exist:

- a. The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.
- b. The RPR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.
- c. If required by the RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The RPR has the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

**60-05 Engineer/ Resident Project Representative (RPR) field office.** The Contractor shall provide dedicated space for the use of the engineer, RPR, and inspectors, as a field office for the duration of the project. This space shall be located as shown on the plans near the construction, shall have doors equipped with locking capabilities or heavy-duty padlocks, have two rooms, one drafting table, minimum two desks and office chairs, and shall be separate from any space used by the Contractor. The space must be anchored or secured to preclude overturning caused by high velocity winds. The Contractor shall furnish water, sanitary facilities, heat, air conditioning, electricity, high speed internet, letter quality plain paper printer/scanner/copy machine (11”x17” capable), mini-refrigerator, microwave, first aid kit, and fire extinguisher.

**60-06 Storage of materials.** Materials shall be stored to ensure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the RPR. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans and/or CSPP, the storage of materials and the location of the Contractor’s plant and parked equipment or vehicles shall be as directed by the RPR. Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the RPR a copy of the property Owner’s permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at their expense, except as otherwise agreed to (in writing) by the Owner or lessee of the property.

**60-07 Unacceptable materials.** Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the RPR.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the RPR has approved its use in the work.

**60-08 Owner furnished materials.** The Contractor shall furnish all materials required to complete the work, except those specified, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

All costs of handling, transportation from the specified location to the site of work, storage, and installation of Owner-furnished materials shall be included in the unit price bid for the contract item in which Owner-furnished material is used.

After any Owner-furnished material has been delivered to the specified location, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due to the Contractor any cost incurred by the Owner in making good such loss due to the Contractor's handling, storage, or use of Owner-furnished materials.

## **END OF SECTION 60**

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## Section 70 Legal Regulations and Responsibility to Public

**70-01 Laws to be observed.** The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all their officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.

**70-02 Permits, licenses, and taxes.** The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

**70-03 Patented devices, materials, and processes.** If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

**70-04 Restoration of surfaces disturbed by others.** The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) must be shown on the plans and is indicated as follows:

- Owner: Detroit Lakes-Becker County Airport Commission
- Location: See Plan Sheets
- Person to Contact: Kelcey Klemm, City Administrator (218-846-7123)

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the RPR.

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the RPR, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

**70-05 Federal Participation.** The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.



**70-06 Sanitary, health, and safety provisions.** The Contractor's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

**70-07 Public convenience and safety.** The Contractor shall control their operations and those of their subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to their own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, *Maintenance of Traffic*, and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, *Limitation of Operations*.

The Contractor shall remove or control debris and rubbish resulting from its work operations at frequent intervals, and upon the order of the RPR. If the RPR determines the existence of Contractor debris in the work site represents a hazard to airport operations and the Contractor is unable to respond in a prompt and reasonable manner, the RPR reserves the right to assign the task of debris removal to a third party and recover the resulting costs as a liquidated damage against the Contractor.

**70-08 Construction Safety and Phasing Plan (CSPP).** The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is on sheet(s) G-081 through G-084 of the project plans and attached as Appendix A of these specifications.

**70-09 Use of explosives.** The use of explosives is not permitted on this project.

**70-10 Protection and restoration of property and landscape.** The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer/RPR has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, the Contractor shall restore, at their expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

**70-11 Responsibility for damage claims.** The Contractor shall indemnify and hold harmless the Engineer/RPR and the Owner and their officers, agents, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the

Contractor will not be withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

**70-12 Third party beneficiary clause.** It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create for the public or any member thereof, a third-party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

**70-13 Opening sections of the work to traffic.** If it is necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such “phasing” of the work must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

- Phasing and time of completion requirements: see Appendix A (CSPP) and plan sheets G-081 through G-084.

Upon completion of any portion of work listed above, such portion shall be accepted by the Owner in accordance with Section 50, paragraph 50-14, *Partial Acceptance*.

No portion of the work may be opened by the Contractor until directed by the Owner in writing. Should it become necessary to open a portion of the work to traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the RPR, such a portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of the contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the Owner shall be repaired by the Contractor at their expense.

The Contractor shall make their own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP.

The contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

**70-14 Contractor’s responsibility for work.** Until the RPR’s final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, *Partial Acceptance*, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at their own expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

**70-15 Contractor's responsibility for utility service and facilities of others.** As provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and/or in the contract documents.

<b>UTILITY SERVICE OF FACILITY (ADDRESS)</b>	<b>PERSON TO CONTACT (NAME, TITLE, &amp; PHONE)</b>
Detroit Lakes Public Utilities 1025 Roosevelt Ave Detroit Lakes, MN 56501	Andy DeBlieck Public Utilities Electric Distribution Supervisor (218) 846-7184
Gopher State One Call	1-800-252-1166
MnDOT NAVAIDs 395 John Ireland Blvd. St. Paul, MN 55155	Mike Hartell Aviation Representative (651) 234-7225

It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of the responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed by Others*. A copy of each notification shall be given to the RPR.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's "Person to Contact" no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the RPR.

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the RPR and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the RPR continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or their own surety.

**70-15.1 FAA facilities and cable runs.** The Contractor is hereby advised that the construction limits of the project include existing facilities and buried cable runs that are owned, operated and maintained by the FAA. The Contractor, during the execution of the project work, shall comply with the following:

**a.** The Contractor shall permit FAA maintenance personnel the right of access to the project work site for purposes of inspecting and maintaining all existing FAA owned facilities.

**b.** The Contractor shall provide notice to the FAA Air Traffic Organization (ATO)/Technical Operations/System Support Center (SSC) Point-of-Contact through the airport Owner a minimum of seven (7) calendar days prior to commencement of construction activities in order to permit sufficient time to locate and mark existing buried cables and to schedule any required facility outages.

**If** execution of the project work requires a facility outage, the Contractor shall contact the FAA Point-of-Contact a minimum of 72 hours prior to the time of the required outage.

**d.** Any damage to FAA cables, access roads, or FAA facilities during construction caused by the Contractor's equipment or personnel whether by negligence or accident will require the Contractor to repair or replace the damaged cables, access road, or FAA facilities to FAA requirements. The Contractor shall not bear the cost to repair damage to underground facilities or utilities improperly located by the FAA.

If the project work requires the cutting or splicing of FAA owned cables, the FAA Point-of-Contact shall be contacted a minimum of 72 hours prior to the time the cable work commences. The FAA reserves the right to have a FAA representative on site to observe the splicing of the cables as a condition of acceptance. All cable splices are to be accomplished in accordance with FAA specifications and require approval by the FAA Point-of-Contact as a condition of acceptance by the Owner. The Contractor is hereby advised that FAA restricts the location of where splices may be installed. If a cable splice is required in a location that is not permitted by FAA, the Contractor shall furnish and install a sufficient length of new cable that eliminates the need for any splice.

**70-16 Furnishing rights-of-way.** The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

**70-17 Personal liability of public officials.** In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, RPR, their authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

**70-18 No waiver of legal rights.** Upon completion of the work, the Owner will expeditiously make a final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights under any warranty or guaranty.

**70-19 Environmental protection.** The Contractor shall comply with all federal, state, and local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, asphalts, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

**70-20 Archaeological and historical findings.** Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during their operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the RPR. The RPR will immediately investigate the Contractor's findings, and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in Section 40, paragraph 40-04, *Extra Work*, and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order, or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

**70-21 Insurance Requirements.** See page 3-3 paragraph 17 of the special provisions for the Contractor's insurance requirements applicable to this project.

## END OF SECTION 70



## Section 80 Execution and Progress

**80-01 Subletting of contract.** The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Resident Project Representative (RPR).

The Contractor shall perform, with his organization, an amount of work equal to at least 25 percent of the total contract cost.

Should the Contractor elect to assign their contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner.

The Contractor shall provide copies of all subcontracts to the RPR 14 days prior to being utilized on the project. As a minimum, the information shall include the following:

- Subcontractor's legal company name.
- Subcontractor's legal company address, including County name.
- Principal contact person's name, telephone and fax number.
- Complete narrative description, and dollar value of the work to be performed by the subcontractor.
- Copies of required insurance certificates in accordance with the specifications.
- Minority/ non-minority status.

**80-02 Notice to proceed (NTP).** The Owners notice to proceed will state the date on which contract time commences. The Contractor is expected to commence project operations within 10 days of the NTP date. The Contractor shall notify the RPR at least 24 hours in advance of the time contract operations begins. The Contractor shall not commence any actual operations prior to the date on which the notice to proceed is issued by the Owner.

**80-03 Execution and progress.** Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least 10 days prior to the start of work. The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the RPR's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the RPR at least 24 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the Owner.

The project schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or another format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall

show all work items identified in the project proposal for each work area and shall include the project start date and end date.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a twice monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

**80-04 Limitation of operations.** The Contractor shall control their operations and the operations of their subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with airport operations (through the RPR) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the RPR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, *Construction Safety and Phasing Plan (CSPP)*.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; and immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) and as listed below, cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows:

See Appendix A – CSPP and plan sheets G-081 through G-084 for AOA closure phasing, time of completion, and communication requirements.

The Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction and the approved CSPP.

**80-04.1 Operational safety on airport during construction.** All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP included within the contract documents conveys minimum requirements for operational safety at the airport during construction activities. The Contractor shall prepare and submit a SPCD that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks to assure compliance with the safety plan measures.

The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the CSPP and SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the Owner. The necessary coordination actions to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time.

**80-05 Character of workers, methods, and equipment.** The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the RPR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the RPR.

Should the Contractor fail to remove such person or persons or fail to furnish suitable and sufficient personnel for the proper execution of the work, the RPR may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on work shall be of sufficient size and in such mechanical condition as to meet the requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall not cause injury to previously completed work, adjacent property, or existing airport facilities due to its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless otherwise authorized by the RPR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the RPR to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the RPR determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality or take such other corrective action as the RPR may direct. No change will be made in the basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this paragraph.

**80-06 Temporary suspension of the work.** The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods the Owner may deem necessary, due to unsuitable weather, or other conditions considered unfavorable for the execution of the work, or for such time necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the written order to suspend work to the effective date of the written order to resume the work. Claims for such compensation shall be filed with the RPR within the time period stated in the RPR's order to resume work. The Contractor shall submit with their own claim information substantiating the amount shown on the claim. The RPR will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather or for any other delay provided for in the contract, plans, or specifications.

If it becomes necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

**80-07 Determination and extension of contract time.** The number of working days shall be stated in the proposal and contract and shall be known as the Contract Time.

If the contract time requires extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

**80-07.1 Contract time based on working days.** Contract time based on working days shall be calculated weekly by the Resident Project Representative (RPR). The RPR will furnish the Contractor a copy of their weekly statement of the number of working days charged against the contract time during the week and the number of working days currently specified for completion of the contract (the original contract time plus the number of working days, if any, that have been included in approved Change Orders or Supplemental Agreements covering Extra Work).

The weekly statement of contract time charged is based on the following considerations:

(1) Time will be charged for days on which the Contractor could proceed with scheduled work under construction at the time for at least six (6) hours with the normal work force employed on such items. When the normal work force is a double-shift, use 12 hours; and when the normal work force is on a triple-shift, use 18 hours. Conditions beyond the Contractor's control such as strikes, lockouts, unusual delays in transportation, temporary suspension of the scheduled work items under construction or temporary suspension of the entire work which have been ordered by the Owner for reasons not the fault of the Contractor, shall not be charged against the contract time.

(2) The RPR will not make charges against the contract time prior to the effective date of the notice to proceed.

(3) The RPR will begin charges against the contract time on the first working day after the effective date of the notice to proceed.

(4) The RPR will not make charges against the contract time after the date of final acceptance as defined in Section 50, paragraph 50-14, *Final Acceptance*.

(5) The Contractor will be allowed one (1) week in which to file a written protest setting forth their own objections to the RPR's weekly statement. If no objection is filed within such a specified time, the weekly statement shall be considered as acceptable to the Contractor.

The contract time (stated in the proposal) is based on the originally estimated quantities as described in Section 20, paragraph 20-05, *Interpretation of Estimated Proposal Quantities*. Should the satisfactory completion of the contract require performance of work in greater quantities than those estimated in the proposal, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such an increase in contract time shall not consider either the cost of work or the extension of contract time that has been covered by change order or supplemental agreement and shall be made at the time of final payment.

**80-08 Failure to complete on time.** For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional

engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

Phase	Liquidated Damages Cost	Allowed Construction Time
1 (Schedule 1)	\$2,000 per Working Day	45 Working Days
2A (Schedule 2)	\$2,000 per Working Day	25 Working Days
2B (Schedule 2)	\$2,000 per Working Day	30 Working Days

The maximum construction time allowed for Schedules 1 and 2 will be the sum of the time allowed for individual schedules but not more than 100 working days. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the Owner of any of its rights under the contract.

**80-09 Default and termination of contract.** The Contractor shall be considered in default of their contract, and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons, if the Contractor:

- a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or
- b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or
- c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or
- d. Discontinues the execution of the work, or
- e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or
- f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or
- g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or
- h. Makes an assignment for the benefit of creditors, or
- i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Owner consider the Contractor in default of the contract for any reason above, the Owner shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the RPR of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract, to take the execution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the RPR will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

**80-10 Termination for national emergencies.** The Owner shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a

direct result of an Executive Order of the President with respect to the execution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials, obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the RPR.

Termination of the contract or a portion thereof shall neither relieve the Contractor of their responsibilities for the completed work nor shall it relieve their surety of its obligation for and concerning any just claim arising out of the work performed.

**80-11 Work area, storage area and sequence of operations.** The Contractor shall obtain approval from the RPR prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate work in accordance with the approved CSPP and SPCD.

## **END OF SECTION 80**



## **Section 90 Measurement and Payment**

**90-01 Measurement of quantities.** All work completed under the contract will be measured by the RPR, or their authorized representatives, using United States Customary Units of Measurement.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the RPR.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

The term “lump sum” when used as an item of payment will mean complete payment for the work described in the contract. When a complete structure or structural unit (in effect, “lump sum” work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When requested by the Contractor and approved by the RPR in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

### **Measurement and Payment Terms**

<b>Term</b>	<b>Description</b>
<b>Excavation and Embankment Volume</b>	In computing volumes of excavation, the average end area method will be used unless otherwise specified.
<b>Measurement and Proportion by Weight</b>	The term “ton” will mean the short ton consisting of 2,000 pounds (907 kg) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the RPR directs, and each truck shall bear a plainly legible identification mark.
<b>Measurement by Volume</b>	Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level

<b>Term</b>	<b>Description</b>
	capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.
<b>Asphalt Material</b>	Asphalt materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts. Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.
<b>Cement</b>	Cement will be measured by the ton (kg) or hundredweight (km).
<b>Structure</b>	Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
<b>Timber</b>	Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.
<b>Plates and Sheets</b>	The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.
<b>Miscellaneous Items</b>	When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.
<b>Scales</b>	<p>Scales must be tested for accuracy and serviced before use. Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.</p> <p>Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed 0.1% of the nominal rated capacity of the scale, but not less than one pound (454 grams). The use of spring balances will not be permitted.</p> <p>In the event inspection reveals the scales have been “overweighing” (indicating more than correct weight) they will be immediately adjusted. All materials</p>

Term	Description
	<p>received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%.</p> <p>In the event inspection reveals the scales have been under-weighting (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded.</p> <p>Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.</p> <p>Scale installations shall have available ten standard 50-pound (2.3 km) weights for testing the weighing equipment or suitable weights and devices for other approved equipment.</p> <p>All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.</p>
<b>Rental Equipment</b>	<p>Rental of equipment will be measured by time (in hours) of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 <i>Payment for Extra Work</i>.</p>
<b>Pay Quantities</b>	<p>When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the RPR. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.</p>

**90-02 Scope of payment.** The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

When the “basis of payment” subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

**90-03 Compensation for altered quantities.** When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in Section 40, paragraph 40-02, *Alteration of Work and Quantities*, will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or

indirectly from their own unbalanced allocation of overhead and profit among the contract items, or from any other cause.

**90-04 Payment for omitted items.** As specified in Section 40, paragraph 40-03, *Omitted Items*, the RPR shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

Should the RPR omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the RPR's order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on work prior to the date of the RPR's order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the RPR's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

**90-05 Payment for extra work.** Extra work, performed in accordance with Section 40, paragraph 40-04, *Extra Work*, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

**90-06 Partial payments.** Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the RPR, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with paragraph 90-07, *Payment for Materials on Hand*. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

a. From the total of the amount determined to be payable on a partial payment, five (5) percent of such total amount will be deducted and retained by the Owner for protection of the Owner's interests. Unless otherwise instructed by the Owner, the amount retained by the Owner will be in effect until the final payment is made except as follows:

(1) Contractor may request release of retainage on work that has been partially accepted by the Owner in accordance with Section 50-14. The contractor must provide a certified invoice to the RPR that supports the value of retainage held by the Owner for partially accepted work.

(2) In lieu of retainage, the Contractor may exercise at its option the establishment of an escrow account per paragraph 90-08.

b. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. Contractor must provide the Owner evidence of prompt and full payment of retainage held by the prime Contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

When at least 95% of the work has been completed to the satisfaction of the RPR, the RPR shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done. The Owner may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the RPR to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in paragraph 90-09, *Acceptance and Final Payment*.

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

**90-07 Payment for materials on hand.** Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

- a. The material has been stored or stockpiled in a manner acceptable to the RPR at or on an approved site.
- b. The Contractor has furnished the RPR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- c. The Contractor has furnished the RPR with satisfactory evidence that the material and transportation costs have been paid.
- d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material stored or stockpiled.
- e. The Contractor has furnished the Owner evidence that the material stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of their responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this paragraph.

**90-08 Payment of withheld funds.** At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in paragraph 90-06 *Partial Payments*, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

- a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.
- b. The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the retainage that would otherwise be withheld from partial payment.
- c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.
- d. The Contractor shall obtain the written consent of the surety to such agreement.

**90-09 Acceptance and final payment.** When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

After the Contractor has approved, or approved under protest, the RPR's final estimate, and after the RPR's receipt of the project closeout documentation required in paragraph 90-11, *Contractor Final Project Documentation*, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of Section 50, paragraph 50-16, *Claims for Adjustments and Disputes*, or under the provisions of this paragraph, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

**90-10 Construction warranty.**

- a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.
- b. This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession.
- c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.



**d.** The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.

**e.** The Owner will notify the Contractor, in writing, within seven (7) days after the discovery of any failure, defect, or damage.

**f.** If the Contractor fails to remedy any failure, defect, or damage within 14 days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

**g.** With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

**h.** This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

**90-11 Contractor Final Project Documentation.** Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the RPR approves the Contractor's final submittal. The Contractor shall:

**a.** Provide two (2) copies of all manufacturers' warranties specified for materials, equipment, and installations.

**b.** Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.

**c.** Complete final cleanup in accordance with Section 40, paragraph 40-08, *Final Cleanup*.

**d.** Complete all punch list items identified during the Final Inspection.

**e.** Provide complete release of all claims for labor and material arising out of the Contract.

**f.** Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.

**g.** When applicable per state requirements, return copies of sales tax completion forms.

**h.** Manufacturer's certifications for all items incorporated in the work.

**i.** All required record drawings, as-built drawings or as-constructed drawings.

**j.** Project Operation and Maintenance (O&M) Manual(s).

**k.** Security for Construction Warranty.

**l.** Equipment commissioning documentation submitted, if required.

## **END OF SECTION 90**

## Part 4

# FAA Standard Technical Specifications

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### **Item C-100 Contractor Quality Control Program (CQCP)**

**100-1 General.** Quality is more than test results. Quality is the combination of proper materials, testing, workmanship, equipment, inspection, and documentation of the project. Establishing and maintaining a culture of quality is key to achieving a quality project. The Contractor shall establish, provide, and maintain an effective Contractor Quality Control Program (CQCP) that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified here and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The Contractor shall establish a CQCP that will:

- a.** Provide qualified personnel to develop and implement the CQCP.
- b.** Provide for the production of acceptable quality materials.
- c.** Provide sufficient information to assure that the specification requirements can be met.
- d.** Document the CQCP process.

The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the CQCP has been reviewed and approved by the Resident Project Representative (RPR). No partial payment will be made for materials subject to specific quality control (QC) requirements until the CQCP has been reviewed and approved.

The QC requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the quality assurance (QA) testing requirements. QA testing requirements are the responsibility of the RPR or Contractor as specified in the specifications.

A Quality Control (QC)/Quality Assurance (QA) workshop with the Engineer, Resident Project Representative (RPR), Contractor, subcontractors, testing laboratories, and Owner's representative must be held prior to start of construction. The QC/QA workshop will be facilitated by the Contractor. The Contractor shall coordinate with the Airport and the RPR on time and location of the QC/QA workshop. Items to be addressed, at a minimum, will include:

- a.** Review of the CQCP including submittals, QC Testing, Action & Suspension Limits for Production, Corrective Action Plans, Distribution of QC reports, and Control Charts.
- b.** Discussion of the QA program.
- c.** Discussion of the QC and QA Organization and authority including coordination and information exchange between QC and QA.
- d.** Establish regular meetings to discuss control of materials, methods and testing.
- e.** Establishment of the overall QC culture.

### **100-2 Description of program.**

**a. General description.** The Contractor shall establish a CQCP to perform QC inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. The CQCP shall ensure conformance to applicable specifications and plans with respect to materials, off-site fabrication, workmanship, construction, finish, and functional performance. The CQCP shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of QC.

**b. Contractor Quality Control Program (CQCP).** The Contractor shall describe the CQCP in a written document that shall be reviewed and approved by the RPR prior to the start of any production, construction, or off-site fabrication. The written CQCP shall be submitted to the RPR for review and approval at least 10 calendar days before the CQCP Workshop. The Contractor's CQCP and QC testing laboratory must be approved in writing by the RPR prior to the Notice to Proceed (NTP).

The CQCP shall be organized to address, as a minimum, the following:

1. QC organization and resumes of key staff.
2. Project progress schedule.
3. Submittals schedule.
4. Inspection requirements.
5. QC testing plan.
6. Documentation of QC activities and distribution of QC reports.
7. Requirements for corrective action when QC and/or QA acceptance criteria are not met.
8. Material quality and construction means and methods. Address all elements applicable to the project that affect the quality of the pavement structure including subgrade, subbase, base, and surface course. Some elements that must be addressed include, but is not limited to mix design, aggregate grading, stockpile management, mixing and transporting, placing and finishing, quality control testing and inspection, smoothness, laydown plan, equipment, and temperature management plan.

The Contractor must add any additional elements to the CQCP that is necessary to adequately control all production and/or construction processes required by this contract.

**100-3 CQCP organization.** The CQCP shall be implemented by the establishment of a QC organization. An organizational chart shall be developed to show all QC personnel, their authority, and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all QC staff by name and function and shall indicate the total staff required to implement all elements of the CQCP, including inspection and testing for each item of work. If necessary, different technicians can be used for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the CQCP, the personnel assigned shall be subject to the qualification requirements of paragraphs 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

The QC organization shall, as a minimum, consist of the following personnel:

**a. Program Administrator.** The Contractor Quality Control Program Administrator (CQCPA) must be a full-time on-site employee of the Contractor, or a consultant engaged by the Contractor. The CQCPA must have a minimum of five (5) years of experience in QC pavement construction with prior QC experience on a project of comparable size and scope as the contract.

Included in the five (5) years of paving/QC experience, the CQCPA must meet at least one of the following requirements:

- (1) Professional Engineer with one (1) year of airport paving experience.
- (2) Engineer-in-training with two (2) years of airport paving experience.
- (3) National Institute for Certification in Engineering Technologies (NICET) Civil Engineering Technology Level IV with three (3) years of airport paving experience.

(4) An individual with four (4) years of airport paving experience, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.

The CQCPA must have full authority to institute any and all actions necessary for the successful implementation of the CQCP to ensure compliance with the contract plans and technical specifications. The CQCPA authority must include the ability to immediately stop production until materials and/or processes are in compliance with contract specifications. The CQCPA must report directly to a principal officer of the construction firm. The CQCPA may supervise the Quality Control Program on more than one project provided that person can be at the job site within two (2) hours after being notified of a problem.

**b. QC technicians.** A sufficient number of QC technicians necessary to adequately implement the CQCP must be provided. These personnel must be either engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II in Civil Engineering Technology or higher and shall have a minimum of two (2) years of experience in their area of expertise.

The QC technicians must report directly to the CQCPA and shall perform the following functions:

- (1) Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by paragraph 100-6.
- (2) Performance of all QC tests as required by the technical specifications and paragraph 100-8.
- (3) Performance of tests for the RPR when required by the technical specifications.

Certification at an equivalent level of qualification and experience by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

**c. Staffing levels.** The Contractor shall provide sufficient qualified QC personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The CQCP shall state where different technicians will be required for different work elements.

**100-4 Project progress schedule.** Critical QC activities must be shown on the project schedule as required by Section 80, paragraph 80-03, *Execution and Progress*.

**100-5 Submittals schedule.** The Contractor shall submit a detailed listing of all submittals (for example, mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include as a minimum:

- a. Specification item number.
- b. Item description.
- c. Description of submittal.
- d. Specification paragraph requiring submittal.
- e. Scheduled date of submittal.

**100-6 Inspection requirements.** QC inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified by paragraph 100-9.

Inspections shall be performed as needed to ensure continuing compliance with contract requirements until completion of the particular feature of work. Inspections shall include the following minimum requirements:



a. During plant operation for material production, QC test results and periodic inspections shall be used to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment used in proportioning and mixing shall be inspected to ensure its proper operating condition. The CQCP shall detail how these and other QC functions will be accomplished and used.

b. During field operations, QC test results and periodic inspections shall be used to ensure the quality of all materials and workmanship. All equipment used in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The CQCP shall document how these and other QC functions will be accomplished and used.

#### **100-7 Contractor QC testing facility.**

a. For projects that include Item P-401, Item P-403, and Item P-404, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM D3666, *Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials*:

8.1.3 Equipment Calibration and Checks;

8.1.9 Equipment Calibration, Standardization, and Check Records;

8.1.12 Test Methods and Procedures

b. For projects that include P-501, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM C1077, *Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation*:

7 Test Methods and Procedures

8 Facilities, Equipment, and Supplemental Procedures

**100-8 QC testing plan.** As a part of the overall CQCP, the Contractor shall implement a QC testing plan, as required by the technical specifications. The testing plan shall include the minimum tests and test frequencies required by each technical specification Item, as well as any additional QC tests that the Contractor deems necessary to adequately control production and/or construction processes.

The QC testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

- a. Specification item number (e.g., P-401)
- b. Item description (e.g., Hot Mix Asphalt Pavements)
- c. Test type (e.g., gradation, grade, asphalt content)
- d. Test standard (e.g., ASTM or American Association of State Highway and Transportation Officials (AASHTO) test number, as applicable)
- e. Test frequency (e.g., as required by technical specifications or minimum frequency when requirements are not stated)
- f. Responsibility (e.g., plant technician)
- g. Control requirements (e.g., target, permissible deviations)

The QC testing plan shall contain a statistically based procedure of random sampling for acquiring test samples in accordance with ASTM D3665. The RPR shall be provided the opportunity to witness QC sampling and testing.

All QC test results shall be documented by the Contractor as required by paragraph 100-9.

**100-9 Documentation.** The Contractor shall maintain current QC records of all inspections and tests performed. These records shall include factual evidence that the required QC inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the RPR daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the CQCPA.

Contractor QC records required for the contract shall include, but are not necessarily limited to, the following records:

**a. Daily inspection reports.** Each Contractor QC technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations. These technician's daily reports shall provide factual evidence that continuous QC inspections have been performed and shall, as a minimum, include the following:

- (1) Technical specification item number and description
- (2) Compliance with approved submittals
- (3) Proper storage of materials and equipment
- (4) Proper operation of all equipment
- (5) Adherence to plans and technical specifications
- (6) Summary of any necessary corrective actions
- (7) Safety inspection.
- (8) Photographs and/or video

The daily inspection reports shall identify all QC inspections and QC tests conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be signed by the responsible QC technician and the CQCPA. The RPR shall be provided at least one copy of each daily inspection report on the workday following the day of record. When QC inspection and test results are recorded and transmitted electronically, the results must be archived.

**b. Daily test reports.** The Contractor shall be responsible for establishing a system that will record all QC test results. Daily test reports shall document the following information:

- (1) Technical specification item number and description
- (2) Test designation
- (3) Location
- (4) Date of test
- (5) Control requirements
- (6) Test results

- (7) Causes for rejection
- (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
- (2) Order the Contractor to stop operations until appropriate corrective actions are taken.

### **METHOD OF MEASUREMENT**

**100-13 Basis of measurement and payment.** Contractor Quality Control Program (CQCP) 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%.
- 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%.

### **BASIS OF PAYMENT**

#### **100-14 Payment will be made under:**

Item C-100 Contractor Quality Control Program (CQCP)

### **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**

## Item C-102 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control

### DESCRIPTION

**102-1.** This item shall consist of temporary control measures as shown on the plans or as ordered by the Resident Project Representative (RPR) during the life of a contract to control pollution of air and water, soil erosion, and siltation through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be designed, installed and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

### MATERIALS

**102-2.1 Grass.** Grass that will not compete with the grasses sown later for permanent cover per Item T-901 shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant. Allowance of temporary seed mix types, in accordance with T-901-2.1, will be allowed with proper documentation and communication with the RPR.

**102-2.2 Mulches.** Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials per Item T-908. Mulches shall not create a wildlife attractant.

**102-2.3 Fertilizer.** Fertilizer shall be a standard commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

**102-2.4 Slope drains.** Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

**102-2.5 Silt fence.** Silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall be machine sliced and shall meet the requirements of MnDOT Specifications 2573 and 3886.

**102-2.6 Sediment Control Log.** Sediment control log shall meet the requirements of MnDOT Specification 3897.

**102-2.7 Stabilized Construction Exit.** Mulch material shall meet the requirements of MnDOT Specification 3882.

**102-2.8 Storm Drain Inlet Protection.** Conform to the requirements of MnDOT Specification 3137 and 3886.

**102-2.9 Culvert End Control.** Sediment control log shall meet the requirements of MnDOT Specification 3897, type compost, wood chip or rock.

**102-2.10 Other.** All other materials shall meet commercial grade standards and shall be approved by the RPR before being incorporated into the project.

## **CONSTRUCTION REQUIREMENTS**

**102-3.1 General.** In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The contractor shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

The contractor will be responsible for complying with the MPCA NPDES General Permit and Construction Stormwater Pollution Prevention Plan (SWPPP) that must be procured by the contractor for the project. The contractor will be solely responsible for providing all inspections, documentation, record keeping, maintenance, remedial actions, and repairs required by the permit. All inspections, maintenance, and records required by the general permit shall be the sole responsibility of the contractor. The word “permittee” shall mean “contractor”. Standard forms for logging all required inspection and maintenance activities shall be used by the contractor. All inspection and maintenance forms used shall be turned over to the RPR every month for retention in accordance with the permit.

The contractor shall have all logs, documentation, and inspection reports on site for the RPR’s review. The contractor shall rectify any shortcomings noted by the RPR.

All meetings with the MPCA or any local authority shall be attended by both the RPR and the contractor or their representatives. No work required by said entities, and for which the contractor requires additional compensation shall be started without approval from the RPR. The contractor shall immediately notify the RPR of any site visits by local permitting authorities.

The contractor has responsibility for the charge and care of the project and shall take necessary precautions against injury or damage to the project by action of the elements. In addition, the contractor shall take necessary precautions to prevent off site damage resulting from work conducted on the project or project related storm water runoff.

The contractor is responsible for preventing or minimizing sediment loss from the project by directing storm water runoff to constructed ponds and sediment traps as well as installing temporary sediment control devices in drainage locations where runoff can leave the project limits and/or enter into environmentally sensitive areas.

The contractor shall schedule, construct and/or install temporary sediment control and storm water management measures as required by the contract and as stated in the permits required for the project without having to obtain prior approval or having to be so directed by the RPR upon immediate discovery.

The contractor shall install temporary storm water management and sediment control devices in conformity with the details, typical sections, and elevation controls shown in the contract. The actual installation location of temporary storm water management and sediment control devices may be slightly adjusted from that indicated in the plan to better accommodate the actual field conditions and increase the effectiveness of a device. The contractor will not conduct location staking. Errors, omissions, and changed site conditions affecting the location or placement of the temporary storm water management or sediment control devices shall be brought to the attention of the RPR by the contractor.



**Erosion control supervisor.** The contractor shall provide an erosion control supervisor with a valid certification to direct the contractor and subcontractor(s) operations and ensure compliance with federal, state, and local ordinances and regulations. The certification is obtained by completing a two (2) day erosion/sediment control site management training class and passing the required test, from a MnDOT approved provider as listed in the MnDOT certification schedule. The contractor's erosion control supervisor is considered incidental to the project. No compensation will be allowed.

The erosion control supervisor shall be responsible for all matters pertaining to the NPDES construction stormwater permit compliance and implement the SWPPP and conduct the contractor's erosion and sediment quality control program. The erosion control supervisor shall have authority over all contractor operations which influence NPDES permit compliance. In addition, the erosion control supervisor shall be available to always be on the project within 24 hours from initial disturbance until final stabilization. The following describes the duties of the erosion control supervisor:

1. Coordinate and schedule the work of subcontractors such that erosion and sediment control measures are fully executed for each operation and in a timely manner over the duration of the contract.
2. Oversee the work of subcontractors, appropriate erosion and sediment preventive measures are undertaken for each operation and stage of the work.
3. Prepare the required weekly erosion control schedules and inspection with the dates and times and present it to the RPR.
4. Attend all weekly construction meetings to discuss the erosion control schedule and findings of the inspections and other related issues.
5. Prepare the erosion/sediment control site plans requested by the RPR.
6. Provide for erosion/sediment control methods for the contractor's temporary work not shown on the plans, such as the work platforms, temporary construction, pumping operations, plant and storage yards, and cofferdams.
7. Ensure that applicable permits are acquired and complied with for borrow pits, dewatering and any temporary work conducted by the contractor in rivers, lakes, and streams.
8. Ensure that all erosion/sediment control work is conducted in a timely manner.
9. Ensure that erosion/sediment control work is installed to the fullest extent prior to suspension of the work.
10. Coordinate with federal, state, and local regulatory agencies on resolution of erosion/sediment control issues due to the contractor's operations.
11. Ensure that proper cleanup occurs from vehicle tracking on paved surfaces and/or any location where the sediment leaves the right-of-way.
12. Ensure that installers of erosion and sediment control have proper certifications.

If the contractor fails to provide a certified erosion control supervisor for the project, the RPR shall issue a written order to the contractor. The contractor shall respond within 24 hours and provide the required erosion control supervisor or be subject to \$1,000 per calendar day deduct for noncompliance.

**102-3.2 Schedule.** Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the RPR.

**102-3.3 Construction details.** The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations. The RPR shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the RPR.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the RPR. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the RPR, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The RPR may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

**102-3.4 Installation, maintenance and removal of silt fence.** Silt fences shall extend to a minimum of 16 inches (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 10 feet (3 m) on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch (300-mm) overlap and securely sealed. A trench shall be excavated approximately 4 inches (100 mm) deep by 4 inches (100 mm) wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric. The Contractor shall 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 conditions until permanent erosion control is established. Silt fence shall be removed upon approval of the RPR.

**102-3.5 temporary sediment control measures.** Sediment control measures must be installed down gradient prior to or in conjunction with soil disturbing activities. The contractor shall schedule, install, and maintain temporary sediment control measures as an ongoing effort on a site-by-site basis over the temporary sediment control devices have been installed by implementing a good quality erosion control program and staging construction as needed, if the RPR determines that the contractor has not followed

proper erosion control practices that result in sedimentation outside of the right of way, the contractor shall retrieve all sediment that has left the right of way, and restore the property to the pre-existing condition, to the fullest extent possible at the contractor's expense.

**102-3.6 Dewatering and pumping.** If dewatering or pumping of water is necessary, the contractor is responsible for obtaining any necessary permits in accordance with MnDOT specifications 1701 and 1702. Do not begin to work until the RPR approves the dewatering plan. If the discharge from the dewatering or pumping process is turbid or contains sediment-laden water, it must be treated through use of sediment traps, vegetative filter strips, flocculants, or other sediment reducing measures such that the discharge is not visibly different from the receiving water. Do not begin work until the RPR approves the water treatment plan. The discharge location of the dewatering process must also be protected from excess erosion, unless otherwise provided in the contract, the best management practices used to control erosion and suspended sediment during the dewatering or pumping operation shall be furnished by the contractor. Dewatering and pumping shall be incidental to the project construction.

**102-3.7 vehicle tracking onto paved surfaces.** The contractor shall use stabilized construction entrances/exits or other appropriate best management practices (BMPs) at major vehicle exit locations to minimize vehicle tracking of sediment from the project onto paved surfaces. BMPs to protect vehicle exit sites shall be furnished by the contractor and maintained throughout the duration of the project and removed upon final completion of the work.

The contractor is responsible for ensuring paved streets are clean at the end of each working day or more often as necessary to provide safety for the traveling public.

Tracked sediment on paved surfaces must be removed by the contractor within 24 hours of discovery, in accordance with MnDOT specification 1717.2. payment for street sweeping to provide safe conditions for the traveling public, environmental reasons, or regulatory requirements shall be incidental to the project.

**102-3.8 critical resources.** The contractor shall schedule and phase construction in critical resource areas to the best of their ability in order to minimize the potential of sediment entering into a critical resource. Critical resources include but are not limited to protected wetlands, surface waters, trout streams, special waters, impaired waters, rivers, and endangered species habitat. Measures to minimize sediment potential include practices such as hand clearing and grubbing, limited bare soil exposure time and immediate final establishment of vegetation.

**102-3.9 silt fence, type machine sliced.** This item shall include the installation, maintenance, and removal of the silt fence as indicated in the plan or as directed by the RPR. Mechanically install the geotextile with the salvaged edge on top. Place the geotextile directly behind the soil-slicing blade as it works to achieve consistent placement and depth. Do not plow soil if using the slicing method. Roll the wheels of a tractor or skid steer on each side of the geotextile at least two (2) times to compact the soil immediately next to the geotextile fabric. Posts shall be embedded a minimum of two (2) feet into the ground and installed a maximum of ten (10) feet apart for general use and four (4) feet apart in ditch check applications. Secure each post by inserting three (3) plastic zip ties through the geotextile. Silt fence shall be installed on the contour and constructed so flow cannot bypass the ends. Continuous silt fence segments shall not exceed six hundred (600) feet.

Silt fences shall extend to a minimum of sixteen (16) inches and a maximum of thirty-four (34) inches above the ground surface. Filter fabric shall be cut from a continuous roll to the length requiring minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum twelve (12) inch overlap and securely sealed. The contractor shall 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 conditions until permanent erosion control is established. Silt fence shall be removed upon approval of site conditions by the RPR.

**102-3.10 Sediment control logs.** Prepare a shallow trench for the sediment control log to be placed. Backfill and compact the up-gradient side of the sediment control log with soil. Stake logs as shown on the plans. If using more than one sediment control log for length, overlap the ends six (6) inches and stake both ends. Wood stakes shall be sized and installed as shown on the plans. Logs shall be free of seed-bearing stalks of noxious grasses or weeds as defined by the rules and regulations of the Minnesota Department of Agriculture.

For ditch checks, place logs perpendicular to flow and in a crescent shape with ends facing upstream. Use logs with a center section of the ditch check one log diameter lower than the ends. Space stakes as shown on the plans.

**102-3.11 Culvert end controls.** Culvert end controls shall be placed in accordance with the plan and shall meet requirements of MnDOT specification 2573. This item shall include the installation and maintenance of the culvert end control as indicated in the plan or as directed by the RPR.

Provide culvert end controls consisting of BMPs and devices for temporary impoundment and treatment of construction stormwater upstream. Culvert end controls apply to median culverts, centerline culverts, box culverts, and entrance culverts.

Protect culvert ends with sediment capture devices before soil disturbing activities that would result in sediment laden storm water runoff entering the culvert. Protect culvert outlet ends with energy dissipation devices, transition devices, or both to reduce erosion and sediment loss while reducing the velocity of water exiting the culvert. Leave installed devices in place for as long as the culvert is functioning. Maintain devices until the contract is completed.

Clean out devices regularly and provide an emergency overflow feature to reduce the flooding potential. Place devices in a manner that does not create driving hazards or obstructions. Remove sediment deposited in or plugging the drainage systems.

**102-3.12 Storm drain inlet protection.** Inlet protection shall be placed in accordance with the plan and shall meet the requirements of MnDOT specification 2573. This item shall include the installation and maintenance of the inlet protection as indicated in the plan or as directed by the RPR.

Protect all storm drain inlets prior to soil disturbing activities that may result in sediment laden storm water runoff. Implement BMPs and devices to protect all given inlets throughout the work to prevent passage of sediments into and through underground drainage systems. Protect storm drain inlets including manholes, catch basins, curb inlets, and other drop-type inlets constructed for the ingress of surface water runoff into the underground drainage systems.

Protect storm drain inlets with sediment capture devices before soil disturbing activities that result in sediment laden storm water runoff entering the inlet. Provide effective storm drain inlet protection until the completion of paving or stabilizing of sources with potential for discharging into an inlet.

Prevent or minimize the potential for unsafe flooding or siltation problems. Regularly clean out devices and provide devices with an emergency overflow to reduce the flooding potential. Place devices without creating driving hazards or obstructions.

**102-3.13 removal of erosion control devices.** Contractor shall remove all erosion control devices and materials from the site after completing the work unless otherwise required by the contract or directed by the RPR. The contractor shall perform cleanup operations upon completion of removal. All removed devices and material become the property of the contractor. Spread accumulated sediment to form a suitable surface for turf establishment or dispose of the sediment. Shape the area to permit natural drainage as approved by the RPR.

## METHOD OF MEASUREMENT

**102-4.1** Temporary erosion and pollution control work required will be performed as scheduled or directed by the RPR. Completed and accepted work will be measured as follows:

- a) Temporary seeding and mulching will not be measured for payment; it is considered the responsibility of the contractor to comply with the stabilization time frames outlined in the NPDES permit.
- b) Installation and removal of silt fence, type MS, shall be measured by the linear foot furnished, acceptably installed, maintained, and removed upon stabilization of landscaped areas. Measurement shall be along the base of the fence from outside to outside of the end post for each section of fence. Removal and disposal of trapped sediment is incidental.
- c) Sediment control logs shall be measured by the linear foot for each separate size furnished, acceptably installed, maintained, and removed upon stabilization of landscaped areas.
- d) Stabilized construction exits shall be measured per each furnished, acceptably installed, maintained, and removed upon completion of the project. No additional payment will be made for the restoration of the area upon removal, it shall be considered incidental to the bid item.
- e) Culvert end controls shall be measured per each furnished, acceptably installed, maintained, and removed upon stabilization of landscaped area.
- f) Storm drains inlet protection shall be measured per each furnished, acceptably installed, maintained, and removed upon stabilization of landscaped areas.
- g) Removed erosion control devices shall be disposed of offsite by contractor. Disposal is considered incidental to pay items.

**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 RPR and measured as provided in paragraph 102-4.1 will be paid for under:

Item C-102-5.1a	Installation and removal of silt fence, type MS – per linear foot.
Item C-102-5.1b	Sediment control log – per linear foot
Item C-102-5.1c	Stabilized construction exit – per each
Item C-102-5.1d	Culvert end control – per each
Item C-102-5.1e	Storm drain inlet protection – per each

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*.

## 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 150/5200-33      *Hazardous Wildlife Attractants on or Near Airports*

AC 150/5370-2      *Operational Safety on Airports During Construction*

### ASTM International (ASTM)

ASTM D6461      *Standard Specification for Silt Fence Materials*

### United States Department of Agriculture (USDA)

FAA/USDA Wildlife Hazard Management at Airports, A Manual for Airport Personnel

**END OF ITEM C-102**



## **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 10 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 as shown on the plans near the construction, shall have doors equipped with locking capabilities or heavy-duty padlocks, have two rooms, one drafting table, minimum two desks and office chairs, and shall be separate from any space used by the Contractor. The space must be anchored or secured to preclude overturning caused by high velocity winds. The Contractor shall furnish water, sanitary facilities, heat, air conditioning, electricity, high speed internet, letter quality plain paper printer/scanner/copy machine (11”x17” capable), mini-refrigerator, microwave, first aid kit, and fire extinguisher.

## **METHOD OF MEASUREMENT**

**105-5 Basis of measurement and payment.** 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%.

## **BASIS OF PAYMENT**

**105-6 Payment will be made under:**

- Item C-105-6.1a Mobilization – per lump sum
- Item C-105-6.1b Temporary RPR field office for construction – 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.

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended.

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD)

WH 1321 – Employee Rights under the Davis-Bacon Act Poster

**END OF ITEM C-105**

## Item C-110 Method of Estimating Percentage of Material Within Specification Limits (PWL)

**110-1 General.** When the specifications provide for acceptance of material based on the method of estimating percentage of material within specification limits (PWL), the PWL will be determined in accordance with this section. All test results for a lot will be analyzed statistically to determine the total estimated percent of the lot that is within specification limits. The PWL is computed using the sample average ( $\bar{X}$ ) and sample standard deviation ( $S_n$ ) of the specified number ( $n$ ) of sublots for the lot and the specification tolerance limits,  $L$  for lower and  $U$  for upper, for the particular acceptance parameter. From these values, the respective Quality index,  $Q_L$  for Lower Quality Index and/or  $Q_U$  for Upper Quality Index, is computed and the PWL for the lot for the specified  $n$  is determined from Table 1. All specification limits specified in the technical sections shall be absolute values. Test results used in the calculations shall be to the significant figure given in the test procedure.

There is some degree of uncertainty (risk) in the measurement for acceptance because only a small fraction of production material (the population) is sampled and tested. This uncertainty exists because all portions of the production material have the same probability to be randomly sampled. The Contractor's risk is the probability that material produced at the acceptable quality level is rejected or subjected to a pay adjustment. The Owner's risk is the probability that material produced at the rejectable quality level is accepted.

It is the intent of this section to inform the Contractor that, in order to consistently offset the Contractor's risk for material evaluation, production quality (using population average and population standard deviation) must be maintained at the acceptable quality specified or higher. In all cases, it is the responsibility of the Contractor to produce at quality levels that will meet the specified acceptance criteria when sampled and tested at the frequencies specified.

**110-2 Method for computing PWL.** The computational sequence for computing PWL is as follows:

- a. Divide the lot into  $n$  sublots in accordance with the acceptance requirements of the specification.
- b. Locate the random sampling position within the subplot in accordance with the requirements of the specification.
- c. Make a measurement at each location or take a test portion and make the measurement on the test portion in accordance with the testing requirements of the specification.
- d. Find the sample average ( $\bar{X}$ ) for all subplot test values within the lot by using the following formula:

$$\bar{X} = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

Where:  $\bar{X}$  = Sample average of all subplot test values within a lot

$x_1, x_2, \dots, x_n$  = Individual subplot test values

$n$  = Number of subplot test values

- e. Find the sample standard deviation ( $S_n$ ) by using the following formula:

$$S_n = [(d_1^2 + d_2^2 + d_3^2 + \dots + d_n^2)/(n-1)]^{1/2}$$

Where:  $S_n$  = Sample standard deviation of the number of subplot test values in the set

$d_1, d_2, \dots, d_n$  = Deviations of the individual subplot test values  $x_1, x_2, \dots$  from the average value  $\bar{X}$

that is:  $d_1 = (x_1 - \bar{X})$ ,  $d_2 = (x_2 - \bar{X})$  ...  $d_n = (x_n - \bar{X})$

n = Number of subplot test values

**f.** For single sided specification limits (i.e., L only), compute the Lower Quality Index  $Q_L$  by using the following formula:

$$Q_L = (X - L) / S_n$$

Where: L = specification lower tolerance limit

Estimate the percentage of material within limits (PWL) by entering Table 1 with  $Q_L$ , using the column appropriate to the total number (n) of measurements. If the value of  $Q_L$  falls between values shown on the table, use the next higher value of PWL.

**g.** For double-sided specification limits (i.e., L and U), compute the Quality Indexes  $Q_L$  and  $Q_U$  by using the following formulas:

$$Q_L = (X - L) / S_n$$

**and**

$$Q_U = (U - X) / S_n$$

Where: L and U = specification lower and upper tolerance limits

Estimate the percentage of material between the lower (L) and upper (U) tolerance limits (PWL) by entering Table 1 separately with  $Q_L$  and  $Q_U$ , using the column appropriate to the total number (n) of measurements, and determining the percent of material above  $P_L$  and percent of material below  $P_U$  for each tolerance limit. If the values of  $Q_L$  fall between values shown on the table, use the next higher value of  $P_L$  or  $P_U$ . Determine the PWL by use of the following formula:

$$PWL = (P_U + P_L) - 100$$

Where:  $P_L$  = percent within lower specification limit

$P_U$  = percent within upper specification limit

## EXAMPLE OF PWL CALCULATION

**Project:** Example Project

**Test Item:** Item P-401, Lot A.

### A. PWL Determination for Mat Density.

1. Density of four random cores taken from Lot A.

A-1 = 96.60

A-2 = 97.55

A-3 = 99.30

A-4 = 98.35

n = 4

2. Calculate average density for the lot.

$$X = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

$$X = (96.60 + 97.55 + 99.30 + 98.35) / 4$$

$$X = 97.95\% \text{ density}$$

3. Calculate the standard deviation for the lot.

$$S_n = [((96.60 - 97.95)^2 + (97.55 - 97.95)^2 + (99.30 - 97.95)^2 + (98.35 - 97.95)^2) / (4 - 1)]^{1/2}$$

$$S_n = [1.82 + 0.16 + 1.82 + 0.16] / 3^{1/2}$$

$$S_n = 1.15$$

4. Calculate the Lower Quality Index  $Q_L$  for the lot. ( $L=96.3$ )

$$Q_L = (X - L) / S_n$$

$$Q_L = (97.95 - 96.30) / 1.15$$

$$Q_L = 1.4348$$

5. Determine PWL by entering Table 1 with  $Q_L = 1.44$  and  $n = 4$ .

$$PWL = 98$$

## B. PWL Determination for Air Voids.

1. Air Voids of four random samples taken from Lot A.

$$A-1 = 5.00$$

$$A-2 = 3.74$$

$$A-3 = 2.30$$

$$A-4 = 3.25$$

2. Calculate the average air voids for the lot.

$$X = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

$$X = (5.00 + 3.74 + 2.30 + 3.25) / 4$$

$$X = 3.57\%$$

3. Calculate the standard deviation  $S_n$  for the lot.

$$S_n = [((3.57 - 5.00)^2 + (3.57 - 3.74)^2 + (3.57 - 2.30)^2 + (3.57 - 3.25)^2) / (4 - 1)]^{1/2}$$

$$S_n = [(2.04 + 0.03 + 1.62 + 0.10) / 3]^{1/2}$$

$$S_n = 1.12$$

4. Calculate the Lower Quality Index  $Q_L$  for the lot. ( $L = 2.0$ )

$$Q_L = (X - L) / S_n$$

$$Q_L = (3.57 - 2.00) / 1.12$$

$$Q_L = 1.3992$$

5. Determine  $P_L$  by entering Table 1 with  $Q_L = 1.41$  and  $n = 4$ .

$$P_L = 97$$

6. Calculate the Upper Quality Index  $Q_U$  for the lot. ( $U = 5.0$ )

$$Q_U = (U - X) / S_n$$

$$Q_U = (5.00 - 3.57) / 1.12$$

$$Q_U = 1.2702$$

7. Determine  $P_U$  by entering Table 1 with  $Q_U = 1.29$  and  $n = 4$ .

$$P_U = 93$$

8. Calculate Air Voids PWL

$$PWL = (P_L + P_U) - 100$$

$$PWL = (97 + 93) - 100 = 90$$

### EXAMPLE OF OUTLIER CALCULATION (REFERENCE ASTM E178)

**Project:** Example Project

**Test Item:** Item P-401, Lot A.

#### A. Outlier Determination for Mat Density.

1. Density of four random cores taken from Lot A arranged in descending order.

$$A-3 = 99.30$$

$$A-4 = 98.35$$

$$A-2 = 97.55$$

$$A-1 = 96.60$$

2. From ASTM E178, Table 1, for  $n=4$  an upper 5% significance level, the critical value for test criterion = 1.463.

3. Use average density, standard deviation, and test criterion value to evaluate density measurements.

a. For measurements greater than the average:

If (measurement - average)/(standard deviation) is less than test criterion, then the measurement is not considered an outlier.

For A-3, check if  $(99.30 - 97.95) / 1.15$  is greater than 1.463.

Since 1.174 is less than 1.463, the value is not an outlier.

b. For measurements less than the average:

If (average - measurement)/(standard deviation) is less than test criterion, then the measurement is not considered an outlier.

For A-1, check if  $(97.95 - 96.60) / 1.15$  is greater than 1.463.

Since 1.435 is less than 1.463, the value is not an outlier.

**Note:** In this example, a measurement would be considered an outlier if the density were:

Greater than  $(97.95 + 1.463 \times 1.15) = 99.63\%$

OR

less than  $(97.95 - 1.463 \times 1.15) = 96.27\%$ .

**Table 1. Table for Estimating Percent of Lot Within Limits (PWL)**

Percent Within Limits ( $P_L$ and $P_U$ )	Positive Values of Q ( $Q_L$ and $Q_U$ )							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
99	1.1541	1.4700	1.6714	1.8008	1.8888	1.9520	1.9994	2.0362
98	1.1524	1.4400	1.6016	1.6982	1.7612	1.8053	1.8379	1.8630



Percent Within Limits (P <sub>L</sub> and P <sub>U</sub> )	Positive Values of Q (Q <sub>L</sub> and Q <sub>U</sub> )							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
97	1.1496	1.4100	1.5427	1.6181	1.6661	1.6993	1.7235	1.7420
96	1.1456	1.3800	1.4897	1.5497	1.5871	1.6127	1.6313	1.6454
95	1.1405	1.3500	1.4407	1.4887	1.5181	1.5381	1.5525	1.5635
94	1.1342	1.3200	1.3946	1.4329	1.4561	1.4717	1.4829	1.4914
93	1.1269	1.2900	1.3508	1.3810	1.3991	1.4112	1.4199	1.4265
92	1.1184	1.2600	1.3088	1.3323	1.3461	1.3554	1.3620	1.3670
91	1.1089	1.2300	1.2683	1.2860	1.2964	1.3032	1.3081	1.3118
90	1.0982	1.2000	1.2290	1.2419	1.2492	1.2541	1.2576	1.2602
89	1.0864	1.1700	1.1909	1.1995	1.2043	1.2075	1.2098	1.2115
88	1.0736	1.1400	1.1537	1.1587	1.1613	1.1630	1.1643	1.1653
87	1.0597	1.1100	1.1173	1.1192	1.1199	1.1204	1.1208	1.1212
86	1.0448	1.0800	1.0817	1.0808	1.0800	1.0794	1.0791	1.0789
85	1.0288	1.0500	1.0467	1.0435	1.0413	1.0399	1.0389	1.0382
84	1.0119	1.0200	1.0124	1.0071	1.0037	1.0015	1.0000	0.9990
83	0.9939	0.9900	0.9785	0.9715	0.9671	0.9643	0.9624	0.9610
82	0.9749	0.9600	0.9452	0.9367	0.9315	0.9281	0.9258	0.9241
81	0.9550	0.9300	0.9123	0.9025	0.8966	0.8928	0.8901	0.8882
80	0.9342	0.9000	0.8799	0.8690	0.8625	0.8583	0.8554	0.8533
79	0.9124	0.8700	0.8478	0.8360	0.8291	0.8245	0.8214	0.8192
78	0.8897	0.8400	0.8160	0.8036	0.7962	0.7915	0.7882	0.7858
77	0.8662	0.8100	0.7846	0.7716	0.7640	0.7590	0.7556	0.7531
76	0.8417	0.7800	0.7535	0.7401	0.7322	0.7271	0.7236	0.7211
75	0.8165	0.7500	0.7226	0.7089	0.7009	0.6958	0.6922	0.6896
74	0.7904	0.7200	0.6921	0.6781	0.6701	0.6649	0.6613	0.6587
73	0.7636	0.6900	0.6617	0.6477	0.6396	0.6344	0.6308	0.6282
72	0.7360	0.6600	0.6316	0.6176	0.6095	0.6044	0.6008	0.5982
71	0.7077	0.6300	0.6016	0.5878	0.5798	0.5747	0.5712	0.5686
70	0.6787	0.6000	0.5719	0.5582	0.5504	0.5454	0.5419	0.5394
69	0.6490	0.5700	0.5423	0.5290	0.5213	0.5164	0.5130	0.5105
68	0.6187	0.5400	0.5129	0.4999	0.4924	0.4877	0.4844	0.4820
67	0.5878	0.5100	0.4836	0.4710	0.4638	0.4592	0.4560	0.4537
66	0.5563	0.4800	0.4545	0.4424	0.4355	0.4310	0.4280	0.4257
65	0.5242	0.4500	0.4255	0.4139	0.4073	0.4030	0.4001	0.3980
64	0.4916	0.4200	0.3967	0.3856	0.3793	0.3753	0.3725	0.3705
63	0.4586	0.3900	0.3679	0.3575	0.3515	0.3477	0.3451	0.3432
62	0.4251	0.3600	0.3392	0.3295	0.3239	0.3203	0.3179	0.3161
61	0.3911	0.3300	0.3107	0.3016	0.2964	0.2931	0.2908	0.2892
60	0.3568	0.3000	0.2822	0.2738	0.2691	0.2660	0.2639	0.2624
59	0.3222	0.2700	0.2537	0.2461	0.2418	0.2391	0.2372	0.2358
58	0.2872	0.2400	0.2254	0.2186	0.2147	0.2122	0.2105	0.2093
57	0.2519	0.2100	0.1971	0.1911	0.1877	0.1855	0.1840	0.1829
56	0.2164	0.1800	0.1688	0.1636	0.1607	0.1588	0.1575	0.1566
55	0.1806	0.1500	0.1406	0.1363	0.1338	0.1322	0.1312	0.1304
54	0.1447	0.1200	0.1125	0.1090	0.1070	0.1057	0.1049	0.1042
53	0.1087	0.0900	0.0843	0.0817	0.0802	0.0793	0.0786	0.0781
52	0.0725	0.0600	0.0562	0.0544	0.0534	0.0528	0.0524	0.0521
51	0.0363	0.0300	0.0281	0.0272	0.0267	0.0264	0.0262	0.0260
50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Percent Within Limits (P <sub>L</sub> and P <sub>U</sub> )	Negative Values of Q (Q <sub>L</sub> and Q <sub>U</sub> )							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
49	-0.0363	-0.0300	-0.0281	-0.0272	-0.0267	-0.0264	-0.0262	-0.0260
48	-0.0725	-0.0600	-0.0562	-0.0544	-0.0534	-0.0528	-0.0524	-0.0521

Percent Within Limits (P <sub>L</sub> and P <sub>U</sub> )	Negative Values of Q (Q <sub>L</sub> and Q <sub>U</sub> )							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
47	-0.1087	-0.0900	-0.0843	-0.0817	-0.0802	-0.0793	-0.0786	-0.0781
46	-0.1447	-0.1200	-0.1125	-0.1090	-0.1070	-0.1057	-0.1049	-0.1042
45	-0.1806	-0.1500	-0.1406	-0.1363	-0.1338	-0.1322	-0.1312	-0.1304
44	-0.2164	-0.1800	-0.1688	-0.1636	-0.1607	-0.1588	-0.1575	-0.1566
43	-0.2519	-0.2100	-0.1971	-0.1911	-0.1877	-0.1855	-0.1840	-0.1829
42	-0.2872	-0.2400	-0.2254	-0.2186	-0.2147	-0.2122	-0.2105	-0.2093
41	-0.3222	-0.2700	-0.2537	-0.2461	-0.2418	-0.2391	-0.2372	-0.2358
40	-0.3568	-0.3000	-0.2822	-0.2738	-0.2691	-0.2660	-0.2639	-0.2624
39	-0.3911	-0.3300	-0.3107	-0.3016	-0.2964	-0.2931	-0.2908	-0.2892
38	-0.4251	-0.3600	-0.3392	-0.3295	-0.3239	-0.3203	-0.3179	-0.3161
37	-0.4586	-0.3900	-0.3679	-0.3575	-0.3515	-0.3477	-0.3451	-0.3432
36	-0.4916	-0.4200	-0.3967	-0.3856	-0.3793	-0.3753	-0.3725	-0.3705
35	-0.5242	-0.4500	-0.4255	-0.4139	-0.4073	-0.4030	-0.4001	-0.3980
34	-0.5563	-0.4800	-0.4545	-0.4424	-0.4355	-0.4310	-0.4280	-0.4257
33	-0.5878	-0.5100	-0.4836	-0.4710	-0.4638	-0.4592	-0.4560	-0.4537
32	-0.6187	-0.5400	-0.5129	-0.4999	-0.4924	-0.4877	-0.4844	-0.4820
31	-0.6490	-0.5700	-0.5423	-0.5290	-0.5213	-0.5164	-0.5130	-0.5105
30	-0.6787	-0.6000	-0.5719	-0.5582	-0.5504	-0.5454	-0.5419	-0.5394
29	-0.7077	-0.6300	-0.6016	-0.5878	-0.5798	-0.5747	-0.5712	-0.5686
28	-0.7360	-0.6600	-0.6316	-0.6176	-0.6095	-0.6044	-0.6008	-0.5982
27	-0.7636	-0.6900	-0.6617	-0.6477	-0.6396	-0.6344	-0.6308	-0.6282
26	-0.7904	-0.7200	-0.6921	-0.6781	-0.6701	-0.6649	-0.6613	-0.6587
25	-0.8165	-0.7500	-0.7226	-0.7089	-0.7009	-0.6958	-0.6922	-0.6896
24	-0.8417	-0.7800	-0.7535	-0.7401	-0.7322	-0.7271	-0.7236	-0.7211
23	-0.8662	-0.8100	-0.7846	-0.7716	-0.7640	-0.7590	-0.7556	-0.7531
22	-0.8897	-0.8400	-0.8160	-0.8036	-0.7962	-0.7915	-0.7882	-0.7858
21	-0.9124	-0.8700	-0.8478	-0.8360	-0.8291	-0.8245	-0.8214	-0.8192
20	-0.9342	-0.9000	-0.8799	-0.8690	-0.8625	-0.8583	-0.8554	-0.8533
19	-0.9550	-0.9300	-0.9123	-0.9025	-0.8966	-0.8928	-0.8901	-0.8882
18	-0.9749	-0.9600	-0.9452	-0.9367	-0.9315	-0.9281	-0.9258	-0.9241
17	-0.9939	-0.9900	-0.9785	-0.9715	-0.9671	-0.9643	-0.9624	-0.9610
16	-1.0119	-1.0200	-1.0124	-1.0071	-1.0037	-1.0015	-1.0000	-0.9990
15	-1.0288	-1.0500	-1.0467	-1.0435	-1.0413	-1.0399	-1.0389	-1.0382
14	-1.0448	-1.0800	-1.0817	-1.0808	-1.0800	-1.0794	-1.0791	-1.0789
13	-1.0597	-1.1100	-1.1173	-1.1192	-1.1199	-1.1204	-1.1208	-1.1212
12	-1.0736	-1.1400	-1.1537	-1.1587	-1.1613	-1.1630	-1.1643	-1.1653
11	-1.0864	-1.1700	-1.1909	-1.1995	-1.2043	-1.2075	-1.2098	-1.2115
10	-1.0982	-1.2000	-1.2290	-1.2419	-1.2492	-1.2541	-1.2576	-1.2602
9	-1.1089	-1.2300	-1.2683	-1.2860	-1.2964	-1.3032	-1.3081	-1.3118
8	-1.1184	-1.2600	-1.3088	-1.3323	-1.3461	-1.3554	-1.3620	-1.3670
7	-1.1269	-1.2900	-1.3508	-1.3810	-1.3991	-1.4112	-1.4199	-1.4265
6	-1.1342	-1.3200	-1.3946	-1.4329	-1.4561	-1.4717	-1.4829	-1.4914
5	-1.1405	-1.3500	-1.4407	-1.4887	-1.5181	-1.5381	-1.5525	-1.5635
4	-1.1456	-1.3800	-1.4897	-1.5497	-1.5871	-1.6127	-1.6313	-1.6454
3	-1.1496	-1.4100	-1.5427	-1.6181	-1.6661	-1.6993	-1.7235	-1.7420
2	-1.1524	-1.4400	-1.6016	-1.6982	-1.7612	-1.8053	-1.8379	-1.8630
1	-1.1541	-1.4700	-1.6714	-1.8008	-1.8888	-1.9520	-1.9994	-2.0362

## **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 E178                      Standard Practice for Dealing with Outlying Observations

**END OF ITEM C-110**

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## **Item P-101 Miscellaneous Removal and Concrete Surface Repair**

### **DESCRIPTION**

**101-1** This item shall consist of preparation of existing pavement surfaces for overlay, surface treatments, removal of existing pavement, and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable plans.

### **EQUIPMENT AND MATERIALS**

**101-2** All equipment and materials shall be specified here and in the following paragraphs or approved by the Resident Project Representative (RPR). The equipment shall not cause damage to the pavement to remain in place.

### **CONSTRUCTION**

#### **101-3.1 Removal of existing pavement.**

The Contractor's removal operation shall be controlled to not damage adjacent pavement structure, and base material, cables, utility ducts, pipelines, or drainage structures which are to remain under the pavement.

**a. Concrete valley gutter removal.** Full depth saw cuts shall be made perpendicular to the slab surface. The Contractor shall saw through the full depth of the slab including any dowels at the joint, removing the pavement and installing new dowels as shown on the plans and per the specifications. Removal of underlying aggregate base course will be paid for as unclassified excavation under the P-152 specification. Where the perimeter of the removal limits is not located on the joint and there are no dowels present, the perimeter shall be saw cut the full depth of the pavement. The pavement inside the saw cut shall be removed by methods which will not cause distress in the pavement which is to remain in place. Concrete slabs that are damaged by under breaking shall be repaired or removed and replaced as directed by the RPR.

The edge of existing concrete pavement against which new pavement abuts shall be protected from damage at all times. Spall and underbreak repair shall be in accordance with the plans. Any underlaying material that is to remain in place, shall be recompact and/or replaced as shown on the plans. Adjacent areas damaged during repair shall be repaired or replaced at the Contractor's expense. All concrete removed shall become property of the contractor and disposed off site.

**b. Asphalt pavement removal.** See specification P-207.

**c. Repair or removal of Base, Subbase, and/or Subgrade.** All failed material including surface, base course, subbase course, and subgrade shall be removed and repaired as shown on the plans or as directed by the RPR. Materials and methods of construction shall comply with the applicable sections of these specifications. Any damage caused by Contractor's removal process shall be repaired at the Contractor's expense. All removal shall be considered unclassified excavation and paid under P-152.

#### **101-3.2 Preparation of joints and cracks prior to overlay/surface treatment.** Not used.

**101-3.3 Removal of Foreign Substances/contaminates prior to remarking.** Removal of foreign substances/contaminates from existing pavement that will affect the bond of the new treatment shall consist of removal of rubber, fuel spills, oil, crack sealer, at least 90% of paint, and other foreign

substances from the surface of the pavement. Areas that require removal are designated on the plans and as directed by the RPR in the field during construction.

High-pressure water, heater scarifier (asphaltic concrete only), or sandblasting may be used. If chemicals are used, they shall comply with the state's environmental protection regulations. Removal methods used shall not cause major damage to the pavement, or to any structure or utility within or adjacent to the work area. Major damage is defined as changing the properties of the pavement, removal of asphalt causing the aggregate to ravel, or removing pavement over 1/8 inch (3 mm) deep. If it is deemed by the RPR that damage to the existing pavement is caused by operational error, such as permitting the application method to dwell in one location for too long, the Contractor shall repair the damaged area without compensation and as directed by the RPR.

Removal of foreign substances shall not proceed until approved by the RPR. Water used for high-pressure water equipment shall be provided by the Contractor at the Contractor's expense. No material shall be deposited on the pavement shoulders. All waste shall be disposed of in areas indicated in this specification or shown on the plans.

#### **101-3.4 Concrete spall or failed asphaltic concrete pavement repair.**

**a. Repair of concrete spalls.** The Contractor shall repair all spalled concrete as shown on the plans or as directed by the RPR. The perimeter of the repair shall be saw cut a minimum of 3 inches outside the affected area and 4 inches deep. The deteriorated material shall be removed to a depth where the existing material is firm or cannot be easily removed with a geologist pick. The removed area shall be filled with concrete mixture with aggregate sized appropriately for the depth of the patch.

**b. Asphalt pavement repair.** The Contractor shall repair all spalled asphalt as shown on the plans or as directed by the RPR. The failed areas shall be removed as specified in paragraph 101-3.1b. All failed material including surface, base course, subbase course, and subgrade shall be removed. Materials and methods of construction shall comply with the applicable sections of these specifications.

**101-3.5 Cold milling.** Milling shall be performed with a power-operated milling machine or grinder, capable of producing a uniform finished surface. The milling machine or grinder shall operate without tearing or gouging the underlying surface. The milling machine or grinder shall be equipped with grade and slope controls, and a positive means of dust control. All millings shall be removed and disposed off of Airport property or in areas designated on the plans. If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material removed with new material at the Contractor's Expense.

**a. Patching.** The milling machine shall be capable of cutting a vertical edge without chipping or spalling the edges of the remaining pavement and it shall have a positive method of controlling the depth of cutting. The RPR shall layout the area to be milled with a straightedge in increments of 1-foot (30 cm) widths. The area to be milled shall cover only the failed area. Any excessive area that is milled because the Contractor doesn't have the appropriate milling machine, or areas that are damaged because of his negligence, shall be repaired by the Contractor at the Contractor's Expense.

**b. Profiling, grade correction, or surface correction.** The milling machine shall have a minimum width of 4 feet, and it shall be equipped with electronic grade control devices that will cut the surface to the specified grade. The tolerances shall be maintained within +0 inch and -1/4 inch (+0 mm and -6mm) of the specified grade. The machine must cut vertical edges and have a positive method of dust control. The machine must have the ability to windrow the millings or cuttings or remove the millings or cuttings from the pavement and load them into a truck. All millings shall be removed and disposed of off the airport or in areas designated on the plans.

**c. Clean-up.** The Contractor shall sweep the milled surface daily and immediately after the milling until all residual materials are removed from the pavement surface. Prior to paving, the Contractor shall



wet down the milled pavement and thoroughly sweep and/or blow the surface to remove loose residual material. Waste materials shall be collected and removed from the pavement surface and adjacent areas by sweeping or vacuuming. Waste materials shall be removed and disposed off of Airport property, or in areas designated on the plans.

**101-3.6. Preparation of asphalt pavement surfaces prior to surface treatment.** Existing asphalt pavements to be treated with a surface treatment shall be prepared as follows:

a. Patch asphalt pavement surfaces that have been softened by petroleum derivatives or have failed due to any other cause. Remove damaged pavement to the full depth of the damage and replace with new asphalt pavement similar to that of the existing pavement in accordance with paragraph 101-3.4b.

b. Repair joints and cracks in accordance with paragraph 101-3.2.

c. Remove oil or grease that has not penetrated the asphalt pavement by scrubbing with a detergent and washing thoroughly with clean water. After cleaning, treat these areas with an oil spot primer.

d. Clean pavement surface immediately prior to placing the surface treatment so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film.

**101-3.7 Maintenance.** The Contractor shall perform all maintenance work necessary to keep the pavement in a satisfactory condition until the full section is complete and accepted by the RPR. The surface shall be kept clean and free from foreign material. The pavement shall be properly drained at all times. If cleaning is necessary or if the pavement becomes disturbed, any work repairs necessary shall be performed at the Contractor's expense.

**101-3.8 Preparation of Joints in Rigid Pavement prior to resealing.** Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the joint and does not damage the joint.

**101-3.8.1 Removal of Existing Joint Sealant.** All existing joint sealants will be removed by plowing or use of hand tools. Any remaining sealant and or debris will be removed by use of wire brushes or other tools as necessary. Resaw joints removing no more than 1/16 inch (2 mm) from each joint face. Immediately after sawing, flush out joint with water and other tools as necessary to completely remove the slurry.

**101-3.8.2 Cleaning prior to sealing.** Immediately before sealing, joints shall be cleaned by removing any remaining laitance and other foreign material. Allow sufficient time to dry out joints prior to sealing. Joint surfaces will be surface-dry prior to installation of sealant.

**101-3.8.3 Joint sealant.** Joint material and installation will be in accordance with Item P-605.

**101-3.9 Preparation of Cracks in Flexible Pavement prior to sealing.** Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the cracks and does not damage the pavement.

**101-3.9.1 Preparation of Crack.** Widen crack with router or random crack saw by removing a minimum of 1/16 inch (2 mm) from each side of crack. Immediately before sealing, cracks will be blown out with a hot air lance combined with oil and water-free compressed air.

**101-3.9.2 Removal of Existing Crack Sealant.** Existing sealants will be removed by routing or random crack saw. Following routing or sawing, any remaining debris will be removed by use of a hot lance combined with oil and water-free compressed air.

**101-3.9.3 Crack Sealant.** Crack sealant material and installation will be in accordance with Item P-605.

**101-3.9.4 Removal of Pipe and other Buried Structures.**

**a. Removal of Existing Pipe Material.** Remove the types of pipes as indicated on the plans. The pipe material shall be legally disposed of off-site in a timely manner following removal. Trenches shall be backfilled with material equal to or better in quality than adjacent embankment. Trenches under paved areas must be compacted to 100% of ASTM D698.

**b. Removal of Inlets/Manholes/Aircraft Tie-Down Anchors.** Where indicated on the plans or as directed by the RPR, inlets and/or manholes and aircraft tie-down anchors 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 100% of ASTM D698, when outside of paved areas must be compacted to 95% of ASTM D698.

**101-3.10 Sanitary Manhole elevation adjustments.** The Contractor shall adjust the tops of existing manholes in areas designated in the Contract Documents to the new elevations shown. The Contractor shall be responsible for determining the exact height adjustment required to raise or lower the top of each manhole to the new elevations. The existing top elevation of each manhole to be adjusted shall be determined in the field and subtracted/added from the proposed top elevation.

The Contractor shall remove/extend the existing top section or ring and cover on the manhole structure or manhole access. The Contractor shall install precast concrete sections or grade rings of the required dimensions to adjust the manhole top to the new proposed elevation or shall cut the existing manhole walls to shorten the existing structure, as required by final grades. The Contractor shall reinstall the manhole top section or ring and cover on top and check the new top elevation.

The Contractor is responsible for coordinating this work with the Detroit Lakes Public Utility for approval of proposed contractor means and methods.

## **METHOD OF MEASUREMENT**

**101-4.1 Pavement removal.** The unit of measurement for pavement removal (concrete gutter) shall be the number of square yards 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. Dowel bar installation shall be incidental to pavement removal.

**101-4.2 Joint and crack repair.** The unit of measurement for joint and crack repair shall be the linear foot of joint or crack.

**101-4.3 Removal of Foreign Substances/contaminates.** Foreign substances/contaminate removal shall not be measured for payment and shall be considered incidental to the construction.

**101-4.4 Removal of Pipe and other Buried Structures.**

**101-4.4a** The unit of measurement for removal of pipe will be made at the contract unit price per linear foot removed and disposed of by the Contractor and accepted by the RPR. 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. Trenching, backfilling with approved materials, and disposal of pipe is incidental to each respective removal pay item.

**101-4.6b** The unit of measurement for removal of Inlets/Manholes/Aircraft Tie-Down Anchors will be made at the contract unit price per each structure/anchor removed and disposed by the Contractor and accepted by the RPR. 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. Trenching, backfilling with approved materials, and disposal of pipe is incidental to each respective removal pay item.

**101-4.5 Concrete Corner, Pop Out, or Joint Spall Repair.** The unit of measure for concrete corner, pop out, or joint spall repair shall be per each, regardless of size or depth. The location, size, and average depth of the repair shall be determined and agreed upon by the RPR and the Contractor.

**101-4.6 Cold milling.** Not used.

**101-4.7 Raise Existing Sanitary Manhole Rim Elevation.** The unit of measure shall be by the completed unit installed, in place, completed, and accepted. Separate measurement shall not be made for the various types and sizes.

### **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.

Standard Pay Items for Work covered by this specification are as follows:

Item P 101-5.1	Remove concrete valley gutter, full depth - per square yard
Item P 101-5.2a	Rout, Clean, & Seal Concrete Joint – per linear foot
Item P 101-5.2b	Rout, Clean, & Seal Concrete Surface Crack– per linear foot
Item P-101-5.7a	Remove Storm Sewer Pipe – per linear foot
Item P-101-5.7b	Remove Storm Sewer Structure – per each
Item P-101-5.7c	Remove Aircraft Tie-Down Anchor – per each
Item P-101-5.8	Concrete Corner, Pop Out, or Joint Spall Repair – per each
Item P-101-5.9	Raise Existing Sanitary Manhole Rim Elevation – 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 150/5380-6	Guidelines and Procedures for Maintenance of Airport Pavements.
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ASTM International (ASTM)

ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
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### **END OF ITEM P-101**

## Item P-152 Excavation, Subgrade, and Embankment

### DESCRIPTION

**152-1.1** This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

**152-1.2 Classification.** All material excavated shall be classified as defined below:

**a. Unclassified excavation.** Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature on site. All removal of underlying aggregate base, subbase, and subgrade material are considered unclassified excavation.

**152-1.3 Unsuitable excavation.** Unsuitable material shall be disposed of in designated waste areas as shown on the plans. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR.

### CONSTRUCTION METHODS

**152-2.1 General.** Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151.

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable materials shall be disposed of in waste areas as shown on the plans. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

**a. Blasting.** Blasting shall not be allowed.

**152-2.2 Excavation.** No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of

the ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate or agree to any adjustments made to the original ground lines.

Digital terrain model (DTM) files of the existing surfaces finished surfaces, and other various surfaces were used to develop the design plans.

Volumetric quantities were calculated by comparing DTM files of the applicable design surfaces and generating Triangle Volume Reports. Electronic copies of DTM files and a paper copy of the original topographic map will be issued to the successful bidder.

Existing grades on the design cross sections or DTM's, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map. The contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect. For this purpose, spot elevations which are within 0.1 foot (30 mm) of the stated elevations for ground surfaces, or within 0.04 foot (12 mm) for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface. If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the RPR in writing at least two weeks before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design cross sections or DTM's. Disturbance of existing grades in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.

All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes as shown on the plans. All unsuitable material shall be disposed of as shown on the plans and approved by the RPR.

The grade shall be maintained so that the surface is well drained at all times. When necessary, temporary drains and drainage ditches shall be installed to intercept or divert surface water that may affect the work. Such temporary drains and drainage ditches shall be the responsibility of the contractor and shall not be paid for separately but shall be in other items of work. Any other required de-watering shall be the responsibility of the contractor.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

**a. Selective grading.** When selective grading is indicated on the plans, the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

**b. Undercutting.** Rock, shale, hardpan, loose rock, boulders, or other unsatisfactory material for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum

depth of 12 inches (300 mm) below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed of at locations shown on the plans. This excavated material shall be paid for at the contract unit price per cubic yard (per cubic meter) for unclassified excavation. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as unclassified excavation.

**c. Over-break.** Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-breaks shall be graded or removed by the Contractor and disposed of as directed by the RPR. The RPR shall determine if the displacement of such material was unavoidable, and their own decision shall be final. Payment will not be made for the removal and disposal of over-break that the RPR determines as avoidable. Unavoidable over-break will be classified as "Unclassified Excavation."

**d. Removal of utilities.** The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

**152-2.3 Borrow excavation.** Borrow areas are not required.

**152-2.4 Drainage excavation.** Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the RPR. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

**152-2.5 Preparation of cut areas or areas where existing pavement has been removed.** In those areas on which a subbase or base course is to be placed, the top 12 inches (300 mm) of subgrade shall be compacted to not less than 100% of maximum density for non-cohesive soils, and 100% of maximum density for cohesive soils as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

**152-2.6 Preparation of embankment area.** All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontals shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

**152-2.7 Control Strip.** The first half-day construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the



materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment, and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

**152-2.8 Formation of embankments.** The material shall be constructed in lifts as established in the control strip, but not less than 6 inches nor more than 12 inches of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment, nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within  $\pm 2\%$  of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The RPR will take samples of excavated materials which will be used in embankment for testing and developing a Moisture-Density Relations of Soils Report (Proctor) in accordance with ASTM D698. A new Proctor shall be developed for each soil type based on visual classification.

Density tests will be taken by the RPR for every 3,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

If the material has greater than 30% retained on the 3/4-inch (19.0 mm) sieve, follow AASHTO T-180 Annex Correction of maximum dry density and optimum moisture for oversized particles.

Rolling operations shall be continued until the embankment is compacted to not less than 100% of maximum density for non-cohesive soils, and 100% of maximum density for cohesive soils as determined by ASTM D698. Under all areas to be paved, the embankments shall be compacted to a depth of 12 inches and to a density of not less than 100% percent of the maximum density as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches (100 mm) which shall be prepared for a seedbed in accordance with Item T-901.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The RPR shall perform all density for acceptance. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 12 inches (300 mm) of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet (60 cm) in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

**152-2.9 Proof rolling.** The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. Before start of embankment, and After compaction is completed, the subgrade area shall be proof rolled with a 20 ton (18.1 metric ton) Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 100 psi (0.689 MPa) in the presence of the RPR. Apply a minimum of 50% coverage, or as specified by the RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch (25 mm) or show permanent deformation greater than 1 inch (25 mm) shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.

**152-2.10 Compaction requirements.** The subgrade under areas to be paved shall be compacted to a depth of 12 inches (300 mm) and to a density of not less than 100 percent of the maximum dry density as determined by ASTM D698. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 12 inches (300 mm) and to a density of not less than 95 percent of the maximum density as determined by ASTM D698.

The material to be compacted shall be within  $\pm 2\%$  of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the  $\frac{3}{4}$  inch (19.0 mm) sieve, follow the methods in ASTM D698 procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized particles. Tests for moisture content and compaction will be taken at a minimum of 3,000 S.Y. of subgrade. All quality assurance testing shall be done by the RPR.

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months prior to its use on this contract. The gage shall be field standardized daily.

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the RPR and the finished subgrade shall be maintained.

**152-2.11 Finishing and protection of subgrade.** Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the RPR.

**152-2.12 Haul.** All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

**152-2.13 Surface Tolerances.** In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

- a. **Smoothness.** The finished surface shall not vary more than  $\pm \frac{1}{2}$  inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.
- b. **Grade.** The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within  $\pm 0.05$  feet (15 mm) of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to be placed, grade shall not vary more than 0.10 feet (30 mm) from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

**152-2.14 Topsoil.** When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged 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 shall be computed by the comparison of digital terrain model (DTM) surfaces for computation of neat line design quantities. The end area is 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.

For payment specified by the cubic yard, measurement for all excavation shall be computed by the average end area method. The end area is that bound by the original ground line established by field cross-sections and the final ground line established by field cross-sections. This shall be accomplished by comparing before and after surveys performed by the **Contractor**. The surveys shall be conducted by a licensed surveyor by means of field cross-sections taken randomly at intervals not exceeding 100 linear feet. The documentation, stamped and signed by a licensed surveyor, along with the electronic data readable in AutoCAD 2024, shall be provided by the Contractor to the RPR. The RPR reserves the right to independently conduct a before and after survey for verification.

**152-3.2** The quantity of unclassified and unsuitable excavation to be paid for shall be the number of cubic yards 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. Unclassified and unsuitable excavation shall remain on site to be used as embankment construction. Excess topsoil excavation that cannot be incorporated into the grading or stockpiled on site shall become property of the contractor and disposed off site.

## **BASIS OF PAYMENT**

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

Payment will be made under:

Item P-152-4.1a	Unclassified Excavation - per cubic yard
Item P-152-4.1b	Unsuitable Excavation - per cubic yard
Item P-152-4.1c	Excess Topsoil Excavation – Haul Off Site - per cubic 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.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180	Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop
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ASTM International (ASTM)

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft <sup>3</sup> (600 kN-m/m <sup>3</sup> ))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft <sup>3</sup> (2700 kN-m/m <sup>3</sup> ))
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2	Operational Safety on Airports During Construction Software
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Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66	Design and Construction of Airport Pavements on Expansive Soils
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## **END OF ITEM P-152**

## Item P-154 Subbase Course

### DESCRIPTION

**154-1.1** This item shall consist of a subbase course composed of granular materials constructed on a prepared subgrade or underlying course in accordance with these specifications, and in conformity with the dimensions and typical cross-section shown on the plans.

### MATERIALS

**154-2.1 Materials.** The subbase material shall consist of hard durable particles or fragments of granular aggregates. The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with proper blending. The materials from these sources shall meet the requirements for gradation, quality, and consistency. The material shall be free from vegetative matter, excessive amounts of clay, and other objectionable substances; uniformly blended; and be capable of being compacted into a dense, stable subbase.

The subbase material shall exhibit a California Bearing Ratio (CBR) value of at least 20 when tested in accordance with ASTM D1883. The subbase material shall meet the gradation specified in the table below.

Subbase Gradation Requirements:

Sieve designation	Percentage by weight passing sieves	Contractor's Final Gradation	Job Control Grading Band Tolerances <sup>1</sup> (Percent)
	Subbase Aggregate		
3 inch (75 mm)	100		0
1 1/2 inch (37.5 mm)			0
3/4 inch (19.0 mm)	70-100		±10
No. 10 (2.00 mm)	20-100		±10
No. 40 (425 µm)	5-60		±5
No. 200 (75 µm)	0-10		±5

<sup>1</sup>The "Job Control Grading Band Tolerances" shall be applied to "Contractor's Final Gradation" to establish the job control grading band.

The portion of the material passing the No. 40 (425 µm) sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than six (6) when tested in accordance with ASTM D4318.



#### **154-2.2 Sampling and testing.**

**a. Aggregate base materials.** Samples shall be taken by the Contractor per ASTM D75 for initial aggregate subbase requirements and gradation. Material shall meet the requirements in paragraphs 154-2.1. The Contractor shall submit to the Resident Project Representative (RPR) certified test results showing that the aggregate meets the Material requirements of this section. Tests shall be representative of the material to be used for the project.

**b. Gradation requirements.** The Contractor shall take at least one aggregate subbase sample per day in the presence of the RPR to check the final gradation. Samples shall be taken from the in-place, un-compacted material at sampling locations determined by the RPR on a random basis per ASTM D3665. Sampling shall be per ASTM D75 and tested per ASTM C136 and ASTM C117. Results shall be furnished to the RPR by the Contractor each day during construction. Material shall meet the requirements in paragraph 154-2.1.

**154-2.3 Separation Geotextile.** Not used.

**154-2.4 Geogrid.** Not used.

### **CONSTRUCTION METHODS**

**154-3.1 General.** The subbase course shall be placed where designated on the plans or as directed by the RPR. The material shall be shaped and thoroughly compacted within the tolerances specified.

Granular subbases which, due to grain sizes or shapes, are not sufficiently stable to support the construction equipment without movement, shall be mechanically modified to the depth necessary to provide stability as directed by the RPR. The mechanical modification shall include the addition of a fine-grained medium to bind the particles of the subbase material sufficiently to furnish a bearing strength, so the course will not deform under construction equipment traffic.

**154-3.2 Preparing underlying course.** Prior to constructing the subbase course, clean the underlying course or subgrade of all foreign substances. The surface of the underlying course or subgrade shall meet specified compaction and surface tolerances in accordance with Item P-152. Correct ruts, soft yielding spots in the underlying courses, and subgrade areas having inadequate compaction and/or deviations of the surface from the specified requirements, by loosening and removing soft or unsatisfactory material, adding approved material, reshaping to line and grade, and recompacting to specified density requirements. For cohesionless underlying courses or subgrades containing sand or gravels, as defined in ASTM D2487, the surface shall be stabilized prior to placement of the overlying course by mixing the overlying course material into the underlying course and compacting by approved methods. The stabilized material shall be considered as part of the underlying course and shall meet all requirements for the underlying course. The finished underlying course shall not be disturbed by traffic or other operations and shall be maintained in a satisfactory condition until the overlying course is placed. The underlying course shall be checked and accepted by the RPR before placing and spreading operations are started.

To protect the subgrade and to ensure proper drainage, spreading of the subbase shall begin along the centerline of the pavement on a crowned section or on the high side of pavements with a one-way slope.

**154-3.3 Control Strip.** The first half-day of subbase construction shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment, and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

**154-3.4 Placement.** The material shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted. The material shall not be placed when the underlying course is soft or yielding.

The material shall meet gradation and moisture requirements prior to compaction. Material may be free-draining, and the minimum moisture content shall be established for placement and compaction of the material.

The material shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

**154-3.5 Compaction.** The subbase material shall be compacted, adjusting moisture as necessary, to be within  $\pm 2\%$  of optimum moisture. The field density of the compacted material shall be at least 100% of the maximum density as specified in paragraph 154-3.9a. If the specified density is not attained, the area of the lift represented by the test shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

**154-3.6 Weather limitations.** Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on subbase courses shall not be conducted when the subgrade is wet or frozen or the subbase material contains frozen material.

**154-3.7 Maintenance.** No base or surface course shall be placed on the subbase until the subbase has been accepted by the RPR. The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, the Contractor shall verify that materials still meet all specification requirements before placement of additional material. Equipment may be routed over completed sections of the subbase course, provided the equipment does not damage the subbase course and the equipment is routed over the full width of the completed subbase course. Any damage to the subbase course from routing equipment over the subbase course shall be repaired by the Contractor at their expense.

**154-3.8 Surface tolerance.** In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

**a. Smoothness.** The finished surface shall not vary more than  $\pm \frac{1}{2}$  inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge

shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

**b. Grade.** The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/- 0.05 feet (15 mm) of the specified grade.

**154-3.9 Acceptance sampling and testing.** The aggregate base course shall be accepted for density and thickness on an area basis. Two tests shall be made for density and thickness for each 1200 square yards (1000 square meters). Sampling locations will be determined on a random basis per ASTM D3665.

**a. Density.** The RPR shall perform all density tests for acceptance.

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM D698. The in-place field density shall be determined per ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test shall be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

When the material has greater than 30 percent retained on the ¾ inch (19.0 mm) sieve, use methods in ASTM D698 and the procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized particles.

**b. Thickness.** The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material of proper gradation, and the material shall be blended and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

## METHOD OF MEASUREMENT

**154-4.1** Subbase course shall be measured by the number of cubic yards (cubic meters) of subbase course material placed and compacted to specified density and plan thickness requirements in the completed course. The quantity of subbase course material shall be measured in final position based upon survey of the completed work computed from elevations to the nearest 0.01 foot (3 mm). On individual depth measurements, thicknesses more than 1/2 inch (12 mm) in excess of that shown on the plans shall be considered as the specified thickness plus 1/2 inch (12 mm) in computing the yardage for payment. Subbase materials shall not be included in any other excavation quantities.

## BASIS OF PAYMENT

**154-5.1** Payment shall be made at the contract unit price per cubic yard for subbase course. This price shall be full compensation for furnishing all materials; for all preparation, hauling, and placing of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-154-5.1                      Subbase Course - per cubic 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.

### ASTM International (ASTM)

ASTM C117	Standard Test Method for Materials Finer than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft <sup>3</sup> (600 kN-m/m <sup>3</sup> ))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft <sup>3</sup> (2,700 kN-m/m <sup>3</sup> ))
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D4759	Practice for Determining the Specification Conformance of Geosynthetics
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

### American Association of State Highway and Transportation Officials (AASHTO)

M 288	Geotextile Specification for Highway Applications
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**END OF ITEM P-154**

## Item P-207 In-place Full Depth Reclamation (FDR) Recycled Asphalt Aggregate Base Course

### DESCRIPTION

**207-1.1** This item consists of a recycled asphalt aggregate base course resulting from the in-place full depth reclamation (FDR) of the existing pavement section (asphalt wearing surface and aggregate base), plus mechanical stabilization with additional aggregate or chemical stabilization with cement, asphalt emulsion or fly ash when required.

### MATERIALS

**207-2.1 Aggregate.** The FDR shall consist of materials produced by recycling (pulverizing and mixing) the existing asphalt pavement, aggregate base, subgrade, and any additional aggregate, as necessary. Material larger than 2 inches in any dimension shall not be permitted in the recycled asphalt aggregate base course.

The FDR shall meet the gradation in the table below.

#### FDR Gradation

Sieve	Minimum Percentage by weight passing sieves
2 inches (51 mm)	100
No. 4 (4.75 mm)	55
No. 200 (75 µm)	0-15

**a. Deleterious substances.** Materials for the aggregate base shall be kept free from weeds, sticks, grass, roots and other foreign matter.

**b. Uniformity.** The materials shall be thoroughly recycled (pulverized and mixed) to ensure uniform gradation.

#### 207-2.2 Stabilization.

**a. Mechanical stabilization.** Not required.

**b. Chemical Stabilization.** Stabilizing agent is not required.

**207-2.3 Water.** Water used in mixing or curing shall be from potable water sources. Other sources shall be tested in accordance with ASTM C1602 prior to use.

**207-2.4 Quality Control (QC) Sampling and testing.** The Contractor shall take at least two FDR samples per day of production in the presence of the Resident Project Representative (RPR) to check the gradation. Sampling shall be per ASTM D75. Material shall meet the requirements in paragraph 207-2.1. Samples shall be taken from the in-place, un-compacted material at random sampling locations per ASTM D3665.

### CONSTRUCTION METHODS

**207-3.1 Milling.** Milling is not required.

**207-3.2 Control Strip.** The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. Upon acceptance of the control strip by the RPR, the Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

**207-3.3 Recycling (Pulverization and mixing).** The asphalt pavement, aggregate base and subgrade shall be recycled (pulverized and mixed) into a uniformly blended mixture to the depth indicated on the plans. All material over approximately 2 inches (50 mm) shall be removed by the Contractor. The mixture shall be brought to the desired moisture content.

The maximum lift thickness of the recycled aggregate base course material to be compacted shall be 12 inches (300 mm).

**207-3.4 Grading and compaction.** Immediately upon completion of recycling (pulverization and mixing), the material shall be shaped and graded in accordance with the project plans. The recycled asphalt aggregate base course shall be compacted within the same day to an in-place density of 95% as determined by ASTM D698. The moisture content of the material during compaction shall be within  $\pm 2\%$  of the optimum moisture content as determined by ASTM D2216. The number, type and weight of rollers shall be sufficient to compact the material to the required density. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

**207-3.5 Finishing.** The surface of the aggregate base course shall be finished by blading or with automated equipment designed for this purpose. If the top layer is 1/2 inch (12 mm) or more below grade, the top layer shall be scarified to a depth of at least 3 inches (75mm), new material added, and the layer blended and re-compacted to bring it to grade. The addition of layers of less than 3 inches (75mm) shall not be allowed.

**207-3.6 Proof rolling.** Compacted asphalt aggregate base course shall be proof rolled with a 20-ton Proof Roller with tires spaced not more than 32 inches (0.8 m) on-center with tires inflated to 100 (690) in the presence of the RPR. Soft areas that deflect greater than 0.5 inch (12 mm) or show permanent deformation greater than 0.5 inch (12 mm) shall be removed and reworked at the Contractor's expense.

**207-3.7 Weather limitations.** When weather conditions detrimentally affect the construction process and/or quality of the materials, the Contractor shall stop construction. Cement or fly ash shall not be applied when wind conditions affect the distribution of the materials. When the aggregates contain frozen materials or when the underlying course is frozen or wet, the construction shall be stopped. Construction shall not be performed unless the atmospheric temperature is above 35°F (2°C) and rising or approved by the RPR. When the temperature falls below 35°F (2°C), protect all completed areas against detrimental effects of freezing by approved methods. Correct completed areas damaged by freezing, rainfall, or other weather conditions to meet specified requirements.

**207-3.8 Maintenance.** The asphalt aggregate base course shall be maintained in a satisfactory condition until the work is accepted by the RPR. Equipment used in the construction of an adjoining section may be routed over completed sections of the asphalt aggregate base course, provided that no damage results and equipment is routed over the full width of the completed asphalt aggregate base course. Any damage to the recycled asphalt aggregate base course shall be repaired by the Contractor at the Contractor's expense.



**207-3.9 Surface tolerances.** The finished surface shall be tested for smoothness and accuracy of grade. Any area failing smoothness or grade shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted by the Contractor at the Contractor's expense.

**a. Smoothness.** The finished surface shall not vary more than 3/8-inch (9 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

**b. Grade.** The grade shall be measured on a 50-foot (15-m) grid and shall be within +0 and -1/2 inch (12 mm) of the specified grade.

**207-3.10 Acceptance sampling and testing for density.** The FDR base course shall be accepted for density and thickness on an area basis. One (1) test for density and thickness will be made for each 1200 square yds. Sampling locations will be determined on a random basis in accordance with ASTM D3665.

**a. Density.** The RPR shall perform all density tests for acceptance.

Each area will be accepted for density when the field density is at least 95% of the maximum density of the FDR base course in accordance with ASTM D698. The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

**b. Thickness.** The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material, and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

## **METHOD OF MEASUREMENT**

**207-4.1** The quantity of existing in-place FDR asphalt aggregate base course shall be measured by the number of square yards of material in compliance with the plans and specifications.

**207-4.2** The quantity of FDR asphalt aggregate base course to be transported to its final location, placed, compacted, and accepted by the RPR shall be measured by the cubic yard.

**207-4.3** No separate measurement shall be made for transporting and stockpiling excess FDR asphalt aggregate base course, it is considered incidental to the FDR construction.

## **BASIS OF PAYMENT**

**207-5.1** Payment shall be made at the contract unit price per square yard for recycling the existing asphalt pavement, aggregate base course, as well as subgrade and mixing with stabilizing agent, if required. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools and incidentals to complete the item.

**207-5.2** Payment shall be made at the contract unit price per cubic yard for transporting, placing, and compacting the FDR asphalt aggregate base course to the compacted thickness as indicated on the drawings. This includes all contractor processes including windrowing or hauling, all resspreading,

compacting, and maintaining the recycled material to the compacted thickness as indicated on the drawings. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools and incidentals to complete the item.

Payment will be made under:

Item P-207-5.1a	In-place Full Depth Recycled (FDR) asphalt aggregate base course –per square yard
Item P-207-5.1b	Place and Compact FDR base course – 6” depth – per cubic 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.

### ASTM International (ASTM)

ASTM C29	Unit Weight of Aggregate
ASTM C88	Soundness of Aggregates by Use of Sodium or Magnesium Sulfate
ASTM C117	Materials Finer than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregate by Washing
ASTM C131	Resistance to abrasion of Small Size Coarse Aggregate by Use of Los Angeles Machine
ASTM C136	Sieve or Screen Analysis of Fine and Coarse Aggregate
ASTM C150	Standard Specification for Portland Cement
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D75	Sampling Aggregate
ASTM D558	ASTM D558 Standard Test Methods for Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures
ASTM D698	Moisture Density Relations of Soils and Aggregate using 5.5 lb. Rammer and 12 in drop.
ASTM D977	Standard Specification for Emulsified Asphalt
ASTM D1556	Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method
ASTM D1557	Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
ASTM D2216	Test Methods for Laboratory Determination of Water (Moisture) Soil and Rock by Mass
ASTM D2419	Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D3665	Standard Practice for Random Sampling of Construction Materials

ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity
ASTM D4751	Standard Test Methods for Determining Apparent Opening Size of a Geotextile
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (Shallow Depth)
American Association of State Highway and Transportation Officials (AASHTO)	
M288	Standard Specification for Geosynthetic Specification for Highway Applications

**END OF ITEM P-207**

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## Item P-401 Asphalt Mix Pavement

### DESCRIPTION

**401-1.1** This item shall consist of pavement courses composed of mineral aggregate and asphalt binder mixed in a central mixing plant and placed on a prepared base or stabilized course in accordance with these specifications and shall conform to the lines, grades, thicknesses, and typical cross-sections shown on the plans. Each course shall be constructed to the depth, typical section, and elevation required by the plans and shall be rolled, finished, and approved before the placement of the next course.

### MATERIALS

**401-2.1 Aggregate.** Aggregates shall consist of crushed stone, crushed gravel, crushed slag, screenings, natural sand, and mineral filler, as required. The aggregates should have no known history of detrimental pavement staining due to ferrous sulfides, such as pyrite. Coarse aggregate is the material retained on the No. 4 (4.75 mm) sieve. Fine aggregate is the material passing the No. 4 (4.75 mm) sieve.

- a. **Coarse aggregate.** Coarse aggregate shall consist of sound, tough, durable particles, free from films of matter that would prevent thorough coating and bonding with the asphalt material and free from organic matter and other deleterious substances. Coarse aggregate material requirements are given in the table below.

#### Coarse Aggregate Material Requirements

Material Test	Requirement	Standard
Resistance to Degradation	Loss: 40% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate <b>or</b> Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium sulfate - or - 18% maximum using magnesium sulfate	ASTM C88
Clay lumps and friable particles	1.0 % maximum	ASTM C142
Percentage of Fractured Particles	For pavements designed for aircraft gross weights less than 60,000 pounds (27200 kg): Minimum 50% by weight of particles with at least two fractured faces and 65% with at least one fractured face <sup>1</sup>	ASTM D5821
Flat, Elongated, or Flat and Elongated Particles	8% maximum, by weight, of flat, elongated, or flat and elongated particles at 5:1 <sup>2</sup>	ASTM D4791
Bulk density of slag <sup>3</sup>	Weigh not less than 70 pounds per cubic foot (1.12 Mg/cubic meter)	ASTM C29.

<sup>1</sup> The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the fracture planes shall be at least 30 degrees to count as two fractured faces.

<sup>2</sup> A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

<sup>3</sup> Only required if slag is specified.

**b. Fine aggregate.** Fine aggregate shall consist of clean, sound, tough, durable, angular shaped particles produced by crushing stone, slag, or gravel and shall be free from coatings of clay, silt, or other objectionable matter. Natural (non-manufactured) sand may be used to obtain the gradation of the fine aggregate blend or to improve the workability of the mix. Fine aggregate material requirements are listed in the table below.

#### Fine Aggregate Material Requirements

Material Test	Requirement	Standard
Liquid limit	25 maximum	ASTM D4318
Plasticity Index	4 maximum	ASTM D4318
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 10% maximum using Sodium sulfate - or - 15% maximum using magnesium sulfate	ASTM C88
Clay lumps and friable particles	1.0 % maximum	ASTM C142
Sand equivalent	45 minimum	ASTM D2419
Natural Sand	0% to 15% maximum by weight of total aggregate	ASTM D1073

**c. Sampling.** ASTM D75 shall be used in sampling coarse and fine aggregate.

**401-2.2 Mineral filler.** Mineral filler (baghouse fines) may be added in addition to material naturally present in the aggregate. Mineral filler shall meet the requirements of ASTM D242.

#### Mineral Filler Requirements

Material Test	Requirement	Standard
Plasticity Index	4 maximum	ASTM D4318

**401-2.3 Asphalt binder.** Asphalt binder shall conform to ASTM D6373 Performance Grade (PG) **64-34**.

#### Asphalt Binder PG Plus Test Requirements

Material Test	Requirement	Standard
Elastic Recovery	75% minimum	ASTM D6084 <sup>1</sup>

<sup>1</sup> Follow procedure B on RTFO aged binder.

**401-2.4 Anti-stripping agent.** Any anti-stripping agent or additive (anti-strip) shall be heat stable and shall not change the asphalt binder grade beyond specifications. Anti-strip shall be an approved material of the Department of Transportation of the State in which the project is located.

### COMPOSITION

**401-3.1 Composition of mixture(s).** The asphalt mix shall be composed of a mixture of aggregates, filler and anti-strip agent if required, and asphalt binder. The aggregate fractions shall be sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula (JMF).

**401-3.2 Job mix formula (JMF) laboratory.** The laboratory used to develop the JMF shall possess a current certificate of accreditation, listing D3666 from a national accrediting authority and all test methods required for developing the JMF; and be listed on the accrediting authority's website. A copy of the laboratory's current accreditation and accredited test methods shall be submitted to the Resident Project Representative (RPR) prior to start of construction.

**401-3.3 Job mix formula (JMF).** No asphalt mixture shall be placed until an acceptable mix design has been submitted to the RPR for review and accepted in writing. The RPR's review shall not relieve the Contractor of the responsibility to select and proportion the materials to comply with this section.

When the project requires asphalt mixtures of differing aggregate gradations and/or binders, a separate JMF shall be submitted for each mix. Add anti-stripping agent to meet tensile strength requirements.

The JMF shall be prepared by an accredited laboratory that meets the requirements of paragraph 401-3.2. The asphalt mixture shall be designed using procedures contained in Asphalt Institute MS-2 Mix Design Manual, 7th Edition. Samples shall be prepared and compacted using the gyratory compactor in accordance with ASTM D6925.

Should a change in sources of materials be made, a new JMF must be submitted to the RPR for review and accepted in writing before the new material is used. After the initial production JMF has been approved by the RPR and a new or modified JMF is required for whatever reason, the subsequent cost of the new or modified JMF, including a new control strip when required by the RPR, will be borne by the Contractor.

The RPR may request samples at any time for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

The JMF shall be submitted in writing by the Contractor at least 14 days prior to the start of paving operations. The JMF shall be developed within the same construction season using aggregates proposed for project use.

The JMF shall be dated, and stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items as a minimum:

- Manufacturer's Certificate of Analysis (COA) for the asphalt binder used in the JMF in accordance with paragraph 401-2.3. Certificate of asphalt performance grade is with modifier already added, if used and must indicate compliance with ASTM D6373. For plant modified asphalt binder, certified test report indicating grade certification of modified asphalt binder.
- Manufacturer's Certificate of Analysis (COA) for the anti-stripping agent if used in the JMF in accordance with paragraph 401-2.4.
- Certified material test reports for the course and fine aggregate and mineral filler in accordance with paragraphs 401-2.1.
- Percent passing each sieve size for individual gradation of each aggregate cold feed and/or hot bin; percent by weight of each cold feed and/or hot bin used; and the total combined gradation in the JMF.
- Specific Gravity and absorption of each coarse and fine aggregate.
- Percent natural sand.
- Percent fractured faces.
- Percent by weight of flat particles, elongated particles, and flat and elongated particles (and criteria).
- Percent of asphalt.



- Number of blows or gyrations
- Laboratory mixing and compaction temperatures.
- Supplier-recommended field mixing and compaction temperatures.
- Plot of the combined gradation on a 0.45 power gradation curve.
- Graphical plots of air voids, voids in the mineral aggregate (VMA), and unit weight versus asphalt content. To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.
- Tensile Strength Ratio (TSR).
- Type and amount of Anti-strip agent when used.
- Asphalt Pavement Analyzer (APA) results.
- Date the JMF was developed. Mix designs that are not dated or which are from a prior construction season shall not be accepted.

Percentage and properties (asphalt content, asphalt binder properties, and aggregate properties) of reclaimed asphalt mix pavement (RAP) in accordance with paragraph 401-3.4.

**Table 1. Asphalt Design Criteria**

Test Property	Value	Test Method
Number of blows or gyrations	75	
Air voids (%)	3.5	ASTM D3203
Percent voids in mineral aggregate (VMA), minimum	See Table 2	ASTM D6995
Tensile Strength Ratio (TSR) <sup>1</sup>	not less than 80 at a saturation of 70-80%	ASTM D4867

<sup>1</sup> Test specimens for TSR shall be compacted at  $7 \pm 1.0$  % air voids. In areas subject to freeze-thaw, use freeze-thaw conditioning in lieu of moisture conditioning per ASTM D4867.

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory sieves, will conform to the gradation or gradations specified in Table 2 when tested in accordance with ASTM C136 and ASTM C117.

The gradations in Table 2 represent the limits that shall determine the suitability of aggregate for use from the sources of supply; be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa.

**Table 2. Aggregate - Asphalt Pavements**

<b>Sieve Size</b>	<b>Percentage by Weight Passing Sieve</b>
1 inch (25.0 mm)	--
3/4 inch (19.0 mm)	<b>100</b>
1/2 inch (12.5 mm)	<b>90-100</b>
3/8 inch (9.5 mm)	<b>72-88</b>
No. 4 (4.75 mm)	<b>53-73</b>
No. 8 (2.36 mm)	<b>38-60</b>
No. 16 (1.18 mm)	<b>26-48</b>
No. 30 (600 µm)	<b>18-38</b>
No. 50 (300 µm)	<b>11-27</b>
No. 100 (150 µm)	<b>6-18</b>
No. 200 (75 µm)	<b>3-6</b>
<b>Minimum Voids in Mineral Aggregate (VMA)<sup>1</sup></b>	<b>15.0</b>
<b>Asphalt Percent:</b>	
Stone or gravel	<b>5.0-7.5</b>
Slag	<b>6.5-9.5</b>
<b>Recommended Minimum Construction Lift Thickness</b>	<b>2 inches</b>

<sup>1</sup>To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.

The aggregate gradations shown are based on aggregates of uniform specific gravity. The percentages passing the various sieves shall be corrected when aggregates of varying specific gravities are used, as indicated in the Asphalt Institute MS-2 Mix Design Manual, 7th Edition.

**401-3.4 Reclaimed asphalt pavement (RAP).** RAP shall not be used.

**401-3.5 Control Strip.** Full production shall not begin until an acceptable control strip has been constructed and accepted in writing by the RPR. The Contractor shall prepare and place a quantity of asphalt according to the JMF. The underlying grade or pavement structure upon which the control strip is to be constructed shall be the same as the remainder of the course represented by the control strip.

The Contractor will not be allowed to place the control strip until the Contractor quality control program (CQCP), showing conformance with the requirements of paragraph 401-5.1, has been accepted, in writing, by the RPR.

The control strip will consist of at least 250 tons (227 metric tons) or 1/2 subplot, whichever is greater. The control strip shall be placed in two lanes of the same width and depth to be used in production with a longitudinal cold joint. The cold joint must be cut back in accordance with paragraph 401-4.14 using the same procedure that will be used during production. The cold joint for the control strip will be an exposed construction joint at least four (4) hours old or when the mat has cooled to less than 160°F (71°C). The equipment used in construction of the control strip shall be the same type, configuration and weight to be used on the project.

The control strip will be considered acceptable by the RPR if the gradation, asphalt content, and VMA are within the action limits specified in paragraph 401-5.5a; and Mat density greater than or equal to 94.5%, air voids 3.5% +/- 1%, and joint density greater than or equal to 92.5%.

If the control strip is unacceptable, necessary adjustments to the JMF, plant operation, placing procedures, and/or rolling procedures shall be made and another control strip shall be placed. Unacceptable control strips shall be removed at the Contractor's expense.

The control strip will be considered one lot for payment based upon the average of a minimum of 3 samples (no sublots required for control strip). Payment will only be made for an acceptable control strip in accordance with paragraph 401-8.1 using a lot pay factor equal to 100.

## CONSTRUCTION METHODS

**401-4.1 Weather limitations.** The asphalt shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 4. The temperature requirements may be waived by the RPR, if requested; however, all other requirements including compaction shall be met.

**Table 4. Surface Temperature Limitations of Underlying Course**

Mat Thickness	Base Temperature (Minimum)	
	°F	°C
3 inches (7.5 cm) or greater	40 <sup>1</sup>	4
Greater than 2 inches (50 mm) but less than 3 inches (7.5 cm)	45	7

**401-4.2 Asphalt plant.** Plants used for the preparation of asphalt shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M156 including the following items.

**a. Inspection of plant.** The RPR, or RPR's authorized representative, shall have access, at all times, to all areas of the plant for checking adequacy of equipment; inspecting operation of the plant: verifying weights, proportions, and material properties; and checking the temperatures maintained in the preparation of the mixtures.

**b. Storage bins and surge bins.** The asphalt mixture stored in storage and/or surge bins shall meet the same requirements as asphalt mixture loaded directly into trucks. Asphalt mixture shall not be stored in storage and/or surge bins for a period greater than twelve (12) hours. If the RPR determines there is an excessive heat loss, segregation, or oxidation of the asphalt mixture due to temporary storage, temporary storage shall not be allowed.

**401-4.3 Aggregate stockpile management.** Aggregate stockpiles shall be constructed in a manner that prevents segregation and intermixing of deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the asphalt batch plant. Aggregates that have become segregated or mixed with earth or foreign material shall not be used.

A continuous supply of materials shall be provided to the work to ensure continuous placement.

**401-4.4 Hauling equipment.** Trucks used for hauling asphalt shall have tight, clean, and smooth metal beds. To prevent the asphalt from sticking to the truck beds, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other material approved by the RPR. Petroleum products shall not be used for coating truck beds. Each truck shall have a suitable cover to protect the

mixture from adverse weather. When necessary, to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers shall be securely fastened.

**401-4.4.1 Material transfer vehicle (MTV).** Material transfer vehicles are not required.

**401-4.5 Asphalt pavers.** Asphalt pavers shall be self-propelled with an activated heated screed, capable of spreading and finishing courses of asphalt that will meet the specified thickness, smoothness, and grade. The paver shall have sufficient power to propel itself and the hauling equipment without adversely affecting the finished surface. The asphalt paver shall be equipped with a control system capable of automatically maintaining the specified screed grade and elevation.

If the spreading and finishing equipment in use leaves tracks or indented areas or produces other blemishes in the pavement that are not satisfactorily corrected by the scheduled operations, the use of such equipment shall be discontinued.

The paver shall be capable of paving to a minimum width specified in paragraph 401-4.12.

**401-4.6 Rollers.** The number, type, and weight of rollers shall be sufficient to compact the asphalt to the required density while it is still in a workable condition without crushing of the aggregate, depressions or other damage to the pavement surface. Rollers shall be in good condition, clean, and capable of operating at slow speeds to avoid displacement of the asphalt. All rollers shall be specifically designed and suitable for compacting asphalt concrete and shall be properly used. Rollers that impair the stability of any layer of a pavement structure or underlying soils shall not be used.

**401-4.7 Density device.** The Contractor shall have on site a density gauge during all paving operations in order to assist in the determination of the optimum rolling pattern, type of roller and frequencies, as well as to monitor the effect of the rolling operations during production paving. The Contractor shall supply a qualified technician during all paving operations to calibrate the gauge and obtain accurate density readings for all new asphalt. These densities shall be supplied to the RPR upon request at any time during construction. No separate payment will be made for supplying the density gauge and technician.

**401-4.8 Preparation of asphalt binder.** The asphalt binder shall be heated in a manner that will avoid local overheating and provide a continuous supply of the asphalt binder to the mixer at a uniform temperature. The temperature of unmodified asphalt binder delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles but shall not exceed 325°F (160°C) when added to the aggregate. The temperature of modified asphalt binder shall be no more than 350°F (175°C) when added to the aggregate.

**401-4.9 Preparation of mineral aggregate.** The aggregate for the asphalt shall be heated and dried. The maximum temperature and rate of heating shall be such that no damage occurs to the aggregates. The temperature of the aggregate and mineral filler shall not exceed 350°F (175°C) when the asphalt binder is added. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by overheating. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

**401-4.10 Preparation of Asphalt mixture.** The aggregates and the asphalt binder shall be weighed or metered and mixed in the amount specified by the JMF. The combined materials shall be mixed until the aggregate obtains a uniform coating of asphalt binder and is thoroughly distributed throughout the mixture. Wet mixing time shall be the shortest time that will produce a satisfactory mixture, but not less than 25 seconds for batch plants. The wet mixing time for all plants shall be established by the Contractor, based on the procedure for determining the percentage of coated particles described in ASTM D2489, for each individual plant and for each type of aggregate used. The wet mixing time will be set to achieve 95% of coated particles. For continuous mixing plants, the minimum mixing time shall be determined by dividing the weight of its contents at an operating level by the weight of the mixture delivered per second by the mixer. The moisture content of all asphalt upon discharge shall not exceed 0.5%.

**401-4.11 Application of Prime and Tack Coat.** Immediately before placing the asphalt mixture, the underlying course shall be cleaned of all dust and debris.

A tack coat shall be applied in accordance with Item P-603 to all vertical and horizontal asphalt and concrete surfaces prior to placement of the first and each subsequent lift of asphalt mixture.

**401-4.12 Laydown plan, transporting, placing, and finishing.** Prior to the placement of the asphalt, the Contractor shall prepare a laydown plan with the sequence of paving lanes and width to minimize the number of cold joints; the location of any temporary ramps; laydown temperature; and estimated time of completion for each portion of the work (milling, paving, rolling, cooling, etc.). The laydown plan and any modifications shall be approved by the RPR.

Deliveries shall be scheduled so that the placing and compacting of asphalt is uniform with minimum stopping and starting of the paver. Hauling over freshly placed material shall not be permitted until the material has been compacted, as specified, and allowed to cool to approximately ambient temperature. The Contractor, at their expense, shall be responsible for repair of any damage to the pavement caused by hauling operations.

The contractor shall survey each lift of asphalt surface course and certify to RPR that every lift meets the grade tolerances of paragraph 401-6.2d before the next lift can be placed.

Edges of existing asphalt pavement abutting the new work shall be saw cut and the cut off material and laitance removed. Apply a tack coat in accordance with P-603 before new asphalt material is placed against it.

The speed of the paver shall be regulated to eliminate pulling and tearing of the asphalt mat. Placement of the asphalt mix shall begin along the centerline of a crowned section or on the high side of areas with a one-way slope unless shown otherwise on the laydown plan as accepted by the RPR. The asphalt mix shall be placed in consecutive adjacent lanes having a minimum width of 12 feet except where edge lanes require less width to complete the area. Additional screed sections attached to widen the paver to meet the minimum lane width requirements must include additional auger sections to move the asphalt mixture uniformly along the screed extension.

The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least one foot (30 cm); however, the joint in the surface top course shall be at the centerline of crowned pavements. Transverse joints in one course shall be offset by at least 10 feet (3 m) from transverse joints in the previous course. Transverse joints in adjacent lanes shall be offset to a minimum of 10 feet (3 m). On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the asphalt may be spread and luted by hand tools.

The RPR may at any time, reject any batch of asphalt, on the truck or placed in the mat, which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or overheated asphalt mixture. Such rejection may be based on only visual inspection or temperature measurements. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the RPR, and if it can be demonstrated in the laboratory, in the presence of the RPR, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

Areas of segregation in the surface course, as determined by the RPR, shall be removed and replaced at the Contractor's expense. The area shall be removed by saw cutting and milling a minimum of the construction lift thickness as specified in paragraph 401-3.3, Table 2 for the approved mix design. The area to be removed and replaced shall be a minimum width of the paver and a minimum of 10 feet (3 m) long.

**401-4.13 Compaction of asphalt mixture.** After placing, the asphalt mixture shall be thoroughly and uniformly compacted by self-propelled rollers. The surface shall be compacted as soon as possible when the asphalt has attained sufficient stability so that the rolling does not cause undue displacement, cracking

or shoving. The sequence of rolling operations and the type of rollers used shall be at the discretion of the Contractor. The speed of the roller shall, at all times, be sufficiently slow to avoid displacement of the hot mixture and be effective in compaction. Any surface defects and/or displacement occurring as a result of the roller, or from any other cause, shall be corrected at the Contractor's expense.

Sufficient rollers shall be furnished to handle the output of the plant. Rolling shall continue until the surface is of uniform texture, true to grade and cross-section, and the required field density is obtained. To prevent adhesion of the asphalt to the roller, the wheels shall be equipped with a scraper and kept moistened with water as necessary.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with approved power tampers.

Any asphalt that becomes loose and broken, mixed with dirt, contains check-cracking, or in any way defective, shall be removed and replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching shall not be allowed.

**401-4.14 Joints.** The formation of all joints shall be made to ensure a continuous bond between the courses and obtain the required density. All joints shall have the same texture as other sections of the course and meet the requirements for smoothness and grade.

The roller shall not pass over the unprotected end of the freshly laid asphalt except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course. The tapered edge shall be cut back to its full depth and width on a straight line to expose a vertical face prior to placing the adjacent lane. In both methods, all contact surfaces shall be coated with an asphalt tack coat before placing any fresh asphalt against the joint.

Longitudinal joints which have been left exposed for more than four (4) hours; the surface temperature has cooled to less than 175°F (80°C); or are irregular, damaged, uncompacted or otherwise defective shall be cut back with a cutting wheel or pavement saw a maximum of 3 inches (75 mm) to expose a clean, sound, uniform vertical surface for the full depth of the course. All cutback material and any laitance produced from cutting joints shall be removed from the project. Asphalt tack coat in accordance with P-603 shall be applied to the clean, dry joint prior to placing any additional fresh asphalt against the joint. The cost of this work shall be considered incidental to the cost of the asphalt.

**401-4.15 Saw-cut grooving.** Saw-cut grooving is not required.

**401-4.16 Diamond grinding.** Diamond grinding shall be completed prior to pavement grooving. Diamond grinding shall be accomplished by sawing with saw blades impregnated with industrial diamond abrasive.

Diamond grinding shall be performed with a machine designed specifically for diamond grinding capable of cutting a path at least 3 feet (0.9 m) wide. The saw blades shall be 1/8-inch (3-mm) wide with a sufficient number of blades to create grooves between 0.090 and 0.130 inches (2 and 3.5 mm) wide; and peaks and ridges approximately 1/32 inch (1 mm) higher than the bottom of the grinding cut. The actual number of blades will be determined by the Contractor and depend on the hardness of the aggregate. Equipment or grinding procedures that cause ravels, aggregate fractures, spalls or disturbance to the pavement will not be permitted. Contractor shall demonstrate to the RPR that the grinding equipment will produce satisfactory results prior to making corrections to surfaces. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The slurry resulting from the grinding operation shall be continuously removed and the pavement left in a clean condition. The Contractor shall apply a surface treatment per P-608 to all areas that have been subject to grinding.

**401-4.17 Nighttime paving requirements.** The Contractor shall provide adequate lighting during any nighttime construction. A lighting plan shall be submitted by the Contractor and approved by the RPR

prior to the start of any nighttime work. All work shall be in accordance with the approved CSPP and lighting plan.

### **CONTRACTOR QUALITY CONTROL (CQC)**

**401-5.1 General.** The Contractor shall develop a Contractor Quality Control Program (CQCP) in accordance with Item C-100. No partial payment will be made for materials without an approved CQCP.

**401-5.2 Contractor quality control (QC) facilities.** The Contractor shall provide or contract for testing facilities in accordance with Item C-100. The RPR shall be permitted unrestricted access to inspect the Contractor's QC facilities and witness QC activities. The RPR will advise the Contractor in writing of any noted deficiencies concerning the QC facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to be adversely affecting the test results, the incorporation of the materials into the work shall be suspended immediately and will not be permitted to resume until the deficiencies are satisfactorily corrected.

**401-5.3 Contractor QC testing.** The Contractor shall perform all QC tests necessary to control the production and construction processes applicable to these specifications and as set forth in the approved CQCP. The testing program shall include, but not necessarily be limited to, tests for the control of asphalt content, aggregate gradation, temperatures, aggregate moisture, field compaction, and surface smoothness. A QC Testing Plan shall be developed as part of the CQCP.

**a. Asphalt content.** A minimum of two tests shall be performed per day in accordance with ASTM D6307 or ASTM D2172 for determination of asphalt content. When using ASTM D6307, the correction factor shall be determined as part of the first test performed at the beginning of plant production; and as part of every tenth test performed thereafter. The asphalt content for the day will be determined by averaging the test results.

**b. Gradation.** Aggregate gradations shall be determined a minimum of twice per day from mechanical analysis of extracted aggregate in accordance with ASTM D5444, ASTM C136, and ASTM C117.

**c. Moisture content of aggregate.** The moisture content of aggregate used for production shall be determined a minimum of once per day in accordance with ASTM C566.

**d. Moisture content of asphalt.** The moisture content shall be determined once per day in accordance with AASHTO T329 or ASTM D1461.

**e. Temperatures.** Temperatures shall be checked at least four times per day, at necessary locations to determine the temperatures of the dryer, the asphalt binder in the storage tank, the asphalt at the plant, and the asphalt at the job site.

**f. In-place density monitoring.** The Contractor shall conduct any necessary testing to ensure that the specified density is being achieved. A nuclear gauge may be used to monitor the pavement density in accordance with ASTM D2950.

#### **g. Smoothness for Contractor Quality Control.**

The Contractor shall perform smoothness testing in transverse and longitudinal directions daily to verify that the construction processes are producing pavement with variances less than ¼ inch in 12 feet, identifying areas that may pond water which could lead to hydroplaning of aircraft. If the smoothness criteria are not met, appropriate changes and corrections to the construction process shall be made by the Contractor before construction continues.

The Contractor may use a 12-foot (3.7m) straightedge, a rolling inclinometer meeting the requirements of ASTM E2133 or rolling external reference device that can simulate a 12-foot (3.7m)



straightedge approved by the RPR. Straight-edge testing shall start with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the straightedge for each successive measurement. Testing shall be continuous across all joints. The surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length and measuring the maximum gap between the straightedge and the pavement surface in the area between the two high points. If the rolling inclinometer or external reference device is used, the data may be evaluated using the FAA profile program, ProFAA, or FHWA ProVal, using the 12-foot straightedge simulation function.

Smoothness readings shall not be made across grade changes or cross slope transitions. The transition between new and existing pavement shall be evaluated separately for conformance with the plans.

**(1) Transverse measurements.** Transverse measurements shall be taken for each day's production placed. Transverse measurements shall be taken perpendicular to the pavement centerline each 50 feet (15 m) or more often as determined by the RPR. The joint between lanes shall be tested separately to facilitate smoothness between lanes.

**(2) Longitudinal measurements.** Longitudinal measurements shall be taken for each day's production placed. Longitudinal tests shall be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet (6 m); and at the third points of paving lanes when widths of paving lanes are 20 ft (6 m) or greater. When placement abuts previously placed material the first measurement shall start with one half the length of the straight edge on the previously placed material.

Deviations on the final surface course in either the transverse or longitudinal direction that will trap water greater than 1/4 inch (6 mm) shall be corrected with diamond grinding per paragraph 401-4.16 or by removing and replacing the surface course to full depth. Grinding shall be tapered in all directions to provide smooth transitions to areas not requiring grinding. All areas in which diamond grinding has been performed shall be subject to the final pavement thickness tolerances specified in paragraph 401-6.1d(3). Areas that have been ground shall be sealed with a surface treatment in accordance with Item P-608. To avoid the surface treatment creating any conflict with runway or taxiway markings, it may be necessary to seal a larger area.

Control charts shall be kept showing area of each day's placement and the percentage of corrective grinding required. Corrections to production and placement shall be initiated when corrective grinding is required. If the Contractor's machines and/or methods produce significant areas that need corrective actions in excess of 10 percent of a day's production, production shall be stopped until corrective measures are implemented by the Contractor.

**h. Grade.** Grade shall be evaluated daily to allow adjustments to paving operations when grade measurements do not meet specifications. As a minimum, grades shall be evaluated prior to and after the placement of the first lift and after placement of the surface lift.

Measurements will be taken at appropriate grade lines (as a minimum at center and edges of paving lane) and longitudinal spacing as shown on cross-sections and plans. The final surface of the pavement will not vary from the grade line elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically and 0.1 feet (30 mm) laterally. The documentation will be provided by the Contractor to the RPR by the end of the following working day.

Areas with humps or depressions that exceed grade or smoothness criteria and that retain water on the surface must be ground off provided the course thickness after grinding is not more than 1/2 inch (12 mm) less than the thickness specified on the plans. Grinding shall be in accordance with paragraph 401-4.16.

The Contractor shall repair low areas or areas that cannot be corrected by grinding by removal of deficient areas to the depth of the final course plus ½ inch and replacing with new material. Skin patching is not allowed.

**401-5.4 Sampling.** When directed by the RPR, the Contractor shall sample and test any material that appears inconsistent with similar material being sampled, unless such material is voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be in accordance with standard procedures specified.

**401-5.5 Control charts.** The Contractor shall maintain linear control charts for both individual measurements and range (i.e. difference between highest and lowest measurements) for aggregate gradation, asphalt content, and VMA. The VMA for each day will be calculated and monitored by the QC laboratory.

Control charts shall be posted in a location satisfactory to the RPR and kept current. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and Suspension Limits applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor's projected data during production indicates a problem and the Contractor is not taking satisfactory corrective action, the RPR may suspend production or acceptance of the material.

**a. Individual measurements.** Control charts for individual measurements shall be established to maintain process control within tolerance for aggregate gradation, asphalt content, and VMA. The control charts shall use the job mix formula target values as indicators of central tendency for the following test parameters with associated Action and Suspension Limits:

**Control Chart Limits for Individual Measurements**

Sieve	Action Limit	Suspension Limit
3/4 inch (19.0 mm)	±6%	±9%
1/2 inch (12.5 mm)	±6%	±9%
3/8 inch (9.5 mm)	±6%	±9%
No. 4 (4.75 mm)	±6%	±9%
No. 16 (1.18 mm)	±5%	±7.5%
No. 50 (300 µm)	±3%	±4.5%
No. 200 (75 µm)	±2%	±3%
<b>Asphalt Content</b>	±0.45%	±0.70%
<b>Minimum VMA</b>	-0.5%	-1.0%

**b. Range.** Control charts shall be established to control gradation process variability. The range shall be plotted as the difference between the two test results for each control parameter. The Suspension Limits specified below are based on a sample size of  $n = 2$ . Should the Contractor elect to perform more than two tests per lot, the Suspension Limits shall be adjusted by multiplying the Suspension Limit by 1.18 for  $n = 3$  and by 1.27 for  $n = 4$ .

**Control Chart Limits Based on Range**

<b>Sieve</b>	<b>Suspension Limit</b>
1/2 inch (12.5 mm)	11%
3/8 inch (9.5 mm)	11%
No. 4 (4.75 mm)	11%
No. 16 (1.18 mm)	9%
No. 50 (300 µm)	6%
No. 200 (75 µm)	3.5%
<b>Asphalt Content</b>	0.8%

**c. Corrective Action.** The CQCP shall indicate that appropriate action shall be taken when the process is believed to be out of tolerance. The Plan shall contain rules to gauge when a process is out of control and detail what action will be taken to bring the process into control. As a minimum, a process shall be deemed out of control and production stopped and corrective action taken, if:

- (1) One-point falls outside the Suspension Limit line for individual measurements or range; or
- (2) Two points in a row fall outside the Action Limit line for individual measurements.

**401-5.6 QC reports.** The Contractor shall maintain records and shall submit reports of QC activities daily, in accordance with Item C-100.

**MATERIAL ACCEPTANCE**

**401-6.1 Acceptance sampling and testing.** Unless otherwise specified, all acceptance sampling and testing necessary to determine conformance with the requirements specified in this section will be performed by the RPR at no cost to the Contractor except that coring as required in this section shall be completed and paid for by the Contractor.

**a. Quality assurance (QA) testing laboratory.** The QA testing laboratory performing these acceptance tests will be accredited in accordance with ASTM D3666. The QA laboratory accreditation will be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing will be listed on the lab accreditation.

**b. Lot size.** A standard lot will be equal to one day's production divided into approximately equal sublots of between 400 to 600 tons. When only one or two sublots are produced in a day's production, the sublots will be combined with the production lot from the previous or next day.

Where more than one plant is simultaneously producing asphalt for the job, the lot sizes will apply separately for each plant.

**c. Asphalt air voids.** Plant-produced asphalts will be tested for air voids on a subplot basis.

**(1) Sampling.** Material from each subplot shall be sampled in accordance with ASTM D3665. Samples shall be taken from material deposited into trucks at the plant or at the job site in accordance with ASTM D979. The sample asphalt may be put in a covered metal tin and placed in an oven for not less than 30 minutes nor more than 60 minutes to maintain the material at or above the compaction temperature as specified in the JMF.

**(2) Testing.** Air voids will be determined for each subplot in accordance with ASTM D3203 for a set of three compacted specimens prepared in accordance with ASTM D6925.

**d. In-place asphalt mat and joint density.** Each subplot will be tested for in-place mat and joint density as a percentage of the theoretical maximum density (TMD).

**(1) Sampling.** The Contractor will cut minimum 5-inch (125 mm) diameter samples in accordance with ASTM D5361. The Contractor shall furnish all tools, labor, and materials for cleaning, and filling the cored pavement. Laitance produced by the coring operation shall be removed immediately after coring, and core holes shall be filled within one day after sampling in a manner acceptable to the RPR.

**(2) Bond.** Each lift of asphalt shall be bonded to the underlying layer. If cores reveal that the surface is not bonded, additional cores shall be taken as directed by the RPR to determine the extent of unbonded areas. Unbonded areas shall be removed by milling and replaced at no additional cost as directed by the RPR.

**(3) Thickness.** Thickness of each lift of surface course will be evaluated by the RPR for compliance to the requirements shown on the plans after any necessary corrections for grade. Measurements of thickness will be made using the cores extracted for each subplot for density measurement. The maximum allowable deficiency at any point will not be more than 1/4 inch (6 mm) less than the thickness indicated for the lift. Average thickness of lift, or combined lifts, will not be less than the indicated thickness. Where the thickness tolerances are not met, the lot or subplot shall be corrected by the Contractor at his expense by removing the deficient area and replacing with new pavement. The Contractor, at his expense, may take additional cores as approved by the RPR to circumscribe the deficient area.

**(4) Mat density.** One core shall be taken from each subplot. Core locations will be determined by the RPR in accordance with ASTM D3665. Cores for mat density shall not be taken closer than one foot (30 cm) from a transverse or longitudinal joint. The bulk specific gravity of each cored sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each subplot sample by the TMD for that subplot.

**(5) Joint density.** One core centered over the longitudinal joint shall be taken for each subplot that has a longitudinal joint. Core locations will be determined by the RPR in accordance with ASTM D3665. The bulk specific gravity of each core sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each joint density sample by the average TMD for the lot. The TMD used to determine the joint density at joints formed between lots will be the lower of the average TMD values from the adjacent lots.

#### **401-6.2 Acceptance criteria.**

**a. General.** Acceptance will be based on the implementation of the Contractor Quality Control Program (CQCP) and the following characteristics of the asphalt and completed pavements: air voids, mat density, joint density, and grade.

**b. Air Voids and Mat density.** Acceptance of each lot of plant produced material for mat density and air voids will be based on the percentage of material within specification limits (PWL). If the PWL of the lot equals or exceeds 90%, the lot will be acceptable. Acceptance and payment will be determined in accordance with paragraph 401-8.1.

**c. Joint density.** Acceptance of each lot of plant produced asphalt for joint density will be based on the PWL. If the PWL of the lot is equal to or exceeds 90%, the lot will be considered acceptable. If the PWL is less than 90%, the Contractor shall evaluate the reason and act accordingly. If the PWL is less than 80%, the Contractor shall cease operations and until the reason for poor compaction has been determined. If the PWL is less than 71%, the pay factor for the lot used to complete the joint will be reduced by five (5) percentage points. This lot pay factor reduction will be incorporated and evaluated in accordance with paragraph 401-8.1.

**d. Grade.** The final finished surface of the pavement shall be surveyed to verify that the grade elevations and cross-sections shown on the plans do not deviate more than 1/2 inch (12 mm) vertically or 0.1 feet (30 mm) laterally.

Cross sections of the pavement shall be taken at a minimum 50-foot (15-m) longitudinal spacing, at all longitudinal grade breaks, and at the start and end of each lane placed. Minimum cross-section grade points shall include grade at centerline,  $\pm 10$  feet of centerline, and edge of apron or taxilane pavement.

The survey and documentation shall be stamped and signed by a licensed surveyor. Payment for sublots that do not meet the grade for over 25% of the subplot shall not be more than 95%.

**e. Profilograph roughness for QA Acceptance.** Not used.

**401-6.3 Percentage of material within specification limits (PWL).** The PWL will be determined in accordance with procedures specified in Item C-110. The specification tolerance limits (L) for lower and (U) for upper are contained in Table 5.

**Table 5. Acceptance Limits for Air Voids and Density**

Test Property	Pavements Specification Tolerance Limits	
	L	U
<b>Air Voids Total Mix (%)</b>	2.0	5.0
<b>Surface Course Mat Density (%)</b>	92.8	-
<b>Base Course Mat Density (%)</b>	92.0	-
<b>Joint density (%)</b>	90.5	--

**a. Outliers.** All individual tests for mat density and air voids will be checked for outliers (test criterion) in accordance with ASTM E178, at a significance level of 5%. Outliers will be discarded, and the PWL will be determined by using the remaining test values. The criteria in Table 5 are based on production processes which have a variability with the following standard deviations: Surface Course Mat Density (%), 1.30; Base Course Mat Density (%), 1.55; Joint Density (%), 1.55.

The Contractor should note that (1) 90 PWL is achieved when consistently producing a surface course with an average mat density of at least 94.5% with 1.30% or less variability, (2) 90 PWL is achieved 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 of asphalt used in the accepted work. Batch weights or truck scale weights will be used to determine the basis for the tonnage.

### 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 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 subplot shall be reduced by 5%.

**Table 6. Price adjustment schedule<sup>1</sup>**

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 <sup>2</sup>

<sup>1</sup> 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.

<sup>2</sup> 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.** Not used.**401-8.1 Payment.**

Payment will be made under:

Item P-401-8.1	Asphalt Surface Course - per ton
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**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- $\mu$ 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 Durometer
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 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 Handbook MS-26, Asphalt Binder	
Asphalt Institute MS-2 Mix Design Manual, 7th Edition.	
AI State Binder Specification Database	
Federal Highway Administration (FHWA)	
Long Term Pavement Performance Binder Program	
Advisory Circulars (AC)	
AC 150/5320-6	Airport Pavement Design and Evaluation
FAA Orders	
5300.1	Modifications to Agency Airport Design, Construction, and Equipment Standards
Software	
FAARFIELD	

**END OF ITEM P-401**

## Item P-501 Cement Concrete Pavement

### DESCRIPTION

**501-1.1** This work shall consist of pavement composed of cement concrete with reinforcement and without reinforcement constructed on a prepared underlying surface in accordance with these specifications and shall conform to the lines, grades, thickness, and typical cross-sections shown on the plans. The terms cement concrete, hydraulic cement concrete, and concrete are interchangeable in this specification.

### MATERIALS

#### **501-2.1 Aggregates.**

**a. Reactivity.** Fine and Coarse aggregates to be used in PCC on this project shall be tested and evaluated by the Contractor for alkali-aggregate reactivity in accordance with both ASTM C1260 and ASTM C1567. Tests must be representative of aggregate sources which will be providing material for production. ASTM C1260 and ASTM C1567 tests may be run concurrently.

(1) Test coarse aggregate and fine aggregate separately, in accordance with ASTM C1260; however, extend the length of the test to 28 days (30 days from casting). Complete the tests within six months of the date of the concrete submittal. If expansion of either the coarse or fine aggregate exceeds 0.10% at 28 days, limit the alkali loading of the concrete to be less than or equal to 3.0 lb. per cubic yard (1.8 kg per cubic meter), calculated in accordance with EB 106.

Note: Remaining parts of 501-2.1a remain as in AC 150/5370-10H.

(2) The combined coarse and fine aggregate shall be tested in accordance with ASTM C1567, modified for combined aggregates, using the proposed mixture design proportions of aggregates, cementitious materials, and/or specific reactivity reducing chemicals. If the expansion does not exceed 0.10% at 28 days, the proposed combined materials will be accepted. If the expansion is greater than 0.10% at 28 days, the aggregates will not be accepted unless adjustments to the combined materials mixture can reduce the expansion to less than 0.10% at 28 days, or new aggregates shall be evaluated and tested.

(3) If lithium nitrate is proposed for use with or without supplementary cementitious materials, the aggregates shall be tested in accordance with Corps of Engineers (COE) Concrete Research Division (CRD) C662 in lieu of ASTM C1567. If lithium nitrate admixture is used, it shall be nominal 30%  $\pm$  0.5% weight lithium nitrate in water. If the expansion does not exceed 0.10% at 28 days, the proposed combined materials will be accepted. If the expansion is greater than 0.10% at 28 days, the aggregates will not be accepted unless adjustments to the combined materials mixture can reduce the expansion to less than 0.10% at 28 days, or new aggregates shall be evaluated and tested.

**b. Fine aggregate.** Grading of the fine aggregate, as delivered to the mixer, shall conform to the requirements of ASTM C33 and the parameters identified in the fine aggregate material requirements below. Fine aggregate material requirements and deleterious limits are shown in the table below.

<b>Fine Aggregate Material Requirements</b>		
Soundness of Aggregates by Use of Sodium Sulfate <b>or</b> Magnesium Sulfate	Loss after 5 cycles: 10% maximum using Sodium sulfate - or - 15% maximum using magnesium sulfate	ASTM C88
Sand Equivalent	45 minimum	ASTM D2419
Fineness Modulus (FM)	$2.50 \leq FM \leq 3.40$	ASTM C136
<b>Limits for Deleterious Substances in Fine Aggregate for Concrete</b>		
Clay lumps and friable particles	1.0% maximum	ASTM C142
Coal and lignite	0.5% using a medium with a density of Sp. Gr. of 2.0	ASTM C123
Total Deleterious Material	1.0% maximum	

**c. Coarse aggregate.** The maximum size coarse aggregate shall be 1 1/2.

Aggregates delivered to the mixer shall be clean, hard, uncoated aggregates consisting of crushed stone, crushed or uncrushed gravel, air-cooled iron blast furnace slag, crushed recycled concrete pavement, or a combination. The aggregates shall have no known history of detrimental pavement staining. Steel blast furnace slag shall not be permitted. Coarse aggregate material requirements and deleterious limits are shown in the table below; washing may be required to meet aggregate requirements.

#### **Coarse Aggregate Material Requirements**

<b>Material Test</b>	<b>Requirement</b>	<b>Standard</b>
Resistance to Degradation	Loss: 40% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate <b>or</b> Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium sulfate - or - 18% maximum using magnesium sulfate	ASTM C88
Flat, Elongated, or Flat and Elongated Particles	8% maximum, by weight, flat, elongated, or flat and elongated particles at 5:1 for any size group coarser than 3/8 (9.5 mm) sieve <sup>1</sup>	ASTM D4791
Bulk density of slag <sup>2</sup>	Weigh not less than 70 pounds per cubic foot (1.12 Mg/cubic meter)	ASTM C29
D-cracking (Freeze-Thaw) <sup>3</sup>	Durability factor $\geq 95$	ASTM C666

<sup>1</sup> A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

<sup>2</sup> Only required if slag is specified.

<sup>3</sup> Coarse aggregates may only be accepted from sources that have a 20-year service history for the same gradation to be supplied with no history of D-Cracking. Aggregates that do not have a 20-year record of service free from major repairs (less than 5% of slabs replaced) in similar conditions without D-cracking shall not be used unless the material currently being produced has a durability factor greater than or equal to 95 per ASTM C666. The Contractor shall submit a current certification and test results to verify the aggregate acceptability. Test results will only be accepted from a State Department of Transportation (DOT) materials

laboratory or an accredited laboratory. Certification and test results which are not dated, or which are over one (1) year old, or which are for different gradations will not be accepted.

The amount of deleterious material in the coarse aggregate shall not exceed the following limits:

#### Limits for Deleterious Substances in Coarse Aggregate

Deleterious material	ASTM	Percentage by Mass
Clay Lumps and friable particles	ASTM C142	1.0
Material finer than No. 200 sieve (75 µm)	ASTM C117	1.0 <sup>1</sup>
Lightweight particles	ASTM C123 using a medium with a density of Sp. Gr. of 2.0	0.5
Chert <sup>2</sup> (less than 2.40 Sp Gr.)	ASTM C123 using a medium with a density of Sp. Gr. of 2.40)	0.1 <sup>3</sup>

<sup>1</sup> The limit for materials that are finer than 75-µm is allowed to be increased to 1.5% for crushed aggregates consisting of dust of fracture that is essentially free from clay or shale. Test results supporting acceptance of an increasing limit to 1.5% with statement indicating material is dust of fracture must be submitted with Concrete mix. Acceptable techniques to characterize these fines include methylene blue adsorption or X-ray diffraction analysis.

<sup>2</sup> Chert and aggregates with less than 2.4 specific gravity.

<sup>3</sup> The limit for chert may be increased to 1.0 percent by mass in areas not subject to severe freeze and thaw.

**d. Combined aggregate gradation.** This specification is targeted for a combined aggregate gradation developed following the guidance presented in United States Air Force Engineering Technical Letter (ETL) 97-5: Proportioning Concrete Mixtures with Graded Aggregates for Rigid Airfield Pavements. Base the aggregate grading upon a combination of all the aggregates (coarse and fine) to be used for the mixture proportioning. Three aggregate sizes may be required to achieve an optimized combined gradation that will produce a workable concrete mixture for its intended use. Use aggregate gradations that produce concrete mixtures with well-graded or optimized aggregate combinations. The Contractor shall submit complete mixture information necessary to calculate the volumetric components of the mixture. The combined aggregate grading shall meet the following requirements:

(1) The materials selected, and the proportions used, shall be such that when the Coarseness Factor (CF) and the Workability Factor (WF) are plotted on a diagram as described in paragraph 501-2.1d(4) below, the point thus determined shall fall within the parallelogram described therein.

(2) The CF shall be determined from the following equation:

$$CF = \frac{(\text{cumulative percent retained on the } 3/8 \text{ in. (9.5 mm) sieve})(100)}{(\text{cumulative percent retained on the No. 8 (2.36 mm) sieve})}$$

(3) The WF is defined as the percentage passing the No. 8 (2.36 mm) sieve based on the combined gradation. However, WF shall be adjusted, upwards only, by 2.5 percentage points for each 94 pounds (42 kg) of cementitious material per cubic meter yard greater than 564 pounds per cubic yard (335 kg per cubic meter).

(4) A diagram shall be plotted using a rectangular scale with WF on the Y-axis with units from 20 (bottom) to 45 (top), and with CF on the X-axis with units from 80 (left side) to 30 (right side). On this diagram a parallelogram shall be plotted with corners at the following coordinates (CF-75, WF-28), (CF-75, WF-40), (CF-45, WF-32.5), and (CF-45, WF-44.5). If the point determined by the intersection of the computed CF and WF does not fall within the above parallelogram, the grading of each size of aggregate

used and the proportions selected shall be changed as necessary. The point determined by the plotting of the CF and WF may be adjusted during production  $\pm 3$  WF and  $\pm 5$  CF. Adjustments to gradation may not take the point outside of the parallelogram.

**e. Contractors combined aggregate gradation.** The Contractor shall submit their combined aggregate gradation using the following format:

**Contractor's Combined Aggregate Gradation**

Sieve Size	Contractor's Concrete Mix Gradation (Percent passing by weight)
2 inch (50 mm)	*
1-1/2 inch (37.5 mm)	*
1 inch (25.0 mm)	*
3/4 inch (19.0 mm)	*
1/2 inch (12.5 mm)	*
3/8 inch (9.5 mm)	*
No. 4 (4.75 mm)	*
No. 8 (2.36 mm)	*
No. 16 (1.18 mm)	*
No. 30 (600 $\mu$ m)	*
No. 50 (300 $\mu$ m)	*
No. 100 (150 $\mu$ m)	*

**501-2.2 Cement.** Cement: ASTM C150, Types I, II, or V; ASTM C595, Types IS, IP, IL, or IT; ASTM C1157 Types GU, HS, MS, MH, or LH

**501-2.3 Cementitious materials.**

**a. Fly ash.** Fly ash shall meet the requirements of ASTM C618, with the exception of loss of ignition, where the maximum shall be less than 6%. Fly ash shall have a Calcium Oxide (CaO) content of less than 15% and a total alkali content less than 3% per ASTM C311. The Contractor shall furnish the previous three most recent, consecutive ASTM C618 reports for each source of fly ash proposed in the concrete mix and shall furnish each additional report as they become available during the project. The reports can be used for acceptance, or the material may be tested independently by the Resident Project Representative (RPR).

**b. Slag cement (ground granulated blast furnace (GGBF)).** Slag cement shall conform to ASTM C989, Grade 100 or Grade 120. Slag cement shall be used only at a rate between 25% and 55% of the total cementitious material by mass.

**c. Raw or calcined natural pozzolan.** Natural pozzolan shall be raw or calcined and conform to ASTM C618, Class N, including the optional requirements for uniformity and effectiveness in controlling Alkali-Silica reaction and shall have a loss on ignition not exceeding 6%. Class N pozzolan for use in mitigating Alkali-Silica Reactivity shall have a total available alkali content less than 3%.

**d. Ultrafine fly ash and ultrafine pozzolan.** UltraFine Fly Ash (UFFA) and UltraFine Pozzolan (UFP) shall conform to ASTM C618, Class F or N, and the following additional requirements:



- (1) The strength activity index at 28 days of age shall be at least 95% of the control specimens.
- (2) The average particle size shall not exceed 6 microns.

**501-2.4 Joint seal.** The joint seal for the joints in the concrete pavement shall meet the requirements of Item P-605 and shall be of the type specified in the plans.

**501-2.5 Isolation joint filler.** Premolded joint filler for isolation joints shall conform to the requirements of ASTM D1751 or ASTM D1752 and shall be where shown on the plans. The filler for each joint shall be furnished in a single piece for the full depth and width required for the joint, unless otherwise specified by the RPR. When the use of more than one piece is required for a joint, the abutting ends shall be fastened securely and held accurately to shape by stapling or other positive fastening means satisfactory to the RPR.

**501-2.6 Steel reinforcement.** Reinforcing shall consist of one of the following;

ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

ASTM A706 Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

ASTM A775 Standard Specification for Epoxy-Coated Steel Reinforcing Bars

ASTM A934 Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars

ASTM A1064 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

ASTM A184 or A704 Bar mats

ASTM A1035 Standard Specification for Deformed and Plain, Low-Carbon, Chromium, Steel Bars for Concrete Reinforcement

ASTM A884 Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement

Welded wire fabric shall be furnished in flat sheets only.

**501-2.7 Dowel and tie bars.** Dowel bars shall be plain steel bars conforming to ASTM A615 and shall be free from burring or other deformation restricting slippage in the concrete.

**a. Dowel Bars.** Before delivery to the construction site each dowel bar shall be epoxy coated per ASTM A1078, Type 1, with a coating thickness after curing greater than 10 mils. Patched ends are not required for Type 1 coated dowels. The dowels shall be coated with a bond-breaker recommended by the manufacturer. Dowel sleeves or inserts are not permitted. Grout retention rings shall be fully circular metal or plastic devices capable of supporting the dowel until the grout hardens.

**b. Tie Bars.** Tie bars shall be deformed steel bars and conform to the requirements of ASTM A615. Tie bars designated as Grade 60 in ASTM A615 or ASTM A706 shall be used for construction requiring bent bars.

**501-2.8 Water.** Water used in mixing or curing shall be potable. If water is taken from other sources considered non-potable, it shall meet the requirements of ASTM C1602.

**501-2.9 Material for curing concrete.** Curing materials shall conform to one of the following specifications:

**a. Liquid membrane-forming compounds for curing concrete** shall conform to the requirements of ASTM C309, Type 2, Class A, or Class B.

- b. White polyethylene film for curing concrete shall conform to the requirements of ASTM C171.
- c. White burlap-polyethylene sheeting for curing concrete shall conform to the requirements of ASTM C171.
- d. Waterproof paper for curing concrete shall conform to the requirements of ASTM C171.

**501-2.10 Admixtures.** Admixtures shall conform to the following specifications:

**a. Air-entraining admixtures.** Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entraining agent and any water reducer admixture shall be compatible.

**b. Water-reducing admixtures.** Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D.

**c. Other admixtures.** The use of set retarding and set-accelerating admixtures shall be approved by the RPR prior to developing the concrete mix. Retarding admixtures shall meet the requirements of ASTM C494, Type A, B, or D and set-accelerating admixtures shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

**d. Lithium Nitrate.** The lithium admixture shall be a nominal 30% aqueous solution of Lithium Nitrate, with a density of 10 pounds/gallon (1.2 kg/L), and shall have the approximate chemical form as shown below:

**Lithium Admixture**

Constituent	Limit (Percent by Mass)
LiNO <sub>3</sub> (Lithium Nitrate)	30 ±0.5
SO <sub>4</sub> (Sulfate Ion)	0.1 (max)
Cl (Chloride Ion)	0.2 (max)
Na (Sodium Ion)	0.1 (max)
K (Potassium Ion)	0.1 (max)

The lithium nitrate admixture dispensing and mixing operations shall be verified and certified by the lithium manufacturer's representative.

**501-2.11 Epoxy-resin.** All epoxy-resin materials shall be two-component materials conforming to the requirements of ASTM C881, Class as appropriate for each application temperature to be encountered, except that in addition, the materials shall meet the following requirements:

- a. Material for use for embedding dowels and anchor bolts shall be Type IV, Grade 3.
- b. Material for use as patching materials for complete filling of spalls and other voids and for use in preparing epoxy resin mortar shall be Type III, Grade as approved.
- c. Material for use for injecting cracks shall be Type IV, Grade 1.
- d. Material for bonding freshly mixed Portland cement concrete or mortar or freshly mixed epoxy resin concrete or mortar to hardened concrete shall be Type V, Grade as approved.

**501-2.12 Bond Breaker.** Not required.

## CONCRETE MIX

**501-3.1. General.** No concrete shall be placed until an acceptable concrete mix has been submitted to the RPR for review and the RPR has taken appropriate action. The RPR's review shall not relieve the Contractor of the responsibility to select and proportion the materials to comply with this section.

**501-3.2 Concrete Mix Laboratory.** The laboratory used to develop the concrete mix shall be accredited in accordance with ASTM C1077. The laboratory accreditation must be current and listed on the accrediting authority's website. All test methods required for developing the concrete mix must be included in the lab accreditation. A copy of the laboratory's current accreditation and accredited test methods shall be submitted to the RPR prior to the start of construction.

**501-3.3 Concrete Mix Proportions.** Develop the mix using the procedures contained in Portland Cement Association (PCA) publication, "Design and Control of Concrete Mixtures." Concrete shall be proportioned to achieve a 28-day compressive strength that meets or exceeds the acceptance criteria contained in paragraph 501-6.6 for a compressive strength of 4,400 psi per ASTM C39.

The minimum cementitious material shall be adequate to ensure a workable, durable mix. The minimum cementitious material (cement plus fly ash, or slag cement) shall be 517 pounds per cubic yard (310 kg per cubic meter). The ratio of water to cementitious material, including free surface moisture on the aggregates but not including moisture absorbed by the aggregates shall be between 0.38 – 0.45 by weight.

Compressive strength test specimens shall be prepared in accordance with ASTM C192 and tested in accordance with ASTM C39. At the start of the project, the Contractor shall determine an allowable slump as determined by ASTM C143 not to exceed 2 inches (50 mm) for slip-form placement. For fixed-form placement, the slump shall not exceed 3 inches (75 mm). For hand placement, the slump shall not exceed 4 inches (100 mm). The results of the concrete mix shall include a statement giving the maximum nominal coarse aggregate size and the weights and volumes of each ingredient proportioned on a one cubic yard (meter) basis. Aggregate quantities shall be based on the mass in a saturated surface dry condition.

If a change in source(s) is made, or admixtures added or deleted from the mix, a new concrete mix must be submitted to the RPR for approval.

The RPR may request samples at any time for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

**501-3.4 Concrete Mix submittal.** The concrete mix shall be submitted to the RPR at least 14 days prior to the start of operations. The submitted concrete mix shall not be more than 180 days old and must use the materials to be used for production for the project. Production shall not begin until the concrete mix is approved in writing by the RPR.

Each of the submitted concrete mixes (i.e. slip form, side form machine finish and side form hand finish) shall be stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items and quantities as a minimum:

- Alkali loading contributed by the cement per cubic yard, calculated in accordance with EB 106.
- Certified material test reports for aggregate in accordance with paragraph 501-2.1. Certified reports must include all tests required; reporting each test, test method, test result, and requirement specified (criteria).
- Combined aggregate gradations and analysis; and including plots of the fine aggregate fineness modulus.
- Reactivity Test Results.

- Coarse aggregate quality test results, including deleterious materials.
- Fine aggregate quality test results, including deleterious materials.
- Mill certificates for cement and supplemental cementitious materials.
- Certified test results for all admixtures, including Lithium Nitrate if applicable.
- Specified compressive strength, slump, and air content.
- Recommended proportions/volumes for proposed mixture and trial water-cementitious materials ratio, including actual slump and air content.
- Compressive strength summaries and plots, including all individual cylinder breaks.
- Correlation ratios for acceptance testing and Contractor QC testing, when applicable.
- Historical record of test results documenting production standard deviation, when applicable.

### 501-3.5 Cementitious materials.

**a. Fly ash.** When fly ash is used as a partial replacement for cement, the replacement rate shall be determined from laboratory trial mixes and shall be between 20 and 30% by weight of the total cementitious material. If fly ash is used in conjunction with slag cement the maximum replacement rate shall not exceed 10% by weight of total cementitious material.

**b. Slag cement (ground granulated blast furnace (GGBF)).** Slag cement may be used. The slag cement, or slag cement plus fly ash if both are used, may constitute between 25 to 55% of the total cementitious material by weight.

**c. Raw or calcined natural pozzolan.** Natural pozzolan may be used in the concrete mix. When pozzolan is used as a partial replacement for cement, the replacement rate shall be determined from laboratory trial mixes and shall be between 20 and 30% by weight of the total cementitious material. If pozzolan is used in conjunction with slag cement the maximum replacement rate shall not exceed 10% by weight of total cementitious material.

**d. Ultrafine fly ash (UFFA) and ultrafine pozzolan (UFP).** UFFA and UFP may be used in the concrete mix with the RPR's approval. When UFFA and UFP are used as a partial replacement for cement, the replacement rate shall be determined from laboratory trial mixes and shall be between 7% and 16% by weight of the total cementitious material.

### 501-3.6 Admixtures.

**a. Air-entraining admixtures.** Air-entraining admixtures are to be added in such a manner that will ensure uniform distribution of the agent throughout the batch. The air content of freshly mixed air-entrained concrete shall be based upon trial mixes with the materials to be used in the work adjusted to produce concrete of the required plasticity and workability. The percentage of air in the mix shall be as shown in the table below. Air content shall be determined by testing in accordance with ASTM C231 for gravel and stone coarse aggregate and ASTM C173 for slag and other highly porous coarse aggregate.

**Recommended Air Content (Percent)**

Exposure Level	Maximum Size Aggregate inch (mm)				
	2 inch (50 mm)	1-1/2 inch (37.5 mm)	1 inch (25.0 mm)	3/4 inch (19.0 mm)	1/2 inch (12.5 mm)
Severe	5.0%	5.5%	6.0%	6.0%	7.0%

**b. Water-reducing admixtures.** Water-reducing admixtures shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements. Tests shall be conducted with the materials to be used in the work, in accordance with ASTM C494.

**c. Other admixtures.** Set controlling, and other approved admixtures shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements. Tests shall be conducted with the materials to be used in the work, in accordance with ASTM C494.

**d. Lithium nitrate.** Lithium nitrate shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements in accordance with paragraph 501-2.10d.

## CONSTRUCTION METHODS

**501-4.1 Control Strip.** Not required.

**501-4.2 Equipment.** The Contractor is responsible for the proper operation and maintenance of all equipment necessary for handling materials and performing all parts of the work to meet this specification.

**a. Plant and equipment.** The plant and mixing equipment shall conform to the requirements of ASTM C94 and/or ASTM C685. Each truck mixer shall have attached in a prominent place a manufacturer's nameplate showing the capacity of the drum in terms of volume of mixed concrete and the speed of rotation of the mixing drum or blades. The truck mixers shall be examined daily for changes in condition due to accumulation of hard concrete or mortar or wear of blades. The pickup and throwover blades shall be replaced when they have worn down 3/4 inch (19 mm) or more. The Contractor shall have a copy of the manufacturer's design on hand showing dimensions and arrangement of blades in reference to original height and depth.

Equipment for transferring and spreading concrete from the transport equipment to the paving lane in front of the finishing equipment shall be provided. The equipment shall be specially manufactured, self-propelled transfer equipment which will accept the concrete outside the paving lane and will spread it evenly across the paving lane in front of the paver and strike off the surface evenly to a depth which permits the paver to operate efficiently.

### **b. Finishing equipment.**

**(1) Slip-form.** The standard method of constructing concrete pavements shall be with an approved slip-form paving equipment designed and operated to spread, consolidate, screed, and finish the freshly placed concrete in one complete pass of the machine so that the end result is a dense and homogeneous pavement which is achieved with a minimum of hand finishing. The paver-finisher shall be a heavy duty, self-propelled machine designed specifically for paving and finishing high quality concrete pavements.

**(2) Fixed form.** On projects requiring less than 10,000 cubic yards (7650 cubic meters) of concrete pavement or irregular areas at locations inaccessible to slip-form paving equipment, concrete pavement may be placed with equipment specifically designed for placement and finishing using stationary side forms. Methods and equipment shall be reviewed and accepted by the RPR. Hand screeding and float finishing may only be used on small irregular areas as allowed by the RPR.

**c. Vibrators.** Vibrator shall be the internal type. The rate of vibration of each vibrating unit shall be sufficient to consolidate the pavement without segregation or voids. The number, spacing, and frequency shall be as necessary to provide a dense and homogeneous pavement and meet the recommendations of

American Concrete Institute (ACI) 309R, Guide for Consolidation of Concrete. Adequate power to operate all vibrators shall be available on the paver. The vibrators shall be automatically controlled so that they shall be stopped as forward motion ceases. The Contractor shall provide an electronic or mechanical means to monitor vibrator status. The checks on vibrator status shall occur a minimum of two times per day or when requested by the RPR.

Handheld vibrators may only be used in irregular areas and shall meet the recommendations of ACI 309R, Guide for Consolidation of Concrete.

**d. Concrete saws.** The Contractor shall provide sawing equipment adequate in number of units and power to complete the sawing to the required dimensions. The Contractor shall provide at least one standby saw in good working order and a supply of saw blades at the site of the work at all times during sawing operations.

**e. Fixed forms.** Straight side fixed forms shall be made of steel and shall be furnished in sections not less than 10 feet (3 m) in length. Forms shall be provided with adequate devices for secure settings so that when in place they will withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment. Forms with battered top surfaces and bent, twisted or broken forms shall not be used. Built-up forms shall not be used, except as approved by the RPR. The top face of the form shall not vary from a true plane more than 1/8 inch (3 mm) in 10 feet (3 m), and the upstanding leg shall not vary more than 1/4 inch (6 mm). The forms shall contain provisions for locking the ends of abutting sections together tightly for secure setting. Wood forms may be used under special conditions, when approved by the RPR. The forms shall extend the full depth of the pavement section.

**501-4.3 Form setting.** Forms shall be set to line and grade as shown on the plans, sufficiently in advance of the concrete placement, to ensure continuous paving operation. Forms shall be set to withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment. Forms shall be cleaned and oiled prior to the concrete placement.

**501-4.4 Base surface preparation prior to placement.** Any damage to the prepared base, subbase, and subgrade shall be corrected full depth by the Contractor prior to concrete placement. The underlying surface shall be entirely free of frost when concrete is placed. The prepared grade shall be moistened with water, without saturating, immediately ahead of concrete placement to prevent rapid loss of moisture from concrete.

**501-4.5 Handling, measuring, and batching material.** Aggregate stockpiles shall be constructed and managed in such a manner that prevents segregation and intermixing of deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the concrete batch plant. Aggregates that have become segregated or mixed with earth or foreign material shall not be used. All aggregates produced or handled by hydraulic methods, and washed aggregates, shall be stockpiled or binned for draining at least 12 hours before being batched. Store and maintain all aggregates at a uniform moisture content prior to use. A continuous supply of materials shall be provided to the work to ensure continuous placement.

**501-4.6 Mixing concrete.** The concrete may be mixed at the work site, in a central mix plant or in truck mixers. The mixer shall be of an approved type and capacity. Mixing time shall be measured from the time all materials are placed into the drum until the drum is emptied into the truck. All concrete shall be mixed and delivered to the site in accordance with the requirements of ASTM C94 or ASTM C685.

Mixed concrete from the central mixing plant shall be transported in truck mixers, truck agitators, or non-agitating trucks. The elapsed time from the addition of cementitious material to the mix until the concrete is discharged from the truck should not exceed 30 minutes when the concrete is hauled in non-agitating trucks, nor 90 minutes when the concrete is hauled in truck mixers or truck agitators. In no case shall the temperature of the concrete when placed exceed 90°F (32°C). Retempering concrete by adding water or by other means will not be permitted. With transit mixers additional water may be added to the batch

materials and additional mixing performed to increase the slump to meet the specified requirements provided the addition of water is performed within 45 minutes after the initial mixing operations and provided the water/cementitious ratio specified is not exceeded.

**501-4.7 Weather Limitations on mixing and placing.** No concrete shall be mixed, placed, or finished when the natural light is insufficient, unless an adequate and approved artificial lighting system is operated.

**a. Cold weather.** Unless authorized in writing by the RPR, mixing and concreting operations shall be discontinued when a descending air temperature in the shade and away from artificial heat reaches 40°F (4°C) and shall not be resumed until an ascending air temperature in the shade and away from artificial heat reaches 35°F (2°C).

The aggregate shall be free of ice, snow, and frozen lumps before entering the mixer. The temperature of the mixed concrete shall not be less than 50°F (10°C) at the time of placement. Concrete shall not be placed on frozen material, nor shall frozen aggregates be used in the concrete.

When concreting is authorized during cold weather, water and/or the aggregates may be heated to not more than 150°F (66°C). The apparatus used shall heat the mass uniformly and shall be arranged to preclude the possible occurrence of overheated areas which might be detrimental to the materials.

Curing during cold weather shall be in accordance with paragraph 501-4.13d.

**b. Hot weather.** During periods of hot weather when the maximum daily air temperature exceeds 85°F (30°C), the following precautions shall be taken.

The forms and/or the underlying surface shall be sprinkled with water immediately before placing the concrete. The concrete shall be placed at the coolest temperature practicable, and in no case shall the temperature of the concrete when placed exceed 90°F (32°C). The aggregates and/or mixing water shall be cooled as necessary to maintain the concrete temperature at or not more than the specified maximum.

The concrete placement shall be protected from exceeding an evaporation rate of 0.2 psf (0.98 kg/m<sup>2</sup> per hour) per hour. When conditions are such that problems with plastic cracking can be expected, and particularly if any plastic cracking begins to occur, the Contractor shall immediately take such additional measures as necessary to protect the concrete surface. If the Contractor's measures are not effective in preventing plastic cracking, paving operations shall be immediately stopped.

Curing during hot weather shall be in accordance with paragraph 501-4.13e.

**c. Temperature management program.** Prior to the start of paving operation for each day of paving, the Contractor shall provide the RPR with a Temperature Management Program for the concrete to be placed to assure that uncontrolled cracking is avoided. (Federal Highway Administration HIPERPAV 3 is one example of a temperature management program.) As a minimum, the program shall address the following items:

(1) Anticipated tensile strains in the fresh concrete as related to heating and cooling of the concrete material.

(2) Anticipated weather conditions such as ambient temperatures, wind velocity, and relative humidity; and anticipated evaporation rate using Figure 19-9, PCA, Design and Control of Concrete Mixtures.

(3) Anticipated timing of initial sawing of joint.

(4) Anticipated number and type of saws to be used.

**d. Rain.** The Contractor shall have available materials for the protection of the concrete during inclement weather. Such protective materials shall consist of rolled polyethylene sheeting at least 4 mils (0.1 mm) thick of sufficient length and width to cover the plastic concrete slab and any edges. The



sheeting may be mounted on either the paver or a separate movable bridge from which it can be unrolled without dragging over the plastic concrete surface. When rain appears imminent, all paving operations shall stop, and all available personnel shall begin covering the surface of the unhardened concrete with the protective covering.

**501-4.8 Concrete Placement.** At any point in concrete conveyance, the free vertical drop of the concrete from one point to another or to the underlying surface shall not exceed 3 feet (1 m). The finished concrete product must be dense and homogeneous, without segregation and conforming to the standards in this specification. Backhoes and grading equipment shall not be used to distribute concrete in front of the paver. Front end loaders will not be used. All concrete shall be consolidated without voids or segregation, including under and around all load-transfer devices, joint assembly units, and other features embedded in the pavement. Hauling equipment or other mechanical equipment can be permitted on adjoining previously constructed pavement when the concrete strength reaches a compressive strength of 3,100 psi (21.4 MPa), based on the average of four field cured specimens per 2,000 cubic yards (1,530 cubic meters) of concrete placed. The Contractor must determine that the above minimum strengths are adequate to protection the pavement from overloads due to the construction equipment proposed for the project.

**The Contractor shall have available materials for the protection of the concrete during cold, hot and/or inclement weather in accordance with paragraph 501-4.7.**

**a. Slip-form construction.** The concrete shall be distributed uniformly into its final position by a self-propelled slip-form paver without delay. The alignment and elevation of the paver shall be regulated from outside reference lines established for this purpose. The paver shall vibrate the concrete for the full width and depth of the strip of pavement being placed and the vibration shall be adequate to provide a consistency of concrete that will stand normal to the surface with sharp well-defined edges. The sliding forms shall be rigidly held together laterally to prevent the spreading of the forms. The plastic concrete shall be effectively consolidated by internal vibration with transverse vibrating units for the full width of the pavement and/or a series of equally placed longitudinal vibrating units. The space from the outer edge of the pavement to longitudinal unit shall not exceed 9 inches (23 cm) for slipform and at the end of the dowels for the fill-in lanes. The spacing of internal units shall be uniform and shall not exceed 18 inches (0.5 m).

The term internal vibration means vibrating units located within the specified thickness of pavement section.

The rate of vibration of each vibrating unit shall be sufficient to consolidate the pavement without, segregation, voids, or vibrator trails and the amplitude of vibration shall be sufficient to be perceptible on the surface of the concrete along the entire length of the vibrating unit and for a distance of at least one foot (30 cm). The frequency of vibration or amplitude should be adjusted proportionately with the rate of travel to result in a uniform density and air content. The paving machine shall be equipped with a tachometer or other suitable device for measuring and indicating the actual frequency of vibrations.

The concrete shall be held at a uniform consistency. The slip-form paver shall be operated with nearly a continuous forward movement as possible and all operations of mixing, delivering, and spreading concrete shall be coordinated to provide uniform progress with stopping and starting of the paver held to a minimum. If for any reason, it is necessary to stop the forward movement of the paver, the vibratory and tamping elements shall also be stopped immediately. No tractive force shall be applied to the machine, except that which is controlled from the machine.

When concrete is being placed adjacent to an existing pavement, that part of the equipment which is supported on the existing pavement shall be equipped with protective pads on crawler tracks or rubber-tired wheels on which the bearing surface is offset to run a sufficient distance from the edge of the pavement to avoid breaking the pavement edge.

Not more than 15% of the total free edge of each 500-foot (150 m) segment, or fraction thereof, shall have an edge slump exceeding 1/4 inch (6 mm), and none of the free edge of the pavement shall have an edge slump exceeding 3/8 inch (9 mm). (The total free edge of 500 feet (150 m) of

pavement will be considered the cumulative total linear measurement of pavement edge originally constructed as nonadjacent to any existing pavement; that is, 500 feet (150 m) of paving lane originally constructed as a separate lane will have 1,000 feet (300 m) of free edge, 500 feet (150 m) of fill-in lane will have no free edge, etc.). The area affected by the downward movement of the concrete along the pavement edge shall be limited to not more than 18 inches (0.5 m) from the edge.

When excessive edge slump cannot be corrected before the concrete has hardened, the area with excessive edge slump will be removed the full width of the slip form lane and replaced at the expense of the Contractor as directed by the RPR.

**b. Fixed-form construction.** Forms shall be drilled in advance of being placed to line and grade to accommodate tie bars / dowel bars where these are specified.

Immediately in advance of placing concrete and after all subbase operations are completed, side forms shall be trued and maintained to the required line and grade for a sufficient distance to prevent delay in placing.

Side forms shall remain in place at least 12 hours after the concrete has been placed, and in all cases until the edge of the pavement no longer requires the protection of the forms. Curing compound shall be applied to the concrete immediately after the forms have been removed.

Side forms shall be thoroughly cleaned and coated with a release agent each time they are used and before concrete is placed against them.

Concrete shall be spread, screed, shaped and consolidated by one or more self-propelled machines. These machines shall uniformly distribute and consolidate concrete without segregation so that the completed pavement will conform to the required cross-section with a minimum of handwork.

The number and capacity of machines furnished shall be adequate to perform the work required at a rate equal to that of concrete delivery. The equipment must be specifically designed for placement and finishing using stationary side forms. Methods and equipment shall be reviewed and accepted by the RPR.

Concrete for the full paving width shall be effectively consolidated by internal vibrators. The rate of vibration of each vibrating unit shall be sufficient to consolidate the pavement without segregation, voids, or leaving vibrator trails.

Power to vibrators shall be connected so that vibration ceases when forward or backward motion of the machine is stopped.

**c. Consolidation.** Concrete shall be consolidated with the specified type of lane-spanning, gang-mounted, mechanical, immersion type vibrating equipment mounted in front of the paver, supplemented, in rare instances as specified, by hand-operated vibrators. The vibrators shall be inserted into the concrete to a depth that will provide the best full-depth consolidation but not closer to the underlying material than 2 inches (50 mm). Vibrators shall not be used to transport or spread the concrete. For each paving train, at least one additional vibrator spud, or sufficient parts for rapid replacement and repair of vibrators shall be maintained at the paving site at all times. Any evidence of inadequate consolidation (honeycomb along the edges, large air pockets, or any other evidence) or over-consolidation (vibrator trails, segregation, or any other evidence) shall require the immediate stopping of the paving operation and adjustment of the equipment or procedures as approved by the RPR.

If a lack of consolidation of the hardened concrete is suspected by the RPR, referee testing may be required. Referee testing of hardened concrete will be performed by the RPR by cutting cores from the

finished pavement after a minimum of 24 hours of curing. The RPR shall visually examine the cores for evidence of lack of consolidation. Density determinations will be made by the RPR based on the water content of the core as taken. ASTM C642 shall be used for the determination of core density in the saturated-surface dry condition. When required, referee cores will be taken at the minimum rate of one for each 500 cubic yards (382 m<sup>3</sup>) of pavement, or fraction. The Contractor shall be responsible for all referee testing cost if they fail to meet the required density.

The average density of the cores shall be at least 97% of the original concrete mix density, with no cores having a density of less than 96% of the original concrete mix density. Failure to meet the referee tests will be considered evidence that the minimum requirements for vibration are inadequate for the job conditions. Additional vibrating units or other means of increasing the effect of vibration shall be employed so that the density of the hardened concrete conforms to the above requirements.

**501-4.9 Strike-off of concrete and placement of reinforcement.** Following the placing of the concrete, it shall be struck off to conform to the cross-section shown on the plans and to an elevation that when the concrete is properly consolidated and finished, the surface of the pavement shall be at the elevation shown on the plans. When reinforced concrete pavement is placed in two layers, the bottom layer shall be struck off to such length and depth that the sheet of reinforcing steel fabric or bar mat may be laid full length on the concrete in its final position without further manipulation. The reinforcement shall then be placed directly upon the concrete, after which the top layer of the concrete shall be placed, struck off, and screed. If any portion of the bottom layer of concrete has been placed more than 30 minutes without being covered with the top layer or if the initial set has taken place, it shall be removed and replaced with freshly mixed concrete at the Contractor's expense. When reinforced concrete is placed in one layer, the reinforcement may be positioned in advance of concrete placement, or it may be placed in plastic concrete by mechanical or vibratory means after spreading.

Reinforcing steel, at the time concrete is placed, shall be free of mud, oil, or other organic matter that may adversely affect or reduce bond. Reinforcing steel with rust, mill scale or a combination of both will be considered satisfactory, provided the minimum dimensions, weight, and tensile properties of a hand wire-brushed test specimen are not less than the applicable ASTM specification requirements.

**501-4.10 Joints.** Joints shall be constructed as shown on the plans and in accordance with these requirements. All joints shall be constructed with their faces perpendicular to the surface of the pavement and finished or edged as shown on the plans. Joints shall not vary more than 1/2-inch (12 mm) from their designated position and shall be true to line with not more than 1/4-inch (6 mm) variation in 10 feet (3 m). The surface across the joints shall be tested with a 12-foot (3 m) straightedge as the joints are finished and any irregularities in excess of 1/4 inch (6 mm) shall be corrected before the concrete has hardened. All joints shall be so prepared, finished, or cut to provide a groove of uniform width and depth as shown on the plans.

**a. Construction.** Longitudinal construction joints shall be slip-formed or formed against side forms as shown in the plans.

Transverse construction joints shall be installed at the end of each day's placing operations and at any other points within a paving lane when concrete placement is interrupted for more than 30 minutes, or it appears that the concrete will obtain its initial set before fresh concrete arrives. The installation of the joint shall be located at a planned contraction or expansion joint. If placing the concrete is stopped, the Contractor shall remove the excess concrete back to the previous planned joint.

**b. Contraction.** Contraction joints shall be installed at the locations and spacing as shown on the plans. Contraction joints shall be installed to the dimensions required by forming a groove or cleft in the top of the slab while the concrete is still plastic or by sawing a groove into the concrete surface after the concrete has hardened. When the groove is formed in plastic concrete the sides of the grooves shall be finished even and smooth with an edging tool. If an insert material is used, the installation and edge finish

shall be according to the manufacturer's instructions. The groove shall be finished or cut clean so that spalling will be avoided at intersections with other joints. Grooving or sawing shall produce a slot at least 1/8 inch (3 mm) wide and to the depth shown on the plans.

**c. Isolation (expansion).** Isolation joints shall be installed as shown on the plans. The premolded filler of the thickness as shown on the plans, shall extend for the full depth and width of the slab at the joint. The filler shall be fastened uniformly along the hardened joint face with no buckling or debris between the filler and the concrete interface, including a temporary filler for the sealant reservoir at the top of the slab. The edges of the joint shall be finished and tooled while the concrete is still plastic.

**d. Dowels and Tie Bars for Joints**

**(1) Tie bars.** Tie bars shall consist of deformed bars installed in joints as shown on the plans. Tie bars shall be placed at right angles to the centerline of the concrete slab and shall be spaced at intervals shown on the plans. They shall be held in position parallel to the pavement surface and in the middle of the slab depth and within the tolerances in paragraph 501-4.10(f.). When tie bars extend into an unpaved lane, they may be bent against the form at longitudinal construction joints, unless threaded bolt or other assembled tie bars are specified. Tie bars shall not be painted, greased, or enclosed in sleeves. When slip-form operations call for tie bars, two-piece hook bolts can be installed.

**(2) Dowel bars.** Dowel bars shall be placed across joints in the proper horizontal and vertical alignment as shown on the plans. The dowels shall be coated with a bond-breaker or other lubricant recommended by the manufacturer and approved by the RPR. Dowels bars at longitudinal construction joints shall be bonded in drilled holes.

**(3) Placing dowels and tie bars.** Horizontal spacing of dowels shall be within a tolerance of  $\pm 3/4$  inch (19 mm). The vertical location on the face of the slab shall be within a tolerance of  $\pm 1/2$  inch (12 mm). The method used to install dowels shall ensure that the horizontal and vertical alignment will not be greater than 1/4 inch per feet (6 mm per 0.3 m), except for those across the crown or other grade change joints. Dowels across crowns and other joints at grade changes shall be measured to a level surface. Horizontal alignment shall be checked perpendicular to the joint edge. The portion of each dowel intended to move within the concrete or expansion cap shall be wiped clean and coated with a thin, even film of lubricating oil or light grease before the concrete is placed. Dowels shall be installed as specified in the following subparagraphs.

**(a) Contraction joints.** Dowels and tie bars in longitudinal and transverse contraction joints within the paving lane shall be held securely in place by means of rigid metal frames or basket assemblies of an approved type. The basket assemblies shall be held securely in the proper location by means of suitable pins or anchors. Do not cut or crimp the dowel basket tie wires.

At the Contractor's option, dowels and tie bars in contraction joints may be installed by insertion into the plastic concrete using approved equipment and procedures per the paver manufacturer's design. Approval of installation methods will be based on the results of the control strip showing that the dowels and tie bars are installed within specified tolerances as verified by cores or non-destructive rebar location devices approved by the RPR.

**(b) Construction joints.** Install dowels and tie bars by the cast-in-place or the drill-and-dowel method. Installation by removing and replacing in preformed holes will not be permitted. Dowels and tie bars shall be prepared and placed across joints where indicated, correctly aligned, and securely held in the proper horizontal and vertical position during placing and finishing operations, by means of devices fastened to the forms.

**(c) Joints in hardened concrete.** Install dowels in hardened concrete by bonding the dowels into holes drilled into the concrete. The concrete shall have cured for seven (7) days or reached a minimum compressive strength of 3100 psi (21.4 MPa) before drilling begins. Holes 1/8 inch (3 mm) greater in diameter than the dowels shall be drilled into the hardened concrete using rotary-core drills.

Rotary-percussion drills may be used, provided that excessive spalling does not occur. Spalling beyond the limits of the grout retention ring will require modification of the equipment and operation. Depth of dowel hole shall be within a tolerance of  $\pm 1/2$  inch (12 mm) of the dimension shown on the drawings. On completion of the drilling operation, the dowel hole shall be blown out with oil-free, compressed air. Dowels shall be bonded in the drilled holes using epoxy resin. Epoxy resin shall be injected at the back of the hole before installing the dowel and extruded to the collar during insertion of the dowel so as to completely fill the void around the dowel. Application by buttering the dowel will not be permitted. The dowels shall be held in alignment at the collar of the hole by means of a suitable metal or plastic grout retention ring fitted around the dowel.

**e. Sawing of joints.** Sawing shall commence, without regard to day or night, as soon as the concrete has hardened sufficiently to permit cutting without chipping, spalling, or tearing and before uncontrolled shrinkage cracking of the pavement occurs and shall continue without interruption until all joints have been sawn. All slurry and debris produced in the sawing of joints shall be removed by vacuuming and washing. Curing compound or system shall be reapplied in the initial saw-cut and maintained for the remaining cure period.

Joints shall be cut in locations as shown on the plans. The initial joint cut shall be a minimum 1/8 inch (3 mm) wide and to the depth shown on the plans. Prior to placement of joint sealant or seals, the top of the joint shall be widened by sawing as shown on the plans.

**501-4.11 Finishing.** Finishing operations shall be a continuing part of placing operations starting immediately behind the strike-off of the paver. Initial finishing shall be provided by the transverse screed or extrusion plate. The sequence of operations shall be transverse finishing, longitudinal machine floating if used, straightedge finishing, edging of joints, and then texturing. Finishing shall be by the machine method. The hand method shall be used only on isolated areas of odd slab widths or shapes and in the event of a breakdown of the mechanical finishing equipment. Supplemental hand finishing for machine finished pavement shall be kept to an absolute minimum. Any machine finishing operation which requires appreciable hand finishing, other than a moderate amount of straightedge finishing, shall be immediately stopped and proper adjustments made, or the equipment replaced. Equipment, mixture, and/or procedures which produce more than 1/4 inch (6 mm) of mortar-rich surface shall be immediately modified as necessary to eliminate this condition or operations shall cease. Compensation shall be made for surging behind the screeds or extrusion plate and settlement during hardening and care shall be taken to ensure that paving and finishing machines are properly adjusted so that the finished surface of the concrete (not just the cutting edges of the screeds) will be at the required line and grade. Finishing equipment and tools shall be maintained clean and in an approved condition. At no time shall water be added to the surface of the slab with the finishing equipment or tools, or in any other way. Fog (mist) sprays or other surface applied finishing aids specified to prevent plastic shrinkage cracking, approved by the RPR, may be used in accordance with the manufacturer's requirements.

**a. Machine finishing with slipform pavers.** The slipform paver shall be operated so that only a very minimum of additional finishing work is required to produce pavement surfaces and edges meeting the specified tolerances. Any equipment or procedure that fails to meet these specified requirements shall immediately be replaced or modified as necessary. A self-propelled non-rotating pipe float may be used while the concrete is still plastic, to remove minor irregularities and score marks. Only one pass of the pipe float shall be allowed. Equipment, mixture, and/or procedures which produce more than 1/4 inch (6 mm) of mortar-rich surface shall be immediately modified as necessary to eliminate this condition or operations shall cease. Remove excessive slurry from the surface with a cutting straightedge and wipe off the edge. Any slurry which does run down the vertical edges shall be immediately removed by hand, using stiff brushes or scrapers. No slurry, concrete or concrete mortar shall be used to build up along the edges of the pavement to compensate for excessive edge slump, either while the concrete is plastic or after it hardens.

**b. Machine finishing with fixed forms.** The machine shall be designed to straddle the forms and shall be operated to screed and consolidate the concrete. Machines that cause displacement of the forms shall be replaced. The machine shall make only one pass over each area of pavement. If the equipment and procedures do not produce a uniform texture, true to grade, in one pass, the operation shall be immediately stopped and the equipment, mixture, and procedures adjusted as necessary.

**c. Other types of finishing equipment.** Clary screeds, other rotating tube floats, or bridge deck finishers are not allowed on mainline paving but may be allowed on irregular or odd-shaped slabs, and near buildings or trench drains, subject to the RPR's approval.

Bridge deck finishers shall have a minimum operating weight of 7500 pounds (3400 kg) and shall have a transversely operating carriage containing a knock-down auger and a minimum of two immersion vibrators. Vibrating screeds or pans shall be used only for isolated slabs where hand finishing is permitted as specified, and only where specifically approved.

**d. Hand finishing.** Hand finishing methods will not be permitted, except under the following conditions: (1) in the event of breakdown of the mechanical equipment, hand methods may be used to finish the concrete already deposited on the grade and (2) in areas of narrow widths or of irregular dimensions where operation of the mechanical equipment is impractical.

**e. Straightedge testing and surface correction.** After the pavement has been struck off and while the concrete is still plastic, it shall be tested for trueness with a 12-foot (3.7-m) finishing straightedge swung from handles capable of spanning at least one-half the width of the slab. The straightedge shall be held in contact with the surface in successive positions parallel to the centerline and the whole area gone over from one side of the slab to the other, as necessary. Advancing shall be in successive stages of not more than one-half the length of the straightedge. Any excess water and laitance in excess of 1/8 inch (3 mm) thick shall be removed from the surface of the pavement and wasted. Any depressions shall be immediately filled with freshly mixed concrete, struck off, consolidated, and refinished. High areas shall be cut down and refinished. Special attention shall be given to assure that the surface across joints meets the smoothness requirements. Straightedge testing and surface corrections shall continue until the entire surface is found to be free from observable departures from the straightedge and until the slab conforms to the required grade and cross-section. The use of long-handled wood floats shall be confined to a minimum; they may be used only in emergencies and in areas not accessible to finishing equipment.

**501-4.12 Surface texture.** The surface of the pavement shall be finished as designated below for all newly constructed concrete pavements. It is important that the texturing equipment does not tear or unduly roughen the pavement surface during the operation. The texture shall be uniform in appearance and approximately 1/16 inch (2 mm) in depth. Any imperfections resulting from the texturing operation shall be corrected to the satisfaction of the RPR.

**a. Brush or broom finish.** Shall be applied when the water sheen has practically disappeared. The equipment shall operate transversely across the pavement surface.

**b. Burlap drag finish.** Not used.

**c. Artificial turf finish.** Not used.

**501-4.13 Curing.** Immediately after finishing operations are completed and bleed water is gone from the surface, all exposed surfaces of the newly placed concrete shall be cured for a 7-day cure period in accordance with one of the methods below. Failure to provide sufficient cover material of whatever kind the Contractor may elect to use, or lack of water to adequately take care of both curing and other requirements, shall be cause for immediate suspension of concreting operations. The concrete shall not be left exposed for more than 1/2 hour during the curing period.

When a two-saw-cut method is used to construct the contraction joint, the curing compound shall be applied to the saw-cut immediately after the initial cut has been made. The sealant reservoir shall not be

sawed until after the curing period has been completed. When the one cut method is used to construct the contraction joint, the joint shall be cured with wet rope, wet rags, or wet blankets. The rags, ropes, or blankets shall be kept moist for the duration of the curing period.

**a. Impervious membrane method.** Curing with liquid membrane compounds should not occur until bleed and surface moisture has evaporated. All exposed surfaces of the pavement shall be sprayed uniformly with white pigmented curing compound immediately after the finishing of the surface and before the set of the concrete has taken place. The curing compound shall not be applied during rainfall. Curing compounds shall be applied by mechanical sprayers under pressure at the rate of one gallon (4 liters) to not more than 150 square feet (14 sq m). The spraying equipment shall be of the fully atomizing type equipped with a tank agitator. At the time of use, the compound shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. During application, the compound shall be stirred continuously by mechanical means. Hand spraying of odd widths or shapes and concrete surfaces exposed by the removal of forms will be permitted. When hand spraying is approved by the RPR, a double application rate shall be used to ensure coverage. Should the film become damaged from any cause, including sawing operations, within the required curing period, the damaged portions shall be repaired immediately with additional compound or other approved means. Upon removal of side forms, the sides of the exposed slabs shall be protected immediately to provide a curing treatment equal to that provided for the surface.

**b. White burlap-polyethylene sheets.** The surface of the pavement shall be entirely covered with the sheeting. The sheeting used shall be such length (or width) that it will extend at least twice the thickness of the pavement beyond the edges of the slab. The sheeting shall be placed so that the entire surface and both edges of the slab are completely covered. The sheeting shall be placed and weighted to remain in contact with the surface covered, and the covering shall be maintained fully saturated and in position for seven (7) days after the concrete has been placed.

**c. Water method.** The entire area shall be covered with burlap or other water absorbing material. The material shall be of sufficient thickness to retain water for adequate curing without excessive runoff. The material shall be kept wet at all times and maintained for seven (7) days. When the forms are stripped, the vertical walls shall also be kept moist. It shall be the responsibility of the Contractor to prevent ponding of the curing water on the subbase.

**d. Concrete protection for cold weather.** Maintain the concrete at a temperature of at least 50°F (10°C) for a period of 72 hours after placing and at a temperature above freezing for the remainder of the 7-day curing period. The Contractor shall be responsible for the quality and strength of the concrete placed during cold weather; and any concrete damaged shall be removed and replaced at the Contractor's expense.

**e. Concrete protection for hot weather.** Concrete should be continuous moisture cured for the entire curing period and shall commence as soon as the surfaces are finished and continue for at least 24 hours. However, if moisture curing is not practical beyond 24 hours, the concrete surface shall be protected from drying with application of a liquid membrane-forming curing compound while the surfaces are still damp. Other curing methods may be approved by the RPR.

**501-4.14 Removing forms.** Unless otherwise specified, forms shall not be removed from freshly placed concrete until it has hardened sufficiently to permit removal without chipping, spalling, or tearing. After the forms have been removed, the sides of the slab shall be cured in accordance with paragraph 501-4.13.

If honeycombed areas are evident when the forms are removed, materials, placement, and consolidation methods must be reviewed and appropriate adjustments made to assure adequate consolidation at the edges of future concrete placements. Honeycombed areas that extend into the slab less than approximately 1 inch (25 mm), shall be repaired with an approved grout, as directed by the RPR.



Honeycombed areas that extend into the slab greater than a depth of 1 inch (25 mm) shall be considered as defective work and shall be removed and replaced in accordance with paragraph 501-4.19.

**501-4.15 Saw-cut grooving.** If shown on the plans, grooved surfaces shall be provided in accordance with the requirements of Item P-621.

**501-4.16 Sealing joints.** The joints in the pavement shall be sealed in accordance with Item P-605.

**501-4.17 Protection of pavement.** The Contractor shall protect the pavement and its appurtenances against both public traffic and traffic caused by the Contractor's employees and agents until accepted by the RPR. This shall include watchmen to direct traffic and the erection and maintenance of warning signs, lights, pavement bridges, crossovers, and protection of unsealed joints from intrusion of foreign material, etc. Any damage to the pavement occurring prior to final acceptance shall be repaired or the pavement replaced at the Contractor's expense.

Aggregates, rubble, or other similar construction materials shall not be placed on airfield pavements. Traffic shall be excluded from the new pavement by erecting and maintaining barricades and signs until the concrete is at least seven (7) days old, or for a longer period if directed by the RPR.

In paving intermediate lanes between newly paved pilot lanes, operation of the hauling and paving equipment will be permitted on the new pavement after the pavement has been cured for seven (7) days, the joints are protected, the concrete has attained a minimum field cured flexural strength of [ 450 psi (3100 kPa) ], and the slab edge is protected.

All new and existing pavement carrying construction traffic or equipment shall be kept clean and spillage of concrete and other materials shall be cleaned up immediately.

Damaged pavements shall be removed and replaced at the Contractor's expense. Slabs shall be removed to the full depth, width, and length of the slab.

**501-4.18 Opening to construction traffic.** The pavement shall not be opened to traffic until test specimens molded and cured in accordance with ASTM C31 have attained a compressive strength of 3,100 pounds per square inch (21400 kPa) when tested in accordance with ASTM C39. If such tests are not conducted, the pavement shall not be opened to traffic until 14 days after the concrete was placed. Prior to opening the pavement to construction traffic, all joints shall either be sealed or protected from damage to the joint edge and intrusion of foreign materials into the joint. As a minimum, backer rod or tape may be used to protect the joints from foreign matter intrusion.

**501-4.19 Repair, removal, or replacement of slabs.** New pavement slabs that are broken or contain cracks or are otherwise defective or unacceptable as defined by acceptance criteria in paragraph 501-6.6 shall be removed and replaced or repaired, as directed by the RPR, at the Contractor's expense. Spalls along joints shall be repaired as specified. Removal of partial slabs is not permitted. Removal and replacement shall be full depth, shall be full width of the slab, and the limit of removal shall be normal to the paving lane and to each original transverse joint. The RPR will determine whether cracks extend to full depth of the pavement and may require cores to be drilled on the crack to determine depth of cracking. Such cores shall have a diameter of 2 inches (50 mm) to 4 inches (100 mm), shall be drilled by the Contractor and shall be filled by the Contractor with a well consolidated concrete mixture bonded to the walls of the hole with a bonding agent, using approved procedures. Drilling of cores and refilling holes shall be at no expense to the Owner. Repair of cracks as described in this section shall not be allowed if in the opinion of the RPR the overall condition of the pavement indicates that such repair is unlikely to achieve an acceptable and durable finished pavement. No repair of cracks shall be allowed in any panel that demonstrates segregated aggregate with an absence of coarse aggregate in the upper 1/8 inch (3 mm) of the pavement surface.

**a. Shrinkage cracks.** Shrinkage cracks which do not exceed one-third of the pavement depth shall be cleaned and either high molecular weight methacrylate (HMWM) applied; or epoxy resin (Type IV,

Grade 1) pressure injected using procedures recommended by the manufacturer and approved by the RPR. Sandblasting of the surface may be required following the application of HMWM to restore skid resistance. Care shall be taken to ensure that the crack is not widened during epoxy resin injection. All epoxy resin injections shall take place in the presence of the RPR. Shrinkage cracks which exceed one-third the pavement depth shall be treated as full depth cracks in accordance with paragraphs 501-4.19b and 501-19c.

**b. Slabs with cracks through interior areas.** Interior area is defined as that area more than 6 inches (150 mm) from either adjacent original transverse joint. The full slab shall be removed and replaced at no cost to the Owner, when there are any full depth cracks, or cracks greater than one-third the pavement depth, which extend into the interior area.

**c. Cracks close to and parallel to joints.** All full-depth cracks within 6 inches (150 mm) either side of the joint and essentially parallel to the original joints, shall be treated as follows.

**(1) Full depth cracks and original joint not cracked.** The full-depth crack shall be treated as the new joint and the original joint filled with an epoxy resin.

**i. Full-depth crack.** The joint sealant reservoir for the crack shall be formed by sawing to a depth of 3/4 inches (19 mm),  $\pm 1/16$  inch (2 mm), and to a width of 5/8 inch (16 mm),  $\pm 1/8$  inch (3 mm). The crack shall be sawed with equipment specially designed to follow random cracks. Any equipment or procedure which causes raveling or spalling along the crack shall be modified or replaced to prevent raveling or spalling. The joint shall be sealed with sealant in accordance with P-605 or as directed by the RPR.

**ii. Original joint.** If the original joint sealant reservoir has been sawed out, the reservoir and as much of the lower saw cut as possible shall be filled with epoxy resin, Type IV, Grade 2, thoroughly tooled into the void using approved procedures.

If only the original narrow saw cut has been made, it shall be cleaned and pressure injected with epoxy resin, Type IV, Grade 1, using approved procedures.

Where a parallel crack goes part way across paving lane and then intersects and follows the original joint which is cracked only for the remaining of the width, it shall be treated as specified above for a parallel crack, and the cracked original joint shall be prepared and sealed as originally designed.

**(2) Full depth cracks and original joint cracked.** If there is any place in the lane width where a parallel crack and a cracked portion of the original joint overlap, the entire slab containing the crack shall be removed and replaced.

**d. Removal and replacement of full slabs.** Make a full depth cut perpendicular to the slab surface along all edges of the slab with a concrete saw cutting any dowels or tie-bars. Remove damaged slab protecting adjacent pavement from damage. Damage to adjacent slabs may result in removal of additional slabs as directed by the RPR at the Contractor's expense.

The underlying material shall be repaired, re-compacted and shaped to grade.

Dowels of the size and spacing specified for other joints in similar pavement on the project shall be installed along all four (4) edges of the new slab in accordance with paragraph 501-4.10d.

Placement of concrete shall be as specified for original construction. The joints around the new slab shall be prepared and sealed as specified for original construction.

**e. Spalls along joints.**

**(1)** Spalls less than one inch wide and less than the depth of the joint sealant reservoir, shall be filled with joint sealant material.

**(2)** Spalls larger than one inch and/or deeper than the joint reservoir, but less than 1/2 the slab depth, and less than 25% of the length of the adjacent joint shall be repaired as follows:

i. Make a vertical saw cut at least one inch (25 mm) outside the spalled area and to a depth of at least 2 inches (50 mm). Saw cuts shall be straight lines forming rectangular areas surrounding the spalled area.

ii. Remove unsound concrete and at least 1/2 inch (12 mm) of visually sound concrete between the saw cut and the joint or crack with a light chipping hammer.

iii. Clean cavities with high-pressure water jets supplemented with compressed air as needed to remove all loose material.

iv. Apply a prime coat of epoxy resin, Type III, Grade I, to the dry, cleaned surface of all sides and bottom of the cavity, except any joint face.

v. Fill the cavity with low slump concrete or mortar or with epoxy resin concrete or mortar.

vi. An insert or other bond-breaking medium shall be used to prevent bond at all joint faces.

vii. A reservoir for the joint sealant shall be sawed to the dimensions required for other joints, or as required to be routed for cracks. The reservoir shall be thoroughly cleaned and sealed with the sealer specified for the joints.

(3) Spalls deeper than 1/2 of the slab depth or spalls longer than 25% of the adjacent joint require replacement of the entire slab.

**f. Diamond grinding of Concrete surfaces.** Diamond grinding shall be completed prior to pavement grooving. Diamond grinding of the hardened concrete should not be performed until the concrete is at least 14 days old and has achieved full minimum strength. Equipment that causes ravels, aggregate fractures, spalls or disturbance to the joints will not be permitted. The depth of diamond grinding shall not exceed 1/2 inch (13 mm) and all areas in which diamond grinding has been performed will be subject to the final pavement thickness tolerances specified.

Diamond grinding shall be performed with a machine specifically designed for diamond grinding capable of cutting a path at least 3 feet (0.9 m) wide. The saw blades shall be 1/8-inch (3-mm) wide with sufficient number of flush cut blades that create grooves between 0.090 and 0.130 inches (2 and 3.5 mm) wide; and peaks and ridges approximately 1/32 inch (1 mm) higher than the bottom of the grinding cut. The Contractor shall determine the number and type of blades based on the hardness of the aggregate. Contractor shall demonstrate to the RPR that the grinding equipment will produce satisfactory results prior to making corrections to surfaces.

Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The slurry resulting from the grinding operation shall be continuously removed and the pavement left in a clean condition. All grinding shall be at the expense of the Contractor.

## CONTRACTOR QUALITY CONTROL (CQC)

**501-5.1 Quality control program.** The Contractor shall develop a Quality Control Program in accordance with Item C-100. No partial payment will be made for materials that are subject to specific quality control requirements without an approved quality control program.

**501-5.2 Contractor Quality Control (CQC).** The Contractor shall provide or contract for testing facilities in accordance with Item C-100. The RPR shall be permitted unrestricted access to inspect the Contractor's QC facilities and witness QC activities. The RPR will advise the Contractor in writing of any noted deficiencies concerning the QC facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to be adversely affecting the test results, the incorporation of the materials into the work shall be suspended immediately and will not be permitted to resume until the deficiencies are satisfactorily corrected.

**501-5.3 Contractor QC testing.** The Contractor shall perform all QC tests necessary to control the production and construction processes applicable to this specification and as set forth in the CQCP. The testing program shall include, but not necessarily be limited to, tests for aggregate gradation, aggregate moisture content, slump, and air content. A QC Testing Plan shall be developed and approved by the RPR as part of the CQCP.

The RPR may at any time, notwithstanding previous plant acceptance, reject and require the Contractor to dispose of any batch of concrete mixture which is rendered unfit for use due to contamination, segregation, or improper slump. Such rejection may be based on only visual inspection. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the RPR, and if it can be demonstrated in the laboratory, in the presence of the RPR, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

**a. Fine aggregate.**

**(1) Gradation.** A sieve analysis shall be made at least twice daily in accordance with ASTM C136 from randomly sampled material taken from the discharge gate of storage bins or from the conveyor belt.

**(2) Moisture content.** If an electric moisture meter is used, at least two direct measurements of moisture content shall be made per week to check the calibration. If direct measurements are made in lieu of using an electric meter, two tests shall be made per day. Tests shall be made in accordance with ASTM C70 or ASTM C566.

**(3) Deleterious substances.** Fine aggregate as delivered to the mixer shall be tested for deleterious substances in fine aggregate for concrete as specified in paragraph 501-2.1b, prior to production of the control strip, and a minimum of every 30-days during production or more frequently as necessary to control deleterious substances.

**b. Coarse Aggregate.**

**(1) Gradation.** A sieve analysis shall be made at least twice daily for each size of aggregate. Tests shall be made in accordance with ASTM C136 from randomly sampled material taken from the discharge gate of storage bins or from the conveyor belt.

**(2) Moisture content.** If an electric moisture meter is used, at least two direct measurements of moisture content shall be made per week to check the calibration. If direct measurements are made in lieu of using an electric meter, two tests shall be made per day. Tests shall be made in accordance with ASTM C566.

**(3) Deleterious substances.** Coarse aggregate as delivered to the mixer shall be tested for deleterious substances in coarse aggregate for concrete as specified in paragraph 501-2.1c, prior to production of the control strip, and a minimum of every 30-days during production or more frequently as necessary to control deleterious substances.

**c. Slump.** One test shall be made for each subplot. Slump tests shall be performed in accordance with ASTM C143 from material randomly sampled from material discharged from trucks at the paving site. Material samples shall be taken in accordance with ASTM C172.

**d. Air content.** One test shall be made for each subplot. Air content tests shall be performed in accordance with ASTM C231 for gravel and stone coarse aggregate and ASTM C173 for slag or other porous coarse aggregate, from material randomly sampled from trucks at the paving site. Material samples shall be taken in accordance with ASTM C172.

**e. Unit weight and Yield.** One test shall be made for each subplot. Unit weight and yield tests shall be in accordance with ASTM C138. The samples shall be taken in accordance with ASTM C172 and at the same time as the air content tests.

**f. Temperatures.** Temperatures shall be checked at least four times per lot at the job site in accordance with ASTM C1064.

**g. Smoothness for Contractor Quality Control.**

The Contractor shall perform smoothness testing in transverse and longitudinal directions daily to verify that the construction processes are producing pavement with variances less than ¼ inch in 12 feet, identifying areas that may pond water which could lead to hydroplaning of aircraft. If the smoothness criteria are not met, appropriate changes and corrections to the construction process shall be made by the Contractor before construction continues.

The Contractor may use a 12-foot (3.7m) straightedge, a rolling inclinometer meeting the requirements of ASTM E2133, or rolling external reference device that can simulate a 12-foot (3.7m) straightedge approved by the RPR. Straight-edge testing shall start with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the straightedge for each successive measurement. Testing shall be continuous across all joints. The surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length and measuring the maximum gap between the straightedge and the pavement surface in the area between the two high points. If the rolling inclinometer or external reference device is used, the data may be evaluated using the FAA profile program, ProFAA, or FHWA ProVal, using the 12-foot straightedge simulation function.

Smoothness readings shall not be made across grade changes or cross slope transitions. The transition between new and existing pavement shall be evaluated separately for conformance with the plans.

**(1) Transverse measurements.** Transverse measurements shall be taken for each day's production placed. Transverse measurements shall be taken perpendicular to the pavement centerline each 50 feet (15 m) or more often as determined by the RPR. The joint between lanes shall be tested separately to facilitate smoothness between lanes.

**(2) Longitudinal measurements.** Longitudinal measurements shall be taken for each day's production placed. Longitudinal tests shall be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet (6 m); and at the third points of paving lanes when widths of paving lanes are 20 ft (6 m) or greater. When placement abuts previously placed material the first measurement shall start with one half of the length of the straight edge of the previously placed material.

Deviations on the final surface course in either the transverse or longitudinal direction that will trap water greater than 1/4 inch (6 mm) shall be corrected with diamond grinding per paragraph 501-4.19f or by removing and replacing the surface course to full depth. Grinding shall be tapered in all directions to provide smooth transitions to areas not requiring grinding. All areas in which diamond grinding has been performed shall be subject to the final pavement thickness tolerances specified in paragraph 501-6.6.

Control charts shall be kept showing area of each day's placement and the percentage of corrective grinding required. Corrections to production and placement shall be initiated when corrective grinding is required. If the Contractor's machines and/or methods produce significant areas that need corrective actions in excess of 10 percent of a day's production, production shall be stopped until corrective measures are implemented by the Contractor.

**h. Grade.** Grade will be evaluated prior to and after placement of the concrete surface.

Measurements will be taken at appropriate grade lines (as a minimum at center and edges of paving lane) and longitudinal spacing as shown on cross-sections and plans. The final surface of the pavement will not vary from the grade line elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically and 0.1 feet (30 mm) laterally. The documentation will be provided by the Contractor to the RPR by the end of the following working day.

Areas with humps or depression that exceed grade or smoothness and that retain water on the surface must be ground off provided the course thickness after grinding is not more than 1/2 inch (12 mm) less than the thickness specified on the plans. If these areas cannot be corrected with grinding, then the slabs that are retaining water must be removed and replaced in accordance with paragraph 501-4.19d. Grinding shall be in accordance with paragraph 501-4.19f. All corrections will be at the Contractors expense.

**501-5.4 Control charts.** The Contractor shall maintain linear control charts for fine and coarse aggregate gradation, slump, and air content. The Contractor shall also maintain a control chart plotting the coarseness factor/workability factor from the combined gradations in accordance with paragraph 501-2.1d.

Control charts shall be posted in a location satisfactory to the RPR and shall be kept up to date at all times. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and suspension Limits, or Specification limits, applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor's projected data during production indicates a potential problem and the Contractor is not taking satisfactory corrective action, the RPR may halt production or acceptance of the material.

**a. Fine and coarse aggregate gradation.** The Contractor shall record the running average of the last five gradation tests for each control sieve on linear control charts. Superimposed on the control charts shall be the action and suspension limits. Gradation tests shall be performed by the Contractor per ASTM C136. The Contractor shall take at least [ two ] samples per lot to check the final gradation. Sampling shall be per ASTM D75 from the flowing aggregate stream or conveyor belt.

**b. Slump and air content.** The Contractor shall maintain linear control charts both for individual measurements and range (that is, difference between highest and lowest measurements) for slump and air content in accordance with the following Action and Suspension Limits.

**c. Combined gradation.** The Contractor shall maintain a control chart plotting the coarseness factor and workability factor on a chart in accordance with paragraph 501-2.1d.

**Control Chart Limits<sup>1</sup>**

Control Parameter	Individual Measurements	
	Action Limit	Suspension Limit
Gradation <sup>2</sup>	* <sup>3</sup>	* <sup>3</sup>
Coarseness Factor (CF)	±3.5	±5
Workability Factor (WF)	±2	±3
Slump	+0.5 to -1 inch (+13 to -25 mm)	+1 to -1.5 inch (+25 to -38 mm)
Air Content	±1.5%	±2.0%

<sup>1</sup> Control charts shall be developed and maintained for each control parameter indicated.

<sup>2</sup> Control charts shall be developed and maintained for each sieve size.

<sup>3</sup> Action and suspension limits shall be determined by the Contractor.

**501-5.5 Corrective action at Suspension Limit.** The CQCP shall indicate that appropriate action shall be taken when the process is believed to be out of control. The CQCP shall detail what action will be taken to bring the process into control and shall contain sets of rules to gauge when a process is out of

control. As a minimum, a process shall be deemed out of control and corrective action taken if any one of the following conditions exists.

- a. Fine and coarse aggregate gradation. When two consecutive averages of five tests are outside of the suspension limits, immediate steps, including a halt to production, shall be taken to correct the grading.
- b. Coarseness and Workability factors. When the CF or WF reaches the applicable suspension limits, the Contractor, immediate steps, including a halt to production, shall be taken to correct the CF and WF.
- c. Fine and coarse aggregate moisture content. Whenever the moisture content of the fine or coarse aggregate changes by more than 0.5%, the scale settings for the aggregate batcher and water batcher shall be adjusted.
- d. Slump. The Contractor shall halt production and make appropriate adjustments whenever:
  - (1) one-point falls outside the Suspension Limit line for individual measurements  
OR
  - (2) two points in a row fall outside the Action Limit line for individual measurements.
- d. Air content. The Contractor shall halt production and adjust the amount of air-entraining admixture whenever:
  - (1) one-point falls outside the Suspension Limit line for individual measurements  
OR
  - (2) two points in a row fall outside the Action Limit line for individual measurements.

## MATERIAL ACCEPTANCE

**501-6.1 Quality Assurance (QA) Acceptance sampling and testing.** All acceptance sampling and testing necessary to determine conformance with the requirements specified in this section, with the exception of coring for thickness determination, will be performed by the RPR. The Contractor shall provide adequate facilities for the initial curing of beams. The Contractor shall bear the cost of providing initial curing facilities and coring and filling operations, per paragraph 501-6.5b(1).

The samples will be transported while in the molds. The curing, except for the initial cure period, will be accomplished using the immersion in saturated lime water method. During the 24 hours after molding, the temperature immediately adjacent to the specimens must be maintained in the range of 60° to 80°F (16° to 27°C), and loss of moisture from the specimens must be prevented. The specimens may be stored in tightly constructed wooden boxes, damp sand pits, temporary buildings at construction sites, under wet burlap in favorable weather, or in heavyweight closed plastic bags, or using other suitable methods, provided the temperature and moisture loss requirements are met.

**501-6.2 Quality Assurance (QA) testing laboratory.** Quality assurance testing organizations performing these acceptance tests will be accredited in accordance with ASTM C1077. The quality assurance laboratory accreditation must be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing must be listed on the lab accreditation. A copy of the laboratory's current accreditation and accredited test methods will be submitted to the RPR prior to the start of construction.

**501-6.3 Lot size.** Concrete will be accepted for strength and thickness on a lot basis. A lot will consist of a day's production not to exceed 2,000 cubic yards (1530 cubic meters). Each lot will be divided into approximately equal sublots with individual sublots between 400 to 600 cubic yards. Where three sublots are produced, they will constitute a lot. Where one or two sublots are produced, they will be incorporated



into the previous or next lot. Where more than one plant is simultaneously producing concrete for the job, the lot sizes will apply separately for each plant.

**501-6.4 Partial lots.** When operational conditions cause a lot to be terminated before the specified number of tests have been made for the lot or for overages or minor placements to be considered as partial lots, the following procedure will be used to adjust the lot size and the number of tests for the lot.

Where three sublots have been produced, they will constitute a lot. Where one or two sublots have been produced, they will be incorporated into the next lot or the previous lot and the total number of sublots will be used in the acceptance criteria calculation, that is,  $n=5$  or  $n=6$ .

#### **501-6.5 Acceptance Sampling and Testing.**

##### **a. Strength.**

**(1) Sampling.** One sample will be taken for each subplot from the concrete delivered to the job site. Sampling locations will be determined by the RPR in accordance with random sampling procedures contained in ASTM D3665. The concrete will be sampled in accordance with ASTM C172.

**(2) Test Specimens.** The RPR will be responsible for the casting, initial curing, transportation, and curing of specimens in accordance with ASTM C31. Two (2) specimens will be made from each sample and slump, air content, unit weight, and temperature tests will be conducted for each set of strength specimens. Within 24 to 48 hours, the samples will be transported from the field to the laboratory while in the molds. Samples will be cured in saturated lime water.

The strength of each specimen will be determined in accordance with ASTM C39. The strength for each subplot will be computed by averaging the results of the two test specimens representing that subplot.

**(3) Acceptance.** Acceptance of pavement for strength will be determined by the RPR in accordance with paragraph 501-6.6b(1). All individual strength tests within a lot will be checked for outliers in accordance with ASTM E178, at a significance level of 5%. Outliers will be discarded, and the remaining test values will be used to determine acceptance in accordance with paragraph 501-6.5b.

##### **b. Pavement thickness.**

**(1) Sampling.** Pavement thickness will be determined by survey of the underlying base layer conducted by the RPR and a separate survey of the finished concrete layer conducted by the Contractor's licensed surveyor.

**(2) Testing.** Not used.

**(3) Acceptance.** Acceptance of pavement for thickness will be determined by the RPR in accordance with paragraph 501-6.6.

#### **501-6.6 Acceptance criteria.**

**a. General.** Acceptance will be based on the following characteristics of the completed pavement discussed in paragraph 501-6.5b:

- (1) Strength**
- (2) Thickness**
- (3) Grade**

Acceptance for strength, thickness, and grade, will be based on the criteria contained in accordance with paragraph 501-6.6b(1), 501-6.6b(2), and 501-6.6b(3), respectively.

##### **b. Acceptance criteria.**

- (1) Strength.** The strength for each subplot shall be computed by averaging the results of that subplot. When subplot strength equals or exceeds the strength as specified in

paragraph 501-3.3, the lot will be acceptable. Acceptance and payment for the lot will be determined in accordance with paragraph 501-8.1.

- (2) **Thickness.** If subplot thickness is not be less than ½ inch (12 mm) from plan thickness, the lot will be acceptable. Acceptance and payment for the lot will be determined in accordance with paragraph 501-8.1.

(3) **Grade.** The final finished surface of the pavement of the completed project will not vary from the grade line elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically or 0.1 feet (30 mm) laterally. The documentation, stamped and signed by a licensed surveyor shall be in accordance with paragraph 501-5.3h. Payment for sublots that do not meet grade for over 25% of the subplot shall reduce by 5% and not be more than 95%. It is the responsibility of the Contractor to conduct the finish grade survey.

- (4) **Profilograph roughness for QA Acceptance.** Not used.

(5) **Adjustments for repair.** Sublots with spall repairs, crack repairs, or partial panel replacement, will be limited to no more than 95% payment.

(6) **Adjustment for grinding.** For sublots with grinding over 25% of a subplot, payment will be reduced 5%.

## METHOD OF MEASUREMENT

**501-7.1** Concrete pavement shall be measured by the number of square yards of plain or reinforced pavement as specified in-place, completed and accepted. Joints including sealant, backer rods, compressible material, and dowel bars shall be incidental to the P-501 pay items. Rebar in reinforced concrete pavement shall be incidental to each P-501 pay item.

## BASIS OF PAYMENT

**501-8.1 Payment.** Payment for concrete pavement meeting all acceptance criteria as specified in paragraph 501-6.6. Acceptance Criteria shall be based on results of strength tests and thickness tests. Payment for acceptable lots of concrete pavement shall be adjusted in accordance with paragraph 501-8.1a for strength and thickness; 501-8.1b for repairs; 501-8.1c for grinding; and 501-8.1d for smoothness, subject to the limitation that:

The total project payment for concrete pavement shall not exceed 100 percent of the product of the contract unit price and the total number of square yards (square meters) of concrete pavement used in the accepted work (See Note 1 under the Price Adjustment Schedule table below).

Payment shall be full compensation for all labor, materials, tools, equipment, and incidentals required to complete the work as specified herein and on the drawings.

- a. Basis of adjusted payment.** Not used.

**b. Adjusted payment for repairs.** The lot pay factor shall be reduced by 5% and be no higher than 95% for sublots which contain repairs in accordance with paragraph 501-4.19 on more than 20% of the slabs within the subplot. Payment factors greater than 100 percent for the strength and thickness cannot be used to offset adjustments for repairs.

**c. Adjusted payment for grinding.** The lot pay factor shall be reduced by 5% and be no higher than 95% for sublots with grinding over 25% of a subplot.

- d. Profilograph Roughness.** Not used.

- e. Payment.** Payment shall be made under:

Item P-501-8.1a	Concrete Pavement, 8.5” - per square yard
Item P-501-8.1b	Concrete Pavement, 8.5”, reinforced - 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.

### ASTM International (ASTM)

ASTM A184	Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A704	Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement
ASTM A706	Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A775	Standard Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A884	Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
ASTM A934	Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM A996	Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement
ASTM A1035	Standard Specification for Deformed and Plain, Low-Carbon, Chromium, Steel Bars for Concrete Reinforcement
ASTM A1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM A1078	Standard Specification for Epoxy-Coated Steel Dowels for Concrete Pavement
ASTM C29	Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C70	Standard Test Method for Surface Moisture in Fine Aggregate
ASTM C78	Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

ASTM C94	Standard Specification for Ready-Mixed Concrete
ASTM C114	Standard Test Methods for Chemical Analysis of Hydraulic Cement
ASTM C117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C123	Standard Test Method for Lightweight Particles in Aggregate
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
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 C138	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM C143	Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C171	Standard Specification for Sheet Materials for Curing Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C173	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C174	Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores
ASTM C227	Standard Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method)
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C295	Standard Guide for Petrographic Examination of Aggregates for Concrete
ASTM C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C311	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland Cement Concrete
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregates by Drying
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

ASTM C642	Standard Test Method for Density, Absorption, and Voids in Hardened Concrete
ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C685	Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C881	Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C989	Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C1017	Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1064	Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1157	Standard Performance Specification for Hydraulic Cement
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1365	Standard Test Method for Determination of the Proportion of Phases in Portland Cement and Portland-Cement Clinker Using X-Ray Powder Diffraction Analysis
ASTM C1567	Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D1752	Standard Specification for Preformed Sponge Rubber and Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM E178	Standard Practice for Dealing with Outlying Observations

ASTM E1274	Standard Test Method for Measuring Pavement Roughness Using a Profilograph
ASTM E2133	Standard Test Method for Using a Rolling Inclinometer to Measure Longitudinal and Transverse Profiles of a Traveled Surface
American Concrete Institute (ACI)	
ACI 305R	Guide to Hot Weather Concreting
ACI 306R	Guide to Cold Weather Concreting
ACI 309R	Guide for Consolidation of Concrete
Advisory Circulars (AC)	
AC 150/5320-6	Airport Pavement Design and Evaluation
Federal Highway Administration (FHWA)	
HIPERPAV 3, version 3.2	
Portland Concrete Association (PCA)	
PCA	Design and Control of Concrete Mixtures, 16 <sup>th</sup> Edition
U.S. Army Corps of Engineers (USACE) Concrete Research Division (CRD)	
CRD C662	Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials, Lithium Nitrate Admixture and Aggregate (Accelerated Mortar-Bar Method)
United States Air Force Engineering Technical Letter (ETL)	
ETL 97-5	Proportioning Concrete Mixtures with Graded Aggregates for Rigid Airfield Pavements

**END ITEM P-501**

## Item P-603 Emulsified Asphalt Tack Coat

### DESCRIPTION

**603-1.1** This item shall consist of preparing and treating an asphalt or concrete surface with asphalt material in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

### MATERIALS

**603-2.1 Asphalt materials.** The asphalt material shall be an emulsified asphalt as specified in ASTM D3628 as an asphalt application for tack coat appropriate to local conditions. The emulsified asphalt shall not be diluted. The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the asphalt material to the Resident Project Representative (RPR) before the asphalt material is applied for review and acceptance. The furnishing of COA for the asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer's COA may be subject to verification by testing the material delivered for use on the project.

### CONSTRUCTION METHODS

**603-3.1 Weather limitations.** The tack coat shall be applied only when the existing surface is dry, and the atmospheric temperature is 50°F (10°C) or above; the temperature has not been below 35°F (2°C) for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when directed by the RPR.

**603-3.2 Equipment.** The Contractor shall provide equipment for heating and applying the emulsified asphalt material. The emulsion shall be applied with a manufacturer-approved computer rate-controlled asphalt distributor. The equipment shall be in working order and contain no contaminants or diluents in the tank. Spray bar tips must be clean, free of burrs, and of a size to maintain an even distribution of the emulsion. Any type of tip or pressure source is suitable that will maintain predetermined flow rates and constant pressure during the application process with application speeds under eight (8) miles per hour (13 km per hour) or seven (700) feet per minute (213 m per minute).

The equipment will be tested under pressure for leaks and to ensure proper set-up before use to verify truck set-up (via a test-shot area), including but not limited to, nozzle tip size appropriate for application, spray-bar height and pressure and pump speed, evidence of triple-overlap spray pattern, lack of leaks, and any other factors relevant to ensure the truck is in good working order before use.

The distributor truck shall be equipped with a minimum 12-foot (3.7-m) spreader spray bar with individual nozzle control with computer-controlled application rates. The distributor truck shall have an easily accessible thermometer that constantly monitors the temperature of the emulsion and has an operable mechanical tank gauge that can be used to cross-check the computer accuracy. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper.

The distributor truck shall be equipped to effectively heat and mix the material to the required temperature prior to application as required. Heating and mixing shall be done in accordance with the manufacturer's recommendations. Do not overheat or overmix the material.

The distributor shall be equipped with a hand sprayer.



Asphalt distributors must be calibrated annually in accordance with ASTM D2995. The Contractor must furnish a current calibration certification for the asphalt distributor truck from any State or other agency as approved by the RPR.

A power broom and/or power blower suitable for cleaning the surfaces to which the asphalt tack coat is to be applied shall be provided.

**603-3.3 Application of emulsified asphalt material.** The emulsified asphalt shall not be diluted. Immediately before applying the emulsified asphalt tack coat, the full width of surface to be treated shall be swept with a power broom and/or power blower to remove all loose dirt and other objectionable material.

The emulsified asphalt material shall be uniformly applied with an asphalt distributor at the rates appropriate for the conditions and surface specified in the table below. The type of asphalt material and application rate shall be approved by the RPR prior to application.

#### Emulsified Asphalt

Surface Type	Residual Rate, gal/SY (L/square meter)	Emulsion Application Bar Rate, gal/SY (L/square meter)
New asphalt	0.02-0.05 (0.09-0.23)	0.03-0.07 (0.13-0.32)
Existing asphalt	0.04-0.07 (0.18-0.32)	0.06-0.11 (0.27-0.50)
Milled Surface	0.04-0.08 (0.18-0.36)	.06-0.12 (0.27-0.54)
Concrete	0.03-0.05 (0.13-0.23)	0.05-0.08 (0.23-0.36)

After application of the tack coat, the surface shall be allowed to cure without being disturbed for the period of time necessary to permit drying and setting of the tack coat. This period shall be determined by the RPR. The Contractor shall protect the tack coat and maintain the surface until the next course has been placed. When the tack coat has been disturbed by the Contractor, tack coat shall be reapplied at the Contractor's expense.

**603-3.4 Freight and waybills** The Contractor shall submit waybills and delivery tickets, during progress of the work. Before the final statement is allowed, file with the RPR certified waybills and certified delivery tickets for all emulsified asphalt materials used in the construction of the pavement covered by the contract. Do not remove emulsified asphalt material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

#### METHOD OF MEASUREMENT

**603-4.1** The emulsified asphalt material for tack coat shall be measured by the gallon (liter). Volume shall be corrected to the volume at 60°F (16°C) in accordance with ASTM D1250. The emulsified asphalt material paid for will be the measured quantities used in the accepted work, provided that the measured quantities are not 10% over the specified application rate. Any amount of emulsified asphalt material more than 10% over the specified application rate for each application will be deducted from the measured quantities, except for irregular areas where hand spraying of the emulsified asphalt material is necessary. Water added to emulsified asphalt will not be measured for payment.

### **BASIS OF PAYMENT**

**603.5-1** Payment shall be made at the contract unit price per gallon of emulsified asphalt material. This price shall be full compensation for furnishing all materials, for all preparation, delivery, and application of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-603-5.1	Emulsified Asphalt Tack Coat - per gallon
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### **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 D1250	Standard Guide for Use of the Petroleum Measurement Tables
ASTM D2995	Standard Practice for Estimating Application Rate and Residual Application Rate of Bituminous Distributors
ASTM D3628	Standard Practice for Selection and Use of Emulsified Asphalts

**END ITEM P-603**

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## Item P-605 Joint Sealants for Pavements

### DESCRIPTION

**605-1.1** This item shall consist of providing and installing a resilient and adhesive joint sealing material capable of effectively sealing joints in pavement; joints between different types of pavements; and cracks in existing pavement.

### MATERIALS

**605-2.1 Joint sealants.** Joint sealant materials for all new concrete and existing concrete joint resealing shall meet the requirements of ASTM D5893 Standard Specifications for Cold Applied, Single Component, Chemically Curing Silicon Joint Sealant for Concrete Pavements.

Joint sealant materials for new asphalt construction joint seals shall meet the requirements of ASTM D6690 Standard Specification for Joint and Crack Sealants, Hot Applied, for Asphalt Pavements.

Each lot or batch of sealant shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the sealant meets the requirements of this specification.

**605-2.2 Backer rod.** The material furnished shall be a compressible, non-shrinking, non-staining, non-absorbing material that is non-reactive with the joint sealant in accordance with ASTM D5249. The backer-rod material shall be  $25\% \pm 5\%$  larger in diameter than the nominal width of the joint.

**605-2.3 Bond breaking tapes.** Provide a bond breaking tape or separating material that is a flexible, non-shrinkable, non-absorbing, non-staining, and non-reacting adhesive-backed tape. The material shall have a melting point at least 5°F (3°C) greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The bond breaker tape shall be approximately 1/8 inch (3 mm) wider than the nominal width of the joint and shall not bond to the joint sealant.

### CONSTRUCTION METHODS

**605-3.1 Time of application.** Joints shall be sealed as soon after completion of the curing period as feasible and before the pavement is opened to traffic, including construction equipment. The pavement temperature shall be 50°F (10°C) and rising at the time of application of the poured joint sealing material. Do not apply sealant if moisture is observed in the joint.

**605-3.2 Equipment.** Machines, tools, and equipment used in the performance of the work required by this section shall be approved before the work is started and maintained in satisfactory condition at all times. Submit a list of proposed equipment to be used in performance of construction work including descriptive data, 14 days prior to use on the project.

**a. Tractor-mounted routing tool.** Provide a routing tool, used for removing old sealants from the joints, of such shape and dimensions and so mounted on the tractor that it will not damage the sides of the joints. The tool shall be designed so that it can be adjusted to remove the old material to varying depths as required. The use of V-shaped tools or rotary impact routing devices will not be permitted. Hand-operated spindle routing devices may be used to clean and enlarge random cracks.

**b. Concrete saw.** Provide a self-propelled power saw, with water-cooled diamond or abrasive saw blades, for cutting joints to the depths and widths specified.

**c. Sandblasting equipment.** The Contractor must demonstrate sandblasting equipment including the air compressor, hose, guide and nozzle size, under job conditions, before approval in accordance with paragraph 605-3.3. The Contractor shall demonstrate, in the presence of the Resident Project Representative (RPR), that the method cleans the joint and does not damage the joint.

**d. Waterblasting equipment.** The Contractor must demonstrate waterblasting equipment including the pumps, hose, guide and nozzle size, under job conditions, before approval in accordance with paragraph 605-3.3. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

**e. Hand tools.** Hand tools may be used, when approved, for removing defective sealants from a crack and repairing or cleaning the crack faces. Hand tools should be carefully evaluated for potential spalling effects prior to approval for use.

**f. Hot-poured sealing equipment.** The unit applicators used for heating and installing ASTM D6690 joint sealant materials shall be mobile and shall be equipped with a double-boiler, agitator-type kettle with an oil medium in the outer space for heat transfer; a direct-connected pressure-type extruding device with a nozzle shaped for inserting in the joint to be filled; positive temperature devices for controlling the temperature of the transfer oil and sealant; and a recording type thermometer for indicating the temperature of the sealant. The applicator unit shall be designed so that the sealant will circulate through the delivery hose and return to the inner kettle when not in use.

**g. Cold-applied, single-component sealing equipment.** The equipment for installing ASTM D5893 single component joint sealants shall consist of an extrusion pump, air compressor, following plate, hoses, and nozzle for transferring the sealant from the storage container into the joint opening. The dimension of the nozzle shall be such that the tip of the nozzle will extend into the joint to allow sealing from the bottom of the joint to the top. Maintain the initially approved equipment in good working conditions, serviced in accordance with the supplier's instructions, and unaltered in any way without obtaining prior approval. Small hand-held air-powered equipment (i.e., caulking guns) may be used for small applications.

**605-3.3 Preparation of joints.** Pavement joints for application of material in this specification must be dry, clean of all scale, dirt, dust, curing compound, and other foreign matters. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

**a. Sawing.** All joints shall be sawed in accordance with specifications and plan details. Immediately after sawing the joint, the resulting slurry shall be completely removed from joint and adjacent area by flushing with a jet of water, and by use of other tools as necessary.

**b. Sealing.** Immediately before sealing, the joints shall be thoroughly cleaned of all remaining laitance, curing compound, filler, protrusions of hardened concrete, old sealant and other foreign material from the sides and upper edges of the joint space to be sealed. Cleaning shall be accomplished by sandblasting, tractor-mounted routing equipment, concrete saw, or water blaster as specified in paragraph 605-3.2. The newly exposed concrete joint faces and the pavement surface extending a minimum of 1/2 inch (12 mm) from the joint edge shall be sandblasted clean. Sandblasting shall be accomplished in a minimum of two passes. One pass per joint face with the nozzle held at an angle directly toward the joint face and not more than 3 inches (75 mm) from it. After final cleaning and immediately prior to sealing, blow out the joints with compressed air and leave them completely free of debris and water. The joint faces shall be surface dry when the seal is applied.

**c. Backer Rod.** When the joint opening is of a greater depth than indicated for the sealant depth, plug or seal off the lower portion of the joint opening using a backer rod in accordance with paragraph 605-2.2 to prevent the entrance of the sealant below the specified depth. Take care to ensure that the backer rod is placed at the specified depth and is not stretched or twisted during installation.

**d. Bond-breaking tape.** Where inserts or filler materials contain bitumen, or the depth of the joint opening does not allow for the use of a backup material, insert a bond-separating tape breaker in accordance with paragraph 605-2.3 to prevent incompatibility with the filler materials and three-sided adhesion of the sealant. Securely bond the tape to the bottom of the joint opening so it will not float up into the new sealant.

**605-3.4 Installation of sealants.** Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the RPR before sealing is allowed. Sealants shall be installed in accordance with the following requirements:

Immediately preceding, but not more than 50 feet (15 m) ahead of the joint sealing operations, perform a final cleaning with compressed air. Fill the joints from the bottom up to 1/8 inch  $\pm$  1/16 inch (2 mm) below the top of pavement surface; or bottom of groove for grooved pavement. Remove and discard excess or spilled sealant from the pavement by approved methods. Install the sealant in such a manner as to prevent the formation of voids and entrapped air. In no case shall gravity methods or pouring pots be used to install the sealant material. Traffic shall not be permitted over newly sealed pavement until authorized by the RPR. When a primer is recommended by the manufacturer, apply it evenly to the joint faces in accordance with the manufacturer's instructions. Check the joints frequently to ensure that the newly installed sealant is cured to a tack-free condition within the time specified.

**605-3.5 Inspection.** The Contractor shall inspect the joint sealant for proper rate of cure and set, bonding to the joint walls, cohesive separation within the sealant, reversion to liquid, entrapped air and voids. Sealants exhibiting any of these deficiencies at any time prior to the final acceptance of the project shall be removed from the joint, wasted, and replaced as specified at no additional cost to the airport.

**605-3.6 Clean-up.** Upon completion of the project, remove all unused materials from the site and leave the pavement in a clean condition.

## METHOD OF MEASUREMENT

**605-4.1** No separate measurement shall be made for joint sealing. All saw cutting, joint sawing, routing, cleaning, and sealant will be considered incidental to pavement construction.

## BASIS OF PAYMENT

**605-5.1** There will be no separate payment for joint sealing, it is considered incidental to pavement construction.

## 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 D789	Standard Test Method for Determination of Relative Viscosity of Polyamide (PA)
ASTM D5249	Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D5893	Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements

Advisory Circulars (AC)

AC 150/5340-30

Design and Installation Details for Airport Visual Aids

**END ITEM P-605**



## Item P-620 Runway and Taxiway Marking

### DESCRIPTION

**620-1.1** This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Resident Project Representative (RPR). The terms “paint” and “marking material” as well as “painting” and “application of markings” are interchangeable throughout this specification.

### MATERIALS

**620-2.1 Materials acceptance.** The Contractor shall furnish manufacturer’s certified test reports, for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. This certification along with a copy of the paint manufacturer’s surface preparation; marking materials, including adhesion, flow promoting and/or floatation additive; and application requirements must be submitted and approved by the Resident Project Representative (RPR) prior to the initial application of markings. The reports can be used for material acceptance or the RPR may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the RPR upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers that are easily quantifiable for inspection by the RPR.

#### **620-2.2 Marking materials.**

**Table 1. Marking Materials**

Paint <sup>1</sup>				Glass Beads <sup>2</sup>	
Type	Color	Fed Std. 595 Number	Application Rate Maximum	Type	Application Rate Minimum
Waterborne Type I	Yellow	333538 or 33655	115 ft <sup>2</sup> /gal	Type I, Gradation A	7 lb/gal

<sup>1</sup> See paragraph 620-2.2a

<sup>2</sup> See paragraph 620-2.2b

**a. Paint.** Paint shall be waterborne in accordance with the requirements of this paragraph. Paint colors shall comply with Federal Standard No. 595.

**Waterborne.** Paint shall meet the requirements of Federal Specification TT-P-1952F, Type I. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.

**b. Reflective media.** Glass beads for white and yellow paint shall meet the requirements for Federal Specification TT-B-1325D Type I, Gradation A.

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Glass beads shall not be used in black and green paint.

Type III glass beads shall not be used in red and pink paint.

## CONSTRUCTION METHODS

**620-3.1 Weather limitations.** Painting shall only be performed when the surface is dry, and the ambient temperature and the pavement surface temperature meet the manufacturer's recommendations in accordance with paragraph 620-2.1. Painting operations shall be discontinued when the ambient or surface temperatures do not meet the manufacturer's recommendations. Marking shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns. Markings shall not be applied when weather conditions are forecasts to not be within the manufacturers' recommendations for application and dry time.

**620-3.2 Equipment.** Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type or airless type marking machine with automatic glass bead dispensers suitable for application of traffic paint. It shall produce an even and uniform film thickness and appearance of both paint and glass beads at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray. The marking equipment for both paint and beads shall be calibrated daily.

**620-3.3 Preparation of surfaces.** Immediately before the application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other contaminants that would reduce the bond between the paint and the pavement. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the RPR. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

**a. Preparation of new pavement surfaces.** The area to be painted shall be cleaned by broom, blower, water blasting, or by other methods approved by the RPR to remove all contaminants, including PCC curing compounds, minimizing damage to the pavement surface.

**b. Preparation of pavement to remove existing markings.** Existing pavement markings shall be removed by rotary grinding, water blasting, or by other methods approved by the RPR minimizing damage to the pavement surface. The removal area may need to be larger than the area of the markings to eliminate ghost markings. After removal of markings on asphalt pavements, apply a fog seal or seal coat to 'block out' the removal area to eliminate 'ghost' markings.

**c. Preparation of pavement markings prior to remarking.** Prior to remarking existing markings, loose existing markings must be removed minimizing damage to the pavement surface, with a method approved by the RPR. After removal, the surface shall be cleaned of all residue or debris.

Prior to the application of markings, the Contractor shall certify in writing that the surface is dry and free from dirt, grease, oil, laitance, or other foreign material that would prevent the bond of the paint to the pavement or existing markings. This certification along with a copy of the paint manufacturers application and surface preparation requirements must be submitted to the RPR prior to the initial application of markings.

**620-3.4 Layout of markings.** The proposed markings shall be laid out in advance of the paint application. The locations of markings to receive glass beads shall be shown on the plans.

**620-3.5 Application.** A period of 24 days shall elapse between placement of surface course or seal coat and application of the permanent paint markings. Paint shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface has been approved by the RPR.

The edges of the markings shall not vary from a straight line more than 1/2 inch (12 mm) in 50 feet (15 m), and marking dimensions and spacing shall be within the following tolerances:

#### **Marking Dimensions and Spacing Tolerance**

<b>Dimension and Spacing</b>	<b>Tolerance</b>
36 inches (910 mm) or less	±1/2 inch (12 mm)
greater than 36 inches to 6 feet (910 mm to 1.85 m)	±1 inch (25 mm)
greater than 6 feet to 60 feet (1.85 m to 18.3 m)	±2 inch (50 mm)
greater than 60 feet (18.3 m)	±3 inch (76 mm)

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate shown in Table 1. The addition of thinner will not be permitted.

Glass beads shall be distributed upon the marked areas at the locations shown on the plans to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 1. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment and distribution should be performed.

#### **620-3.6 Application--preformed thermoplastic airport pavement markings.**

Preformed thermoplastic pavement markings not used.

**620-3.7 Control strip.** Prior to the full application of airfield markings, the Contractor shall prepare a control strip in the presence of the RPR. The Contractor shall demonstrate the surface preparation method and all striping equipment to be used on the project. The marking equipment must achieve the prescribed application rate of paint and population of glass beads (per Table 1) that are properly embedded and evenly distributed across the full width of the marking. Prior to acceptance of the control strip, markings must be evaluated during darkness to ensure a uniform appearance.

**620-3.8 Retro-reflectance.** Reflectance shall be measured by the contractor with a portable retro-reflectometer meeting ASTM E1710 (or equivalent). A total of 6 readings shall be taken over a 6 square foot area with 3 readings taken from each direction. The average shall be equal to or above the minimum levels of all readings which are within 30% of each other.

#### **Minimum Retro-Reflectance Values**

<b>Material</b>	<b>Retro-reflectance mcd/m<sup>2</sup>/lux</b>		
	<b>White</b>	<b>Yellow</b>	<b>Red</b>
Initial Type I	300	175	35

<sup>1</sup> Prior to remarking determine if removal of contaminants on markings will restore retro-reflectance

**620-3.9 Protection and cleanup.** After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose reflective media, and by-products generated by the surface preparation and application

operations to the satisfaction of the RPR. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations.

### **METHOD OF MEASUREMENT**

**620-4.1a** No measurement will be made for surface preparation; it is considered incidental to pavement marking.

**620-4.1b** The quantity of markings to be paid for shall be measured by the number of square feet of painting, including reflective media performed in accordance with the specification and accepted by the RPR.

**620-4.1c.** No separate measurement will be made for reflective media; it is considered incidental to pavement marking.

**620-4.2** The quantity of pavement marking removals to be paid for shall be the number of square feet of markings removed which shall include removal of marking residue and disposal of all blasting media and residue.

### **BASIS OF PAYMENT**

**620-5.1** This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item complete in place and accepted by the RPR in accordance with these specifications.

**620-5.2** Payment for markings shall be made at the contract price for by the number of square feet of painting for each color specified, which includes reflective media (except black paint).

**620-5.3** Payment for pavement marking removal shall be made at the contract price for the number of square feet removed and accepted by the RPR. This price will be payment in full for removing, hauling and disposal of materials; and for furnishing all labor, tools, equipment and incidentals necessary for complete removal as accepted by the RPR.

Payment will be made under:

Item P-620-5.1	Marking, reflectorized, yellow, waterborne, type I - per square foot
Item P-620-5.3	Remove pavement marking - per square 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.

ASTM International (ASTM)

ASTM D476	Standard Classification for Dry Pigmentary Titanium Dioxide Products
ASTM D968	Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D1652	Standard Test Method for Epoxy Content of Epoxy Resins

ASTM D2074	Standard Test Method for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method
ASTM D2240	Standard Test Method for Rubber Property - Durometer Hardness
ASTM D7585	Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments
ASTM E303	Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester
ASTM E1710	Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer
ASTM E2302	Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

#### Code of Federal Regulations (CFR)

##### 40 CFR Part 60, Appendix A-7, Method 24

Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings

##### 29 CFR Part 1910.1200 Hazard Communication

#### Federal Specifications (FED SPEC)

FED SPEC TT-B-1325D	Beads (Glass Spheres) Retro-Reflective
FED SPEC TT-P-1952F	Paint, Traffic and Airfield Marking, Waterborne
FED STD 595	Colors used in Government Procurement

#### Commercial Item Description

A-A-2886B	Paint, Traffic, Solvent Based
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#### Advisory Circulars (AC)

AC 150/5340-1	Standards for Airport Markings
AC 150/5320-12	Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces

**END OF ITEM P-620**

## Item D-701 Pipe for Storm Drains and Culverts

### DESCRIPTION

**701-1.1** This item shall consist of the construction of pipe culverts and storm drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans.

### MATERIALS

**701-2.1** Materials shall meet the requirements shown on the plans and specified below. Underground piping and components used in drainage systems for terminal and aircraft fueling ramp drainage shall be noncombustible and inert to fuel in accordance with National Fire Protection Association (NFPA) 415.

**701-2.2 Pipe.** The pipe shall be of the type called for on the plans or in the proposal and shall be in accordance with the following appropriate requirements:

ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
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**701-2.3 Concrete.** Concrete for pipe cradles shall have a minimum compressive strength of 2000 psi (13.8 MPa) at 28 days and conform to the requirements of ASTM C94.

**701-2.4 Rubber gaskets.** Rubber gaskets for rigid pipes shall conform to the requirements of ASTM C443. Rubber gaskets for PVC pipe, polyethylene, and polypropylene pipe shall conform to the requirements of ASTM F477. Rubber gaskets for zinc-coated steel pipe and precoated galvanized pipe shall conform to the requirements of ASTM D1056, for the "RE" closed cell grades. Rubber gaskets for steel reinforced thermoplastic ribbed pipes shall conform to the requirements of ASTM F477.

**701-2.5 Joint mortar.** Pipe joint mortar shall consist of one part Portland cement and two parts sand. The Portland cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

**701-2.6 Joint fillers.** Poured filler for joints shall conform to the requirements of ASTM D6690.

**701-2.7 Plastic gaskets.** Not used.

**701-2.8. Controlled low-strength material (CLSM).** Not used.

**701-2.9 Precast box culverts.** Manufactured in accordance with and conforming to ASTM C1433.

**701-2.10 Precast concrete pipe.** Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or American Concrete Pipe Association QCast Plant Certification program.

### CONSTRUCTION METHODS

**701-3.1 Excavation.** The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but it shall not be less than the external diameter of the pipe plus 12 inches (300 mm) on each side. The trench walls shall be approximately vertical.

The Contractor shall comply with all current federal, state and local rules and regulations governing the safety of men and materials during the excavation, installation and backfilling operations. Specifically, the Contractor shall observe that all requirements of the Occupational Safety and Health Administration (OSHA) relating to excavations, trenching and shoring are strictly adhered to. The width of the trench

shall be sufficient to permit satisfactorily jointing of the pipe and thorough compaction of the bedding material under the pipe and backfill material around the pipe, but it shall not be greater than the widths shown on the plans trench detail.

Where rock, hardpan, or other unyielding material is encountered, the Contractor shall remove it from below the foundation grade for a depth of at least 8 inch (200 mm) or 1/2 inch (12 mm) for each foot of fill over the top of the pipe (whichever is greater) but for no more than three-quarters of the nominal diameter of the pipe. The excavation below grade should be filled with granular material to form a uniform foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, the unstable soil shall be removed and replaced with approved granular material for the full trench width. The RPR shall determine the depth of removal necessary. The granular material shall be compacted to provide adequate support for the pipe.

The excavation for pipes placed in embankment fill shall not be made until the embankment has been completed to a height above the top of the pipe as shown on the plans.

**701-3.2 Bedding.** The bedding surface for the pipe shall provide a foundation of uniform density to support the pipe throughout its entire length.

**a. Rigid pipe.** The pipe bedding shall be constructed uniformly for the full length of the pipe barrel, as required in the plans. The maximum aggregate size shall be 1 in when the bedding thickness is less than 6 inches, and 1-1/2 in when the bedding thickness is greater than 6 inches. Bedding shall be loosely placed uncompacted material under the middle third of the pipe prior to placement of the pipe.

**701-3.3 Laying pipe.** The pipe laying shall begin at the lowest point of the trench and proceed upgrade. The lower segment of the pipe shall be in contact with the bedding throughout its full length. Bell or groove ends of rigid pipes and outside circumferential laps of flexible pipes shall be placed facing upgrade.

Paved or partially lined pipe shall be placed so that the longitudinal center line of the paved segment coincides with the flow line.

Elliptical and elliptically reinforced concrete pipes shall be placed with the manufacturer's reference lines designating the top of the pipe within five degrees of a vertical plane through the longitudinal axis of the pipe.

**701-3.4 Joining pipe.** Joints shall be made with (1) cement mortar, (2) cement grout, (3) rubber gaskets, or (4) plastic gaskets.

Mortar joints shall be made with an excess of mortar to form a continuous bead around the outside of the pipe and shall be finished smooth on the inside. Molds or runners shall be used for grouted joints to retain the poured grout. Rubber ring gaskets shall be installed to form a flexible watertight seal.

**a. Concrete pipe.** Concrete pipes may be either bell and spigot or tongue and groove. Pipe sections at joints shall be fully seated and the inner surfaces flush and even. Concrete pipe joints shall be sealed with rubber gaskets meeting ASTM C443 when leak resistant joints are required.

**b. Metal pipe.** Not used.

**c. PVC, Polyethylene, or Polypropylene pipe.** Not used.

**d. Fiberglass pipe.** Not used.

**701-3.5 Embedment and Overfill.** Pipes shall be inspected before any fill material is placed; any pipes found to be out of alignment, unduly settled, or damaged shall be removed and re-laid or replaced at the Contractor's expense.



### **701-3.5-1 Embedment Material Requirements**

**a. Concrete Pipe.** Embedment material and compaction requirements shall be in accordance with the applicable Type of Standard Installation (Types 1, 2, 3, or 4) per ASTM C1479.

### **701-3.5-2 Placement of Embedment Material**

The embedment material shall be compacted in layers not exceeding 6 inches (150 mm) on each side of the pipe and shall be brought up one foot (30 cm) above the top of the pipe or to natural ground level, whichever is greater. Thoroughly compact the embedment material under the haunches of the pipe without displacing the pipe. Material shall be brought up evenly on each side of the pipe for the full length of the pipe.

When the top of the pipe is above the top of the trench, the embedment material shall be compacted in layers not exceeding 6 inches (150 mm) and shall be brought up evenly on each side of the pipe to one foot (30 cm) above the top of the pipe. All embedment materials shall be compacted to the density required under Item P-152.

It shall be the Contractor's responsibility to protect installed pipes and culverts from damage due to construction equipment operations. The Contractor shall be responsible for installation of any extra strutting or backfill required to protect pipes from the construction equipment.

### **701-3.6 Overfill**

Pipes shall be inspected before any overfill is in place. Any pipes found to be out of alignment, unduly settled, or damaged shall be removed and re-laid or replaced at the Contractor's expense. Evaluation of any damage to RCP shall be evaluated based on AASHTO R73.

Overfill material shall be placed and compacted in layers as required to achieve compaction to at least 95 percent standard proctor per ASTM D698. The soil shall contain no debris, organic matter, frozen material, or stones with a diameter greater than one half the thickness of the compacted layers being placed.

### **701-3.7 Inspection Requirements**

An initial post installation inspection shall be performed by the RPR no sooner than 30 days after completion of installation and final backfill. Clean or flush all lines prior to inspection.

Use a camera with lighting suitable to allow a clear picture of the entire periphery of the pipe interior. Center the camera in the pipe both vertically and horizontally and be able to pan and tilt to a 90-degree angle with the axis of the pipe rotating 360 degrees. Use equipment to move the camera through the pipe that will not obstruct the camera's view or interfere with proper documentation of the pipe's condition. The video image shall be clear, focused, and relatively free from roll, static, or other image distortion qualities that would prevent the reviewer from evaluating the condition of the pipe.

Incorporate specific inspection requirements for the various types of pipes beneath the general inspection requirements.

Reinforced concrete pipe shall be inspected, evaluated, and reported on in accordance with ASTM C1840, "Standard Practice for Inspection and Acceptance of Installed Reinforced Concrete Culvert, Storm Drain, and Storm Sewer Pipe." Any issues reported shall include still photos and video documentation. The zoom ratio shall be provided for all still or video images that document any issues of concern by the inspection firm.

### **METHOD OF MEASUREMENT**

**701-4.1** The length of 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 the end or inside face of structure to the end or inside face of structure, whichever is applicable. Each class, type and size of pipe ] shall be measured separately. All fittings shall be included in the footage as typical pipe sections in the pipe being measured.

### **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).

Payment will be made under:

Item 701-5.1a	18-inch RCP storm sewer, class V - per linear foot
Item 701-5.1b	27-inch RCP storm sewer, class V - per linear foot
Item 701-5.1c	30-inch RCP storm sewer, class V - 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.

ASTM International (ASTM)

ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
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### **END ITEM D-701**

## Item D-705 Pipe Underdrains for Airports

### DESCRIPTION

**705-1.1** This item shall consist of the construction of pipe drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans.

### MATERIALS

**705-2.1 General.** Materials shall meet the requirements shown on the plans and specified below.

**705-2.2 Pipe.** The pipe shall be of the type called for on the plans or in the proposal and shall be in accordance with the following appropriate requirements.

ASTM F949                      Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated  
Sewer Pipe with a Smooth Interior and Fittings

**705-2.3 Joint mortar.** Pipe joint mortar shall consist of one part by volume of Portland cement and two parts sand. The Portland cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

**705-2.4 Elastomeric seals.** Elastomeric seals shall conform to the requirements of ASTM F477.

**705-2.5 Porous backfill.** Porous backfill shall be free of clay, humus, or other objectionable matter.

**705-2.6 Granular material.** Granular material used for backfilling shall conform to the requirements of specification P-154.

**705-2.7 Filter fabric.** The filter fabric shall conform to the requirements of AASHTO M288 Class 2 or equivalent.

**Table 2. Fabric Properties**

Fabric Property	Test Method	Test Requirement
Grab Tensile Strength, lbs	ASTM D4632	125 min
Grab Tensile Elongation %	ASTM D4632	50 min
Burst Strength, psi	ASTM D3785	125 min
Trapezoid Tear Strength, lbs	ASTM D4533	55 min
Puncture Strength, lbs	ASTM D4833	40 min
Abrasion, lbs	ASTM D4886	15 max loss
Equivalent Opening Size	ASTM D4751	70-100
Permittivity sec <sup>-1</sup>	ASTM D4491	0.80
Accelerated Weathering (UV Stability) (Strength Retained - %)	ASTM D4355 *(500 hrs exposure)	70

**705-2.8 Controlled low-strength material (CLSM).** CLSM is not used.

## CONSTRUCTION METHODS

**705-3.1 Equipment.** All equipment required for the construction of pipe underdrains shall be on the project, in good working condition, and approved by the RPR before construction is permitted to start.

**705-3.2 Excavation.** The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe but shall not be less than the external diameter of the pipe plus 6 inches (150 mm) on each side of the pipe. The trench walls shall be approximately vertical.

Where rock, hardpan, or other unyielding material is encountered, it shall be removed below the foundation grade for a depth of at least 4 inches (100 mm). The excavation below grade shall be backfilled with selected fine compressible material, such as silty clay or loam, and lightly compacted in layers not over 6 inches (150 mm) in uncompacted depth to form a uniform but yielding foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, the unstable soil shall be removed and replaced with approved granular material for the full trench width. The RPR shall determine the depth of removal necessary. The granular material shall be compacted to provide adequate support for the pipe.

Excavated material not required or acceptable for backfill shall be disposed of by the Contractor as directed by the RPR. The excavation shall not be carried below the required depth; if this occurs, the trench shall be backfilled at the Contractor's expense with material approved by the RPR and compacted to the density of the surrounding material.

The pipe bedding shall be constructed uniformly over the full length of the pipe barrel, as required on the plans. The maximum aggregate size shall be 1 inch when the bedding thickness is less than 6 inches, and 1-1/2 inch when the bedding thickness is greater than 6 inches. Bedding shall be loosely placed, uncompacted material under the middle third of the pipe prior to placement of the pipe.

The Contractor shall do trench bracing, sheathing, or shoring necessary to perform and protect the excavation as required for safety and conformance to federal, state and local laws. Unless otherwise provided, the bracing, sheathing, or shoring shall be removed by the Contractor after the backfill has reached at least 12 inches (300 mm) over the top of the pipe. The sheathing or shoring shall be pulled as the granular backfill is placed and compacted to avoid any unfilled spaces between the trench wall and the backfill material. The cost of bracing, sheathing, or shoring, and the removal of same, shall be included in the unit price bid per foot (meter) for the pipe.

### **705-3.3 Laying and installing pipe.**

**a. Concrete pipe.** The laying of the pipe in the finished trench shall be started at the lowest point and proceed upgrade. When bell and spigot pipe are used, the bells shall be laid upgrade. If tongue and groove pipe is used, the groove end shall be laid upgrade. Holes in perforated pipes shall be placed down, unless otherwise shown on the plans. The pipe shall be firmly and accurately set to line and grade so that the invert will be smooth and uniform. Pipe shall not be laid on frozen ground.

Pipe, which is not true in alignment, or which shows any settlement after laying, shall be taken up and re-laid by the Contractor at no additional expense. Making adjustments in grade by exerting force on the barrel of the pipe with excavating equipment, by lifting and dropping the pipe, or by lifting the pipe and packing bedding material under it shall be prohibited. If the installed pipe section is not to grade, the pipe section shall be completely removed, the grade corrected, and the pipe rejoined."

**b. Metal pipe.** The metal pipe shall be laid with the separate sections joined firmly together with bands, with outside laps of circumferential joints pointing upgrade, and with longitudinal laps on the sides. Any metal in the pipe or bands that is not protected thoroughly by galvanizing shall be coated with suitable asphaltum paint.

During installation, the asphalt-protected pipe shall be handled without damaging the asphalt coating. Any breaks in the bitumen or treatment of the pipe shall be refilled with the type and kind of bitumen used in coating the pipe originally.

**c. PVC, fiberglass, or polyethylene pipe.** PVC or polyethylene pipes shall be installed in accordance with the requirements of ASTM D2321. Perforations shall meet the requirements of AASHTO M252 or AASHTO M294 Class 2, unless otherwise indicated on the plans. The pipe shall be laid accurately to line and grade. Fiberglass per ASTM D3839 Standard Guide for Underground Installation of "Fiberglass" (Glass-Fiber Reinforced Thermosetting-Resin) Pipe.

**d. All types of pipes.** The upgrade end of pipelines, not terminating in a structure, shall be plugged or capped as approved by the RPR.

Unless otherwise shown on the plans, a 4-inch (100 mm) bed of granular backfill material shall be spread in the bottom of the trench throughout the entire length under all perforated pipe underdrains.

Pipe outlets for the underdrains shall be constructed when required or shown on the plans. The pipe shall be laid with tight-fitting joints. A porous backfill is not required around or over pipe outlets for underdrains. All connections to other drainage pipes or structures shall be made as required and in a satisfactory manner. If connections are not made to other pipes or structures, the outlets shall be protected and constructed as shown on the plans.

**e. Filter fabric.** The filter fabric shall be installed in accordance with the manufacturer's recommendations, or in accordance with the AASHTO M288 Appendix, unless otherwise shown on the plans.

**705-3.4 Mortar.** The mortar shall be of the desired consistency for caulking and filling the joints of the pipe and for making connections to other pipes or to structures. Mortar that is not used within 45 minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted.

**705-3.5 Joints in concrete pipe.** When open or partly open joints are required or specified, they shall be constructed as indicated on the plans. The pipe shall be laid with the ends fitted together as designed. If a bell and spigot pipe are used, mortar shall be placed along the inside bottom quarter of the bell to center the following section of pipe.

The open or partly open joints shall be surrounded with granular material meeting requirements of porous backfill No. 2 in Table 1 or as indicated on the plans. This backfill shall be placed so its thickness will be not less than 3 inches (75 mm) nor more than 6 inches (150 mm), unless otherwise shown on the plans.

When the original material excavated from the trench is impervious, commercial concrete sand or granular material meeting requirements of porous backfill No. 1 shall surround porous backfill No. 2 (Table 1), as shown on the plans or as directed by the RPR.

When the original material excavated from the trench is pervious and suitable, it may be used as backfill in lieu of porous backfill No. 1, when indicated on the plans or as directed by the RPR.

### **705-3.6 Embedment and Backfill**

**a. Earth.** All trenches and excavations shall be backfilled soon after the pipes are installed, unless additional protection of the pipe is directed. The embedment material shall be select material from excavation or borrow and shall be approved by the RPR. The select material shall be placed on each side of the pipe out to a distance of the nominal pipe diameter and one foot (30 cm) over the top of the pipe and shall be readily compacted. It shall not contain stones 3 inches (75 mm) or larger in size, frozen lumps, chunks of highly plastic clay, or any other material that is objectionable to the RPR. The material shall be moistened or dried, as required to aid compaction. Placement of the embedment material shall not

cause displacement of the pipe. Thorough compaction under the haunches and along the sides to the top of the pipe shall be obtained.

The embedment material shall be placed in loose layers not exceeding 6 inches (150 mm) in depth under and around the pipe. Backfill material over the pipe shall be placed in lifts not exceeding 8 inches (200 mm). Successive layers shall be added and thoroughly compacted by hand and pneumatic tampers, approved by the RPR, until the trench is completely filled and brought to the planned elevation. Embedment and backfilling shall be done to avoid damaging the top or side of the pipe.

In embankments and other unpaved areas, the backfill shall be compacted per Item P-152 to the density required for embankments in unpaved areas. Under paved areas, the subgrade and any backfill shall be compacted per Item P-152 to the density required for embankments for paved areas.

**b. Granular backfill.** When granular backfill is required, placement in the trench and about the pipe shall be as shown on the plans. The granular backfill shall not contain an excessive amount of foreign matter, nor shall soil from the sides of the trench or from the soil excavated from the trench be allowed to filter into the granular backfill. When required by the RPR, a template shall be used to properly place and separate the two sizes of backfill. The backfill shall be placed in loose layers not exceeding 6 inches (150 mm) in depth. The granular backfill shall be compacted by hand and pneumatic tampers to the requirements as given for embankment. Backfilling shall be done to avoid damaging top or side pressure on the pipe. The granular backfill shall extend to the elevation of the trench or as shown on the plans.

When perforated pipe is specified, granular backfill material shall be placed along the full length of the pipe. The position of the granular material shall be as shown on the plans. If the original material excavated from the trench is pervious and suitable, it shall be used in lieu of porous backfill No. 1.

If porous backfill is placed in paved or adjacent to paved areas before grading or subgrade operations is completed, the backfill material shall be placed immediately after laying the pipe. The depth of the granular backfill shall be not less than 12 inches (300 mm), measured from the top of the underdrain. During subsequent construction operations, a minimum depth of 12 inches (300 mm) of backfill shall be maintained over the underdrains. When the underdrains are to be completed, any unsuitable material shall be removed exposing the porous backfill. Porous backfill containing objectionable material shall be removed and replaced with suitable material. The cost of removing and replacing any unsuitable material shall be at the Contractor's expense.

If a granular subbase blanket course is used which extends several feet beyond the edge of paving to the outside edge of the underdrain trench, the granular backfill material over the underdrains shall be placed in the trench up to an elevation of 2 inches (50 mm) above the bottom surface of the granular subbase blanket course. Immediately prior to the placing of the granular subbase blanket course, the Contractor shall blade this excess trench backfill from the top of the trench onto the adjacent subgrade where it can be incorporated into the granular subbase blanket course. Any unsuitable material that remains over the underdrain trench shall be removed and replaced. The subbase material shall be placed to provide clean contact between the subbase material and the underdrain granular backfill material for the full width of the underdrain trench.

**c. Controlled low-strength material (CLSM).** CLSM is not used.

**705-3.7 Flexible Pipe Ring Deflection.** The flexible pipe shall be inspected by the Contractor during and after installation to ensure that the internal diameter of the pipe barrel has not been reduced by more than 5 percent. For guidance on properly sizing mandrels, refer to ASTM D3034 and ASTM F679 appendices.

**705-3.8 Connections.** When the plans call for connections to existing or proposed pipe or structures, these connections shall be watertight and made to obtain a smooth uniform flow line throughout the drainage system.

**705-3.9 Cleaning and restoration of site.** After the backfill is completed, the Contractor shall dispose of all surplus material, soil, and rubbish from the site. Surplus soil may be deposited in embankments, shoulders, or as directed by the RPR. Except for paved areas of the airport, the Contractor shall restore all disturbed areas to their original condition.

### **METHOD OF MEASUREMENT**

**705-4.1** The length of pipe shall be the number of linear feet of pipe underdrains in place, completed, and approved; 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. The several classes, types, and sizes shall be measured separately. All fittings shall be included in the footage as typical pipe sections in the pipeline being measured.

**705-4.2** The quantity of pipe underdrains shall be made at the contract unit price per linear foot complete, including granular backfill and filter sock around the pipe.

### **BASIS OF PAYMENT**

**705-5.1** Payment will be made at the contract unit price per linear foot for pipe underdrains of the type, class, and size designated.

**705-5.2 Pipe underdrains, Complete.** Pipe underdrains, complete (including granular backfill and filter sock) shall be made at the contract unit price per linear foot complete (including granular backfill and filter sock).

These prices shall be full compensation 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.

Payment will be made under:

Item D-705-5.1	4-Inch Pipe Underdrain, Perforated PVC Complete, Including Filter Sock - per linear foot.
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### **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 A760	Standard Specification for Corrugated Steel Pipe, Metallic Coated for Sewers and Drains
ASTM A762	Standard Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C444	Standard Specification for Perforated Concrete Pipe



ASTM C654	Standard Specification for Porous Concrete Pipe
ASTM D2321	Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
ASTM D3262	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Sewer Pipe
ASTM D4161	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Pipe Joints Using Flexible Elastomeric Seals
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F758	Standard Specification for Smooth Wall Poly (Vinyl Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport, and Similar Drainage
ASTM F794	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe & Fittings Based on Controlled Inside Diameter
ASTM F949	Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings
ASTM F2562	Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage
American Association of State Highway and Transportation Officials (AASHTO)	
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
AASHTO M252	Standard Specification for Corrugated Polyethylene Drainage Pipe
AASHTO M288	Standard Specification for Geotextile Specification for Highway Applications
AASHTO M294	Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
AASHTO M304	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter
AASHTO MP20	Standard Specification for Steel-Reinforced Polyethylene (PE) Ribbed Pipe, 300- to 900-mm (12- to 36-in.) diameter
AASHTO	Standard Specifications for Highway Bridges

**END OF ITEM D-705**

## **Item D-751 Manholes, Catch Basins, Inlets and Inspection Holes**

### **DESCRIPTION**

**751-1.1** This item shall consist of construction of manholes, catch basins, inlets, and inspection holes, in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the RPR.

### **MATERIALS**

**751-2.1 Brick.** Not used.

**751-2.2 Mortar.** Mortar shall consist of one part Portland cement and two parts sand. The cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

**751-2.3 Concrete.** Plain and reinforced concrete used in structures, connections of pipes with structures, and the support of structures or frames shall conform to the requirements of Item P-610.

**751-2.4 Precast concrete pipe manhole rings.** Precast concrete pipe manhole rings shall conform to the requirements of ASTM C478. Unless otherwise specified, the risers and offset cone sections shall have an inside diameter of not less than 36 inches (90 cm) nor more than 48 inches (120 cm). There shall be a gasket between individual sections and sections cemented together with mortar on the inside of the manhole. Gaskets shall conform to the requirements of ASTM C443.

**751-2.5 Corrugated metal.** Corrugated metal shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M36.

**751-2.6 Frames, covers, and grates.** The castings shall conform to one of the following requirements:

- a. ASTM A48, Class 35B: Gray iron castings
- b. ASTM A47: Malleable iron castings
- c. ASTM A27: Steel castings
- d. ASTM A283, Grade D: Structural steel for grates and frames
- e. ASTM A536, Grade 65-45-12: Ductile iron castings
- f. ASTM A897: Austempered ductile iron castings

All castings or structural steel units shall conform to the dimensions shown on the plans and shall be designed to support the loadings, aircraft gear configuration and/or direct loading, specified.

Each frame and cover or grate unit shall be provided with fastening members to prevent it from being dislodged by traffic, but which will allow easy removal for access to the structure.

All castings shall be thoroughly cleaned. After fabrication, structural steel units shall be galvanized to meet the requirements of ASTM A123.

**751-2.7 Steps.** The steps or ladder bars shall be gray or malleable cast iron or galvanized steel. The steps shall be the size, length, and shape shown on the plans and those steps that are not galvanized shall be given a coat of asphalt paint, when directed.

**751-2.8 Precast inlet structures.** Manufactured in accordance with and conforming to ASTM C913.

## CONSTRUCTION METHODS

### 751-3.1 Unclassified excavation.

**a.** The Contractor shall excavate for structures and footings to the lines and grades or elevations, shown on the plans, or as staked by the RPR. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximately only; and the RPR may direct, in writing, changes in dimensions or elevations of footings necessary for a satisfactory foundation.

**b.** Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the RPR. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. Where concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed and excavation to final grade shall not be made until immediately before the concrete or reinforcing is placed.

**c.** The Contractor shall do all bracing, sheathing, or shoring necessary to implement and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for the structure.

**d.** All bracing, sheathing, or shoring involved in the construction of this item shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage finished masonry. The cost of removal shall be included in the unit price bid for the structure.

**e.** After excavation is completed for each structure, the Contractor shall notify the RPR. No concrete or reinforcing steel shall be placed until the RPR has approved the depth of the excavation and the character of the foundation material.

### 751-3.2 Brick structures. Not used.

**751-3.3 Concrete structures.** Concrete structures which are to be cast-in-place within the project boundaries shall be built on prepared foundations, conforming to the dimensions and shape indicated on the plans. The construction shall conform to the requirements specified in Item P-610. Any reinforcement required shall be placed as indicated on the plans and shall be approved by the RPR before the concrete is placed.

All invert channels shall be constructed and shaped accurately to be smooth, uniform, and cause minimum resistance to flowing water. The interior bottom shall be sloped to the outlet.

**751-3.4 Precast concrete structures.** Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another RPR approved third party certification program.

Precast concrete structures shall conform to ASTM C478. Precast concrete structures shall be constructed on prepared or previously placed slab foundations conforming to the dimensions and locations shown on the plans. All precast concrete sections necessary to build a complete structure shall be furnished. The different sections shall fit together readily. Joints between precast concrete risers and tops shall be full bedded in cement mortar and shall: (1) be smoothed to a uniform surface on both interior and exterior of the structure or (2) utilize a rubber gasket per ASTM C443. The top of the upper precast concrete section shall be suitably formed and dimensioned to receive the metal frame and cover or grate, or other cap, as required. Provisions shall be made for any connections for lateral pipes, including drops and leads that may be installed in the structure. The flow lines shall be smooth, uniform, and cause minimum resistance to flow. The metal or metal encapsulated steps that are embedded or built into the side walls shall be aligned and placed in accordance with ASTM C478. When a metal ladder replaces the steps, it shall be securely fastened into position.

**751-3.5 Corrugated metal structures.** Corrugated metal structures shall be prefabricated. All standard or special fittings shall be furnished to provide pipe connections or branches with the correct dimensions and of sufficient length to accommodate connecting bands. The fittings shall be welded in place to the metal structures. The top of the metal structure shall be designed so that either a concrete slab or metal collar may be attached to allow the fastening of a standard metal frame and grate or cover. Steps or ladders shall be furnished as shown on the plans. Corrugated metal structures shall be constructed on prepared foundations, conforming to the dimensions and locations as shown on the plans. When indicated, the structures shall be placed on a reinforced concrete base.

**751-3.6 Inlet and outlet pipes.** Inlet and outlet pipes shall extend through the walls of the structures a sufficient distance beyond the outside surface to allow for connections. They shall be cut off flush with the wall on the inside surface of the structure, unless otherwise directed. For concrete or brick structures, mortar shall be placed around these pipes to form a tight, neat connection.

**751-3.7 Placement and treatment of castings, frames, and fittings.** All castings, frames, and fittings shall be placed in the positions indicated on the plans or as directed by the RPR and shall be set true to line and elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

When frames or fittings are placed on previously constructed masonry, the bearing surface of the masonry shall be brought true to line and grade and shall present an even bearing surface so the entire face or back of the unit will come in contact with the masonry. The unit shall be set in mortar beds and anchored to the masonry as indicated on the plans or as directed by the RPR. All units shall set firm and secure.

After the frames or fittings have been set in the final position, the concrete or mortar shall be allowed to harden for seven (7) days before the grates or covers are placed and fastened down.

**751-3.8 Installation of steps.** The steps shall be installed as indicated on the plans or as directed by the RPR. When the steps are to be set in concrete, they shall be placed and secured in position before the concrete is placed. When the steps are installed in brick masonry, they shall be placed as the masonry is being built. The steps shall not be disturbed or used until the concrete or mortar has hardened for at least seven (7) days. After seven (7) days, the steps shall be cleaned and painted, unless they have been galvanized.

When steps are required with precast concrete structures, they shall meet the requirements of ASTM C478. The steps shall be cast into the side of the sections at the time the sections are manufactured or set in place after the structure is erected by drilling holes in the concrete and cementing the steps in place.

When steps are required with corrugated metal structures, they shall be welded into aligned position at a vertical spacing of 12 inches (300 mm).

Instead of steps, prefabricated ladders may be installed. For brick or concrete structures, the ladder shall be held in place by grouting the supports in drilled holes. For metal structures, the ladder shall be secured by welding the top support to the structure and grouting the bottom support into drilled holes in the foundation or as directed by the RPR.

### **751-3.9 Backfilling.**

**a.** After a structure has been completed, the area around it shall be backfilled with approved material, in horizontal layers not to exceed 8 inches (200 mm) in loose depth and compacted to the density required in Item P-152. Each layer shall be deposited evenly around the structure to approximately the same elevation. The top of the fill shall meet the elevation shown on the plans or as directed by the RPR.

**b.** Backfill shall not be placed against any structure until approved by the RPR. For concrete structures, approval shall not be given until the concrete has been in place seven (7) days, or until tests

establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill and placing methods.

c. Backfill shall not be measured for direct payment. Performance of this work shall be considered an obligation of the Contractor covered under the contract unit price for the structure involved.

**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, inlets, and inspection holes shall be measured per each, regardless of the type, depth, size, or number of connections.

### **BASIS OF PAYMENT**

**751-5.1** The accepted quantities of manholes, catch basins, 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.

Payment will be made under:

Item D-751-5.1a	48-inch I.D. storm sewer inlet – per each
Item D-751-5.1b	60-inch I.D. storm sewer inlet – 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
ASTM A283	Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
ASTM A536	Standard Specification for Ductile Iron Castings
ASTM A897	Standard Specification for Austempered Ductile Iron Castings

ASTM C32	Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale)
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C443	Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
ASTM C478	Standard Specification for Precast Reinforced Concrete Manhole Sections
ASTM C913	Standard Specification for Precast Concrete Water and Wastewater Structures.
American Association of State Highway and Transportation Officials (AASHTO)	
AASHTO M36	Standard Specification for Corrugated Steel Pipe, Metallic Coated, for Sewers and Drains

**END OF ITEM D-751**

## **Item D-752 Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures**

### **DESCRIPTION**

**752-1.1** This item shall consist of plain or reinforced concrete culverts, headwalls, and miscellaneous drainage structures constructed in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the RPR.

### **MATERIALS**

**752-2.1 Concrete.** Plain or reinforced concrete shall meet the requirements of Item P-501.

### **CONSTRUCTION METHODS**

#### **752-3.1 Unclassified excavation.**

**a.** Trenches and foundation pits for structures or structure footings shall be excavated to the lines and grades and elevations shown on the plans. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximate only; and the RPR may approve, in writing, changes in dimensions or elevations of footings necessary to secure a satisfactory foundation.

**b.** Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the RPR. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. When concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed and excavation to final grade shall not be made until immediately before the concrete or reinforcing steel is placed.

**c.** The Contractor shall do all bracing, sheathing, or shoring necessary to perform and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for excavation.

**d.** All bracing, sheathing, or shoring shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage the finished concrete. The cost of removal shall be included in the unit price bid for excavation.

**e.** After each excavation is completed, the Contractor shall notify the RPR. No concrete or reinforcing steel shall be placed until the RPR has approved the depth of the excavation and the character of the foundation material.

#### **752-3.2 Backfilling.**

**a.** After a structure has been completed, backfilling with approved material shall be accomplished by applying the fill-in horizontal layers not to exceed 8 inches (200 mm) in loose depth and compacted. The field density of the compacted material shall be at least 90% of the maximum density for cohesive soils and 95% of the maximum density for noncohesive soils. The maximum density shall be determined in accordance with ASTM D698. The field density shall be determined in accordance with ASTM D1556.

**b.** No backfilling shall be placed against any structure until approved by the RPR. For concrete, approval shall not be given until the concrete has been in place seven (7) days, or until tests establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill or the placement methods.



c. Fill placed around concrete culverts shall be deposited on each side at the same time and to approximately the same elevation. All slopes bounding or within the areas to be backfilled shall be stepped or serrated to prevent wedge action against the structure.

d. Backfill will not be measured for direct payment. Performance of this work shall be considered as a subsidiary obligation of the Contractor, covered under the contract unit price for “unclassified excavation for structures.”

**752-3.3 Weep holes.** Weep holes shall be constructed as shown on the plans.

**752-3.4 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 embankment, 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**

**752-4.1** Precast concrete flared end sections and metal aprons shall be per each end section that is installed and accepted by the RPR. Each size shall be measured separately. All fittings, bedding, and incidentals shall be included as typical in each flared end section or apron being measured.

### **BASIS OF PAYMENT**

**752-5.1** Payment will be made at the contract unit price per each kind of precast concrete flared end section of the type and size designated.

These prices shall be full compensation for furnishing all materials and for all preparation, excavation, and placing the materials, and for all labor, equipment, tools, and incidentals necessary to complete the structure.

Payment will be made under:

Item D-752-5.1	Precast flared end section for 30-inch RCP, class V – per each
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### **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 D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft <sup>3</sup> (600 kN-m/m <sup>3</sup> ))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

### **END OF ITEM D-752**

## Item D-754 Concrete Gutters, Ditches, and Flumes

### DESCRIPTION

**754-1.1** This item shall consist of Portland cement concrete gutters, ditches, and flumes constructed in accordance with these specifications at the specified locations in accordance with the dimensions, lines, and grades as shown on the plans.

### MATERIALS

**754-2.1 Concrete.** Plain and reinforced concrete shall meet the requirements of Item P-501.

**754-2.2 Joints.** Joint filler materials and premolded joint material shall conform to Item P-605.

### CONSTRUCTION METHODS

**754-3.1 Preparing subgrade.** Excavation shall be made to the required width and depth, and the subgrade upon which the item is to be built shall be compacted to a firm uniform grade. All soft and unsuitable material shall be removed and replaced with suitable approved material. When required, a layer of approved granular material, compacted to the thickness indicated on the plans, shall be placed to form a subbase. The underlying course shall be checked and accepted by the RPR before placing and spreading operations are started.

**754-3.2 Placing.** The forms and the mixing, placing, finishing, and curing of concrete shall conform to the requirements of Item P-610 and the following requirements.

The concrete shall be tamped until it is consolidated, and mortar covers the top surface. The surface of the concrete shall be floated smooth and the edges rounded to the radii shown on the plans. Before the concrete is given the final finishing, the surface shall be tested with a 12-foot (3.7-m) straightedge, and any irregularities of more than 1/4 inch (6 mm) in 12-foot (3.7-m) shall be eliminated.

The concrete shall be placed with dummy-grooved joints not to exceed 25 feet (7.5 m) apart and no section shall be less than 4 feet (1.2 m) long.

Expansion joints of the type called for in the plans shall be constructed to replace dummy groove joints at a spacing of approximately 100 feet (30 m). When the gutter is placed next to concrete pavement, expansion joints in the gutter shall be located opposite expansion joints in the pavement. When a gutter abuts a pavement or other structure, an expansion joint shall be placed between the gutter and the other structure.

Forms shall not be removed within 24 hours after the concrete has been placed. Minor defects shall be repaired with mortar containing one (1) part cement and two (2) parts fine aggregate.

Depositing, compacting, and finishing the item shall be conducted to build a satisfactory structure. If any section of concrete is found to be porous, or is otherwise defective, it shall be removed and replaced by the Contractor without additional compensation.

**754-3.3 Backfilling.** After the concrete has set sufficiently, the spaces adjacent to the structure shall be refilled to the required elevation with material specified on the plans and compacted by mechanical equipment to at least 90% of the maximum density as determined by ASTM D698. The in-place density shall be determined in accordance with ASTM D1556.

**754-3.4 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 ordered 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.

Performance of the work described in this section shall be considered as a subsidiary obligation of the Contractor, covered under the contract unit price for the structure.

### **METHOD OF MEASUREMENT**

**754-4.1** Concrete shall be measured by the cubic yard in accordance with the dimensions shown on the plans or ordered by the RPR. No deductions shall be made for the volume occupied by reinforcing steel, anchors, conduits, weep holes, or piling.

**754-4.2** No separate measurement shall be made for reinforcing steel; it is considered incidental to the structural concrete.

**754-4.3** No separate measurements shall be made for concrete joint construction or sealing. All joint sawing, routing, cleaning, backer rod, premolded expansion joint material, and joint sealant is considered incidental to structural concrete construction.

### **BASIS OF PAYMENT**

**754-5.1** The accepted quantities of structural concrete will be paid for at the contract unit price per cubic yard complete in place. This price shall be full compensation for concrete, reinforcing steel, and jointing, 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.

Payment will be made under:

Item D-754-5.1	Structural Concrete, Reinforced (Flatwork) - per cubic yard.
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### **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 D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft <sup>3</sup> (600 kN-m/m <sup>3</sup> ))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

### **END OF ITEM D-754**

## Item T-901 Seeding

### DESCRIPTION

**901-1.1** This item shall consist of soil preparation, seeding, fertilizing, hydraulic stabilized fiber matrix, hydraulic bonded fiber matrix, erosion control blanket, and riprap on the areas shown on the plans or as directed by the RPR in accordance with these specifications.

### MATERIALS

**901-2.1 Seed.** The species and application rates of grass, legume, and cover-crop seed furnished shall be those stipulated herein. Seed shall conform to the requirements of Federal Specification JJJ-S-181, Federal Specification, Seeds, Agricultural.

Seed shall be furnished separately or in mixtures in standard containers labeled in conformance with the Agricultural Marketing Service (AMS) Seed Act and applicable state seed laws with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked for each kind of seed. The Contractor shall furnish the RPR duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within six (6) months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed. Wet, moldy, or otherwise damaged seed will be rejected.

Seeds shall be applied as follows:

#### Seed Properties and Rate of Application

Seed	Application Date Window (Inclusive)	Rate of Application lb/acre (or lb/1,000 S.F.)
MnDOT Seed Mix Residential Turf Grass (RT)	Between April 1-June 1 or July 20-September 20	200 lb/acre
Temporary MnDOT Seed Mix Winter Wheat (WW)	August 1 – October 1	100 lb/acre

Seeding shall be performed during the periods above inclusively, unless otherwise approved by the RPR.

**901-2.2 Lime.** Not required.

**901-2.3 Fertilizer.** Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water-soluble potash. They shall be applied at the rate and to the depth specified and shall meet the requirements of applicable state laws. They shall be furnished in standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon. No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.

The fertilizers may be supplied in one of the following forms:

- a. A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;
- b. A finely-ground fertilizer soluble in water, suitable for application by power sprayers; or
- c. A granular or pellet form suitable for application by blower equipment.

Fertilizers shall be type 3 slow-release commercial fertilizers, analysis 22-5-10 NPK and shall be spread at the rate of 350 lb/acre.

**901-2.4 Hydraulic Stabilized Fiber Matrix (SFM).** Type stabilized fiber matrix hydraulic soil stabilizer shall meet the requirements of MnDOT Specification 3884. Stabilized fiber matrix shall be spread at the rate of 3,000 pounds per acre. Seeding shall be done as a separate operation prior to application of the hydraulic SFM. SFM shall be applied on all turf areas to be restored except the first 10-feet off of all pavement edges and areas designated for RFM.

**901-2.5 Hydraulic Bonded Fiber Matrix (BFM).** Type bonded fiber matrix (BFM) hydraulic soil stabilizer shall meet the requirements of MnDOT Specification 3884. Bonded fiber matrix shall be spread at the rate of 3,500 pounds per acre. Seeding shall be done as a separate operation prior to application of the hydraulic BFM. BFM shall be applied to the first 10-feet off of all pavement. BFM shall be applied in two stages using one half of the material in each stage. Allow the first stage application to dewater before applying the second stage.

**901-2.6 Erosion Control Blanket Category 3N.** Erosion control blanket shall meet the requirements of MnDOT Standard Specifications 2575 Establishing Turf and Controlling Erosion and 3885 Rolled Erosion Control Product, Category 3N (natural netting and natural stitching). Seeding shall be done as a separate operation prior to installation of erosion control blankets.

**901-2.7 Riprap.** Riprap shall meet the requirements of MnDOT Standard Specifications 2511 Riprap and 3601 Riprap Materials, Table 3601-2.1, Random Riprap class III. Geotextile fabric shall be type 5 per MnDOT Specification 3733 Geotextiles, and the granular filter shall meet the requirements of the FAA P-154, subbase specification.

**901-2.8 Soil for repairs.** The soil for filling and topsoiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be relatively free from large stones, roots, stumps, or other materials that will interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the RPR before being placed.

## CONSTRUCTION METHODS

**901-3.1 Advance preparation and cleanup.** After grading of areas has been completed and before applying fertilizer and ground limestone, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage including filling gullies, smoothing irregularities, and repairing other incidental damage.

An area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches (125 mm) as a result of grading operations and, if immediately prior to seeding, the top 3 inches (75 mm) of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and if shaped to the required grade.

When the area to be seeded is sparsely sodded, weedy, barren and unworked, or packed and hard, any grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or otherwise loosened to a depth not less than 5 inches (125 mm). Clods shall be broken and the top 3 inches

(75 mm) of soil shall be worked into a satisfactory seedbed by discing, or by use of cultipackers, rollers, drags, harrows, or other appropriate means.

### **901-3.2 Dry application method.**

**a. Liming.** Not required.

**b. Fertilizing.** Following advance preparations and cleanup fertilizer shall be uniformly spread at the rate that will provide not less than the minimum quantity stated in paragraph 901-2.3.

**c. Seeding.** Grass seed shall be sown at the rate specified in paragraph 901-2.1 immediately after fertilizing. The fertilizer and seed shall be raked within the depth range stated in the special provisions. Seeds of legumes, either alone or in mixtures, shall be inoculated before mixing or sowing, in accordance with the instructions of the manufacturer of the inoculant. When seeding is required other than the seasons shown on the plans or in the special provisions, a cover crop shall be sown by the same methods required for grass and legume seeding.

**d. Rolling.** After the seed has been properly covered, the seedbed shall be immediately compacted by means of an approved lawn roller, weighing 40 to 65 pounds per foot (60 to 97 kg per meter) of width for clay soil (or any soil having a tendency to pack), and weighing 150 to 200 pounds per foot (223 to 298 kg per meter) of width for sandy or light soils.

### **901-3.3 Wet application method.**

**a. General.** The Contractor may elect to apply seed and fertilizer (and lime, if required) by spraying them on the previously prepared seedbed in the form of an aqueous mixture and by using the methods and equipment described herein. The rates of application shall be as specified in the special provisions.

**b. Spraying equipment.** The spraying equipment shall have a container or water tank equipped with a liquid level gauge calibrated to read in increments not larger than 50 gallons (190 liters) over the entire range of the tank capacity, mounted so as to be visible to the nozzle operator. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The unit shall also be equipped with a pressure pump capable of delivering 100 gallons (380 liters) per minute at a pressure of 100 lb / sq inches (690 kPa). The pump shall be mounted in a line that will recirculate the mixture through the tank whenever it is not being sprayed from the nozzle. All pump passages and pipelines shall be capable of providing clearance for 5/8-inch (16 mm) solids. The power unit for the pump and agitator shall have control mounted so as to be accessible to the nozzle operator. There shall be an indicating pressure gauge connected and mounted immediately at the back of the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture delivered to the nozzle. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For the case of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings.

In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

**c. Mixtures.** Lime, if required, shall be applied separately, in the quantity specified, prior to the fertilizing and seeding operations. Not more than 220 pounds (100 kg) of lime shall be added to and

mixed with each 100 gallons (380 liters) of water. Seed and fertilizer shall be mixed together in the specified relative proportions, but not more than a total of 220 pounds (100 kg) of these combined solids shall be added to and mixed with each 100 gallons (380 liters) of water.

All water used shall be obtained from freshwater sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. The Contractor shall identify to the RPR all sources of water at least two (2) weeks prior to use. The RPR may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the RPR following such tests.

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 missing and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of the 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.

**901-3.5 Erosion Control Blanket Category 3N.** Place the blankets within 24 hours after sowing of the seed on that area. Installation shall conform to MnDOT Specification 2575.3.G.2. Water the blankets immediately after placement at a rate of at least 3,000 gal per acre. Control erosion and establish a permanent vegetative cover as approved by the RPR. Restore areas with seeding failure or erosion during the maintenance period.

**901-3.6 Riprap.** Excavate and shape the foundation for the riprap with filter material to the cross sections shown on the plans. Compact loose subgrade material before placing the geotextile fabric. Ensure the subgrade is smooth and free of stones, sticks, and other debris or irregularities that might puncture the fabric. Place the fabric with the longest dimension parallel to the direction of water flow, overlapping

splices and joints at least 18 inches. Bury the upgrade edges of the fabric a minimum of 6 inches to direct water flow over the fabric and prevent undermining. Spread granular filter material to a minimum thickness of 6 inches over the prepared foundation and geotextile fabric without tearing, punching, or shifting the fabric.

Position random riprap to provide a uniform distribution of the various sizes of stone and produces a dense, well-keyed layer of stones with the least practical voids volume. Level the surface flush with the surrounding ground to produce a reasonably uniform appearance and the thickness required by the plans.

## METHOD OF MEASUREMENT

**901-4.1** The quantity of seeding to be paid for shall be the number of acres measured on the ground surface, completed and accepted. Soil preparation, seeding, and fertilizing will not be measured separately; all shall be included in the unit price for seeding.

**901-4.2** The quantity of hydraulic stabilized fiber matrix and hydraulic bonded fiber matrix will be measured by the number of square yards on the ground surface, completed and accepted, taking into account the type of material used and the specified application rate.

**901-4.3** The quantity of rolled erosion control products will be measured by the number of square yards on the ground surface, completed and accepted. Overlapped portions in the application areas will not be included in the overall measurement.

**901-4.4** The quantity of random riprap will be measured separately for each class of riprap by the number of cubic yards based on the actual ground surface dimensions and thickness shown on the plans, completed and accepted. Measurement shall not include the quantity of materials placed without authorization beyond the dimensions shown in the plans. Granular filter material and geotextile fabric required to be placed underneath the riprap shall not be measured separately for payment and shall be included in the unit price for random riprap.

## BASIS OF PAYMENT

**901-5.1** Payment for seeding shall be made at the contract unit price per acre or fraction thereof for each type of mixture, which price includes soil preparation, seeding and fertilizing, of 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. Soil preparation and fertilizer shall be considered incidental to seeding.

**901-5.2** Payment for hydraulic stabilized fiber matrix, hydraulic bonded fiber matrix, and erosion control blanket shall be made at the contract unit price per square yard, 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.

**901-5.3** Payment for random riprap shall be made at the contract unit price per cubic yard, which price and payment shall be full compensation for furnishing and placing all material (including granular filter material and geotextile fabric) and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item.

Item T-901-5.1a	Seeding, MnDOT mixture Residential Turf Grass (RT) - per acre
Item T-901-5.1b	Seeding, MnDOT mixture Winter Wheat (WW) - per acre
Item T-901-5.2a	Hydraulic stabilized fiber matrix (SFM) - per square yard
Item T-901-5.2b	Hydraulic bonded fiber matrix (BFM) - per square yard



Item T-901-5.2c	Erosion control blanket, category 3N - per square yard
Item T-901-5.3	Random riprap class III - per cubic 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.

ASTM International (ASTM)

ASTM C602                      Standard Specification for Agricultural Liming Materials

Federal Specifications (FED SPEC)

FED SPEC                      JJJ-S-181, Federal Specification, Seeds, Agricultural

Advisory Circulars (AC)

AC 150/5200-33              Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

### **END OF ITEM T-901**

## Item T-905 Topsoil

### DESCRIPTION

**905-1.1** This item shall consist of preparing the ground surface for topsoil application, removing topsoil from designated stockpiles or areas to be stripped on the site or from approved sources off the site, and placing and spreading the topsoil on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the RPR.

### MATERIALS

**905-2.1 Topsoil.** Topsoil shall be the surface layer of soil with no admixture of refuse or any material toxic to plant growth, and it shall be reasonably free from subsoil and stumps, roots, brush, stones (2 inches (50 mm) or more in diameter), and clay lumps or similar objects. Brush and other vegetation that will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary sod and herbaceous growth such as grass and weeds are not to be removed but shall be thoroughly broken up and intermixed with the soil during handling operations. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means, shall be removed. The topsoil or soil mixture, unless otherwise specified or approved, shall have a pH range of approximately 5.5 pH to 7.6 pH, when tested in accordance with the methods of testing of the Association of Official Agricultural Chemists in effect on the date of invitation of bids. The organic content shall be not less than 3% nor more than 20% as determined by the wet-combustion method (chromic acid reduction). There shall be not less than 20% nor more than 80% of the material passing the 200 mesh (75  $\mu$ m) sieve as determined by the wash test in accordance with ASTM C117.

Natural topsoil may be amended by the Contractor with approved materials and methods to meet the above specifications.

**905-2.2 Inspection and tests.** Within 10 days following acceptance of the bid, the RPR shall be notified of the source of topsoil to be furnished by the Contractor. The topsoil shall be inspected to determine if the selected soil meets the requirements specified and to determine the depth to which stripping will be permitted. At this time, the Contractor may be required to take representative soil samples from several locations within the area under consideration and to the proposed stripping depths, for testing purposes as specified in paragraph 905-2.1.

### CONSTRUCTION METHODS

**905-3.1 General.** Areas to be topsoiled shall be shown on the plans. If topsoil is available on the site, the location of the stockpiles or areas to be stripped of topsoil and the stripping depths shall be shown on the plans.

Suitable equipment necessary for proper preparation and treatment of the ground surface, stripping of topsoil, and for the handling and placing of all required materials shall be on hand, in good condition, and approved by the RPR before the various operations are started.

**905-3.2 Preparing the ground surface.** Immediately prior to dumping and spreading the topsoil on any area, the surface shall be loosened by discs or spike-tooth harrows, or by other means approved by the RPR, to a minimum depth of 2 inches (50 mm) to facilitate bonding of the topsoil to the covered subgrade soil. The surface of the area to be topsoiled shall be cleared of all stones larger than 2 inches (50 mm) in any diameter and all litter or other material which may be detrimental to proper bonding, the rise of

capillary moisture, or the proper growth of the desired planting. Limited areas, as shown on the plans, which are too compact to respond to these operations shall receive special scarification.

Grades on the area to be topsoiled, which have been established by others as shown on the plans, shall be maintained in a true and even condition. Where grades have not been established, the areas shall be smooth-graded and the surface left at the prescribed grades in an even and compacted condition to prevent the formation of low places or pockets where water will stand.

**905-3.3 Obtaining topsoil.** Prior to the stripping of topsoil from designated areas, any vegetation, briars, stumps and large roots, rubbish or stones found on such areas, which may interfere with subsequent operations, shall be removed using methods approved by the RPR. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means shall be removed.

When suitable topsoil is available on the site, the Contractor shall remove this material from the designated areas and to the depth as directed by the RPR. The topsoil shall be spread on areas already tilled and smooth-graded or stockpiled in areas approved by the RPR. Any topsoil stockpiled by the Contractor shall be rehandled and placed without additional compensation. Any topsoil that has been stockpiled on the site by others, and is required for topsoil purposes, shall be removed and placed by the Contractor. The sites of all stockpiles and areas adjacent thereto which have been disturbed by the Contractor shall be graded if required and put into a condition acceptable for seeding.

When suitable topsoil is secured off the airport site, the Contractor shall locate and obtain the supply, subject to the approval of the RPR. The Contractor shall notify the RPR sufficiently in advance of operations in order that necessary measurements and tests can be made. The Contractor shall remove the topsoil from approved areas and to the depth as directed. The topsoil shall be hauled to the site of the work and placed for spreading or spread as required. Any topsoil hauled to the site of the work and stockpiled shall be rehandled and placed without additional compensation.

**905-3.4 Placing topsoil.** The topsoil shall be evenly spread on the prepared areas to a uniform depth of 6 inches (50 mm) after compaction, unless otherwise shown on the plans or stated in the special provisions. Spreading shall not be done when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the work. Spreading shall be carried on so that turfing operations can proceed with a minimum of soil preparation or tilling.

After spreading, any large, stiff clods and hard lumps shall be broken with a pulverizer or by other effective means, and all stones or rocks (2 inches (50 mm) or more in diameter), roots, litter, or any foreign matter shall be raked up and disposed of by the Contractor. After spreading is completed, the topsoil shall be satisfactorily compacted by rolling with a cultipacker or by other means approved by the RPR. The compacted topsoil surface shall conform to the required lines, grades, and cross-sections. Any topsoil or other dirt falling upon pavements as a result of hauling or handling of topsoil shall be promptly removed.

## **METHOD OF MEASUREMENT**

**905-4.1** Topsoil obtained on the site shall be measured by the number of acres of topsoil measured on the ground surface in its final position, completed, and accepted. Topsoil shall be placed at a minimum depth of 6 inches over all areas to be seeded.

## **BASIS OF PAYMENT**

**905-5.1** Payment will be made at the contract unit price per acre or fraction thereof for topsoil (obtained on the site or removed from stockpile). This price shall be full compensation for furnishing all materials

and for all preparation, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item T-905-5.1	Topsoil Respread (Obtained on Site or Removed from Stockpile) - per acre.
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### **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 C117	Materials Finer than 75 $\mu\text{m}$ (No. 200) Sieve in Mineral Aggregates by Washing
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Advisory Circulars (AC)

AC 150/5200-33	Hazardous Wildlife Attractants on or Near Airports
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FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

**END OF ITEM T-905**

## Item L-108 Underground Power Cable for Airports

### DESCRIPTION

**108-1.1** This item shall consist of furnishing and installing power cables that are direct buried and furnishing and/or installing power cables within conduit or duct banks per these specifications at the locations shown on the plans. It includes excavation and backfill of trench for direct-buried cables only. Also included are the installation of counterpoise wires, ground wires, ground rods and connections, cable splicing, cable marking, cable testing, and all incidentals necessary to place the cable in operating condition as a completed unit to the satisfaction of the RPR. This item shall not include the installation of duct banks or conduit, trenching and backfilling for duct banks or conduit, or furnishing or installation of cable for FAA owned/operated facilities.

### EQUIPMENT AND MATERIALS

#### 108-2.1 General.

**a.** Airport lighting equipment and materials covered by advisory circulars (AC) shall be approved under the Airport Lighting Equipment Certification Program per AC 150/5345-53, current version.

**b.** All other equipment and materials covered by other referenced specifications shall be subject to acceptance through the manufacturer's certification of compliance with the applicable specification, when requested by the RPR.

**c.** Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials that comply with these specifications at the Contractor's cost.

**d.** All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are of as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

**e.** The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be neatly bound in a properly sized 3-ring binder, tabbed by specification section, or electronically submitted in pdf format. The RPR reserves the right to reject any and all equipment, materials, or procedures that do not meet the system design and the standards specified in this document.

**f.** All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner. The Contractor shall maintain a minimum insulation resistance in accordance with paragraph 108-3.10e with isolation transformers connected in new circuits and new segments of existing circuits through the end of the contract warranty period when tested in

accordance with AC 150/5340-26, *Maintenance Airport Visual Aid Facilities*, paragraph 5.1.3.1, Insulation Resistance Test.

**108-2.2 Cable.** Underground cable for airfield lighting facilities (runway and taxiway lights and signs) shall conform to the requirements of AC 150/5345-7, Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits latest edition. Conductors for use on 6.6 ampere primary airfield lighting series circuits shall be single conductor, seven strand, #8 American wire gauge (AWG), L-824 Type C, 5,000 volts, non-shielded, with ethylene propylene insulation. Conductors for use on 20 ampere primary airfield lighting series circuits shall be single conductor, seven strand, 6 AWG, L-824 Type C, 5,000 volts, non-shielded, with ethylene propylene insulation. L-824 conductors for use on the L-830 secondary of airfield lighting series circuits shall be sized in accordance with the manufacturer's recommendations. All other conductors shall comply with FAA and National Electric Code (NEC) requirements. Conductor sizes noted above shall not apply to leads furnished by manufacturers on airfield lighting transformers and fixtures.

Wire for electrical circuits up to 600 volts shall comply with Specification L-824 and/or Commercial Item Description A-A-59544A and shall be type THWN-2, 75°C for installation in conduit and RHW-2, 75°C for direct burial installations. Conductors for parallel (voltage) circuits shall be type and size and installed in accordance with NFPA-70, National Electrical Code.

Unless noted otherwise, all 600-volt and less non-airfield lighting conductor sizes are based on a 75°C, THWN-2, 600-volt insulation, copper conductors, not more than three single insulated conductors, in raceway, in free air. The conduit/duct sizes are based on the use of THWN-2, 600-volt insulated conductors. The Contractor shall make the necessary increase in conduit/duct sizes for other types of wire insulation. In no case shall the conduit/duct size be reduced. The minimum power circuit wire size shall be #12 AWG.

Conductor sizes may have been adjusted due to voltage drop or other engineering considerations. Equipment provided by the Contractor shall be capable of accepting the quantity and sizes of conductors shown in the Contract Documents. All conductors, pigtails, cable step-down adapters, cable step-up adapters, terminal blocks and splicing materials necessary to complete the cable termination/splice shall be considered incidental to the respective pay items provided.

Cable type, size, number of conductors, strand and service voltage shall be as specified in the Contract Document.

**108-2.3 Bare copper wire (counterpoise, bare copper wire ground and ground rods).** Wire for counterpoise or ground installations for airfield lighting systems shall be No. 6 AWG bare solid copper wire for counterpoise and/or No. 6 AWG insulated stranded for grounding bond wire per ASTM B3 and ASTM B8 and shall be bare copper wire or tinned copper wire per ASTM B33. For voltage powered circuits, the equipment grounding conductor shall comply with NEC Article 250.

Ground rods shall be -clad steel. The ground rods shall be of the length and diameter specified on the plans, but in no case be less than 10 feet (2.54 m) long and 3/4 inch (19 mm) in diameter.

**108-2.4 Cable connections.** In-line connections or splices of underground primary cables shall be of the type called for on the plans and shall be one of the types listed below. No separate payment will be made for cable connections.

**a. The cast splice.** A cast splice, employing a plastic mold and using epoxy resin equivalent to that manufactured by 3M™ Company, "Scotchcast" Kit No. 82-B, or an approved equivalent, used for potting the splice is acceptable.

**b. The field-attached plug-in splice.** Field-attached plug-in splices shall be installed as shown on the plans. The Contractor shall determine the outside diameter of the cable to be spliced and furnish

appropriately sized connector kits and/or adapters. Tape or heat shrink tubing with integral sealant shall be in accordance with the manufacturer's requirements. Primary Connector Kits manufactured by Amerace, "Super Kit", Integro "Complete Kit", or approved equal is acceptable.

**c. The factory-molded plug-in splice.** Specification for L-823 Connectors, Factory-Molded to Individual Conductors, is acceptable.

**d. The taped or heat-shrink splice.** Taped splices employing field-applied rubber, or synthetic rubber tape covered with plastic tape is acceptable. The rubber tape should meet the requirements of ASTM D4388, and the plastic tape should comply with Military Specification MIL-I-24391 or Commercial Item Description A-A-55809. Heat shrinkable tubing shall be heavy-wall, self-sealing tubing rated for the voltage of the wire being spliced and suitable for direct-buried installations. The tubing shall be factory coated with a thermoplastic adhesive-sealant that will adhere to the insulation of the wire being spliced forming a moisture- and dirt-proof seal. Additionally, heat shrinkable tubing for multi-conductor cables, shielded cables, and armored cables shall be factory kits that are designed for the application. Heat shrinkable tubing and tubing kits shall be manufactured by Tyco Electronics/ Raychem Corporation, Energy Division, or approved equivalent.

In all the above cases, connections of cable conductors shall be made using crimp connectors using a crimping tool designed to make a complete crimp before the tool can be removed. All L-823/L-824 splices and terminations shall be made per the manufacturer's recommendations and listings.

All connections of counterpoise, grounding conductors and ground rods shall be made by the exothermic process or approved equivalent, except that a light base ground clamp connector shall be used for attachment to the light base. All exothermic connections shall be made per the manufacturer's recommendations and listings.

**108-2.5 Splicer qualifications.** Every airfield lighting cable splicer shall be qualified in making airport cable splices and terminations on cables rated at or above 5,000 volts AC. The Contractor shall submit to the RPR proof of the qualifications of each proposed cable splicer for the airport cable type and voltage level to be worked on. Cable splicing/terminating personnel shall have a minimum of three (3) years continuous experience in terminating/splicing medium voltage cable.

**108-2.6 Concrete.** Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

**108-2.7 Flowable backfill.** Flowable material used to backfill trenches for power cable trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

**108-2.8 Cable identification tags.** Cable identification tags shall be made from a non-corrosive material with the circuit identification stamped or etched onto the tag. The tags shall be of the type as detailed on the plans.

**108-2.9 Tape.** Electrical tapes shall be Scotch™ Electrical Tapes –Scotch™ 88 (1-1/2 inch (38 mm) wide) and Scotch™ 130C® linerless rubber splicing tape (2-inch (50 mm) wide), as manufactured by the Minnesota Mining and Manufacturing Company (3M™), or an approved equivalent.

**108-2.10 Electrical coating.** Electrical coating shall be Scotchkote™ as manufactured by 3M™, or an approved equivalent.

**108-2.11 Existing circuits.** Whenever the scope of work requires connection to an existing circuit, the existing circuit's insulation resistance shall be tested, in the presence of the RPR. The test shall be performed per this item and prior to any activity that will affect the respective circuit. The Contractor shall record the results on forms acceptable to the RPR. When the work affecting the circuit is complete, the circuit's insulation resistance shall be checked again, in the presence of the RPR. The Contractor shall record the results on forms acceptable to the RPR. The second reading shall be equal to or greater than the

first reading or the Contractor shall make the necessary repairs to the existing circuit to bring the second reading above the first reading. All repair costs including a complete replacement of the L-823 connectors, L-830 transformers and L-824 cable, if necessary, shall be borne by the Contractor. All test results shall be submitted in the Operation and Maintenance (O&M) Manual.

**108-2.12 Detectable warning tape.** Plastic, detectable, American Public Works Association (APWA) Red (electrical power lines, cables, conduit and lighting cable) with continuous legend tape shall be polyethylene film with a metalized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item. Detectable warning tape for communication cables shall be orange. Detectable warning tape color code shall comply with the APWA Uniform Color Code.

## CONSTRUCTION METHODS

**108-3.1 General.** The Contractor shall install the specified cable at the approximate locations indicated on the plans. Unless otherwise shown on the plans, all cable required to cross under pavements expected to carry aircraft loads shall be installed in concrete encased duct banks. Cables shall be run without splices, from fixture to fixture.

Cable connections between lights will be permitted only at the light locations for connecting the underground cable to the primary leads of the individual isolation transformers. The Contractor shall be responsible for providing cable in continuous lengths for home runs or other long cable runs without connections unless otherwise authorized in writing by the RPR or shown on the plans.

In addition to connectors being installed at individual isolation transformers, L-823 cable connectors for maintenance and test points shall be installed at locations shown on the plans. Cable circuit identification markers shall be installed on both sides of the L-823 connectors installed and on both sides of slack loops where a future connector would be installed.

Provide not less than 3 feet (1 m) of cable slack on each side of all connections, isolation transformers, light units, and at points where cable is connected to field equipment. Where provisions must be made for testing or for future above grade connections, provide enough slack to allow the cable to be extended at least one foot (30 cm) vertically above the top of the access structure. This requirement also applies where primary cable passes through empty light bases, junction boxes, and access structures to allow for future connections, or as designated by the RPR.

Primary airfield lighting cables installed shall have cable circuit identification markers attached on both sides of each L-823 connector and on each airport lighting cable entering or leaving cable access points, such as manholes, hand holes, pull boxes, junction boxes, etc. Markers shall be of sufficient length for imprinting the cable circuit identification legend on one line, using letters not less than 1/4 inch (6 mm) in size. The cable circuit identification shall match the circuits noted on the construction plans.

**108-3.2 Installation in duct banks or conduits.** This item includes the installation of the cable in duct banks or conduit per the following paragraphs. The maximum number and voltage ratings of cables installed in each single duct or conduit, and the current-carrying capacity of each cable shall be per the latest version of the National Electric Code, or the code of the local agency or authority having jurisdiction.

The Contractor shall make no connections or splices of any kind in cables installed in conduits or duct banks.

Unless otherwise designated in the plans, where ducts are in tiers, use the lowest ducts to receive the cable first, with spare ducts left in the upper levels. Check duct routes prior to construction to obtain assurance that the shortest routes are selected, and that any potential interference is avoided.



Duct banks or conduits shall be installed as a separate item per Item L-110, Airport Underground Electrical Duct Banks and Conduit. The Contractor shall run a mandrel through duct banks or conduit prior to installation of cable to ensure that the duct bank or conduit is open, continuous and clear of debris. The mandrel size shall be compatible with the conduit size. The Contractor shall swab out all conduits/ducts and clean light bases, manholes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed, the light bases and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, light bases, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be re-cleaned at the Contractor's expense. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

The cable shall be installed in a manner that prevents harmful stretching of the conductor, damage to the insulation, or damage to the outer protective covering. The ends of all cables shall be sealed with moisture-seal tape providing moisture-tight mechanical protection with minimum bulk, or alternately, heat shrinkable tubing before pulling into the conduit and it shall be left sealed until connections are made. Where more than one cable is to be installed in a conduit, all cables shall be pulled in the conduit at the same time. The pulling of a cable through duct banks or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes. Maximum pulling tensions shall not exceed the cable manufacturer's recommendations. A non-hardening cable-pulling lubricant recommended for the type of cable being installed shall be used where required.

The Contractor shall submit the recommended pulling tension values to the RPR prior to any cable installation. If required by the RPR, pulling tension values for cable pulls shall be monitored by a dynamometer in the presence of the RPR. Cable pull tensions shall be recorded by the Contractor and reviewed by the RPR. Cables exceeding the maximum allowable pulling tension values shall be removed and replaced by the Contractor at the Contractor's expense.

The manufacturer's minimum bend radius or NEC requirements (whichever is more restrictive) shall apply. Cable installation, handling and storage shall be per manufacturer's recommendations. During cold weather, particular attention shall be paid to the manufacturer's minimum installation temperature. Cable shall not be installed when the temperature is at or below the manufacturer's minimum installation temperature. At the Contractor's option, the Contractor may submit a plan, for review by the RPR, for heated storage of the cable and maintenance of an acceptable cable temperature during installation when temperatures are below the manufacturer's minimum cable installation temperature.

Cable shall not be dragged across base can or manhole edges, pavement or earth. When cable must be coiled, lay cable out on a canvas tarp or use other appropriate means to prevent abrasion to the cable jacket.

**108-3.3 Installation of direct-buried cable in trenches.** Unless otherwise specified, the Contractor shall not use a cable plow for installing the cable. Cable shall be unreeled uniformly in place alongside or in the trench and shall be carefully placed along the bottom of the trench. The cable shall not be unreeled and pulled into the trench from one end. Slack cable sufficient to provide strain relief shall be placed in the trench in a series of S curves. Sharp bends or kinks in the cable shall not be permitted.

Where cables must cross over each other, a minimum of 3 inches (75 mm) vertical displacement shall be provided with the topmost cable depth at or below the minimum required depth below finished grade.

**a. Trenching.** Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored. Trenches for cables may be excavated manually or with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of surface is disturbed. Graders shall not be used to excavate the trench with their blades. The bottom surface of trenches shall be essentially smooth and free from coarse aggregate. Unless otherwise specified, cable

trenches shall be excavated to a minimum depth of 18 inches (0.5 m) below finished grade per NEC Table 300.5, except as follows:

- When off the airport or crossing under a roadway or driveway, the minimum depth shall be 36 inches (91 cm) unless otherwise specified.
- Minimum cable depth when crossing under a railroad track, shall be 42 inches (1 m) unless otherwise specified.

The Contractor shall excavate all cable trenches to a width not less than 6 inches (150 mm). Unless otherwise specified on the plans, all cables in the same location and running in the same general direction shall be installed in the same trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required cable depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve. Flowable backfill material may alternatively be used.

Duct bank or conduit markers temporarily removed for trench excavations shall be replaced as required.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. The installation of a new cable where such crossings must occur shall proceed as follows:

(1) Existing cables shall be located manually. Unearthed cables shall be inspected to ensure absolutely no damage has occurred.

(2) Trenching, etc., in cable areas shall then proceed, with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair or replacement.

**b. Backfilling.** After the cable has been installed, the trench shall be backfilled. The first layer of backfill in the trench shall encompass all cables; be 3 inches (75 mm) deep, loose measurement; and shall be either earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve. This layer shall not be compacted. The second layer shall be 5 inches (125 mm) deep, loose measurement, and shall contain no particles that would be retained on a one inch (25.0 mm) sieve. The remaining third and subsequent layers of backfill shall not exceed 8 inches (20 cm) of loose measurement and be excavated or imported material and shall not contain stone or aggregate larger than 4 inches (100 mm) maximum diameter.

The second and subsequent layers shall be thoroughly tamped and compacted to at least the density of the adjacent material. If the cable is to be installed in locations or areas where other compaction requirements are specified (under pavements, embankments, etc.) the backfill compaction shall be to a minimum of 100 percent of ASTM D1557.

Trenches shall not contain pools of water during backfilling operations. The trench shall be completely backfilled and tamped level with the adjacent surface, except that when turf is to be established over the trench, the backfilling shall be stopped at an appropriate depth consistent with the type of turfing operation to be accommodated. A proper allowance for settlement shall also be provided. Any excess excavated material shall be removed and disposed of per the plans and specifications.

Underground electrical warning (caution) tape shall be installed in the trench above all direct-buried cable. The contractor shall submit a sample of the proposed warning tape for acceptance by the RPR. If not shown on the plans, the warning tape shall be located 6 inches (150 mm) above the direct-buried cable or the counterpoise wire if present. A 3-6 inch (75 - 150 mm) wide polyethylene film detectable tape, with a metalized foil core, shall be installed above all direct buried cable or counterpoise. The tape shall be of the color and have a continuous legend as indicated on the plans. The tape shall be installed 8 inches (200 mm) minimum below finished grade.

**c. Restoration.** Following restoration of all trenching near airport movement surfaces, the Contractor shall visually inspect the area for foreign object debris (FOD) and remove any that is found. Where soil and sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by work shall be restored to their original condition. The restoration shall include the topsoiling, fertilizing, seeding, and mulching as shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. When trenching is through paved areas, restoration shall be equal to existing conditions. If the cable is to be installed in locations or areas where other compaction requirements are specified (under pavements, embankments, etc.) the backfill compaction shall be to a minimum of 100 percent of ASTM D698. Restoration shall be considered incidental to the pay item of which it is a component part.

**108-3.4 Cable markers for direct-buried cable.** The location of direct buried circuits shall be marked by a concrete slab marker, 2 feet (60 cm) square and 4-6 inches (10 - 15 cm) thick, extending approximately one inch (25 mm) above the surface. Each cable run from a line of lights and signs to the equipment vault shall be marked at approximately every 200 feet (61 m) along the cable run, with an additional marker at each change of direction of cable run. All other direct-buried cables shall be marked in the same manner. Cable markers shall be installed directly above the cable. The Contractor shall impress the word "CABLE" and directional arrows on each cable marking slab. The letters shall be approximately 4 inches (100 mm) high and 3 inches (75 mm) wide, with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep. Stencils shall be used for cable marker lettering; no hand lettering shall be permitted.

At the location of each underground cable connection/splice, except at lighting units, or isolation transformers, a concrete marker slab shall be installed to mark the location of the connection/splice. The Contractor shall impress the word "SPLICE" on each slab. The Contractor also shall impress additional circuit identification symbols on each slab as directed by the RPR. All cable markers and splice markers shall be painted international orange. Paint shall be specifically manufactured for uncured exterior concrete. After placement, all cable or splice markers shall be given one coat of high-visibility aviation orange paint as approved by the RPR. Furnishing and installation of cable markers is incidental to the respective cable pay item.

**108-3.5 Splicing.** Connections of the type shown on the plans shall be made by experienced personnel regularly engaged in this type of work and shall be made as follows:

**a. Cast splices.** These shall be made by using crimp connectors for jointing conductors. Molds shall be assembled, and the compound shall be mixed and poured per the manufacturer's instructions and to the satisfaction of the RPR.

**b. Field-attached plug-in splices.** These shall be assembled per the manufacturer's instructions. These splices shall be made by plugging directly into mating connectors. The joint where the connectors come together shall be finished by one of the following methods: (1) wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint (2) Covered with heat shrinkable tubing with integral sealant extending at least 1-1/2 inches (38 mm) on each side of the joint or (3) On connector kits equipped with water seal flap; roll-over water seal flap to sealing position on mating connector.

**c. Factory-molded plug-in splices.** These shall be made by plugging directly into mating connectors. The joint where the connectors come together shall be finished by one of the following methods: (1) Wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint. (2) Covered with heat shrinkable tubing with integral sealant extending at least 1-1/2 inches (38 mm) on each side of the joint. or (3) On connector kits so equipped with water seal flap; roll-over water seal flap to sealing position on mating connector.

**d. Taped or heat-shrink splices.** A taped splice shall be made in the following manner:

Bring the cables to their final position and cut so that the conductors will butt. Remove insulation and jacket allowing bare conductors of proper length to fit compression sleeve connector with 1/4 inch (6 mm) of bare conductor on each side of the connector. Prior to splicing, the two ends of the cable insulation shall be penciled using a tool designed specifically for this purpose and for cable size and type. Do not use emery paper on splicing operation since it contains metallic particles. The copper conductors shall be thoroughly cleaned. Join the conductors by inserting them equidistant into the compression connection sleeve. Crimp conductors firmly in place with a crimping tool that requires a complete crimp before tool can be removed. Test the crimped connection by pulling on the cable. Scrape the insulation to assure that the entire surface over which the tape will be applied (plus 3 inches (75 mm) on each end) is clean. After scraping, wipe the entire area with a clean lint-free cloth. Do not use solvents.

Apply high-voltage rubber tape one-half lapped over bare conductor. This tape should be tensioned as recommended by the manufacturer. Voids in the connector area may be eliminated by highly elongating the tape, stretching it just short of its breaking point. The manufacturer's recommendation for stretching tape during splicing shall be followed. Always attempt to exactly half-lap to produce a uniform buildup. Continue buildup to 1-1/2 times cable diameter over the body of the splice with ends tapered a distance of approximately one inch (25 mm) over the original jacket. Cover rubber tape with two layers of vinyl pressure-sensitive tape one-half lapped. Do not use glyptol or lacquer over vinyl tape as they react as solvents to the tape. No further cable covering or splice boxes are required.

Heat shrinkable tubing shall be installed following manufacturer's instructions. Direct flame heating shall not be permitted unless recommended by the manufacturer. Cable surfaces within the limits of the heat-shrink application shall be clean and free of contamination prior to application.

**e. Assembly.** Surfaces of equipment or conductors being terminated or connected shall be prepared in accordance with industry standard practice and manufacturer's recommendations. All surfaces to be connected shall be thoroughly cleaned to remove all dirt, grease, oxides, nonconductive films, or other foreign material. Paints and other nonconductive coatings shall be removed to expose base metal. Clean all surfaces at least 1/4 inch (6.4 mm) beyond all sides of the larger bonded area on all mating surfaces. Use a joint compound suitable for the materials used in the connection. Repair painted/coated surface to original condition after completing the connection.

**108-3.6 Bare counterpoise wire installation for lightning protection and grounding.** If shown on the plans or included in the job specifications, bare solid [6 AWG ] copper counterpoise wire shall be installed for lightning protection of the underground cables. The RPR shall select one of two methods of lightning protection for the airfield lighting circuit based upon sound engineering practice and lightning strike density.

**a. Equipotential.** Not used.

**b. Isolation.** Counterpoise size is selected by the RPR. The isolation method is an alternate method for use only with edge lights installed in turf and stabilized soils and raceways installed parallel to and adjacent to the edge of the pavement. NFPA 780 uses 15 feet to define "adjacent to".

The counterpoise conductor shall be installed halfway between the pavement edge and the light base, mounting stake, raceway, or cable being protected.

The counterpoise conductor shall be installed 8 inches (203 mm) minimum below grade. The counterpoise is not connected to the light base or mounting stake. An additional grounding electrode is required at each light base or mounting stake. The grounding electrode is bonded to the light base or mounting stake with a 6 AWG solid copper conductor.

See AC 150/5340-30, Design and Installation Details for Airport Visual Aids and NFPA 780, Standard for the Installation of Lightning Protection Systems, Chapter 11, for a detailed description of the Isolation Method of lightning protection.

**c. Common Installation requirements.** When a metallic light base is used, the grounding electrode shall be bonded to the metallic light base or mounting stake with a No. 6 AWG bare, annealed or soft drawn, solid copper conductor.

When a nonmetallic light base is used, the grounding electrode shall be bonded to the metallic light fixture or metallic base plate with a No. 6 AWG bare, annealed or soft drawn, solid copper conductor.

Grounding electrodes may be rods, ground dissipation plates, radials, or other electrodes listed in the NFPA 70 (NEC) or NFPA 780.

Where raceway is installed by the directional bore, jack and bore, or other drilling method, the counterpoise conductor shall be permitted to be installed concurrently with the directional bore, jack and bore, or other drilling method raceway, external to the raceway or sleeve.

The counterpoise wire shall also be exothermically welded to ground rods installed as shown on the plans but not more than 500 feet (150 m) apart around the entire circuit. The counterpoise system shall be continuous and terminated at the transformer vault or at the power source. It shall be securely attached to the vault or equipment external ground ring or other made electrode-grounding system. The connections shall be made as shown on the plans and in the specifications.

Where an existing airfield lighting system is being extended or modified, the new counterpoise conductors shall be interconnected to existing counterpoise conductors at each intersection of the new and existing airfield lighting counterpoise systems.

**d. Parallel Voltage Systems.** Provide grounding and bonding in accordance with NFPA 70, National Electrical Code.

**108-3.7 Counterpoise installation above multiple conduits and duct banks.** Counterpoise wires shall be installed above multiple conduits/duct banks for airfield lighting cables, with the intent being to provide a complete area of protection over the airfield lighting cables. When multiple conduits and/or duct banks for airfield cable are installed in the same trench, the number and location of counterpoise wires above the conduits shall be adequate to provide a complete area of protection measured 45 degrees each side of vertical.

Where duct banks pass under pavement to be constructed in the project, the counterpoise shall be placed above the duct bank. Reference details on the construction plans.

**108-3.8 Counterpoise installation at existing duct banks.** When airfield lighting cables are indicated on the plans to be routed through existing duct banks, the new counterpoise wiring shall be terminated at ground rods at each end of the existing duct bank where the cables being protected enter and exit the duct bank. The new counterpoise conductor shall be bonded to the existing counterpoise system.

**108-3.9 Exothermic bonding.** Bonding of counterpoise wire shall be by the exothermic welding process or equivalent method accepted by the RPR. Only personnel experienced in and regularly engaged in this type of work shall make these connections.

Contractor shall demonstrate to the satisfaction of the RPR, the welding kits, materials and procedures to be used for welded connections prior to any installations in the field. The installations shall comply with the manufacturer's recommendations and the following:

- a. All slag shall be removed from welds.
- b. Using an exothermic weld to bond the counterpoise to a lug on a galvanized light base is not recommended unless the base has been specially modified. Consult the manufacturer's installation directions for proper methods of bonding copper wire to the light base. See AC 150/5340-30 for galvanized light base exception.
- c. If called for in the plans, all buried copper and weld material at weld connections shall be thoroughly coated with 6 mm of 3M™ Scotchkote™, or approved equivalent, or coated with coal tar Bitumastic® material to prevent surface exposure to corrosive soil or moisture.

**108-3.10 Testing.** The Contractor shall furnish all necessary equipment and appliances for testing the airport electrical systems and underground cable circuits before and after installation. The Contractor shall perform all tests in the presence of the RPR. The Contractor shall demonstrate the electrical characteristics to the satisfaction of the RPR. All costs for testing are incidental to the respective item being tested. For phased projects, the tests must be completed by phase. The Contractor must maintain the test results throughout the entire project as well as during the warranty period that meet the following:

- a. Earth resistance testing methods shall be submitted to the RPR for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the RPR. All such testing shall be at the sole expense of the Contractor.
- b. Should the counterpoise or ground grid conductors be damaged or suspected of being damaged by construction activities the Contractor shall test the conductors for continuity with a low resistance ohmmeter. The conductors shall be isolated such that no parallel path exists and tested for continuity. The RPR shall approve of the test method selected. All such testing shall be at the sole expense of the Contractor.

After installation, the Contractor shall test and demonstrate to the satisfaction of the RPR the following:

- c. That all affected lighting power and control circuits (existing and new) are continuous and free from short circuits.
- d. That all affected circuits (existing and new) are free from unspecified grounds.
- e. That the insulation resistance to ground of all new non-grounded high voltage series circuits or cable segments is not less than **500** megohms. Verify continuity of all series airfield lighting circuits prior to energization.
- f. That the insulation resistance to ground of all new non-grounded conductors of new multiple circuits or circuit segments is not less than 100 megohms.
- g. That all affected circuits (existing and new) are properly connected per applicable wiring diagrams.
- h. That all affected circuits (existing and new) are operable. Tests shall be conducted that include operating each control not less than 10 times and the continuous operation of each lighting and power circuit for not less than 1/2 hour.
- i. That the impedance to ground of each ground rod does not exceed **25** ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81, to verify this requirement. As an alternate, clamp-on style ground impedance

test meters may be used to satisfy the impedance testing requirement. Test equipment and its calibration sheets shall be submitted for review and approval by the RPR prior to performing the testing.

Two copies of tabulated results of all cable tests performed shall be supplied by the Contractor to the RPR. Where connecting new cables to existing cables, insulation resistance tests shall be performed on the new cable prior to connection to the existing circuit.

There are no approved "repair" procedures for items that have failed testing other than complete replacement.

### **METHOD OF MEASUREMENT**

**108-4.1** The cost of all excavation, backfill, trenching, and dewatering and restoration regardless of the type of material encountered shall be included in the unit price bid for the work.

**108-4.2** Cable or counterpoise wire installed in trench, duct bank or conduit shall be measured by the number of linear feet installed and grounding connectors, and trench marking tape ready for operation, and accepted as satisfactory. Separate measurements shall be made for each cable or counterpoise wire installed in trench, duct bank or conduit. The measurement for this item shall not include additional quantities required for slack.

**108-4.3** No separate payment will be made for ground rods or cable splices.

### **BASIS OF PAYMENT**

**108-5.1** Payment will be made at the contract unit price for trenching, cable and bare counterpoise wire installed in trench (direct-buried), or cable and equipment ground installed in duct bank or conduit, in place by the Contractor and accepted by the RPR. This price shall be full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools, and incidentals, including ground rods and ground connectors and trench marking tape, necessary to complete this item.

Payment will be made under:

Item L-108-5.2	No. 8 AWG, 5kV, L-824, Type C Cable, Installed in Conduit - per liner foot
Item L-108-5.3	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed in Trench, Including Connections/Terminations and ground rods - 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.

#### **Advisory Circulars (AC)**

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 150/5345-53	Airport Lighting Equipment Certification Program
Commercial Item Description	
A-A-59544A	Cable and Wire, Electrical (Power, Fixed Installation)
A-A-55809	Insulation Tape, Electrical, Pressure-Sensitive Adhesive, Plastic
ASTM International (ASTM)	
ASTM B3	Standard Specification for Soft or Annealed Copper Wire
ASTM B8	Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B33	Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes
ASTM D4388	Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes
Mil Spec	
MIL-PRF-23586F	Performance Specification: Sealing Compound (with Accelerator), Silicone Rubber, Electrical
MIL-I-24391	Insulation Tape, Electrical, Plastic, Pressure Sensitive
National Fire Protection Association (NFPA)	
NFPA-70	National Electrical Code (NEC)
NFPA-780	Standard for the Installation of Lightning Protection Systems
American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)	
ANSI/IEEE STD 81	IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System
Federal Aviation Administration Standard	
FAA STD-019E	Lightning and Surge Protection, Grounding Bonding and Shielding Requirements for Facilities and Electronic Equipment

**END OF ITEM L-108**



## **Item L-110 Airport Underground Electrical Duct Banks and Conduits**

### **DESCRIPTION**

**110-1.1** This item shall consist of underground electrical conduits and duct banks (single or multiple conduits encased in concrete or buried in sand) installed per this specification at the locations and per the dimensions, designs, and details shown on the plans. This item shall include furnishing and installing all underground electrical duct banks and individual and multiple underground. It shall also include all turfing trenching, backfilling, removal, and restoration of any paved or turfed areas; concrete encasement, mandrelling, pulling lines, duct markers, plugging of conduits, and the testing of the installation as a completed system ready for installation of cables per the plans and specifications. This item shall also include furnishing and installing conduits and all incidentals for providing positive drainage of the system. Verification of existing ducts is incidental to the pay items provided in this specification.

### **EQUIPMENT AND MATERIALS**

#### **110-2.1 General.**

**a.** All equipment and materials covered by referenced specifications shall be subject to acceptance through the manufacturer's certification of compliance with the applicable specification when requested by the RPR.

**b.** Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed when directed by the RPR and replaced with materials which comply with these specifications, at the Contractor's cost.

**c.** All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are of as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in project that accrue directly or indirectly from late submissions or resubmissions of submittals.

**d.** The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be neatly bound in a properly sized 3-ring binder, tabbed by specification section, or electronically submitted in pdf format, tabbed by specification section. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes specified in this document.

**e.** All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

**110-2.2 Steel conduit.** Rigid galvanized steel (RGS) conduit and fittings shall be hot dipped galvanized inside and out and conform to the requirements of Underwriters Laboratories Standards 6, 514B, and 1242. All RGS conduits or RGS elbows installed below grade, in concrete, permanently wet locations or

other similar environments shall be painted with a 10-mil thick coat of asphaltum sealer or shall have a factory-bonded polyvinyl chloride (PVC) cover. Any exposed galvanizing or steel shall be coated with 10 mils of asphaltum sealer. When using PVC coated RGS conduit, care shall be exercised not to damage the factory PVC coating. Damaged PVC coating shall be repaired per the manufacturer's written instructions. In lieu of PVC coated RGS, corrosion wrap tape shall be permitted to be used where RGS is in contact with direct earth."

**110-2.3 Plastic conduit.** Plastic conduit and fittings shall conform to the following requirements:

- UL 514B covers W-C-1094-Conduit fittings of all types, classes 1 thru 3 and 6 thru 10.<sup>[1]</sup><sub>[SEP]</sub>
- UL 514C covers W-C-1094- all types, Class 5 junction box and cover in plastic (PVC).
- UL 651 covers W-C-1094-Rigid PVC Conduit, types I and II, Class 4.
- UL 651A covers W-C-1094-Rigid PVC Conduit and high-density polyethylene (HDPE) Conduit type III and Class 4.

Underwriters Laboratories Standards UL-651 and Article 352 of the current National Electrical Code shall be one of the following, as shown on the plans:

a. Type I–Schedule 40 and Schedule 80 PVC suitable for underground use either direct-buried or encased in concrete.

b. Type II–Schedule 40 PVC suitable for either above ground or underground use.

c. Type III – Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in concrete.

d. Type III –HDPE pipe, minimum standard dimensional ratio (SDR) 11, suitable for placement with directional boring under pavement.

The type of solvent cement shall be as recommended by the conduit/fitting manufacturer.

**110-2.4 Split conduit.** Split conduits shall be pre-manufactured for the intended purpose and shall be made of steel or plastic.

**110-2.5 Conduit spacers.** Conduit spacers shall be prefabricated interlocking units manufactured for the intended purpose. They shall be of double wall construction made of high-grade, high-density polyethylene complete with interlocking cap and base pads. They shall be designed to accept No. 4 reinforcing bars installed vertically.

**110-2.6 Concrete.** Concrete shall be proportioned, placed, and cured per state department of transportation structural concrete with minimum 25% Type F fly ash, and a minimum allowable compressive strength of 4,000 psi (28 MPa).

**110-2.7 Precast concrete structures.** Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another RPR approved third party certification program. Precast concrete structures shall conform to ASTM C478.

**110-2.8 Flowable backfill.** Flowable material used to back fill conduit and duct bank trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

**110-2.9 Detectable warning tape.** Plastic, detectable, American Public Works Association (APWA) red (electrical power lines, cables, conduit and lighting cable), orange (telephone/fiber optic cabling) with continuous legend magnetic tape shall be polyethylene film with a metallized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item.

## CONSTRUCTION METHODS

**110-3.1 General.** The Contractor shall install underground duct banks and conduits at the approximate locations indicated on the plans. The RPR shall indicate specific locations as the work progresses, if required to differ from the plans. Duct banks and conduits shall be of the size, material, and type indicated on the plans or specifications. Where no size is indicated on the plans or in the specifications, conduits shall be not less than 2 inches (50 mm) inside diameter or comply with the National Electrical Code based on cable to be installed, whichever is larger. All duct bank and conduit lines shall be laid so as to grade toward access points and duct, or conduit ends for drainage. Unless shown otherwise on the plans, grades shall be at least 3 inches (75 mm) per 100 feet (30 m). On runs where it is not practicable to maintain the grade all one way, the duct bank and conduit lines shall be graded from the center in both directions toward access points and conduit ends, with a drain into the storm drainage system. Pockets or traps where moisture may accumulate shall be avoided. Under pavement, the top of the duct bank shall not be less than 18 inches (0.5 m) below the subgrade; in other locations, the top of the duct bank or underground conduit shall be not less than 18 inches (0.5 m) below finished grade.

The Contractor shall mandrel each individual conduit whether the conduit is direct-buried or part of a duct bank. An iron-shod mandrel, not more than 1/4 inch (6 mm) smaller than the bore of the conduit shall be pulled or pushed through each conduit. The mandrel shall have a leather or rubber gasket slightly larger than the conduit hole.

The Contractor shall swab out all conduits/ducts and clean base can, manhole, pull boxes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed the light bases, manholes, pull boxes, etc., and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, base cans, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be recleaned at the Contractor's expense. All accessible points shall be kept closed when not installing the cable. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

For pulling the permanent wiring, each individual conduit, whether the conduit is direct-buried or part of a duct bank, shall be provided with a 200-pound (90 kg) test polypropylene pull rope. The ends shall be secured, and sufficient length shall be left in access points to prevent it from slipping back into the conduit. Where spare conduits are installed, as indicated on the plans, the open ends shall be plugged with removable tapered plugs, designed for this purpose.

All conduits shall be securely fastened in place during construction and shall be plugged to prevent contaminants from entering the conduits. Any conduit section having a defective joint shall not be installed. Ducts shall be supported and spaced apart using approved spacers at intervals not to exceed 5 feet (1.5 m).

Unless otherwise shown on the plans, concrete encased duct banks shall be used when crossing under pavements expected to carry aircraft loads, such as runways, taxiways, taxilanes, ramps and aprons. When under paved shoulders and other paved areas, conduit and duct banks shall be encased using flowable fill for protection.

All conduits within concrete encasement of the duct banks shall terminate with female ends for ease in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored.

Trenches for conduits and duct banks may be excavated manually or with mechanical trenching equipment unless in pavement, in which case they shall be excavated with mechanical trenching

equipment. Walls of trenches shall be essentially vertical so that a minimum of shoulder surface is disturbed. Blades of graders shall not be used to excavate the trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required conduit or duct bank depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve. Flowable backfill may alternatively be used.

Underground electrical warning (Caution) tape shall be installed in the trench above all underground duct banks and conduits in unpaved areas. The contractor shall submit a sample of the proposed warning tape for approval by the RPR. If not shown on the plans, the warning tape shall be located 6 inches above the duct/conduit or the counterpoise wire if present.

Joints in plastic conduit shall be prepared per the manufacturer's recommendations for the particular type of conduit. Plastic conduit shall be prepared by application of a plastic cleaner and brushing a plastic solvent on the outside of the conduit ends and on the inside of the couplings. The conduit fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly. Where more than one conduit is placed in a single trench, or in duct banks, joints in the conduit shall be staggered a minimum of 2 feet (60 cm).

Changes in direction of runs exceeding 10 degrees, either vertical or horizontal, shall be accomplished using manufactured sweep bends.

Whether or not specifically indicated on the drawings, where the soil encountered at established duct bank grade is an unsuitable material, as determined by the RPR, the unsuitable material shall be removed per Item P-152 and replaced with suitable material. Additional duct bank supports shall be installed, as approved by the RPR.

All excavation shall be unclassified and shall be considered incidental to Item L-110. Dewatering necessary for duct installation, and erosion per federal, state, and local requirements is incidental to Item L-110.

Unless otherwise specified, excavated materials that are deemed by the RPR to be unsuitable for use in backfill or embankments shall be removed and disposed of offsite.

Any excess excavation shall be filled with suitable material approved by the RPR and compacted per Item P-152.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. The installation of new cable where such crossings must occur shall proceed as follows:

- a. Existing cables shall be located manually. Unearthed cables shall be inspected to ensure absolutely no damage has occurred.

- b. Trenching, etc., in cable areas shall then proceed with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair.

**110-3.2 Duct banks.** Unless otherwise shown in the plans, duct banks shall be installed so that the top of the concrete envelope is not less than 18 inches (0.5 m) below the bottom of the base or stabilized base course layers where installed under runways, taxiways, aprons, or other paved areas, and not less than 18 inches (0.5 m) below finished grade where installed in unpaved areas.

Unless otherwise shown on the plans, duct banks under paved areas shall extend at least 3 feet (1 m) beyond the edges of the pavement or 3 feet (1 m) beyond any under drains that may be installed alongside the paved area. Trenches for duct banks shall be opened the complete length before concrete is placed so that if any obstructions are encountered, provisions can be made to avoid them. Unless otherwise shown on the plans, all duct banks shall be placed on a layer of concrete not less than 3 inches (75 mm) thick prior to their initial set. The Contractor shall space the conduits not less than 3 inches (75 mm) apart (measured from outside wall to outside wall). All such multiple conduits shall be placed using conduit spacers applicable to the type of conduit. As the conduit laying progresses, concrete shall be placed around and on top of the conduits not less than 3 inches (75 mm) thick unless otherwise shown on the plans. All conduits shall terminate with female ends for ease of access in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Conduits forming the duct bank shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth prior to placing the concrete encasement. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

When specified, the Contractor shall reinforce the bottom side and top of encasements with steel reinforcing mesh or fabric or other approved metal reinforcement. When directed, the Contractor shall supply additional supports where the ground is soft and boggy, where ducts cross under roadways, or where shown on the plans. Under such conditions, the complete duct structure shall be supported on reinforced concrete footings, piers, or piles located at approximately 5-foot (1.5-m) intervals.

All pavement surfaces that are to have ducts installed therein shall be neatly saw cut to form a vertical face. All excavation shall be included in the contract with price for the duct.

Install plastic, detectable, color as noted, 3 to 6 inches (75 to 150 mm) wide tape, 8 inches (200 mm) minimum below grade above all underground conduit or duct lines not installed under pavement. Utilize the 3-inch (75-mm) wide tape only for single conduit runs. Utilize the 6-inch (150-mm) wide tape for multiple conduits and duct banks. For duct banks equal to or greater than 24 inches (600 mm) in width, utilize more than one tape for sufficient coverage and identification of the duct bank as required.

When existing cables are to be placed in split duct, encased in concrete, the cable shall be carefully located and exposed by hand tools. Prior to being placed in duct, the RPR shall be notified so that he may inspect the cable and determine that it is in good condition. Where required, split duct shall be installed as shown on the drawings or as required by the RPR.

**110-3.3 Conduits without concrete encasement.** Trenches for single-conduit lines shall be not less than 6 inches (150 mm) nor more than 12 inches (300 mm) wide. The trench for 2 or more conduits installed at the same level shall be proportionately wider. Trench bottoms for conduits without concrete encasement shall be made to conform accurately to grade so as to provide uniform support for the conduit along its entire length.

Unless otherwise shown on the plans, a layer of fine earth material, at least 4 inches (100 mm) thick (loose measurement) shall be placed in the bottom of the trench as bedding for the conduit. The bedding material shall consist of soft dirt, sand or other fine fill, and it shall contain no particles that would be retained on a 1/4-inch (6.3 mm) sieve. The bedding material shall be tamped until firm. Flowable backfill may alternatively be used.

Unless otherwise shown on plans, conduits shall be installed so that the tops of all conduits within the Airport's secured area where trespassing is prohibited are at least 18 inches (0.5 m) below the finished grade. Conduits outside the Airport's secured area shall be installed so that the tops of the conduits are at least 24 inches (60 cm) below the finished grade per National Electric Code (NEC), Table 300.5.

When two or more individual conduits intended to carry conductors of equivalent voltage insulation rating are installed in the same trench without concrete encasement, they shall be spaced not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches (150 mm) apart in a vertical direction. Where two or more individual conduits intended to carry conductors of differing voltage insulation rating are installed in the same trench without concrete encasement, they shall be placed not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches (150 mm) apart in a vertical direction.

Trenches shall be opened the complete length between normal termination points before conduit is installed so that if any unforeseen obstructions are encountered, proper provisions can be made to avoid them.

Conduits shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth while backfilling. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

**110-3.4 Markers.** The location of each end and of each change of direction of conduits and duct banks shall be marked by a concrete slab marker 2 feet (60 cm) square and 4 - 6 inches (100 - 150 mm) thick extending approximately one inch (25 mm) above the surface. The markers shall also be located directly above the ends of all conduits or duct banks, except where they terminate in a junction/access structure or building. Each cable or duct run from a line of lights and signs to the equipment vault must be marked at approximately every 200 feet (61 m) along the cable or duct run, with an additional marker at each change of direction of cable or duct run.

The Contractor shall impress the word "DUCT" or "CONDUIT" on each marker slab. Impression of letters shall be done in a manner, approved by the RPR, for a neat, professional appearance. All letters and words must be neatly stenciled. After placement, all markers shall be given one coat of high-visibility orange paint, as approved by the RPR. The Contractor shall also impress on the slab the number and size of conduits beneath the marker along with all other necessary information as determined by the RPR. The letters shall be 4 inches (100 mm) high and 3 inches (75 mm) wide with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep or as large as the available space permits. Furnishing and installation of duct markers is incidental to the respective duct pay items.

**110-3.5 Backfilling for conduits.** For conduits, 8 inches (200 mm) of sand, soft earth, or other fine fill (loose measurement) shall be placed around the conduits ducts and carefully tamped around and over them with hand tampers. The remaining trench shall then be backfilled and compacted per Item P-152 except that material used for back fill shall be select material not larger than 4 inches (100 mm) in diameter.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during back filling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

**110-3.6 Backfilling for duct banks.** After the concrete has cured, the remaining trench shall be backfilled and compacted per Item P-152 "Excavation and Embankment" except that the material used for backfilling shall be select material not larger than 4 inches (100 mm) in diameter. In addition to the requirements of Item P-152, where duct banks are installed under pavement, one moisture/density test per

lift shall be made for each 250 linear feet (76 m) of duct bank or one work period's construction, whichever is less.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during backfilling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

**110-3.7 Restoration.** Where sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by the work shall be restored to their original condition. The restoration shall include topsoiling, fertilizing, seeding, and mulching shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. All restoration shall be considered incidental to the respective L-110 pay item. Following restoration of all trenching near airport movement surfaces, the Contractor shall visually inspect the area for foreign object debris (FOD) and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

**110-3.8 Ownership of removed cable.** All removed cables shall become property of the contractor and disposed off site.

## **METHOD OF MEASUREMENT**

**110-4.1** Underground conduits and duct banks shall be measured by the linear feet of conduits and duct banks installed, including encasement, locator tape, trenching and backfill with designated material, and restoration, and for drain lines, the termination at the drainage structure, all measured in place, completed, and accepted. Separate measurements shall be made for the various types and sizes.

## **BASIS OF PAYMENT**

**110-5.1** Payment will be made at the contract unit price per linear foot for each type and size of conduit and duct bank completed and accepted, including trench and backfill with the designated material, and, for drain lines, the termination at the drainage structure. This price shall be full compensation for removal and disposal of existing duct banks and conduits as shown on the plans, 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 per the provisions and intent of the plans and specifications.

Payment will be made under:

Item L-110-5.2	Non-Encased Electrical Conduit, 1W-2". Schedule 40 PVC, Type II - per linear foot
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## **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 Circular (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
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AC 150/5345-53	Airport Lighting Equipment Certification Program
ASTM International (ASTM)	
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
National Fire Protection Association (NFPA)	
NFPA-70	National Electrical Code (NEC)
Underwriters Laboratories (UL)	
UL Standard 6	Electrical Rigid Metal Conduit - Steel
UL Standard 514B	Conduit, Tubing, and Cable Fittings
UL Standard 514C	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL Standard 1242	Electrical Intermediate Metal Conduit Steel
UL Standard 651	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL Standard 651A	Type EB and A Rigid PVC Conduit and HDPE Conduit

**END OF ITEM L-110**



## **Item L-125 Installation of Airport Lighting Systems**

### **DESCRIPTION**

**125-1.1** This item shall consist of airport lighting systems furnished and installed in accordance with this specification, the referenced specifications, and the applicable advisory circulars (ACs). The systems shall be installed at the locations and in accordance with the dimensions, design, and details shown in the plans. This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the RPR.

### **EQUIPMENT AND MATERIALS**

#### **125-2.1 General.**

**a.** Airport lighting equipment and materials covered by Federal Aviation Administration (FAA) specifications shall be certified under the Airport Lighting Equipment Certification Program in accordance with AC 150/5345-53, current version. FAA certified airfield lighting shall be compatible with each other to perform in compliance with FAA criteria and the intended operation. If the Contractor provides equipment that does not perform as intended because of incompatibility with the system, the Contractor assumes all costs to correct the system for to operate properly.

**b.** Manufacturer's certifications shall not relieve the Contractor of their responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

**c.** All materials and equipment used shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be clearly made with arrows or circles (highlighting is not acceptable). The Contractor shall be responsible for delays in the project accruing directly or indirectly from late submissions or resubmissions of submittals.

**d.** The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be submitted in a neatly bound, properly sized 3-ring binder, tabbed by specification section or electronic PDF format, tabbed by specification section. The RPR reserves the right to reject any or all equipment, materials or procedures, which, in the RPR's opinion, does not meet the system design and the standards and codes specified herein.

**e.** All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

### **EQUIPMENT AND MATERIALS**

**125-2.2 Conduit/Duct.** Conduit shall conform to Specification Item L-110 Airport Underground Electrical Duct Banks and Conduits.

**125-2.3 Cable and Counterpoise.** Cable and Counterpoise shall conform to Item L-108 Underground Power Cable for Airports.

**125-2.4 Tape.** Rubber and plastic electrical tapes shall be Scotch Electrical Tape Numbers 23 and 88 respectively, as manufactured by 3M Company or an approved equal.

**125-2.5 Cable Connections.** Cable Connections shall conform to Item L-108 Installation of Underground Cable for Airports.

**125-2.6 Retroreflective Markers.** Not required.

**125-2.7 Runway and Taxiway Lights.** Runway and taxiway lights shall conform to the requirements of AC 150/5345-46. Lamps shall be of size and type indicated, or as required by the fixture manufacturer for each lighting fixture required under this contract. Filters shall be of colors conforming to the specification for the light concerned or to the standard referenced.

**125-2.9 Runway End Identifier Light (REIL).** Not required.

**125-2.10 Precision Approach Path Indicator (PAPI).** Not required.

**125-2.11 Circuit Selector Cabinet.** Not used.

**125-2.12 Light Base and Transformer Housings.** Existing Light Base and Transformer Housings to be relocated are Type L-867.

**125-2.13 Isolation Transformers.** Isolation Transformers to be relocated are Type L-830.

## INSTALLATION

**125-3.1 Installation.** The Contractor shall furnish, install, connect and test all equipment, accessories, conduit, cables, wires, buses, grounds and support items necessary to ensure a complete and operable airport lighting system as specified here and shown in the plans.

The equipment installation and mounting shall comply with the requirements of the National Electrical Code and state and local code agencies having jurisdiction.

The Contractor shall install the specified equipment in accordance with the applicable advisory circulars and the details shown on the plans.

**125-3.2 Testing.** All lights shall be fully tested by continuous operation for not less than 24 hours as a completed system prior to acceptance. The test shall include operating the constant current regulator in each step not less than 10 times at the beginning and end of the 24-hour test. The fixtures shall illuminate properly during each portion of the test.

**125-3.3 Shipping and Storage.** Equipment shall be shipped in suitable packing material to prevent damage during shipping. Store and maintain equipment and materials in areas protected from weather and physical damage. Any equipment and materials, in the opinion of the RPR, damaged during construction or storage shall be replaced by the Contractor at no additional cost to the owner. Painted or galvanized surfaces that are damaged shall be repaired in accordance with the manufacturer's recommendations.

**125-3.4 Elevated and In-pavement Lights.** Water, debris, and other foreign substances shall be removed prior to installing a fixture base and light.

A jig or holding device shall be used when installing each light fixture to ensure positioning to the proper elevation, alignment, level control, and azimuth control. Light fixtures shall be oriented with the light beams parallel to the runway or taxiway centerline and facing in the required direction. The outermost edge of fixture shall be level with the surrounding pavement. Surplus sealant or flexible embedding material shall be removed. The holding device shall remain in place until the sealant has reached its initial set.

**125-3.5 Restoration.** All area disturbed by the trenching, storing of dirt/soil/material, cable laying, pad construction, fixture installation, and other work shall be restored to an acceptable condition as approved by the RPR and shall be incidental to the respective bid item.

### METHOD OF MEASUREMENT

**125-4.1** Relocated taxiway lights will be measured by the number of each type removed, salvaged, and reinstalled at their new location as completed units in place, ready for operation, and accepted by the RPR.

### BASIS OF PAYMENT

**125-5.1** Payment will be made at the Contract unit price for each complete relocated taxiway light, 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.

Payment will be made under:

L-125-5.1	Relocate Medium Intensity Taxiway Edge Light (MITL), Elevated – per each
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### 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 150/5345-5	Circuit Selector Switch
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 150/5345-28	Precision Approach Path Indicator (PAPI) Systems
AC 150/5345-39	Specification for L-853, Runway and Taxiway Retroreflective Markers
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 150/5345-51	Specification for Discharge-Type Flashing Light Equipment
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**

## Part 5

# Non-Standard Technical Specifications

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## ITEM NS-01 AIRFIELD SAFETY & TRAFFIC CONTROL

### DESCRIPTION

**1.1** This Section provides for construction safety in an Airport environment; limitations on construction operations; minimum requirements for construction management and scheduling; and site-specific information pertaining to potential impacts on construction activities. All costs associated with related work are incidental to the project construction. This Work consists of implementing safety measures on the airfield in order for the Contractor to conduct construction operations in accordance with the Construction Operation and Safety Plan and AC 150/5370-2, latest edition.

**2.1 Construction Safety and Phasing Plan (CSPP).** The Contractor shall comply with the project-specific Construction Safety and Phasing Plan (CSPP) included as Appendix A of the Specifications. As part of the requirements of the CSPP, the Contractor is required to provide a Safety Plan Compliance Document (SPCD).

The SPCD shall detail how the Contractor will comply with the CSPP. This shall include all project-specific construction safety plan details not included in the CSPP, including construction equipment heights, any applicable hazard management requirements, and contact information for the Contractor's safety management staff responsible for monitoring the CSPP and SPCD during construction. The SPCD shall be a supplement to and enhancement of the project CSPP. See Attachment 4 to Appendix A for example of SPCD outline.

The SPCD must include a statement that the Contractor understands the operational safety requirements of the CSPP and an assertion that the Contractor will not deviate from the approved CSPP and SPCD without written approval from the Engineer. Any construction operation, activity, or practice proposed by the Contractor that does not conform to the CSPP and SPCD will require a revision to those documents. The revised CSPP and SPCD must be submitted to FAA for review and approval prior to performing any activities that are not in compliance with a previously approved CSPP.

Copies of the approved CSPP and SPCD must be available on-site at all times. The Contractor shall ensure all construction personnel are familiar with safety procedures and regulations applicable to construction on the Airport. At least one of the Contractor's safety management staff must be on-site whenever active construction is ongoing to act as point of contact and immediate response coordinator to correct any construction-related activity that may adversely affect operational safety of the Airport.

### **2.2 Closure of taxiways, taxilanes, and aprons.**

**a. Construction area marking requirements.** Flag lines, traffic cones, flashers, and/or signs shall be used as necessary:

- 1) To clearly separate all construction/maintenance from other parts of air operations area.
- 2) To identify isolated hazards, such as open manholes, excavations, areas under repair, stockpiled material, waste areas, etc.
- 3) To identify FAA, airport, and National Weather Service facilities, cables, power lines, ILS-critical, and other sensitive areas.

**b.** All barricades, temporary markers, flag line supports, and other objects placed/left in the safety area of any open apron, runway, taxiway, or taxilane shall be:

- 1) As low as feasible (maximum 18 inches unless otherwise approved).
- 2) Of low mass.
- 3) Easily collapsible if impacted by an aircraft or component.
- 4) Weighted down or attached to the surface to reduce the chance of movement by prop wash, jet blast, wing vortex, or other wind currents.
- 5) If affixed to the surface, frangible at the ground.

**c.** Barricade locations not meeting criteria in paragraph **b** above shall be placed around perimeters of construction areas, as shown on the drawings or as designated by the RPR, that border areas of aircraft traffic. The barricades shall be firmly anchored against overturning from wind or prop wash. All barricades shall be interconnected (no spacing allowed) except for on the areas shown in the plans to allow vehicle passage. Barricade design shall conform to details shown on the Construction Safety & Phasing Plan. Flashers shall be mounted on barricades and kept visible and operating during all nighttime hours. Flashers shall conform to Type B (high intensity) barricade warning lights specification of the cited manual as a minimum, except that flashers shall be omnidirectional (360 degrees).

**2.3 Vehicular and Pedestrian Control.** Contractors and individuals working directly or indirectly for the Contractor who operate vehicles in the air operations area of an airport shall comply with the following vehicle marking and operation. As a minimum, vehicles operated on open flight operations areas or in their safety areas shall be marked with orange and white flags or flashing yellow beacons during daylight hours. During hours of darkness or low visibility, they shall be marked with at least omnidirectional flashing yellow beacons mounted to the roof of the cab. Headlights, taillights, and flasher shall be used for activities during these hours.

Vehicle traffic will not be permitted on or across active airfield pavements unless approved by the Airport or RPR. When approved, vehicles on open flight operations areas shall maintain continuous radio contact. The CTAF frequency is 122.8 MHz.

Vehicle and pedestrian access routes used for airport construction and maintenance shall be controlled to prevent any unauthorized entry of persons, vehicles, or large animals.

Vehicle parking areas for contractor employees shall be designated in advance to minimize vehicle traffic in open aircraft movement areas.

Personnel and vehicles allowed through the gates shall follow approved haul routes.

No vehicles within 75 feet of a parked aircraft or within 100 feet of a moving aircraft.

No vehicles shall pass in front of pedestrians or taxiing aircraft.

**2.4 Barricades.** Portions of apron, taxiway, or taxilane involved in construction must be closed with approved barricades as shown on the Construction Operations & Safety Phasing Plans. The Contractor will supply and place low profile barricades as in the locations shown on the Plans. The barricades shall



be firmly anchored against overturning from wind or prop wash. Spacing between barricades shall not exceed 4 feet or otherwise specified by the RPR. Barricades shall have red flashing lights and flags.

### **METHOD OF MEASUREMENT**

**3.1** Airfield Safety & Traffic Control will be measured as a single complete unit of Work per Lump Sum, acceptably performed.

**3.2 Basis of measurement and payment.** Based upon the contract lump sum price for “Airfield Safety and Traffic Control” 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%.

### **BASIS OF PAYMENT**

**4.1** Airfield Safety & Traffic Control, measured as provided above, will be paid for at the Contract unit price per Lump Sum, which price will be full compensation for furnishing, placing, maintaining and removing barricades, and other control devices; for supplying and performing all flagging and guidance services; and for all labor, tools, equipment, services and incidentals necessary to maintain airfield traffic during the construction process as detailed in the Construction Safety & Phasing Plan, CSPP compliance, SPCD preparation and compliance, incidentals necessary to complete the work as specified herein, as required on the plans, and described in AC 150/5370-2, latest edition.

Standard Pay Items for Work covered by this Specification are as follows:

Item NS-01-4.1 Airfield Safety & Traffic Control - per lump sum

### **END OF ITEM NS-01**

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## ITEM NS-02 MAINTENANCE AND RESTORATION OF HAUL ROADS

### DESCRIPTION

**1.1** This Work consists of maintaining, repairing, and restoring all public roads not a part of the State Trunk Highway System and streets, and all Airport roads, and other routes utilized to access the Work, including construction / removal of a temporary haul road, contractor storage area, drainage facilities, installation and removal of a temporary access gate, and appurtenances, over which materials are hauled by the Contractor, subcontractors, or suppliers of the Contractor, hereinafter called haul roads, to a condition equivalent to that which would have existed had such hauling not occurred.

**1.2** The Contractor's obligation under this specification does not authorize the use of haul roads for transporting loads exceeding statutory size and weight limitations.

### MATERIALS

**2.1** Materials required and used in the installation, maintenance, and repair of haul roads shall be of the quality and serviceability at least equivalent to those existing prior to use as a haul road. Submit for review to the RPR the amount and quality of all materials to be used prior to being incorporated into the Work.

### CONSTRUCTION METHODS

**3.1 General.** The RPR and Contractor shall both review and log the existing conditions of the haul roads prior to construction. Provide a 7-day notice to the RPR prior to use of the haul road for construction operations and accompany the RPR during logging of the condition or accept the RPR's determination of the prior condition of the haul road. In the event two or more Contractors having contracts with the Owner engage in transport of materials over the same haul road at the same time or at about the same time, the RPR will determine the repair and restoration obligations of the respective Contractors.

The haul roads to be used for this project are shown on the plans.

**3.2 Maintenance.** Install, maintain, and restore haul roads, including dust alleviation, as necessary to ensure reasonable service to other users of the road.

To prevent or minimize damage to haul roads the Contractor may stabilize, reinforce, or strengthen existing facilities before hauling starts, and condition the surface and perform repairs during hauling operations.

**3.3 Restoration.** Upon termination of hauling operations and before final acceptance of the Work under the Contract, restore all haul roads, including drainage facilities, to the condition equivalent to that which would have existed had such hauling of material not occurred.

The final restoration of a haul road shall meet the Airport and RPR's approval.

## **METHOD OF MEASUREMENT**

**4.1** Maintenance and restoration of haul roads, staging, and parking areas will be measured for payment as a single complete unit of work per lump sum for all haul roads, staging, and parking areas constructed, maintained, and repaired that are utilized for the project. Partial payments will be allowed as follows:

- a.** With first pay request, 50%.
- b.** When 25% or more of the original contract is earned, an additional 20%.
- c.** When 50% or more of the original contract is earned, an additional 20%.

**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%.

## **BASIS OF PAYMENT**

**5.1** Maintenance and restoration of haul roads, staging, and parking areas measured as provided above, will be paid for at the Contract lump sum price, which includes furnishing and installing all materials required for construction, hauling and placing required materials, watering the road/staging/parking area for dust control, furnishing and installing topsoil, seed, and mulch for restoration; for all labor, tools, equipment and all other costs necessary to complete the Work to the satisfaction of the RPR; and for other costs incurred by the Contractor to prevent or minimize damage to the haul road.

Payment will be made under:

Item NS-02-5.1 Maintenance and restoration of haul roads - per lump sum

Measurement and Payment will only be made for Pay Items included in the Schedule of Prices. The cost of all Work required by the Contract Documents will be included in the Pay Items contained in the Schedule of Prices.

## **END OF ITEM NS-02**

## **ITEM NS-03 LOCATE AND PROTECT EXISTING CIRCUITS**

### **DESCRIPTION**

**1.1** This Work includes the testing and location of all power and control circuits, public and private, that are located within the construction area or haul routes: providing temporary connection/cable runs to enable operation as required by construction staging of airport lighting systems during darkness, weekends, holidays, and instrument conditions; prompt repair or replacement of electrical cables or equipment damaged during construction operations; careful handling of any FAA installed cables or equipment encountered during construction; and removal/reinstallation of existing cables.

### **CONSTRUCTION METHODS**

**2.1** Immediately prior to construction, obtain meggar test readings of all airport circuits, electrical and communication services that will be encountered during construction, including those crossed by haul routes or access roads, shall be taken in the presence of the Owner and the RPR. If the Contractor notes problems in the existing circuits or services prior to starting Work, these circuits/services may be repaired by the Owner or noted to the mutual satisfaction of the Contractor and the Owner as not being the responsibility of the Contractor. Test circuits/services repaired by the Owner once again prior to construction.

**2.2** Upon completion of construction, in the presence of the Owner and the RPR, meggar test all airport circuits/services encountered during construction. Repair all portions of circuits/services that have been damaged during construction.

**2.3** The excavation, cutting, pulling out, and reinstallation of existing or new cables as required to re-establish power disrupted by the construction shall be incidental to this specification. Provide temporary above-ground connections in protective conduit and clearly mark as conditions and environment warrant. All temporary connections shall use L-823 cable connectors, which must also be taped and waterproofed. The Contractor's superintendent or on-site representative must remain in communication with the RPR until such repairs are completed and the lighting/electrical/communication system has been checked for operation and accepted by the Owner.

**2.4** Contractor shall be responsible to notify all work forces of the location and function of these wires. Care shall be taken by the Contractor's forces not to drive over these wires.

### **METHOD OF MEASUREMENT**

**3.1** Locate and protect existing circuits will be measured for payment as a complete unit per lump sum.

### **BASIS OF PAYMENT**

**4.1** Payment will be made at the Contract lump sum price for Locate and Protect Existing Circuits and will be full compensation for furnishing all materials for locating, testing and protecting existing circuits for the duration of the project, re-establishing power services should any be disrupted due to the

construction, and for all labor, equipment, tools, and incidentals necessary to complete this Pay Item as required.

Payment will be made under:

Item NS-03-4.1 Locate & Protect Existing Circuits - per lump sum

Measurement and Payment will only be made for Pay Items included in the Schedule of Prices. The cost of all Work required by the Contract Documents will be included in the Pay Items contained in the Schedule of Prices.

**END OF ITEM NS-03**

## NS-04 INFILTRATION BASIN

### DESCRIPTION

**1.1** This section shall include the installation of an infiltration basin as a stormwater management practice.

### SUBMITTALS

**2.1** Submit manufacturer's data and details of the following items for approval:

- a. Gradation reports of sand filter, stone, and engineered soil.
- b. Certificate of compliance for filter fabric delivered to RPR prior to fabric installation.

### MATERIALS

**3.1 Filter Fabric.** Filter fabric shall be a nonwoven geotextile conforming to AASHTO M288-06, Class 1 for Elongation  $\geq 50\%$ .

**3.2 Sand Filter.** Sand Filter shall conform to ASTM C33 (Fine Aggregate Concrete Sand).

**3.3 Stone.** Stone shall be clean, washed, angular, non-carbonate and meet one of the following: AASHTO Std. M-43; Size No. 2 or No. 3.

**3.4 Observation Well.** Perforated poly vinyl chloride (PVC) pipe, shall be a minimum nominal pipe size of 4 inches, with a secured aboveground cap with a locking mechanism or special bolt to discourage vandalism, conforming to MNDOT Spec. 3245. PVC pipe shall be perforated over the entire length of the pipe. Perforation shall be 0.25 inch in diameter, spaced 3 inches center to center and have a minimum of two rows of holes. The pipe shall have a plastic collar with ribs to prevent rotation when removing cap.

**3.5 Engineered Soil.** Engineered Soil shall conform to MNDOT Spec. 3877.2 G Filter Topsoil Borrow.

### CONSTRUCTION METHODS

#### 4.1 Infiltration Basin Excavation, Backfill, and Grading.

a. If the infiltration basin is used as a temporary sedimentation basin, initial grading of the infiltration basin shall be performed in conjunction with rough grading of the site. Grade the infiltration basin within three feet of final grade to prevent clogging of the in-situ soil. Once construction in the contributing drainage areas has been completed and the site is stabilized, excavate the infiltration basin to final grade and complete the infiltration basin construction.

(1) If alternative temporary sediment basin facilities are being provided, grading and construction of the infiltration basin shall not begin until all construction in the contributing drainage area has been completed and the site is stabilized.

(2) Compaction of the area for the infiltration basin must be avoided. Regardless if compaction occurs at the base of the infiltration basin, the soil must be re-fractured to a depth of at least 18 inches.

(3) Prevent sediment laden runoff from entering infiltration site during construction.

**b.** Observation well shall be located in the center of the basin at the lowest elevation and shall be fitted with an aluminum or iron plate to provide support. The top of the pipe shall be high enough to prevent the entry of water ponded within the infiltration device.

**c.** Geotextile fabric shall enclose the washed stone. The width of the geotextile fabric must include sufficient material to conform to basin perimeter irregularities and for a 6-inch minimum top overlap. Furnishing and placement of material is to be included in bid price for infiltration basin.

**d.** Minimum depth of engineered soil is twelve inches (12"). The engineered soil shall be placed in multiple lifts. Steps may be taken to induce mild settling of the engineered soil bed as needed to prepare a stable planting medium and stabilize the ponding depth. Vibrating plate-style compactors shall not be used to induce settling. Furnishing, grading, and placing of material is to be included in bid price for infiltration basin.

**e.** Seeding (MnDOT Mixture Residential Turfgrass RT) and installation of erosion control blanket shall be completed within 48 hours of final grading.

### **BASIS OF PAYMENT**

**4.1** Infiltration basin shall be paid per cubic yard per the dimensions shown on the plans, which corresponds to the volume of washed stone to be placed in the trench. Measurement shall be by the theoretical volume of stone, loose volume. Payment shall be made at the bid quantity – no payment will be made for Contractor overages. Payment shall also include furnishing all labor, tools, equipment, and incidentals necessary to complete the Work.

**5.2** No separate measurement will be made for excavation, filter fabric, sand filter, observation well, engineered soil, or seeding; it shall be considered incidental to the infiltration basin installation.

**5.3** No separate measurement will be made for the observation well, metal foot plate, or removable cap; it shall be considered incidental to the infiltration basin installation.

Payment will be made under:

Item NS-04-5.1 Infiltration Basin - per cubic yard

### **END OF ITEM NS-04**



## **NS-05 AIRCRAFT TIE-DOWNS**

### **DESCRIPTION**

**1.1** This Work shall include all materials, installation, and construction of for installing new tie-downs at the locations shown on the plans.

### **CONSTRUCTION METHODS**

**2.1 Install aircraft tie-down.** Materials and installation shall conform to location and details shown on the Plans. Contractor shall install in-pavement aircraft tie-downs after bituminous paving is completed by coring through the existing pavement and underlying materials. Any pavement damaged during the installation of tie-downs shall be removed and replaced at the direction of the RPR with no expense to the Owner.

### **METHOD OF MEASUREMENT**

**3.1 In-pavement aircraft tie-down.** In-pavement aircraft tie-downs will be measured for payment on a unit price basis per each anchor and associated appurtenances installed. Each anchor installation also includes the steel plate, concrete anchor pads, and PVC enclosure unless shown otherwise on the Plans.

### **BASIS OF PAYMENT**

**4.1 Aircraft tie-downs** will be paid for at the Contract unit price per each tie-down anchor, for aircraft tie-downs constructed in accordance with the Contract Documents. This price will be full compensation for furnishing all materials and for preparation and installation of tie-downs, including restoration of existing surfaces, coring or sawcutting pavement, joint sealing, and all labor, equipment, tools and incidentals necessary to complete the Work. Pavement marking shall be incidental, and the cost included in the Pay Item for Aircraft Tie-Downs.

Payment will be made under:

Item NS-05-4.1	Aircraft Tie-down Anchor, In-Pavement - per each
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### **END OF ITEM NS-05**

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## Appendix A

### Construction Safety Phasing Plan (CSPP)

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## Construction Safety and Phasing Plan (CSPP)

### Terminal Apron Reconstruction & Expansion

## CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)



FAA AIP No. 3-27-0021-26-25

MnDOT SP No. A0301-93

Mead & Hunt No. 3197100-  
242527.01

Report prepared for  
**Detroit Lakes - Becker County  
Airport**  
**Detroit Lakes, Minnesota**

March 6, 2025

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## **Appendices**

**ATTACHMENT 1: Construction Operations & Safety Phasing Plans**

**ATTACHMENT 2: Definition of Terms**

**ATTACHMENT 3: Daily Safety Inspection Checklist**

**ATTACHMENT 4: Safety Plan Compliance Document (SPCD) Requirements**

## 1. PROJECT BACKGROUND AND OVERVIEW

This document presents the Construction Safety and Phasing Plan (CSPP) for the proposed Terminal Apron Reconstruction & Expansion project at the Detroit Lakes – Becker County Airport (FAA Design Group B-II) to be performed under the Federal Aviation Administration (FAA) Airport Improvement Program (AIP) grant No. 3-27-0021-26-25. The airport anticipates authorizing on-site work to commence in the spring of 2026 and reach substantial completion within 90 working days. Specifically, the project scope includes the following elements:

- Full-depth bituminous pavement reconstruction and expansion
- Full-depth concrete pavement construction
- Concrete joint and crack routing, cleaning, and sealing
- Surface grading and subsurface drainage improvements
- Landscaping and permanent stormwater treatment
- Pavement marking
- In-pavement aircraft tiedowns

The objective of this CSPP is to provide a general outline of the construction safety and phasing provisions for working in or near the Air Operations Area (AOA) contained in the bid documents (Project Plans and Specifications), and to explain how those provisions will be implemented during construction.

The Part 77 surface analysis for construction (CSPP Points of Interest) related to this report have already been uploaded to OE/AAA under the project and airspace case numbers as listed below:

### **CSPP Points of Interest – Uploaded to OE/AAA on 3/5/2025**

OE/AAA project Detr-649451381-25

Airspace case submittals 2025-AGL-3409-NRA through 2025-AGL-3439-NRA

## 2. PURPOSE

This plan provides sole source procedural information for all key project personnel to use during construction. The CSPP defines the specific responsibilities of the airport operator, the contractor, airport tenants, and the resident project representative (RPR). The FAA Advisory Circular (AC) 150/5370-2G Appendix C Safety and Phasing Plan Checklist was utilized in preparing the construction documents, which include provisions for airport safety and security, operational limitations on construction activities, identification of potential hazards and impacts those hazards may have on airfield and construction activities, and construction phasing requirements to minimize impact on airfield operations.

Requirements for maintaining operational safety during construction are in conformance with FAA Advisory Circular 150/5370-2G, “*Operational Safety on Airports during Construction*.” The project specific Construction Operations and Safety plans for the project are shown on plan sheets G-081 through G-084, which are attached to this report as **Attachment 1**.

## 3. RESPONSIBILITIES

**Airport Operator.** The airport manager is responsible for operational safety on the airport at all times. Erik Carlson is the airport manager. The airport manager will issue Notice to Airmen (NOTAMS) whenever



construction activities occur in the AOA. The Detroit Lakes-Becker County Airport Commission (owner), through its RPR, Mead & Hunt, will provide oversight of all construction activities and coordinate those activities with the airport users (pilots) and airport tenants. The RPR will hold weekly construction progress and safety meetings. During those meetings, operational safety will be reviewed, and an action plan will be developed as needed to address any discrepancies in safety that need to be corrected. The owner will require and approve a Safety Plan Compliance Document (SPCD) from the contractor prior to issuing the notice to proceed. The SPCD outline is attached to this report as **Attachment 4**.

**Construction Contractor.** The contractor will be determined by a competitive bidding process. The contractor's responsibilities for safety and phasing are detailed and defined in the contract documents. The contractor will be required to attend weekly progress and safety meetings and to correct any discrepancies found in safety. The contractor is required to submit a completed SPCD to the owner for approval prior to receiving the notice to proceed.

**Airport Tenants.** The owner will notify airport tenants of all pending construction activities that impact them and advise the tenants of planned pavement closures and other activities in the AOA that will affect aircraft operations. Tenants will be invited to attend weekly construction progress and safety meetings when appropriate.

**Resident Project Representative (RPR).** As part of the project construction management, inspection, and quality assurance process, the RPR will monitor construction safety daily, utilizing the "Daily Safety Inspection Checklist" (**Attachment 3**) to ensure an appropriate level of priority is given to safety. Any discrepancies in safety will be immediately brought to the contractor's and airport manager's attention for corrective action implementation.

## 4. COORDINATION

**Pre-Bid Meeting.** A pre-bid meeting will be held to help clarify and explain construction methods, procedures, and safety measures required by the contract. The pre-bid meeting will be held a minimum of 10 days prior to the bid opening date. Key attendees are the bidding contractors, the owner, airport management, FAA, Mead & Hunt, MnDOT aeronautics, and Detroit Lakes Public Utilities (DLPU). The CSPP will be reviewed and discussed.

**Pre-Construction Meeting.** A pre-construction meeting will be held as soon as practicable after the contract has been awarded and before issuance of the notice to proceed. The pre-construction meeting participants should include, but not be limited to, the owner, airport management, Mead & Hunt, materials testing laboratory representative, contractor, subcontractor(s), contractor's project superintendent, contractor's project clerk, airport users, DLPU, MnDOT, and other local agencies affected by the proposed construction. The CSPP and SPCD will be reviewed and discussed at this meeting.

**Contractor Progress Meetings.** Contractor progress meetings will be held weekly for the duration of construction. Operational safety will be a standing agenda item for discussion during progress meetings throughout the project. Date, time, and location of the progress meetings will be determined at the pre-construction meeting.

**Scope or Schedule Changes.** Scope or schedule changes for the project may necessitate revisions to the CSPP and may require review and approval by the airport manager and the FAA.

**FAA Air Traffic Organization (ATO) & NAVAIDs Coordination.** The project will not require any facility

shutdowns and/or restarts (NAVAIDS, temporary runway/taxiway/taxilane closures, etc.) that must be coordinated with FAA Air Traffic Organization (ATO).

**On-site Construction Operations.** At all times when construction activities are being performed on the project, the prime contractor must have a designated on-site supervisor who is immediately available and authorized to make decisions regarding the operations and safety of all personnel employed by the contractor and subcontractors. At the beginning of each working day, the designated supervisor must meet with the RPR to coordinate anticipated activities for the day's work.

## 5. CONSTRUCTION WORK PLAN / WORK AREAS AND PHASING

The project shall be completed in three sequential phases / working areas. Each phase will require specific apron and taxiway/taxilane closures and will use designated construction entrances and equipment staging/temporary stockpile areas. See plan sheets G-081 through G-084 as part of **Attachment 1** for additional information regarding working days, scheduling, haul routes, staging areas, and construction entrance locations. The construction breakdown is as follows:

### **Phase 1 – North Bituminous Apron Reconstruction & Expansion**

- **Scope of work** – Full-depth bituminous pavement reclamation, subgrade excavation, storm sewer, embankment, bituminous and concrete paving, concrete valley gutter, concrete joint resealing, pavement marking, in-pavement aircraft tiedowns, landscaping, and infiltration basin construction.
- **Estimated start date** – May 1<sup>st</sup>, 2026.
- **Estimated completion date** – June 30<sup>th</sup>, 2026.
- **Duration** – 45 working days.
- **Area closed to aircraft operations** – North bituminous apron.
- **Impacted taxi routes** – Taxilanes D2, D3, and D4 to be accessed via Taxiway B2 and Taxilane E2 rather than through the terminal apron; no impacts to existing taxi routes through the central apron to access the FBO or the fueling area.
- **Impacted ARFF routes** – None.
- **Contractor personal vehicle parking area** – Within the airport parking lot as shown on sheet G-081.
- **Construction equipment staging/parking areas** – East of the north apron expansion as shown on sheet G-081.
- **Construction access and haul route** – Through the eastern vehicle access gate at the southeast edge of the airport parking lot as shown on sheet G-081.
- **Impacts to NAVAIDS** – None.
- **Marking changes** – None.
- **Lighting and signage changes** – None.
- **Required hazard marking and lighting per FAA AC 150/5210-5D** – For the duration of phase 1 construction, implement the following hazard marking and lighting provisions:
  - Place low profile barricades along the edge of the existing concrete apron and across the west ends of Taxilanes D2, D3, and D4 as shown on plan sheet G-081.
  - All construction equipment and vehicles inside the security fencing must have flashing yellow lights or orange and white checkered flags mounted on the uppermost part of the equipment/vehicle; flashing yellow lights will be required for nighttime or working during low visibility conditions.
- **Lead times for required notification** – 72 hours for issuing general construction NOTAMs.

**Phase 2A – SW Bituminous Apron Reconstruction & Taxilane F Widening**

- **Scope of work** – Full-depth bituminous pavement reclamation, subgrade excavation, concrete valley gutter, bituminous paving, pavement marking, in-pavement aircraft tiedowns, landscaping, and taxiway edge light relocation.
- **Estimated start date** – July 1<sup>st</sup>, 2026.
- **Estimated completion date** – July 31<sup>st</sup>, 2026.
- **Duration** – 20 working days.
- **Area closed to aircraft operations** – Taxiway B1, Taxilane F, and the southwest bituminous apron.
- **Impacted taxi routes** – The central apron, FBO, aircraft fueling area, and Taxilane F1 shall be accessed via Taxiway B2 to Taxilane D.
- **Impacted ARFF routes** – None.
- **Contractor personal vehicle parking area** – Within the airport parking lot as shown on sheet G-082.
- **Construction equipment staging/parking areas** – Within the turf infield area west of closed Taxilane F as shown on sheet G-082.
- **Construction access and haul route** – Through the western vehicle access slide gate and over closed Taxilane F as shown on sheet G-082.
- **Impacts to NAVAIDs** – None.
- **Marking changes** – None.
- **Lighting and signage changes** – None.
- **Required hazard marking and lighting per FAA AC 150/5210-5D** – For the duration of phase 2A construction, implement the following hazard marking and lighting provisions:
  - Place low profile barricades along the edge of the central apron and across both ends of Taxiway B1, Taxilane F, and the south end of Taxilane F1 as shown on plan sheet G-082.
  - All construction equipment and vehicles inside the security fencing must have flashing yellow lights or orange and white checkered flags mounted on the uppermost part of the equipment/vehicle; flashing yellow lights will be required for nighttime or working during low visibility conditions.
- **Lead times for required notification** – 72 hours for issuing general construction NOTAMs.

**Phase 2B – Central Bituminous Apron Reconstruction**

- **Scope of work** – Full-depth bituminous pavement reclamation, subgrade excavation, concrete valley gutter, bituminous paving, pavement marking, and in-pavement aircraft tiedowns.
- **Estimated start date** – August 1<sup>st</sup>, 2026.
- **Estimated completion date** – September 15<sup>th</sup>, 2026.
- **Duration** – 25 working days.
- **Area closed to aircraft operations** – Taxilane D1 and the central bituminous apron.
- **Impacted taxi routes** – The central apron, FBO, aircraft fueling area, and Taxilane F1 shall be accessed via a temporary taxilane centerline painted over the expanded Taxilane F pavement constructed in Phase 2A as shown on sheet G-083.
- **Impacted ARFF routes** – None.
- **Contractor personal vehicle parking area** – Within the airport parking lot as shown on sheet G-083.
- **Construction equipment staging/parking areas** – On the closed Taxilane D1 pavement as shown on sheet G-083.

- **Construction access and haul route** – Through the western vehicle access slide gate and over Taxilane F1 and across the temporary taxilane to the central concrete apron as shown on sheet G-083.
- **Impacts to NAVAIDs** – None.
- **Marking changes** – Temporary taxilane centerline to be painted over the reconstructed SW bituminous apron / widened Taxilane F as shown on sheet G-083. Temporary marking to be removed after phase 2B construction is complete and the central bituminous apron is reopened to aircraft traffic.
- **Lighting and signage changes** – None.
- **Required hazard marking and lighting per FAA AC 150/5210-5D** – For the duration of phase 2B construction, implement the following hazard marking and lighting provisions:
  - Place low profile barricades along the edge of the central apron, the temporary taxilane, and across the west end of Taxilane D as shown on plan sheet G-083s.
  - All construction equipment and vehicles inside the security fencing must have flashing yellow lights or orange and white checkered flags mounted on the uppermost part of the equipment/vehicle; flashing yellow lights will be required for nighttime or working during low visibility conditions.
- **Lead times for required notification** – 72 hours for issuing general construction NOTAMs.

### **Construction Safety Drawings**

Drawings specifically indicating airport operations, construction phasing, and safety have been developed for the project construction. These drawings are included in **Attachment 1** and can also be found in the contract drawing bid package (plan sheets G-081 through G-084).

### **Interruption of Water Supplies**

Underground water supplies for firefighting will not be impacted by construction activities.

### **Approach/Departure Surfaces**

The dimension, location, and slope criteria for the approach/departure surfaces for Runway 14/32 and turf Runway 18/36 is described in **Section 20 – Protection of Runway and Taxiway Safety Areas**. All runway approach/departure surfaces for this project will remain unaffected subject to the equipment height limitation described in **Section 21 – Other Limitations on Construction**.

## **6. AREAS AND OPERATIONS AFFECTED BY CONSTRUCTION**

### **Runways**

No runways will be impacted by construction.

### **Taxiways**

Taxiway B1 will be closed for Phase 2A construction.

### **Aprons and Taxilanes**

Phase 1A: North bituminous apron will be closed.

Phase 2A: SW bituminous apron and Taxilane F will be closed.

Phase 2B: Central bituminous apron and Taxilane D1 will be closed.

## 7. NAVIGATIONAL AID (NAVAID) PROTECTION

### FAA Owned NAVAIDs

- **RCE (Radio Control Equipment), RCO (Remote Communications Outlet), and ADS-B Antenna (Automatic Dependent Surveillance-Broadcast)**

Neither the RCE, RCO, or ADS-B antennas will be impacted by construction.

### Airport Owned NAVAIDs

- **Runway 14/32 PAPIs**

The Runway 14 and 32 PAPI units will not be impacted by construction.

- **Runway 14 REILs**

The Runway 14 REIL units will not be impacted by construction.

- **Runway 32 MALSF**

The Runway 32 MALSF will not be impacted by construction.

- **Rotating Beacon**

The rotating beacon will not be impacted by construction.

### MnDOT Owned NAVAIDs

- **VOR**

The VOR will not be impacted by construction.

- **AWOS**

The AWOS will not be impacted by construction.

## 8. CONTRACTOR ACCESS

### Stockpile Locations

Location of stockpiled materials and equipment storage shall be in the designated staging areas or as approved by the Airport. Stockpiling materials and equipment outside the staging areas requires prior approval from the Airport and will be subject to the restrictions described in this paragraph. Stockpiled materials and equipment storage are not permitted within an active RSA, ROFA, OFZ, TOFA, or TSA. See **Section 20 – Protection of Areas, Zones, and Surfaces** for requirements of stockpiled materials. Stockpiles shall be restricted to a maximum height of 15 feet. Stockpiled material shall meet the requirements of **Section 9 – Wildlife Management** to prevent the stockpile location(s) from becoming wildlife attractants.

### Vehicle and Pedestrian Operations

- **Construction site parking**

Employees' personal vehicles shall be parked in the airport parking lot as designated on the plans. No employee personal vehicles will be allowed into the worksite beyond the airport parking lot.

- **Construction equipment parking**

All service and construction vehicles and/or equipment shall be parked in the staging area when not in use and shall be positioned a minimum of 10-feet away from either side of the perimeter security fence.

See **Section 20 – Protection of Areas, Zones, and Surfaces** for further parking restrictions within safety areas and object free areas. Inactive equipment will not be allowed to park on a closed taxiway or runway.

- **Access and haul roads**

The Contractor will be restricted to use the haul road(s) shown on the plans. No other haul routes shall be permitted without prior notification and approval by the Airport and the RPR. The Contractor shall be responsible for the maintenance and cleaning of haul routes. Any haul routes in aircraft traffic areas shall be monitored for FOD (see section 10). The Contractor shall be responsible for cleaning the haul route as soon as possible. Right-of-way shall be given to all emergency vehicles sharing the haul routes with the Contractor.

- **Marking and lighting of vehicles and equipment**

The marking and lighting of vehicles shall be in accordance with AC 150/5210-5D *Painting, Marking, and Lighting of Vehicles used on an Airport*. Only marked Contractor-owned or operated vehicles required for the proper execution of the work will be allowed in the work areas. All equipment shall be marked and lit in accordance with AC 70/7460-1L. All vehicles and equipment shall have omni-directional amber flashing light and/or 3-foot by 3-foot flag having a checkered pattern of international orange and white squares at least one foot on each side. This includes construction, testing, RPR, and Airport personnel. All vehicles and equipment must be equipped with omni-directional amber flashing lights for all airfield activities between sunset and sunrise or when visibility is low. Vehicles within the airfield environment shall display company identification markings on both sides of the vehicle. Non-motorized equipment shall have a reflective device displayed on the front, back and sides. All supervisory and survey personnel vehicles which operate within the airfield environment but outside the work area shall have a company vehicle with an amber flashing light mounted on the roof of the cab and identifying markings, visible from 300 feet, mounted on both sides of the vehicle.

- **Description of proper vehicle operations**

All Contractor vehicles shall operate along the haul routes and within the project areas as shown on sheets G-081 through G-083. Contractor vehicles require an airport approved escort or flagger control to operate within the airfield movement areas (not required this project).

- **Required escorts**

All hauling activities across active taxilanes shall have an escort or flagger provided by the Contractor to control the mix of aircraft and hauling vehicles. Contractor provided escorts and flaggers must be familiar with the airport and have undergone escort training per FAA AC 150/5210-20A.

- **Situational awareness**

Yield to the right-of-way to moving aircraft, whether under tow or their own power, and pedestrians. While driving or working on the airfield environment, there shall be no devices in or on ears other than those used to protect hearing or communicate company business. Yield right-of-way to emergency vehicles displaying rotating beacons (other than amber) and/or using sirens and other audible emergency signals. It is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time. For emergency purposes, all escort vehicles shall be equipped with radio, telephone, or similar device for contact by the Airport Manager or RPR personnel. In the

event of an emergency, be prepared to move workers, vehicles, and equipment immediately at the direction of the Airport or RPR.

- **Two-way communication procedures**

All activities within aircraft movement areas will require two-way communication. In the event the contractor needs to access a movement area, clearance must be obtained before any of their personnel or equipment proceeds onto or across the aircraft movement area. The contractor shall notify the RPR when access to these areas is required. Two-way communication operators shall be always present when construction activities are being performed on the airfield. All clearance and communications will be performed by Airport personnel or the RPR using the Common Traffic Advisory Frequency (CTAF). The CTAF frequency that will be used is:

- CTAF – 122.80 MHz (no radio communication is required for this project)

- **Maintenance of the secured area of the airport**

In area of work activities, the Contractor shall maintain security against unauthorized access to the airfield area. Gates shall be closed and locked when not in use. The Contractor shall monitor all vehicles/personnel attempting to enter the site through the construction entrance. All access gates shall be kept clear of equipment and materials. Failure to adhere to these requirements could result in enforcement action per **Section 21**.

## **9. WILDLIFE MANAGEMENT**

### **Trash**

Receptacles shall be provided by the Contractor and equipped with metal, canvas, or plastic covers. Food scraps or other trash may not be disposed on the ground and must be collected and placed in the covered receptacles as to not attract wildlife.

### **Standing water**

Staging areas, stockpile areas, and the work area shall be graded to drain to avoid attracting wildlife.

### **Tall grass and seeds**

The use of low-quality seed mixtures that contain seeds of plants (such as clover) will attract wildlife and shall not be used. Grass and weeds shall be managed, or cut, if necessary, within work areas to avoid attracting wildlife.

### **Poorly maintained fencing and gates**

Fences and/or gates left open and unattended can allow undesired wildlife inside the airfield. Refer to **Section 8, Maintenance of the secured area of the airport**, for requirements of maintaining the secured area of the airport. Contractor personnel shall immediately notify the Airport and/or RPR of unwanted wildlife inside the airfield.

### **Disruption of wildlife habitat**

Prior to mobilizing equipment, the Contractor shall stake boundaries of wetland areas to be protected, as identified in the contract documents. Stakes shall be placed at 25-foot spacing, or closer as needed to round corners, and shall include a bright ribbon tied between the stakes. The Contractor shall maintain stakes and ribbons throughout the project and shall under no circumstances enter or disturb these areas.

## 10. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

The Contractor will be required to ensure the airfield environment is kept continuously free of construction debris, equipment and/or materials that might endanger or be ingested by an aircraft. The Contractor shall have sweeping/vacuuming capabilities on-site to remove debris as it occurs. Debris shall not be deposited on any portion of an operational runway, taxiway, taxilane, or apron. Should debris be deposited accidentally, it shall be removed immediately. Take extreme care to ensure no work-related debris or other loose items are allowed to be blown by wind or aircraft engine blast. The Contractor shall be responsible for any resulting damage to aircraft engines and/or other property arising from failure to secure and/or protect debris, tools, supplies, or other loose items. Following the requirements in **Section 9 – Wildlife Management** will help eliminate the potential for FOD. In areas that may result in the tracking of soil, sediments, or hazardous materials on the wheels of hauling equipment outside the area that are enclosed by erosion and silt/sediment control devices, the Contractor shall provide the means and methods to remove these materials prior to the vehicle exiting the controlled area. If water wash stations are used, the Contractor shall provide systems for the collection, treatment, and disposal of wheel wash water and accumulated sediment. Equipment operated on haul routes over existing pavements shall be always kept free of material spillage and foreign matter. Standby equipment is required to be always onsite and operational throughout the project and shall include, at a minimum, a self-propelled regenerative air sweeper and a water truck kept always loaded. Backup equipment will not be required to remain in an unproductive standby status and may be used for normal productive work. Upon completion, the Contractor is responsible for ensuring that the project area is restored to its original condition or cleaned up to the satisfaction of the RPR.

## 11. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

If shipments of hazardous material (including hazardous debris, contaminated soil or water, and hazardous waste) will be unloaded onto or loaded from airport property, the contractor shall have a qualified person available onsite when shipments are received or made who is current with U.S. Department of Transportation (DOT) approved training for the transportation of hazardous materials. The contractor shall properly characterize and manifest waste material leaving airport property for disposal. When the waste reaches its destination, the owner or operator of the designated and permitted treatment, storage, and disposal (TSD) facility shall sign the manifest and return a copy to the Airport within 35 days to confirm receipt.

Minor spills can be controlled by the first responder at the discovery of the spill. Use absorbent materials on small spills rather than hosing down or burying the spill. First responder should contain the spread of the spill, recover spilled materials, clean the contaminated area, and properly dispose of contaminated materials. For minor spills, consult the products MSDS for recommended actions for spills or container leaks. Additionally, MSDS's provided emergency phone numbers and occupational health hazard information.

The first responder can control semi-significant spills along with the aid of other personnel such as laborers and the supervisor, etc. Notify the Airport of semi-significant spills. Spills should be cleaned up immediately. Contain the spread of the spill and notify the project supervisor immediately. If the spill occurs on paved or impermeable surfaces, clean up by using dry methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely. If the spill occurs in



dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/hazardous spills that cannot be controlled by personnel in the immediate vicinity must be reported to the local emergency response by dialing 911. In addition to 911, the contractor will notify the Airport and proper county officials. Notify the state Emergency Services Warning Center. The services of a spills contractor or a HAZMAT team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site. Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works and Engineering Department, the Airport, the Highway Patrol, the City/County Police Department, and the Minnesota Department of Health.

Ensure that hazardous goods and material delivered to or from the construction site meet applicable DOT labeling and placarding requirements. Upon request from the Airport, supply material safety data sheets (MSDS) for all hazardous material being delivered to the site.

The storage and shipment of hazardous waste shall also comply with the requirements of this section.

It is emphasized, however, that although spills resulting from incidents or accidents should be responded to, securing the well-being of people comes first.

Good housekeeping practices should be utilized during equipment fueling and maintenance operations. Inspect fueling equipment for leaks prior to dispensing. Fueling operations shall be continuously attended while dispensing fuel. Fueling and maintenance operations shall not be performed within fifty feet of a storm drain, inlet, ditch, surface water, wetland, etc. to allow adequate time for containment in the event of a spill.

## **12. NOTIFICATION OF CONSTRUCTION ACTIVITIES**

### **Responsible representatives / points of contact:**

Project Manager – Taylor Peterson, Mead & Hunt, Inc. – 612.236.5503

Airport Manager – Erik Carlson – 218.841.8233

Detroit Lakes City Administrator (Owner) – Kelcey Klemm – 218.846.7123

Additional points of contact will be provided at the pre-construction meeting.

### **Notices to Airmen (NOTAM)**

Only the Airport Manager may issue and/or cancel a NOTAM on airport conditions and is the only entity that can close or open a runway. The Airport Manager shall coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants. The Contractor shall notify the Airport Manager and RPR a minimum of 72 hours prior to a NOTAM taking effect. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the Airport Manager immediately. Points of contact for issuing NOTAMS are as follows: Main Contact – Erik Carlson, Airport Manager – 218.841.8233 (cell). Alternate Contact – Kelcey Klemm, City Administrator – 218.846.7123 (cell).

**Emergency Notification Procedures**

The Contractor shall contact the Airport and/or RPR in most situations. However, when emergency medical, firefighting, and police response situations exist the Contractor shall first call 911, then notify the Airport Manager of the situation. This will ensure the most rapid emergency response.

In the event of an aircraft emergency, severe weather conditions, or any issue as determined by the Airport that may affect aircraft operations, the Contractor's personnel and/or equipment may be required to immediately vacate the area(s) affected. Points of contact for the various parties involved with the project shall be identified and shared at the pre-construction meeting among the various parties. Specific emergency notification procedures shall be incorporated into the project's SPCD.

**Emergency contact information**

- Emergency – DIAL 911
- Airport Manager – 218.841.8233
- CTAF Radio Emergency – 122.8
- Detroit Lakes Police Department – 218.847.4222
- Detroit Lakes Fire Department – 218.844.7665
- Hospital – St. Mary's Regional Health Center – 911 or 218.847.5611
- Minnesota Poison Center – 800.222.1222

In the event of an aircraft emergency, severe weather conditions, or any issue as determined by DTL that may affect aircraft operations, the Contractor's personnel and/or equipment may be required to immediately vacate the area(s) affected. Points of contact for the various parties involved with the project shall be identified and shared at the pre-construction meeting among the various parties. Specific emergency notification procedures shall be incorporated into the project's SPCD.

**Coordination with ARFF Personnel**

N/A

**Notification of the FAA**

Part 77 – The project will not affect navigable airspace. Any equipment, (cranes, graders, other equipment) used by the Contractor that exceed the height limitation in **Section 21 – Other Limitations on Construction** must have a separate 7460-1 airspace evaluation and determination prior to use.

NAVAIDs – For emergency (short-notice) notification about impacts to both airport owned, and FAA owned NAVAIDs, contact: 866-432-2622. The Contractor shall inform the Airport when emergency notification is necessary (not anticipated this project).

Airport owned/FAA maintained – N/A

FAA owned – No impacts to FAA owned facilities are anticipated for this project.

## **13. INSPECTION REQUIREMENTS**

**Daily Inspections**

The Contractor should conduct inspections at least daily, but more frequently, if necessary, to ensure conformance with the CSPP. Special attention shall be given to areas shared by construction traffic and air traffic. These areas shall be maintained in accordance with **Section 10 – Foreign Object Debris**

**Management.** The RPR will also provide on-going inspection throughout the duration of construction. The Airport Manager will have the final authority in determining if the area is suitable for aircraft use. **Attachment 3** contains a safety inspection checklist that may be used by the Contractor or Airport Manager/RPR. The Contractor will be required to immediately remedy any deficiencies, whether caused by negligence, oversight, or project change.

### **Final Inspections**

The Airport Manager and RPR shall conduct a final inspection prior to commissioning any newly constructed areas to air traffic. The Airport Manager or RPR will have the final authority in determining if the area is suitable for aircraft use. **Attachment 3** contains a safety inspection checklist that may be used by the Contractor or Airport Manager/RPR. The Contractor will be required to immediately remedy any deficiencies, whether caused by negligence, oversight, or project change.

## **14. UNDERGROUND UTILITIES**

The Contractor shall notify Gopher State One Call and owners of underground utilities within the construction area or within affected public rights-of-way or easements, via the “one-call” notification system (1-800-252-1166) in advance of the commencement of excavation activities. Notify the Airport Manager and RPR when the “one-call” request is being initiated. Contractor shall not cross electrical or communication cables unless protected by approved means. In the event of interruption to field-located utility services because of the work, promptly notify the Airport Manager first, and then the proper authority. Cooperate with said authority in restoring service as promptly as possible. If required, the Contractor shall install suitable temporary service until permanent repair is completed.

## **15. PENALTIES**

The contractor is responsible for compliance with the CSPP as detailed herein. Violations of the airport, construction safety, and driving regulations may will be cause for the project to be stopped and project safety procedures evaluated. Contractor working days will continue to be charged, even if the Owner/RPR ceases construction operations. The Owner/RPR will decide if and when work will continue. Enforcement of these regulations will be by the Owner/RPR.

## **16. SPECIAL CONDITIONS**

Low visibility conditions will trigger specific safety mitigation actions outlined in this CSPP. For the purposes of this project, low visibility conditions will exist when the prevailing visibility is less than 1 statute mile. The Airport will notify the Contractor when these conditions exist so adequate safety measures can be taken by the Contractor.

An aircraft in distress may require the Contractor to immediately move equipment away from an aircraft movement area. The Airport will notify the Contractor in the unlikely event of an aircraft in distress. The Contractor will be required to comply with all Airport Manager/RPR instructions.

Various circumstances, such as an aircraft accident, security breach, or other unforeseen event may require suspension of the construction. The Airport will notify the Contractor when suspension of the work will be required. See **Section 12 – Notification of Construction Activities** for emergency contact information.

A VPD (vehicle / pedestrian deviation) is any entry or movement on the movement area by a vehicle or pedestrian that has not been authorized by the Owner/RPR. In the event of a VPD, the Owner/RPR reserves the right to suspend the work or any portion thereof and continue suspension until the completion of any investigation or evaluation by the Owner/RPR and full compliance with any corrective measures which the Owner/RPR may reasonably require. In addition, the Owner/RPR may require the contractor to provide to the Owner/RPR a written plan, satisfactory to the Owner/RPR, to demonstrate the contractor's ability to prevent future violations. See **Section 8 – Contractor Access** for vehicle and pedestrian operations and two-way radio communication requirements.

## 17. RUNWAY AND TAXIWAY VISUAL AIDS

### General

This section refers to standard runway and taxiway lighting systems. Temporary airport markings and lighting provisions shall be clearly visible to pilots and not misleading, confusing, or deceptive. All temporary markings and lighting shall be secured in place to prevent movement by prop wash, jet blast, wing vortices, or other wind currents and constructed of materials that would minimize damage to an aircraft in the event of inadvertent contact. Temporary lighting in areas used by aircraft will need to conform to the frangibility requirements from AC 150/5220-23, *Frangible Connections*.

### Markings

- No existing runway or taxiway markings will be impacted by construction.
- Contractor to mark a 6" wide yellow, reflectorized temporary taxiway centerline stripe over the newly constructed Phase 2A pavement to delineate the temporary taxi route to the central concrete apron during Phase 2B construction as shown on plan sheet G-083. Contractor will remove this temporary centerline stripe following the completion of Phase 2B construction.

### Lighting and Visual NAVAIDs

- No existing runway lighting or visual NAVAIDs will be impacted by construction.
- **Temporarily Closed Taxiway B1 for Phase 2A**  
Temporarily closed Taxiway B1 is identified on sheet G-082 and in **Section 5 – Construction Work Plan / Work Areas and Phasing**. The elevated taxiway edge light fixtures shall be covered using a PVC stub placed (or other airport/RPR approved method) over the fixture in such a way to prevent light leakage. In certain circumstances, the use of temporary jumper wires may be desired.

### Airfield Signs

- No existing runway signs will be impacted by construction.
- **Temporarily Closed Taxiway B1 for Phase 2A**  
Temporarily closed Taxiway B1 is identified on sheet G-082 and in **Section 5 – Construction Work Plan / Work Areas and Phasing**. There are two existing guidance signs that direct aircraft traffic to the FBO over Taxiway B1. These signs shall be turned off and covered in such a way to prevent viewing the taxiway directional panels routing traffic over the closed taxiway.

## **18. MARKING AND SIGNS FOR ACCESS ROUTES**

The contractor shall place traffic control signs and/or devices, as appropriate, to advise other road users of construction operations and hauling. Signs and/or devices shall conform to the most current addition of AC 150-5340-18 and when practical, the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications. Signs in areas also used by aircraft will need to conform to frangibility and height requirements from AC 150/5220-23, *Frangible Connections*.

## **19. HAZARD MARKING AND LIGHTING**

Hazard marking and lighting prevents pilots from entering areas closed to aircraft and prevents construction personnel from entering areas open to aircraft. Before starting work, provide and have available all signs, barricades, and lights necessary for protection of the work. Install and maintain adequate warning signs and lighted barricades to protect property and personnel in the work area. Barricades shall be weighted or anchored to prevent overturning from wind or aircraft engine blast. The contractor shall provide all barricades necessary for proper execution of the work.

Barricades are not permitted in any active safety area. Barricades located within a runway or taxiway object free area and/or on aprons must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights. The contractor shall install and maintain the low-level barricades, marked with diagonal, alternating orange and white stripes, to separate all construction/maintenance areas from the movement areas listed above. The contractor shall provide, install, and maintain red omni-directional flashers for the barricades meeting the luminance requirements of DOT standards. Barricades shall be spaced a maximum of 4 feet apart. The contractor will be required to adequately weigh down the barricades to avoid movement during high winds, jet blast, prop wash, etc.

The contractor shall have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the Airport. Lighting shall be checked for proper operation at least once per day, preferably at dusk.

Open trenches, excavations, or obstructions not being actively worked shall be marked with lighted and weighted barricades which can be seen from a reasonable distance.

## **20. PROTECTION OF RUNWAY AND TAXIWAY SAFETY AREAS**

### **Runway Safety Area (RSA)**

No construction may occur within the RSA while the runway is open for aircraft operations (not anticipated this project). The dimension for the Runway 14/32 RSA is 150-FT each side of centerline and 600-FT beyond each runway end. The dimension for the Runway 18/36 RSA is 60-FT each side of centerline and 240-FT beyond each runway end.

### **Runway Object Free Area (ROFA)**

Construction, including excavations, may be permitted within the ROFA (not anticipated this project). However, equipment must be removed from the ROFA when not in use and material should not be stockpiled in the ROFA. The dimension for the Runway 14/32 ROFA is 400-FT each side of centerline and 600-FT beyond each runway end. The dimension for the Runway 18/36 ROFA is 125-FT each side of centerline and 240-FT beyond each runway end.

**Taxiway/Taxilane Safety Area (TSA)**

No construction may occur in the TSA while the taxiway/taxilane is open to aircraft operations. The TSA extends 39.5 feet each side of all taxiway centerlines and either 39.5 feet (ADG-II) or 24.5 feet (ADG I) each side of all taxilane centerlines and runs for the full length of all taxiways/taxilanes.

**Taxiway/Taxilane Object Free Area (TOFA and TLOFA)**

Construction is not permitted within an active TOFA and TLOFA. Equipment must be removed from the TOFA/TLOFA when not in use and material should not be stockpiled in the TOFA/TLOFA. The TOFA is 62 feet each side of centerline for all taxiways and the TLOFA is either 55 feet (ADG-II) or 39.5 feet (ADG I) each side of centerline for all taxilanes and extends the full length of all taxiways/taxilanes.

**Obstacle Free Zone (OFZ)**

Personnel, material, and/or equipment may not penetrate the OFZ while the runway is open to aircraft operations (not anticipated this project). The dimension for Runway 14/32 OFZ is 200 feet each side of centerline and 200 feet beyond each runway end. The dimension for Runway 18/36 OFZ is 125 feet each side of centerline and 200 feet beyond each runway end.

**Runway Approach/Departure Surfaces**

All personnel, material, and/or equipment must remain clear of the imaginary surfaces for obstruction evaluation (Part 77) of an active runway (approach and departure surfaces). **No impact to any active Part 77 or instrument departure surfaces for either Runway 14/32 or Runway 18/36 is anticipated for this project.**

**Runway 14/32 Existing Approach Surfaces**

Runways 14 and 32 are non-precision instrument approach runways with visibility minimums as low as 3/4 mile. Both Runway 14 and 32 approach surfaces will be unaffected by this project. The resulting approach surfaces begin 200 feet from each runway threshold and consist of a trapezoid with the following dimensions:

- Width at inner approach (200-feet from runway threshold) – 1,000-feet
- Width at outer approach – 4,000-feet
- Length of approach – 10,000-feet
- Approach slope – 34:1

**Runway 18/36 Existing Approach Surfaces**

Runway 18/36 is a visual utility runway. The resulting approach surfaces begin at each runway threshold and consists of a trapezoid with the following dimensions:

- Width at inner approach (at runway threshold) – 250-feet
- Width at outer approach – 1,250-feet
- Length of approach – 5,000-feet
- Approach slope – 20:1

**Runway 14/32 Existing Instrument Departure Surfaces**

The Runway 14 and 32 departure surfaces will be unaffected by this project. Using Table 3-5 and Figure 3-9 from AC150/5300-13B, the Runway 14/32 section 1 (inner) departure surfaces begin at the runway thresholds and consist of a trapezoid with the following dimensions:

- Width at inner departure (runway threshold) – 100-feet

- Width at outer departure – 6,612-feet
- Length of departure – 12,152-feet
- Departure slope – 40:1

## 21. OTHER LIMITATIONS ON CONSTRUCTION

### Prohibitions

- Open flame welding and torches are prohibited unless fire safety precautions are provided, and the Airport has approved their use.
- Electrical blasting caps are prohibited on or within 1,000 feet of the airport property.
- The use of flare pots is prohibited within the airport operations area (AOA).
- No smoking will be allowed within the airfield environment except as designated by the Airport Manager.

### Restrictions

- Construction equipment shall not exceed a height of 20 feet. Construction equipment that extends 20 feet or more above ground level shall be cleared through the Owner/RPR prior to moving onto site. When cranes or concrete pump trucks are used, an FAA-approved, 3-foot orange and white checkered flag and a solid red light shall be mounted at the highest point on the crane or pump boom. Equipment that may be lowered readily shall be lowered at night, during reduced daytime visibility, and during other periods of storage to comply with the 20-foot height limitation.
- If directed by the Owner/RPR, construction equipment that cannot be lowered below the 20-foot height limitation shall be lighted at night and during periods of reduced daytime visibility. Light shall be mounted on the highest point of equipment; shall be omni-directional; and shall consist of, as a minimum, one 100-watt bulb enclosed within an aviation red lens. Also, for daytime operations, mount an FAA-approved 3-foot square orange and white checkered flag at the highest point.
- During daylight hours with severe visibility problems or heavy fog, cranes and concrete pump trucks shall not operate. The Airport Manager will determine when visibility problems exist and will coordinate and designate requirements for position and location of flag and light.
- Any type of fueling support facility or device used to refuel construction equipment is subject to local fire inspection. Local fire codes and safety standards shall be met prior to commencement of work.
- The Contractor shall conduct construction activities on the airport in a manner that will minimize interference with the airport operations.
- Construction sequence, duration, and time limitations can be found in **Section B – Construction Operations/Scheduling/Phasing** and **Attachment 1**.

### Enforcement

Violation of these rules and regulations, depending upon severity of the violation, may result in one or more of the following:

- Verbal warning

- Written warning
- Contract work stopped until corrective measures are taken to preclude a recurrence of the violation



**ATTACHMENT 1:**  
**Construction Operations & Safety Phasing Plans**



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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

SIGNATURE: \_\_\_\_\_  
 PRINT NAME: \_\_\_\_\_  
 DATE: \_\_\_\_\_ LICENSE #: \_\_\_\_\_

PROJECT WORKING DAYS SUMMARY		
PHASE	PAVEMENT AREA	WORKING DAYS
1	12,350 SY	45
2A	3,800 SY	20
2B	4,600 SY	25

# DETROIT LAKES - BECKER COUNTY AIRPORT TERMINAL APRON RECONSTRUCTION & EXPANSION

24813 US HIGHWAY 10  
DETROIT LAKES, MN 56501

ISSUED  
03/06/25 CSCP  
SUBMITTAL

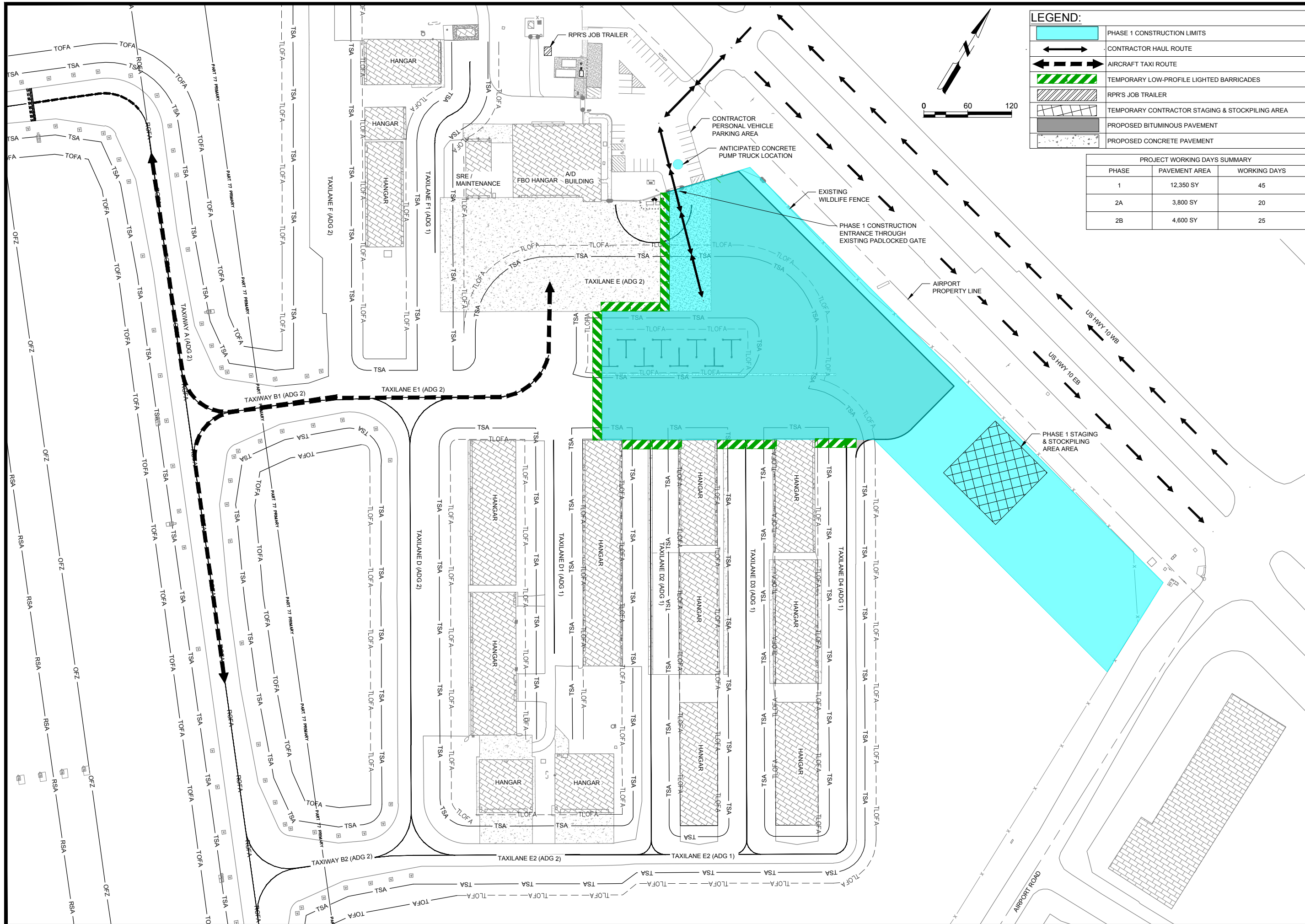
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M&H NO.: 3197100-242527.01  
DATE: MARCH 6, 2025  
DESIGNED BY: JDK  
DRAWN BY: KSH  
CHECKED BY: TFP  
DO NOT SCALE DRAWINGS

**SHEET CONTENTS**

**CONSTRUCTION  
OPERATIONS &  
SAFETY PHASING  
PLAN - PHASE 1**

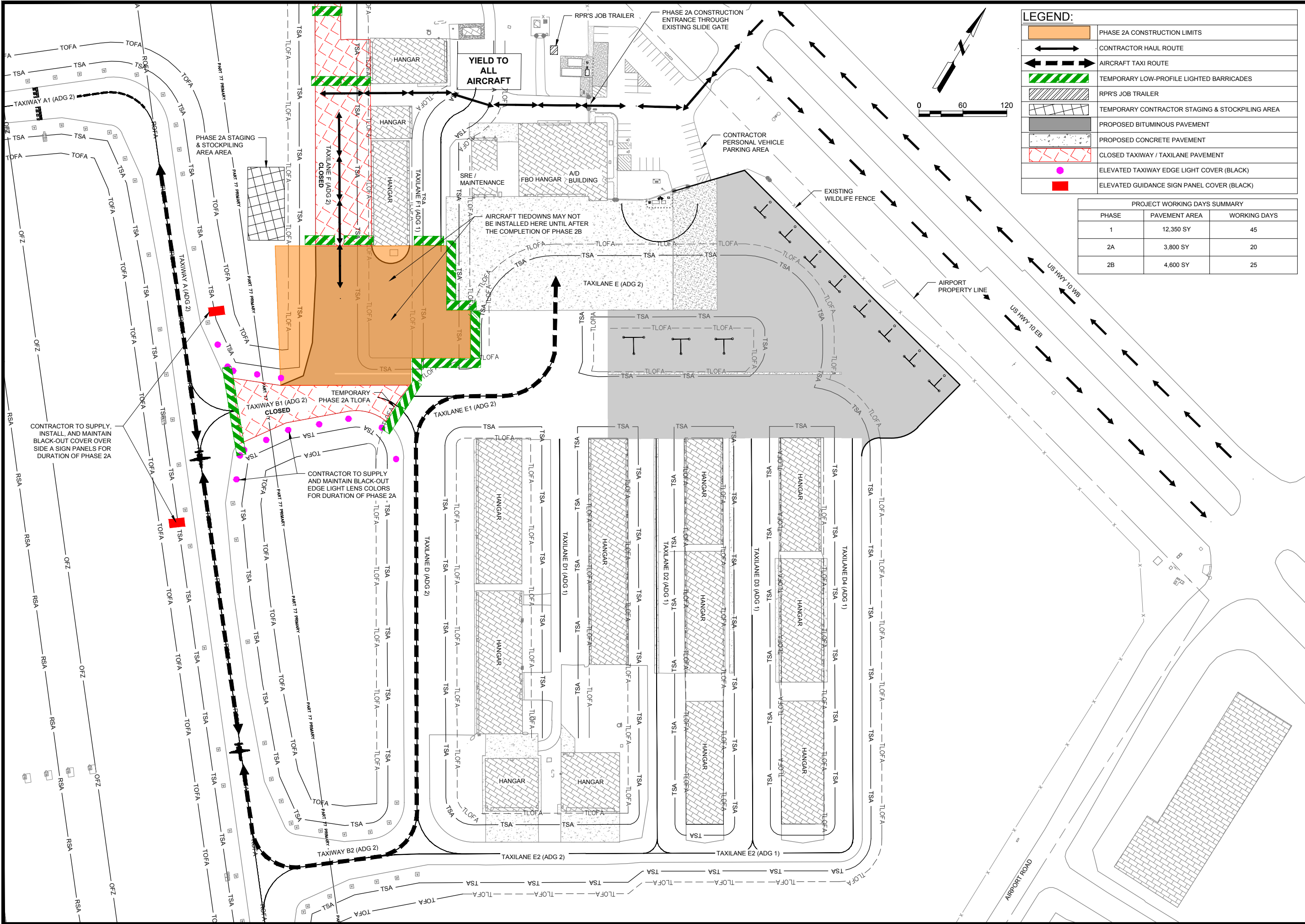
SHEET NO.

G-081



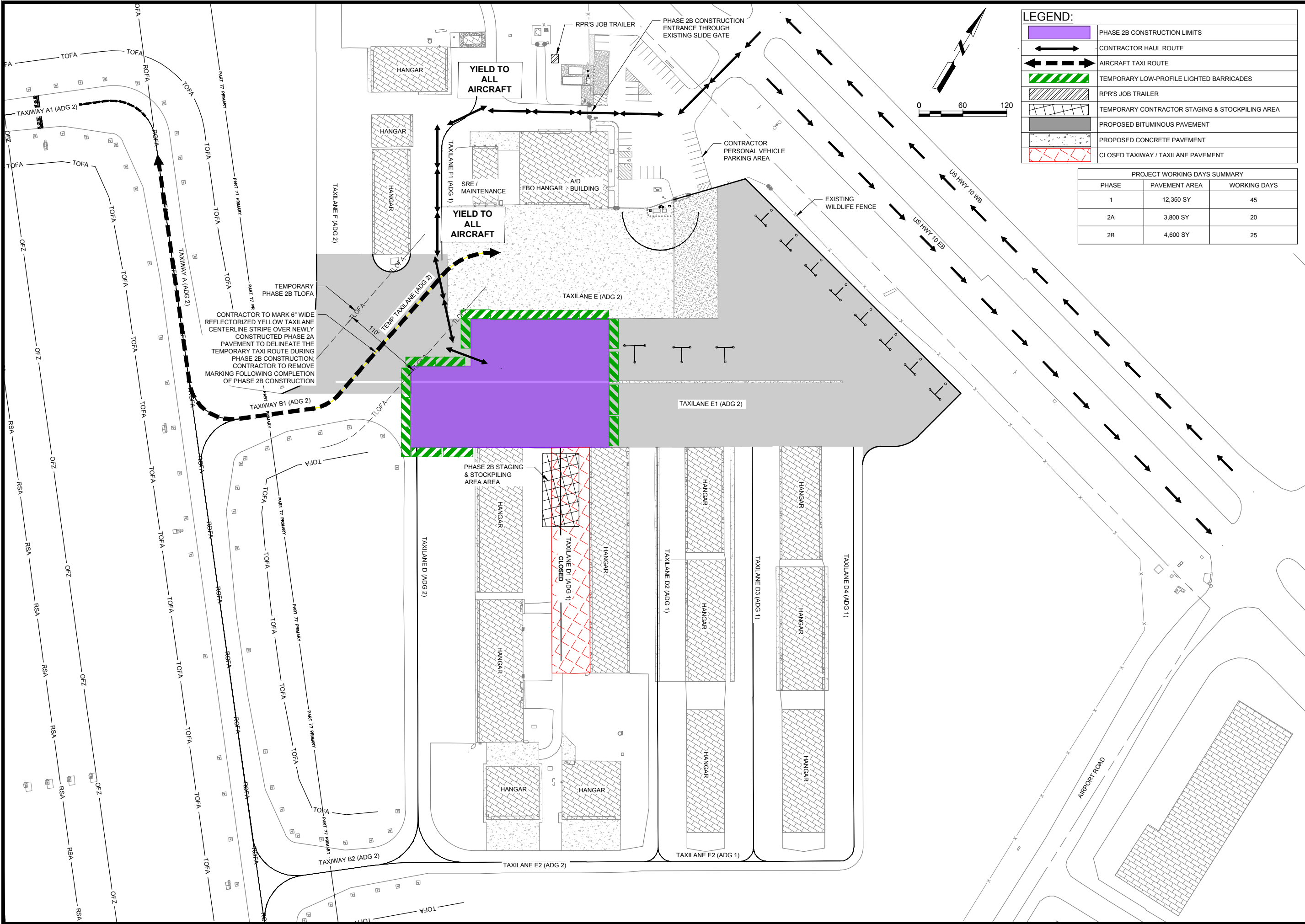
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LEGEND:

	PHASE 2B CONSTRUCTION LIMITS
	CONTRACTOR HAUL ROUTE
	AIRCRAFT TAXI ROUTE
	TEMPORARY LOW-PROFILE LIGHTED BARRICADES
	RPR'S JOB TRAILER
	TEMPORARY CONTRACTOR STAGING & STOCKPILING AREA
	PROPOSED BITUMINOUS PAVEMENT
	PROPOSED CONCRETE PAVEMENT
	CLOSED TAXIWAY / TAXILANE PAVEMENT

PROJECT WORKING DAYS SUMMARY		
PHASE	PAVEMENT AREA	WORKING DAYS
1	12,350 SY	45
2A	3,800 SY	20
2B	4,600 SY	25

DETROIT LAKES - BECKER COUNTY AIRPORT  
TERMINAL APRON RECONSTRUCTION &  
EXPANSION  
24813 US HIGHWAY 10  
DETROIT LAKES, MN 56501

ISSUED 03/06/25 CSPP SUBMITTAL

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DO NOT SCALE DRAWINGS

SHEET CONTENTS  
CONSTRUCTION  
OPERATIONS &  
SAFETY PHASING  
PLAN - PHASE 2B

SHEET NO.

G-083

Mead & Hunt  
Mead and Hunt, Inc.  
7900 International Drive,  
Suite 980  
Bloomington, MN 55425  
phone: 952-941-5619  
meadhunt.com

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

SIGNATURE: \_\_\_\_\_  
PRINT NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_ LICENSE #: \_\_\_\_\_

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CONFORMS TO FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR 150/5370-2G "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION" AND THE PROJECT SPECIFIC "CONSTRUCTION SAFETY AND PHASING PLAN" (CSPP)

GENERAL NOTES

- A. CONSTRUCTION NOTICE TO PROCEED IS ANTICIPATED TO BE ISSUED IN THE SPRING OF 2026. SEE SHEETS G-081 THROUGH G-083 AND THE SPECIAL PROVISIONS IN THE SPECIFICATIONS FOR MORE DETAILS INCLUDING THE NUMBER OF WORKING DAYS ALLOTTED FOR THE PROJECT.
- B. EXACT LIMITS OF CONSTRUCTION WILL BE VERIFIED BY THE RESIDENT PROJECT REPRESENTATIVE (RPR) PRIOR TO THE CONTRACTOR BEGINNING WORK IN ANY AREA. **THE CONTRACTOR SHALL BE RESPONSIBLE FOR INFORMING ALL EMPLOYEES AND SUBCONTRACTORS OF THESE LIMITS.**
- C. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATION OF ALL UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITY LOCATES AND COORDINATION FOR SCHEDULING LOCATES.
- D. ALL STAGING AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION UPON PROJECT COMPLETION AT THE CONTRACTOR'S EXPENSE. THE EXACT LOCATION OF THE STAGING AREAS WILL BE DETERMINED BY THE RPR IN THE FIELD.
- E. SEE "CONSTRUCTION SAFETY AND PHASING PLAN" AND "SAFETY PLAN COMPLIANCE DOCUMENT" FOR ADDITIONAL DETAILS AND INFORMATION ON OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION.

MARKING, LIGHTING, AND BARRICADES

- A. CONSTRUCTION EQUIPMENT -- ALL CONSTRUCTION EQUIPMENT MUST BE MARKED WITH A 3 FOOT X 3 FOOT ORANGE AND WHITE CHECKERED FLAG MOUNTED AT THE HIGHEST POINT AND/OR LIGHTED WITH AN AMBER BEACON. FOR NIGHTTIME CONSTRUCTION, CONSTRUCTION EQUIPMENT MUST BE LIGHTED AND INCLUDE A FLASHING AMBER BEACON.
- B. EXCAVATION/STOCKPILES -- EXCAVATION ADJACENT TO PAVED SURFACES MUST BE APPROPRIATELY MARKED AND LIGHTED BY BARRICADES.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING LOW PROFILE BARRICADES ACROSS THE PAVEMENT AS SHOWN ON SHEETS G-081 THROUGH G-083 TO KEEP VEHICLES FROM ENTERING ACTIVE AREAS AND TO KEEP AIRCRAFT FROM TAXIING INTO AREAS UNDER CONSTRUCTION. CARE SHALL BE EXERCISED BY CONTRACTOR DURING CONSTRUCTION NOT TO PLACE BARRICADES CLOSER THAN THE CLEAR DISTANCES STATED IN THE SPECIAL PROVISIONS AND SHOWN ON THE PLANS.
- D. LOW-PROFILE BARRICADES SHALL BE NO MORE THAN 18 INCHES IN HEIGHT. A MAXIMUM GAP OF FOUR (4) FEET IS ALLOWED BETWEEN BARRICADES. BARRICADES SHALL BE ADEQUATELY WEIGHTED SO AS TO WITHSTAND WIND, PROPELLER, AND JET BLASTS. BARRICADES SHALL HAVE ALTERNATING STRIPS OF REFLECTIVE WHITE AND ORANGE AND BE EQUIPPED WITH RED BLINKING LIGHTS.
- E. CONTRACTOR MUST ALWAYS STAY WITHIN THE BARRICADED AREA UNLESS ACCOMPANIED BY AN AIRPORT APPROVED ESCORT.
- F. BARRICADES SHALL BE PLACED IN ACCORDANCE WITH CONTRACT PROVISIONS AS SHOWN AND AS DIRECTED BY THE RPR. THE CONTRACTOR SHALL PLACE, MOVE, AND MAINTAIN THE BARRICADES THROUGHOUT THE DURATION OF THE WORK.

FUEL SUPPORT

- A. ANY TYPE OF FUELING SUPPORT FACILITY OR DEVICE USED TO REFUEL CONSTRUCTION EQUIPMENT IS SUBJECT TO LOCAL FIRE INSPECTION. LOCAL FIRE CODES AND SAFETY STANDARDS SHALL BE MET PRIOR TO COMMENCEMENT OF WORK. FUELING SHALL BE RESTRICTED TO THE DESIGNATED STAGING AREA SHOWN ON THE PLANS.

SWEEPING/CLEAN-UP

- A. THE CONTRACTOR SHALL HAVE SWEEPING OR VACUUMING EQUIPMENT ON-SITE IN ORDER TO REMOVE DEBRIS AS IT OCCURS. DEBRIS SHALL NOT BE DEPOSITED ON ANY PORTION OF THE AIRFIELD OR LANDSIDE PAVEMENTS. SHOULD DEBRIS BE DEPOSITED ACCIDENTALLY, IT SHALL BE REMOVED IMMEDIATELY. UPON COMPLETION OF THE PROJECT, THE CONTRACTOR IS RESPONSIBLE FOR INSURING THAT THE PROJECT AREA IS RESTORED TO ITS ORIGINAL CONDITION OR CLEANED-UP TO THE CITY AND RPR'S SATISFACTION.

HAUL ROUTES

- A. HAUL ROUTES AND ACCESS TO THE CONSTRUCTION SITE WILL BE DISCUSSED AT THE PRE-CONSTRUCTION MEETING AND ARE DEPICTED ON THIS PLAN.
- B. THE CONTRACTOR SHALL CONDUCT THEIR OPERATIONS ON THE AIRPORT IN A MANNER THAT WILL MINIMIZE INTERFERENCE WITH THE NORMAL OPERATION OF THOSE AIRPORT FACILITIES THAT ARE DESIGNATED UNDER THIS CONTRACT TO REMAIN OPEN TO AIR TRAFFIC, AND THE CONTRACTOR SHALL IMPLEMENT ALL SPECIFIED AND OTHER APPROPRIATE MEASURES TO ENSURE THE SAFETY OF ALL USERS OF THE AIRPORT.
- C. NO HAULING IS ALLOWED ACROSS ANY PORTION OF THE APRON THAT IS OPEN TO AIR TRAFFIC WITHOUT A CONTRACTOR PROVIDED FLAGGER PERSON CONTROLLING THE MOVEMENT OF VEHICLES.

ENFORCEMENT

- A. VIOLATION OF THESE RULES AND REGULATIONS, DEPENDING UPON SEVERITY OF THE VIOLATION, MAY RESULT IN ONE OR MORE OF THE FOLLOWING:  
(1) A VERBAL AND/OR WRITTEN WARNING.  
(2) THE CONTRACT WORK BEING STOPPED UNTIL CORRECTIVE MEASURES ARE TAKEN TO PRECLUDE A RECURRENCE OF THE VIOLATIONS.  
(3) THE REMOVAL OF PERSONNEL FROM THE PROJECT SITE.

MEETINGS AND CORRESPONDENCE

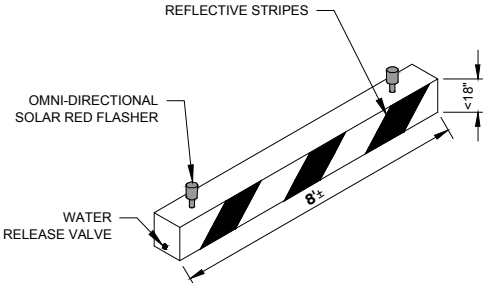
- A. THE AIRPORT MANAGER SHALL ISSUE ALL NOTAMS. THE CONTRACTOR MUST NOTIFY THE AIRPORT MANAGER/RPR A MINIMUM OF 72 HOURS PRIOR TO NOTAM TAKING EFFECT AND A MINIMUM OF 4 WEEKS PRIOR TO INITIAL CONSTRUCTION.
- B. CONTRACTOR IS REQUIRED TO ATTEND WEEKLY COORDINATION MEETINGS AT WHICH SAFETY ISSUES WILL BE DISCUSSED.

OPERATIONS/PHASING/TRAFFIC CONTROL NOTES

- A. ALL PUBLIC ROADS AND THE AIRPORT PARKING LOT ARE TO REMAIN OPEN TO VEHICLE TRAFFIC AT ALL TIMES. CONTRACTOR SHALL REPLACE ANY PAVEMENT DAMAGED DUE TO CONSTRUCTION ACTIVITIES IN KIND AT THE CONTRACTOR'S EXPENSE. TRAFFIC CONTROL WILL BE REQUIRED WHILE PERFORMING CONSTRUCTION CROSSING EXISTING ROADS AND AT ALL HAUL ROUTE/CONSTRUCTION ENTRANCES.
- B. DURING WORKING AND NON-WORKING HOURS, THE CONTRACTOR SHALL PROPERLY BARRICADE AND SIGN AREAS WHICH COULD CAUSE DAMAGE TO VEHICLES. TEMPORARY TRANSITIONS SHALL BE PLACED AT ALL MATCHING PAVEMENT EDGES.
- C. CONTRACTOR SHALL SUPPLY ANY TEMPORARY STOP SIGN, SPEED LIMIT, HAUL ROUTE, OR ANY OTHER TEMPORARY SIGN OR TRAFFIC CONTROL DEVICE REQUIRED TO PERFORM CONSTRUCTION AS DIRECTED BY THE CITY/RPR.
- D. CONTRACTOR SHALL NOT PARK OR TURN AROUND CONSTRUCTION VEHICLES IN ANY ACTIVE AIRCRAFT MOVEMENT OR NON-MOVEMENT AREAS, PARKING LOTS, OR PARKING LOT ENTRANCES.
- E. ALL TRAFFIC CONTROL ITEMS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), CURRENT EDITION. ALL BARRICADES SHALL BE WEIGHTED TO WITHSTAND WIND AND JET BLAST AND KEEP BARRICADES STATIONARY.
- F. PERSONAL VEHICLES SHALL BE PARKED IN THE DESIGNATED SECTION OF THE AIRPORT PARKING LOT AS DEPICTED ON SHEETS G-081 THROUGH G-083.
- G. THE EXACT NUMBER, TYPE, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.
- H. TRAFFIC CONTROL MEASURES SHOWN ON THE PLANS ARE A MINIMUM; THE CONTRACTOR IS TO SUPPLY ANY ADDITIONAL TRAFFIC CONTROL MEASURES TO PERFORM REQUIRED WORK AS REQUIRED BY THE CITY, THE RPR, THE FAA, OR THE MINNESOTA DEPARTMENT OF TRANSPORTATION (MnDOT). THIS IS INCIDENTAL TO THE AIRFIELD SAFETY AND TRAFFIC CONTROL BID ITEM.
- I. AT THE PRE-CONSTRUCTION MEETING, IT WILL BE DISCUSSED IF A CONCRETE PUMP WILL BE USED IN CONSTRUCTION OR AT A LOCATION / HEIGHT OTHER THAN SHOWN ON SHEET G-081. IF SO, THE CONTRACTOR MUST SUBMIT THE APPROPRIATE FORMS TO THE FAA FOR APPROVAL. (ALLOW A MINIMUM OF 60 DAYS FOR REVIEW).
- J. DAILY SAFETY INSPECTIONS SHALL BE PERFORMED AS REQUIRED IN THE CSPP BY THE CONTRACTOR AND THE CITY/RPR.

SCHEDULING NOTES:

- A. ALL SCHEDULING TO BE COORDINATED THROUGH THE RPR AND APPROVED BY THE CITY.
- B. THE CONTRACTOR SHALL SUBMIT A DETAILED PROJECT SCHEDULE AT THE PRE-CONSTRUCTION MEETING FOR APPROVAL BY THE CITY AND RPR. A MINIMUM OF 4-WEEKS NOTICE TO THE CITY/FBO/RPR PRIOR TO BEGINNING CONSTRUCTION IS REQUIRED FOR THE CITY TO PROPERLY NOTIFY ALL TENANTS OF THE PROPOSED CONSTRUCTION.



LOW-PROFILE CONSTRUCTION BARRICADE ON-PAVEMENT

- CONTRACTOR SHALL SUPPLY, PLACE, AND MAINTAIN ALL BARRICADES AND LIGHTS IN WORKING ORDER FOR THE DURATION OF THE PROJECT.
- GAPS BETWEEN BARRICADES SHALL BE NO MORE THAN 4 FEET.
- SEE SPECIFICATION NS-01 AIRFIELD SAFETY AND TRAFFIC CONTROL FOR MORE DETAIL.

1 LOW PROFILE BARRICADE DETAIL

NO SCALE

Mead & Hunt

Mead and Hunt, Inc.  
7900 International Drive,  
Suite 980  
Bloomington, MN 55425  
phone: 952-941-5619  
meadhunt.com

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

SIGNATURE: \_\_\_\_\_  
PRINT NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_ LICENSE #: \_\_\_\_\_

DETROIT LAKES - BECKER COUNTY AIRPORT  
TERMINAL APRON RECONSTRUCTION &  
EXPANSION  
24813 US HIGHWAY 10  
DETROIT LAKES, MN 56501

ISSUED  
03/06/25 CSPP  
SUBMITTAL

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CHECKED BY: TFP  
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SHEET CONTENTS  
CONSTRUCTION  
OPERATIONS &  
SAFETY PHASING  
NOTES

SHEET NO.

G-084

**ATTACHMENT 2:**  
**Definition of Terms**

**APPENDIX B. TERMS AND ACRONYMS****Table B-1. Terms and Acronyms**

<b>Term</b>	<b>Definition</b>
Form 7460-1	Notice of Proposed Construction or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, <i>Safe, Efficient Use, and Preservation of the Navigable Airspace</i> . (See guidance available on the FAA web site at <a href="https://oeaaa.faa.gov">https://oeaaa.faa.gov</a> .) The form may be downloaded at <a href="http://www.faa.gov/airports/resources/forms/">http://www.faa.gov/airports/resources/forms/</a> , or filed electronically at: <a href="https://oeaaa.faa.gov">https://oeaaa.faa.gov</a> .
Form 7480-1	Notice of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. The form may be downloaded at <a href="http://www.faa.gov/airports/resources/forms/">http://www.faa.gov/airports/resources/forms/</a> .
Form 6000-26	Airport Sponsor Strategic Event Submission Form
AC	Advisory Circular
ACSI	Airport Certification Safety Inspector
ADG	Airplane Design Group
AIP	Airport Improvement Program
ALECP	Airport Lighting Equipment Certification Program
ANG	Air National Guard
AOA	Air Operations Area, as defined in 14 CFR Part 107. Means a portion of an airport, specified in the airport security program, in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the secured area of the airport terminal building.
ARFF	Aircraft Rescue and Fire Fighting
ARP	FAA Office of Airports
ASDA	Accelerate-Stop Distance Available
AT	Air Traffic
ATCT	Airport Traffic Control Tower
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under

Term	Definition
	the authority of 14 CFR Part 139, <i>Certification of Airports</i> .
CFR	Code of Federal Regulations
Construction	The presence of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety and Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FOD	Foreign Object Debris/Damage
FSS	Flight Service Station
GA	General Aviation
HAZMAT	Hazardous Materials
HMA	Hot Mix Asphalt
IAP	Instrument Approach Procedures
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LDA	Landing Distance Available
LOC	Localizer antenna array
Movement Area	The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.



<b>Term</b>	<b>Definition</b>
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See <u>AC 150/5300-13</u> for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to <u>AC 150/5300-13</u> for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
OTS	Out of Service
P&R	Planning and Requirements Group
NPI	NAS Planning & Integration
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicator
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RA	Reimbursable Agreement
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with <u>AC 150/5300-13</u> .
SDS	Safety Data Sheet
SIDA	Security Identification Display Area
SMS	Safety Management System

<b>Term</b>	<b>Definition</b>
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
SSC	System Support Center
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with <u>AC 150/5300-13</u> .
TDG	Taxiway Design Group
Temporary	Any condition that is not intended to be permanent.
Temporary Runway End	The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.
Threshold	The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See <u>AC 150/5300-13</u> for guidance on declared distances.
TSA	Taxiway Safety Area, or Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
VASI	Visual Approach Slope Indicator
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicator (PAPI), visual approach slope indicator (VASI), and pulse light approach slope indicator (PLASI).
VFR	Visual Flight Rules
VOR	Very High Frequency Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

**ATTACHMENT 3:**  
**Daily Safety Inspection Checklist**

**APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST**

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

**Table D-1. Potentially Hazardous Conditions**

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		

**ATTACHMENT 4:**  
**Safety Plan Compliance Document (SPCD)**  
**Requirements**



## SAFETY PLAN COMPLIANCE DOCUMENT OUTLINE

The Safety Plan Compliance Document (SPCD) should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The Contractor statement should include the name of the Contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, "I, Name of contractor, have read the Title of Project CSPP, approved on Date, and will abide by it as written and with the following additions as noted:"). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, "No supplemental information," should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP:

- (1) Coordination.** Discuss details of proposed safety meetings with the Airport and with contractor employees and subcontractors.
- (2) Phasing.** Discuss proposed construction schedule elements, including:
  - (a) Duration of each phase.
  - (b) Daily start and finish of construction, including "night only" construction.
  - (c) Duration of construction activities during:
    - (i) Normal runway operations.
    - (ii) Closed runway operations.
    - (iii) Modified runway "Aircraft Reference Code" usage.
- (3) Areas and operations affected by the construction activity.** These areas and operations should be identified in the CSPP and should not require an entry in the SPCD.
- (4) Protection of NAVAIDs.** Discuss specific methods proposed to protect operating NAVAIDs.
- (5) Contractor access.** Provide the following:
  - (a) Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other).
  - (b) Listing of individuals requiring driver training (for certificated airports and as requested).
  - (c) Radio communications.
    - (i) Types of radios and backup capabilities.
    - (ii) Who will be monitoring radios?
    - (iii) Whom to contact if the ATCT cannot reach the contractor's designated person by radio.
  - (d) Details on how the contractor will escort material delivery vehicles.
- (6) Wildlife management.** Discuss the following:
  - (a) Methods and procedures to prevent wildlife attraction.
  - (b) Wildlife reporting procedures.
- (7) Foreign Object Debris (FOD) management.** Discuss equipment and methods for control of FOD,

including construction debris and dust.

- (8) Hazardous material (HAZMAT) management.** Discuss equipment and methods for responding to hazardous spills.
- (9) Notification of construction activities.** Provide the following:
- (a) Contractor points of contact.
  - (b) Contractor emergency contact.
  - (c) Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the Airport.
  - (d) Batch plant details, including 7460-1 submittal.
- (10) Inspection requirements.** Discuss daily (or more frequent) inspections and special inspection procedures.
- (11) Underground utilities.** Discuss proposed methods of identifying and protecting underground utilities.
- (12) Penalties.** Penalties should be identified in the CSPP and should not require an entry in the SPCD.
- (13) Special conditions.** Discuss proposed actions for each special condition identified in the CSPP.
- (14) Runway and taxiway visual aids.** Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:
- (a) Equipment and methods for covering signage and airfield lights.
  - (b) Equipment and methods for temporary closure markings (paint, fabric, other).
  - (c) Types of temporary Visual Guidance Slope Indicators (VGSI).
- (15) Marking and signs for access routes.** Discuss proposed methods of demarcating access routes for vehicle drivers.
- (16) Hazard marking and lighting.** Discuss proposed equipment and methods for identifying excavation areas.
- (17) Protection of runway and taxiway safety areas** (including object free areas, obstacle free zones, and approach/departure surfaces). Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:
- (a) Equipment and methods for maintaining Taxiway Safety Area standards.
  - (b) Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.
- (18) Other limitations on construction** should be identified in the CSPP and should not require an entry in the SPCD.