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ADDENDUM NO. 1
July 25, 2022

2022 Midfield Ramp Repair – Phase 1
Duluth International Airport (DLH)
Duluth, Minnesota
City of Duluth No. 22-4402
SEH No. DULAI 161944

Taxiway A Reconstruction – Phases 2 & 4
Duluth International Airport
Duluth, Minnesota
AIP No. 3-27-0024-074-2022
SP No. A6901-205
SEH No. DULAI 165102 & 167744

From: Short Elliott Hendrickson Inc.
3535 Vadnais Center Drive
St. Paul, MN 55110-3507
651.490.2000

To: Document Holders

DOCUMENT HOLDERS on the above-named project are hereby notified that this document shall be appended to, take precedence over and become part of the original bidding documents dated July 14, 2022 for this work. Bids submitted for the construction of this work shall conform to this document.

This addendum consists of the attached Pre-Bid Meeting Minutes and Video Recording Link, revised bid form, Attachment 1 – Changes to Bid Form, revised project drawings, revised specifications.

Changes to Bidding Requirements:

1. Document 00 21 13 – Instructions to Bidders: Article 6 “Pre-Bid conference.” See the attached Pre-Bid Meeting minutes and video recording transcript link: Pre-Bid Meeting - Taxiway A Phases 2 & 4, Midfield Ramp-20220719_140052-Meeting Recording.mp4

2. Document 00 41 00 – Bid Form: The bid form has been corrected to fix duplications, incorrect item code numbers, and quantities. Please see Attachment 1 – Addendum 1 Changes to Bid Form. The Bid Form will be updated in BidExpress.

Changes to Specifications:

3. Section No. D-701 - Pipe for Storm Drains and Culverts: REPLACE with attached Section No. D701– Pipe for Storm Drains and Culverts. Item No. D-751-5.6 has been modified adding a trash guard to the Flared End Section. Sentence added to Basis of Payment Section stating that Pipe Bedding is incidental.

4. Section No. D-751 – Manholes, Catch Basins, Inlets and Inspection Holes: REPLACE with attached Section No. D751 – Manholes, Catch Basins, Inlets and Inspection Holes. Item No. D-751-5.5 has been corrected to read 84IN Diameter Manhole / Catch Basin.

5. Section No. L-115 – Electrical Manholes and Junction Structures: REPLACE with attached Section No. L-115 – Electrical Manholes and Junction Structures. Item No. L-115-5.3 Adjust Existing FAA Electrical Manhole to Finished Grade and Install New Aircraft Rated Casting has been added.

6. Section No. T-901 – Seeding: REPLACE with attached Section No. T-901 – Seeding. A second seed mix has been added to the project for use on the Bioretention Pond.

Changes to Drawings (Midfield Ramp Repair Phase 1):

7. Drawing G0.12 Statement of Estimated Quantities: Quantity Updates and Item Code Changes. Please see Attachment 1 – Addendum 1 Changes to Bid Form.

8. Drawing C4.01 Storm Sewer Details: Pipe Trench Detail updated to Class B Trench.

Changes to Drawings (DLH Taxiway A Reconstruction Phases 2 & 4):

9. Drawing G0.01 Table of Contents: Table of Contents updated to reflect revised sheet numbers.

10. Drawing G0.43 Statement of Estimated Quantities Schedule A – Quantity Updates and Item Code Changes. Please see Attachment 1 – Addendum 1 Changes to Bid Form.

11. Drawing G0.44 Statement of Estimated Quantities Schedule B – Quantity Updates and Item Code Changes. Please see Attachment 1 – Addendum 1 Changes to Bid Form.

12. Drawing G0.45 Statement of Estimated Quantities Schedule C – Quantity Updates and Item Code Changes. Please see Attachment 1 – Addendum 1 Changes to Bid Form.

13. Drawing G0.48 Earthwork Summary Phase 4 & Bio-Retention Pond (Base Bid) – Total Excavation Estimated Quantities have been adjusted. Additional excavation added for VSR road.

14. Drawing C0.12 Erosion Control Plan – Bio-Retention Pond – An erosion control blanket has been added to the Bio-Retention Pond.

15. Drawing C1.04 Typical Section SRE Apron – Note added to Electrical Ductbank Trench Restoration Detail regarding payment. The typical section for the VSR road has been modified and has increased to a 39-inch depth.

16. Drawing C3.04 PCC Joint Elevation Plan (SRE Apron) – Phase 4 – The jointing plan for the SRE Apron VSR has changed.

17. Drawing C3.07 PCC Joint Elevation Tables (SRE Apron) – Phase 4 – The spot elevation tables for the SRE Apron VSR have changed.

18. Drawing C3.07A PCC Joint Elevation Tables (SRE Apron) – Phase 4 – A new sheet has been added for the spot elevation tables for the SRE Apron VSR.

19. Drawing C4.02 Grading Plan Phases 2A & 2B – Additional information has been provided for the Existing FAA Electrical Manhole that needs to be adjusted.

20. Drawing C4.06 Bio-Retention Pond Plan – An erosion control blanket has been added to the Bio-Retention Pond and a callout in the profile view has been updated.

21. Drawing C5.11 Storm Sewer Details - Pipe Trench Detail updated to Class B Trench.

22. Drawing C7.02 Jointing Plan – Phase 4 - The jointing plan for the SRE Apron VSR has changed.

23. Drawings X1.00 to X1.15, X2.00 to X2.05, and X3.00 to X3.06 Cross Sections – Fixed formatting for Cross Sections.

Attachments:
Pre-Bid Meeting Minutes
Attachment 1 – Addendum 1 Changes to Bid Form
Updated Bid Form
Updated Drawings (Midfield Ramp Repair Phase 1 and DLH Taxiway A Reconstruction Phases 2 & 4)
Updated Specifications

Note: Receipt of this Addendum No.1, dated July 25, 2022 shall be acknowledged on BidExpress. Failure to do so will not allow Bidder to submit Bid.

END OF ADDENDUM

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PRE-BID MEETING MINUTES

RE: Taxiway A Reconstruction Phases 2 & 4
Midfield Ramp Repair
Duluth International Airport (DLH)

Date of Meeting: Tuesday, July 19, 2022

Project Managers: Clint Sciacca & Jarrod Nelson

Time of Meeting: 2:00 p.m.

SEH No.: DULAI 165102 16.00
DULAI 167744
DULAI 161944

Location of Meeting: Virtual MS Teams

Attendees: See attached attendance roster

Link to Pre-Bid Meeting Recording: Pre-Bid Meeting - Taxiway A Phases 2 & 4, Midfield Ramp-20220719_140052-Meeting Recording.mp4

The following items are to be discussed at the above referenced meeting:

I. **Project Representatives**

A. Owner Representatives – Duluth Airport Authority
1. Mark Papko – DAA, Director of Operations
2. Ryan Welch – DAA, Airside Manager
3. Matt Snell – DAA, Public Safety Manager
4. Paul Sinnot – DAA

B. Engineer Representative – Short Elliott Hendrickson, Inc.
1. Shawn McMahon, PE (MN, WI, IA, SD) – SEH, Project Principal, 651.925.7541
2. Jarrod Nelson, PE (MN, IA, ND, SD) – SEH, Project Manager, 651.325.8161
3. Clint Sciacca, PE (CO) – SEH, Project Manager, 480.686.0979
4. Allison Andrashko, EIT – SEH, Project Engineer, 507.261.7617
5. Andy Loftus, PE (MO), LEED AP – Burns & McDonnell, Electrical Project Manager
6. Derek Bruemmer, EIT – Burns & McDonnell

II. **Project Information**

A. Please send all bid questions by email to:
1. csciacca@sehinc.com and jnelson@sehinc.com

B. Project Documents: Bidding Documents are available to view and download at no cost as www.bidexpress.com. Bidders must create a free account with Bid Express®; and login to search for city projects (search by “City of Duluth” or bid number). Bids will only be received electronically through Bid Express®.

C. Project Award: Project award will be based upon overall lowest cost and available funding at the time of bid opening.

1. Different Schedules due to different funding sources:
   a. Schedule A – Phase 2 Base Bid
   b. Schedule B – Phase 2 Alt. Bid
   c. Schedule C – Phase 4 Base Bid
   d. Schedule D – Midfield Ramp Base Bid
   e. Schedule E – Midfield Ramp Alt. Bid

D. Please review **Article 3 – Qualifications of Bidders** in the Project Manual for required documents to be submitted during the bid

1. Bid Surety (5%), Bid Item Prices, Acknowledgement of Addenda, Declaration of Non-Collusion, Responsible Contractor Verification & Cert. of Compliance, and First Tier Subcontractor List.

Major Items of Work Include:

Taxiway A Reconstruction Phases 2 & 4:
16,000 SY 13-inch P-501 PCC, 14,000 SY of 12-inch P-501 PCC, 12,000 tons bituminous pavement (State Spec. and P-403 mixes), 29,500 CY excavation, 7,000 CY P-209 crushed aggregate base, 18,000 CY P-154 granular borrow, pavement marking, turf restoration, lighting and conduit, 3,000 LF storm drain pipe with inlets, and 4,750 LF drain tile.

Midfield Ramp Repair:
Removal of 4,500 SY existing PCC airfield pavement, 2,000 CY excavation, placement of 1,500 CY crushed concrete base, installation of 4,200 SY 12-inch P-501 PCC pavement, and installation of 200 LF 30" RCP. Project work also includes miscellaneous removals, pavement markings, turf establishment, and erosion control measures.

E. Anticipated Project Schedule:
1. Receive Bids: August 4, 2022
2. Anticipated Contract Award: September 2022
   a. Administrative Notice to Proceed will be allowed to purchase material after contract award, to help with procurement lead times.
3. Anticipated Start of Construction: May 15, 2023 (139 Calendar Days)
   a. Pause in work during 2023 DLH Airshow – July 14-16, 2023
   b. CRITICAL component: Open Phase 4 and Midfield Ramp prior to the air show.
   c. St. Louis County Spring Load restrictions lifted on May 16th this year (2022)
4. Anticipated Substantial Completion: September 30, 2023

F. Phasing (See Construction Safety Plan Sheet):
1. Midfield Ramp Repair and Phase 4 - SRE Apron (60 Calendar Days) – May 15, 2023 to July 13, 2022

2. Taxiway A Phase 2: Phases 2A, 2B, and 2C (76 Calendar Days) – July 17, 2023 to September 30, 2023

CRITICAL Phase 2B (Taxiway A4 in the Runway 9/27 Runway Safety Area) requires a 60-hour consecutive closure of Runway 9/27 along with 7-night closures, as proposed by the contractor and approved by the DAA. Use of a high-early concrete mix is strongly recommended. 7 night closures could occur before OR after 60-hour closure with DAA Approval.

G. Airport Security:
   1. Bidders must thoroughly examine Project Documents for security related requirements.
   2. Airport shall remain in full operation during construction except where required for project specific closures
   3. Airfield Safety and Security Training will be held at scheduled times, where the following topics will be discussed:
      a. Project Signage for Haul Routes and Site Access
      b. Procedure for Receipt of Deliveries
      c. Airfield and Site Security
      d. Badging Requirements
   4. Failure to comply with safety and phasing plans that results in a runway incursion or vehicle deviation will result in a penalty of $1,000. Security violations could result in a penalty of up to $10,000 per occurrence.
   5. Contractor is required to hire a third-party Professional Security Firm.

H. Access and Haul Routes
   1. Radio escort required across Tower Apron to control traffic. No additional compensation will be made for hauling delays due to aircraft traffic.

I. Staging and Storage
   1. Contractor can pre-position equipment for project start

J. Quality Control Plan Required

III. **Contract Requirements**

A. Construction Staking – Contractor's Responsibility

B. Quantity surveys are required to be submitted for payment.

C. Disadvantaged Business Enterprise – DBE Goal of 8.5%

D. Wage Rates
   1. Equal Employment Opportunity (EEO)
   2. State and Federal prevailing wage rate requirements

E. Buy American Certification

F. Permits
   1. City of Duluth Stormwater
      a. paid for by the contractor.
   2. NPDES permits to be
      a. paid for by the contractor.
   3. City of Duluth Haul Route Application (Not mentioned during the meeting, but still applicable)
      a. paid for by the contractor.
   4. City of Duluth Grading Permit (Not mentioned during the meeting, but still applicable)
      a. paid for by the contractor.

IV. **Project Work**
A. General Scope
   1. Batch Plant Setup – Mobilization Limited to 10% of total cost
   2. Installation of Traffic Control Devices/Signage and Barricades

3. Covering of existing airfield taxiway and runway signs
4. Erosion Control BMP installation

B. Civil Scope
1. Installation of Landside Bioretention Pond to the east of Terminal Parking Lot
2. Pavement and Earthwork Removals
   a. Disposed of off Airport Property. 50 Loads of asphalt millings to be disposed of at stockpile location designated on drawings.
3. Storm Sewer/Drain Tile Construction
4. Pavement Construction
5. Striping
6. Seeding and Hydromulching

C. Electrical Scope
1. Removal of existing taxiway edge lighting and signage
2. Existing utilities – locate, flag, protect, reconstruct designated utilities. Extensive potholing information performed during design will be provided to contractor.
3. Installation of new lighting, signage, and circuitry.
4. Routing of new duct banks and construction of new manholes. Pull back, protect, and reconnect existing cable. Temporary jumpers required for construction phasing are considered incidental to mobilization.
5. FAA coordination required to perform the work – FAA will be reviewing plans after bidding
6. Detailed Schedule and Phasing Submittal Required
7. Construction of three light poles for Apron Lighting

D. Restoration
1. Locations: disturbed areas, storage areas, haul roads
2. Restored to equal or better conditions

V. **Addendum**
A. Addendum No. 1
1. Meeting Minutes from today
2. Updated bid form removing duplicate bid items and other minor edits.

VI. **Questions**
A. Bid Alternates: Schedule B and Schedule E are add. alternates. We are hoping to award all Schedules.

c:
x:\ae\d\dulai\165102\1-genl\16-meet\pre-bid meeting 7.14.22\taxiway a phases 2 & 4, midfield ramp pre-bid meeting minutes.docx

Attachment 1 - ADDENDUM 1 CHANGES TO BID FORM:

ITEM 9: 32 12 16	UPDATED QUANTITY
ITEM 11: C-102-5.1	UPDATED ITEM DESCRIPTION
ITEM 12: C-102-5.2	UDPATED ITEM DESCRIPTION
ITEM 13: C-102-5.3	UDPATED ITEM DESCRIPTION
ITEM 14: C-102-5.4	UDPATED ITEM DESCRIPTION
ITEM 15: C-102-5.5	UDPATED ITEM DESCRIPTION
ITEM 48:P-101-5.2	UPDATED QUANTITY
ITEM 49: P-101-5.3	UPDATED QUANTITY
ITEM 57: P-152-5.2	UPDATED ITEM DESCRIPTION
ITEM 59: P-152-5.4	UPDATED ITEM DESCRIPTION, UPDATED QUANTITY
ITEM 61: P-154-5.1	UPDATED QUANTITY
ITEM 62: P-154-5.2	UPDATED QUANTITY
ITEM 64: P-403-8.1	UPDATED QUANTITY
ITEM 65: P-403-8.2	UPDATED QUANTITY
ITEM 66: P501-8.4	UPDATED QUANTITY
ITEM 67: P-501-8.5	UPDATED QUANTITY
ITEM 68: P-603-5.1	UPDATED QUANTITY
ITEM 73: T-901-5.1	UPDATED ITEM DESCRIPTION
ITEM 82: 32 12 13	UPDATED QUANTITY
ITEM 105: P-101-5.5	UPDATED QUANTITY
ITEM 111: P-152-5.2	UPDATED ITEM DESCRIPTION
ITEM 113: P-152-5.4	UPDATED ITEM DESCRIPTION, UPDATED QUANTITY
ITEM 114: P-154-5.1	UPDATED QUANTITY
ITEM 115: P-154-5.2	UPDATED QUANTITY
ITEM 116: P-209-5.1	UPDATED QUANTITY
ITEM 117: P-403-8.1	UPDATED QUANTITY
ITEM 119: P-501-8.4	UPDATED QUANTITY
ITEM 120: P-501-8.5	UPDATED QUANTITY
ITEM 121: P-603-5.1	UPDATED QUANTITY
ITEM 126: T-901-5.1	UPDATED ITEM DESCRIPTION
ITEM 143: 2575.504	ADDITIONAL BID ITEM

ITEM 144: 32 12 16 UPDATED QUANTITY

ITEM 146: C-102-5.1 UPDATED ITEM DESCRIPTION

ITEM 147: C-102-5.2 UPDATED ITEM DESCRIPTION

ITEM 148: C-102-5.5 UPDATED ITEM DESCRIPTION

ITEM 153: D-701-5.6 UPDATED ITEM DESCRIPTION

ITEM 169: P-101-502 UPDATED QUANTITY

ITEM 174: p-152-5.1 UPDATED QUANTITY

ITEM 175: P-152-5.2 UPDATED ITEM DESCRIPTION

ITEM 177: P-152-5.4 UPDATED ITEM DESCRIPTION, UPDATED QUANTITY

ITEM 180: P-154-5.1 UPDATED QUANTITY

ITEM 181: P-154-5.2 UPDATED QUANTITY

ITEM 183: P-209-5.1 UPDATED QUANTITY

ITEM 184: P-501-8.1 UPDATED ITEM DESCRIPTION

ITEM 185: P-501-8.2 UPDATED QUANTITY

ITEM 193: T-901-5.1 UPDATED ITEM DESCRIPTION, UPDATED QUANTITY

ITEM 195: T-908.5.1 UPDATED QUANTITY

ITEM 199: P-154-5.2 UPDATED QUANTITY

ITEM 200: C-102-5.2 UPDATED ITEM DESCRIPTION

ITEM 201: C-102-5.3 UPDATED ITEM DESCRIPTION

ITEM 202: C-102-5.5 UDPATED ITEM DESCRIPTION

ITEM 208: P-101-5.5 UPDATED QUANTITY

ITEM 212: P-152-5.2 UPDATED ITEM DESCRIPTION

ITEM 213: P-152-5.4 UPDATED ITEM DESCRIPTION, UPDATED QUANTITY

ITEM 214: P-219-5.1 UPDATED QUANTITY

ITEM 215: P-501-8.2 UPDATED QUANTITY

ITEM 216: P-501-8.3 UPDATED QUANTITY

ITEM 219: T-901-5.1 UPDATED ITEM DESCRIPTION

ITEM 225:P-152-5.2 UPDATED ITEM DESCRIPTION

ITEM 226: P-152-5.4 UPDATED ITEM DESCRIPTION

ITEM 228: P-501-8.2 UPDATED QUANTITY

UNIT PRICE BID

Section Title	Line Item	Item Code	Item Description	UofM	Quantity	Unit Price	Extension
Base Bid - Phase 2 Scope	1	40-05	MAINTENANCE & RESTORATION OF HAUL ROADS	LS	1	$_____	$_____
Base Bid - Phase 2 Scope	2	40-08	RESTORATION OF BATCH PLANT AND CONTRACTOR STORAGE AREAS	LS	1	$_____	$_____
Base Bid - Phase 2 Scope	3	50-06	CONSTRUCTION LAYOUT & STAKING	LS	1	$_____	$_____
Base Bid - Phase 2 Scope	4	60-05	FIELD OFFICE	LS	1	$_____	$_____
Base Bid - Phase 2 Scope	5	70-08	TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING	LS	1	$_____	$_____
Base Bid - Phase 2 Scope	6	70-10	ORANGE CONSTRUCTION FENCE	LF	2250	$_____	$_____
Base Bid - Phase 2 Scope	7	02 41 35	REMOVE PAVEMENT MARKING BY WATER BLASTING	SF	440	$_____	$_____
Base Bid - Phase 2 Scope	8	02 41 35	REMOVE PAVEMENT MARKING, GROUND OFF	SF	35	$_____	$_____
Base Bid - Phase 2 Scope	9	32 12 16	PLANT-MIXED ASPHALT PAVEMENT	TON	3785	$_____	$_____
Base Bid - Phase 2 Scope	10	C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1	$_____	$_____
Base Bid - Phase 2 Scope	11	C-102-5.1	ROCK CONSTRUCTION ENTRANCE (INCLUDES MAINTENANCE AND REMOVAL)	EA	2	$_____	$_____
Base Bid - Phase 2 Scope	12	C-102-5.2	SILT FENCE, TYPE PREASSEMBLED (INCLUDES MAINTENANCE AND REMOVAL)	LF	17400	$_____	$_____
Base Bid - Phase 2 Scope	13	C-102-5.3	FILTER LOG, TYPE WOOD FIBER BIOROLL (INCLUDES MAINTENANCE AND REMOVAL)	LF	2200	$_____	$_____
Base Bid - Phase 2 Scope	14	C-102-5.4	EROSION CONTROL BLANKET, CATEGORY 3N (WOOD FIBER HV) (INCLUDES MAINTENANCE)	SY	1200	$_____	$_____
Base Bid - Phase 2 Scope	15	C-102-5.5	INLET PROTECTION, TYPE B (INCLUDES MAINTENANCE AND REMOVAL)	EA	31	$_____	$_____
Base Bid - Phase 2 Scope	16	C-105	MOBILIZATION	LS	1	$_____	$_____
Base Bid - Phase 2 Scope	17	D-701-5.1	12IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	26	$_____	$_____
Base Bid - Phase 2 Scope	18	D-701-5.2	18IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	247	$_____	$_____
Base Bid - Phase 2 Scope	19	D-701-5.3	24IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	970	$_____	$_____
Base Bid - Phase 2 Scope	20	D-701-5.5	36IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	277	$_____	$_____
Base Bid - Phase 2 Scope	21	D-705-5.1	DRAIN TILE (6" PERFORATED, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	2920	$_____	$_____
Base Bid - Phase 2 Scope	22	D-705-5.2	DRAIN TILE (6" SDR35 PVC PIPE, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	995	$_____	$_____
Base Bid - Phase 2 Scope	23	D-751-5.1	DRAIN TILE ACCESS/INSPECTION PIT	EA	13	$_____	$_____
Base Bid - Phase 2 Scope	24	D-751-5.2	48IN DIA MANHOLE / CATCH BASIN	EA	7	$_____	$_____
Base Bid - Phase 2 Scope	25	D-751-5.3	60IN DIA MANHOLE / CATCH BASIN	EA	3	$_____	$_____
Base Bid - Phase 2 Scope	26	D-751-5.5	84IN DIA MANHOLE / CATCH BASIN	EA	1	$_____	$_____
Base Bid - Phase 2 Scope	27	D-751-5.6	96IN DIA MANHOLE / CATCH BASIN	EA	1	$_____	$_____
Base Bid - Phase 2 Scope	28	L-108-5.1	NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	67500	$_____	$_____
Base Bid - Phase 2 Scope	29	L-108-5.2	NO. 6 AWG, SOLID, BARE COUNTERPOISE WIRE, INSTALLED IN TRENCH, ABOVE THE DUCT BANK OR CONDUIT, INCLUDING CONNECTIONS/TERMINATIONS, GROUND RODS AND GROUND CONNECTORS	LF	6200	$_____	$_____
Base Bid - Phase 2 Scope	30	L-108-5.5	100-PR PE-39 TELEPHONE CABLE	LF	7200	$_____	$_____
Base Bid - Phase 2 Scope	31	L-110-5.1	NON-ENCASED ELECTRICAL CONDUIT, 1-WAY 2-INCH, PVC SCHEDULE 40	LF	4000	$_____	$_____
Base Bid - Phase 2 Scope	32	L-110-5.2	CONCRETE ENCASED ELECTRICAL CONDUIT, 2-WAY 2-INCH, PVC SCHEDULE 40	LF	400	$_____	$_____
Base Bid - Phase 2 Scope	33	L-110-5.4	CONCRETE ENCASED ELECTRICAL CONDUIT, 8-WAY 4-INCH, PVC SCHEDULE 40	LF	500	$_____	$_____
Base Bid - Phase 2 Scope	34	L-110-5.5	DRAIN LINE CONNECTION TO STORM STRUCTURE	EA	20	$_____	$_____
Base Bid - Phase 2 Scope	35	L-110-5.8	CONCRETE ENCASED ELECTRICAL CONDUIT, 6-WAY 4-INCH, PVC SCHEDULE 40	LF	1350	$_____	$_____
Base Bid - Phase 2 Scope	36	L-115-5.1	PRECAST AIRCRAFT-RATED ELECTRICAL MANHOLE	EA	7	$_____	$_____
Base Bid - Phase 2 Scope	37	L-115-5.2	L-867 BASE CAN WITH BLANK COVER USED AS A SPLICE CAN	EA	3	$_____	$_____
Base Bid - Phase 2 Scope	38	L-115-5.3	ADJUST EXISTING FAA ELECTRICAL MANHOLE TO FINISHED GRADE AND INSTALL NEW AIRCRAFT RATED CASTING.	EA	1	$_____	$_____
Base Bid - Phase 2 Scope	39	L-125-5.1	REMOVAL OF EXISTING TAXIWAY EDGE LIGHT FIXTURES AND SIGNS, INCLUDING BASE CAN, ISOLATION TRANSFORMER, SIGN FOUNDATION, CONDUIT, AND WIRE	LS	1	$_____	$_____
Base Bid - Phase 2 Scope	40	L-125-5.2	L-861T(L) MEDIUM INTENSITY TAXIWAY EDGE LIGHT (WITHOUT ARCTIC KIT), BLUE LENS INSTALLED ON NEW L-867-B GALVANIZED BASE CAN (INCLUDES FIXTURES, TRANSFORMER, AND BASE CAN)	EA	39	$_____	$_____
Base Bid - Phase 2 Scope	41	L-125-5.3	L-858(L) GUIDANCE SIGN, SIZE 2, INCLUDING FOUNDATION, ISOLATION TRANSFORMER, WIRE, BASE CAN, AND CONDUIT	EA	6	$_____	$_____
Base Bid - Phase 2 Scope	42	L-125-5.4	L-829 4KW CONSTANT CURRENT REGULATOR	EA	1	$_____	$_____
Base Bid - Phase 2 Scope	43	L-125-5.5	L-829 7.5KW CONSTANT CURRENT REGULATOR	EA	1	$_____	$_____
Base Bid - Phase 2 Scope	44	L-125-5.6	L-868B CAN WITH BLANK COVER	EA	3	$_____	$_____
Base Bid - Phase 2 Scope	45	L-125-5.7	FAA UNFORESEEN CONDITIONS ALLOWANCE	LS	1	$_____	$_____

UNIT PRICE BID

Section Title	Line Item	Item Code	Item Description	UofM	Quantity	Unit Price	Extension
Base Bid - Phase 2 Scope	46		TEMPORARILY REMOVE RUNWAY LIGHT FIXTURE, BASE CAN, CABLE, CONDUIT, AND ISOLATION TRANSFORMER, AND REPLACE LIGHT FIXTURE ON NEW BASE CAN WITH NEW ISOLATION		1	$_____	$_____
		L-125-5.8	TRANSFORMER IN LATER PHASE	EA			
Base Bid - Phase 2 Scope	47	P-101-5.1	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	1100	$_____	$_____
Base Bid - Phase 2 Scope	48	P-101-5.2	REMOVE BITUMINOUS PAVEMENT (FULL DEPTH)	SY	16529	$_____	$_____
Base Bid - Phase 2 Scope	49	P-101-5.3	MILL BITUMINOUS PAVEMENT (DEPTH VARIES)	SY	3235	$_____	$_____
Base Bid - Phase 2 Scope	50	P-101-5.4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	65	$_____	$_____
Base Bid - Phase 2 Scope	51	P-101-5.5	REMOVE CONCRETE PAVEMENT (FULL DEPTH)	SY	550	$_____	$_____
Base Bid - Phase 2 Scope	52	P-101-5.6	REMOVE STORM PIPE	LF	1400	$_____	$_____
Base Bid - Phase 2 Scope	53	P-101-5.7	REMOVE STORM STRUCTURE	EA	9	$_____	$_____
Base Bid - Phase 2 Scope	54	P-101-5.8	REMOVE DRAIN TILE CLEANOUT	EA	8	$_____	$_____
Base Bid - Phase 2 Scope	55	P-101-5.9	REMOVE DRAIN TILE	LF	2980	$_____	$_____
Base Bid - Phase 2 Scope	56	P-152-5.1	COMMON EXCAVATION (EV)	CY	23550	$_____	$_____
Base Bid - Phase 2 Scope	57		UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES		800	$_____	$_____
		P-152-5.2	SUBGRADE PROOF ROLLING)	CY			
Base Bid - Phase 2 Scope	58	P-152-5.3	MUCK EXCAVATION (EV)	CY	150	$_____	$_____
Base Bid - Phase 2 Scope	59		SUBGRADE PREPARATION (INCLUDES SUBGRADE		21425	$_____	$_____
		P-152-5.4	PROOF ROLLING)	SY			
Base Bid - Phase 2 Scope	60	P-152-5.5	ROCK EXCAVATION	CY	50	$_____	$_____
Base Bid - Phase 2 Scope	61	P-154-5.1	GRANULAR BORROW (CV)	CY	10145	$_____	$_____
Base Bid - Phase 2 Scope	62	P-154-5.2	GEOTEXTILE FABRIC, TYPE V	SY	21425	$_____	$_____
Base Bid - Phase 2 Scope	63	P-209-5.1	CRUSHED AGGREGATE BASE COURSE (CV)	CY	3905	$_____	$_____
Base Bid - Phase 2 Scope	64	P-403-8.1	BITUMINOUS SURFACE COURSE	TON	1035	$_____	$_____
Base Bid - Phase 2 Scope	65	P-403-8.2	BITUMINOUS BASE COURSE	TON	885	$_____	$_____
Base Bid - Phase 2 Scope	66	P-501-8.4	CEMENT CONCRETE PAVEMENT, 13"	SY	12095	$_____	$_____
Base Bid - Phase 2 Scope	67	P-501-8.5	CEMENT CONCRETE PAVEMENT, REINFORCED 13"	SY	740	$_____	$_____
Base Bid - Phase 2 Scope	68	P-603-5.1	BITUMINOUS TACK COAT	GAL	1495	$_____	$_____
Base Bid - Phase 2 Scope	69	P-604-6.1	COMPRESSION JOINT SEALS FOR CONCRETE	LF	15440	$_____	$_____
Base Bid - Phase 2 Scope	70	P-605-5.1	JOINT SEALING FILLER	LF	3000	$_____	$_____
Base Bid - Phase 2 Scope	71	P-620-5.1	RUNWAY & TAXIWAY PAVEMENT MARKING	SF	15730	$_____	$_____
Base Bid - Phase 2 Scope	72	P-620-5.2	REFLECTIVE MEDIA	LB	960	$_____	$_____
Base Bid - Phase 2 Scope	73	T-901-5.1	SEEDING (INCLUDING FERTILIZER)	ACRE	6.00	$_____	$_____
Base Bid - Phase 2 Scope	74	T-905-5.1	SELECT TOPSOIL BORROW (IMPORT) (CV)	CY	100	$_____	$_____
Base Bid - Phase 2 Scope	75	T-908-5.1	HYDROMULCHING	ACRE	6.00	$_____	$_____

UNIT PRICE BID

Section Title	Line Item	Item Code	Item Description	UofM	Quantity	Unit Price	Extension
Add. Alternate No. 1	76	40-05	MAINTENANCE & RESTORATION OF HAUL ROADS	LS	1	$_____	$_____
Add. Alternate No. 1	77		RESTORATION OF BATCH PLANT AND CONTRACTOR		1	$_____	$_____
		40-08	STORAGE AREAS	LS			
Add. Alternate No. 1	78	50-06	CONSTRUCTION LAYOUT & STAKING	LS	1	$_____	$_____
Add. Alternate No. 1	79		TRAFFIC PROVISIONS/AIRPORT SECURITY &		1	$_____	$_____
		70-08	DEVICES/PHASING	LS			
Add. Alternate No. 1	80	70-10	ORANGE CONSTRUCTION FENCE	LF	835	$_____	$_____
Add. Alternate No. 1	81		REMOVE PAVEMENT MARKING BY WATER BLASTING		110	$_____	$_____
		02 41 35		SF			
Add. Alternate No. 1	82	32 12 16	PLANT-MIXED ASPHALT PAVEMENT	TON	1065	$_____	$_____
Add. Alternate No. 1	83	C-105	MOBILIZATION	LS	1	$_____	$_____
Add. Alternate No. 1	84	D-701-5.2	18IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	377	$_____	$_____
Add. Alternate No. 1	85		DRAIN TILE (6" PERFORATED, INCLUDING TRENCH,		630	$_____	$_____
		D-705-5.1	BACKFILL, FABRIC)	LF			
Add. Alternate No. 1	86	D-751-5.1	DRAIN TILE ACCESS/INSPECTION PIT	EA	4	$_____	$_____
Add. Alternate No. 1	87	D-751-5.2	48IN DIA MANHOLE / CATCH BASIN	EA	1	$_____	$_____
Add. Alternate No. 1	88		NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN		12050	$_____	$_____
		L-108-5.1	DUCT BANK OR CONDUIT	LF			
Add. Alternate No. 1	89		NO. 6 AWG, SOLID, BARE COUNTERPOISE WIRE, INSTALLED IN TRENCH, ABOVE THE DUCT BANK OR CONDUIT, INCLUDING CONNECTIONS/TERMINATIONS, GROUND RODS AND GROUND CONNECTORS		2100	$_____	$_____
		L-108-5.2		LF			
Add. Alternate No. 1	90		1/C #4/0 15KV CONCENTRIC NEUTRAL CABLE,		410	$_____	$_____
		L-108-5.3	INSTALLED IN DUCT BANK OR CONDUIT	LF			
Add. Alternate No. 1	91		1/C #4 5KV UNSHIELDED XLP MV-90 CABLE,		410	$_____	$_____
		L-108-5.4	INSTALLED IN DUCT BANK OR CONDUIT	LF			
Add. Alternate No. 1	92		NON-ENCASED ELECTRICAL CONDUIT, 1-WAY 2-INCH,		4000	$_____	$_____
		L-110-5.1	PVC SCHEDULE 40	LF			
Add. Alternate No. 1	93		CONCRETE ENCASED ELECTRICAL CONDUIT, 6-WAY 6-INCH, PVC SCHEDULE 40 WITH FOUR 3-CELL TEXTILE/FABRIC INNERDUCTS IN EACH OF FOUR		175	$_____	$_____
		L-110-5.3	DUCTS	LF			
Add. Alternate No. 1	94	L-110-5.5	DRAIN LINE CONNECTION TO STORM STRUCTURE	EA	8	$_____	$_____
Add. Alternate No. 1	95		CONCRETE ENCASED ELECTRICAL CONDUIT, 4-WAY 4-		135	$_____	$_____
		L-110-5.6	INCH, PVC SCHEDULE 40	LF			
Add. Alternate No. 1	96		CONCRETE ENCASED ELECTRICAL CONDUIT, 2-WAY 6-		135	$_____	$_____
		L-110-5.7	INCH, PVC SCHEDULE 40	LF			
Add. Alternate No. 1	97	L-115-5.1	PRECAST AIRCRAFT-RATED ELECTRICAL MANHOLE	EA	2	$_____	$_____
Add. Alternate No. 1	98		REMOVAL OF EXISTING TAXIWAY EDGE LIGHT FIXTURES AND SIGNS, INCLUDING BASE CAN, ISOLATION TRANSFORMER, SIGN FOUNDATION,		1	$_____	$_____
		L-125-5.1	CONDUIT, AND WIRE	LS			
Add. Alternate No. 1	99		L-861T(L) MEDIUM INTENSITY TAXIWAY EDGE LIGHT (WITHOUT ARCTIC KIT), BLUE LENS INSTALLED ON NEW L-867-B GALVANIZED BASE CAN (INCLUDES		18	$_____	$_____
		L-125-5.2	FIXTURES, TRANSFORMER, AND BASE CAN)	EA			
Add. Alternate No. 1	100		L-858(L) GUIDANCE SIGN, SIZE 2, INCLUDING FOUNDATION, ISOLATION TRANSFORMER, WIRE,		2	$_____	$_____
		L-125-5.3	BASE CAN, AND CONDUIT	EA			
Add. Alternate No. 1	101	P-101-5.1	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	80	$_____	$_____
Add. Alternate No. 1	102	P-101-5.2	REMOVE BITUMINOUS PAVEMENT (FULL DEPTH)	SY	2370	$_____	$_____
Add. Alternate No. 1	103	P-101-5.3	MILL BITUMINOUS PAVEMENT (DEPTH VARIES)	SY	440	$_____	$_____
Add. Alternate No. 1	104	P-101-5.4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	110	$_____	$_____
Add. Alternate No. 1	105	P-101-5.5	REMOVE CONCRETE PAVEMENT (FULL DEPTH)	SY	940	$_____	$_____
Add. Alternate No. 1	106	P-101-5.6	REMOVE STORM PIPE	LF	435	$_____	$_____
Add. Alternate No. 1	107	P-101-5.7	REMOVE STORM STRUCTURE	EA	2	$_____	$_____
Add. Alternate No. 1	108	P-101-5.8	REMOVE DRAIN TILE CLEANOUT	EA	2	$_____	$_____
Add. Alternate No. 1	109	P-101-5.9	REMOVE DRAIN TILE	LF	515	$_____	$_____
Add. Alternate No. 1	110	P-152-5.1	COMMON EXCAVATION (EV)	CY	4550	$_____	$_____
Add. Alternate No. 1	111		UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES		200	$_____	$_____
		P-152-5.2	SUBGRADE PROOF ROLLING)	CY			
Add. Alternate No. 1	112	P-152-5.3	MUCK EXCAVATION (EV)	CY	50	$_____	$_____
Add. Alternate No. 1	113		SUBGRADE PREPARATION (INCLUDES SUBGRADE		4790	$_____	$_____
		P-152-5.4	PROOF ROLLING)	SY			
Add. Alternate No. 1	114	P-154-5.1	GRANULAR BORROW (CV)	CY	2155	$_____	$_____
Add. Alternate No. 1	115	P-154-5.2	GEOTEXTILE FABRIC, TYPE V	SY	4790	$_____	$_____
Add. Alternate No. 1	116	P-209-5.1	CRUSHED AGGREGATE BASE COURSE (CV)	CY	845	$_____	$_____
Add. Alternate No. 1	117	P-403-8.1	BITUMINOUS SURFACE COURSE	TON	120	$_____	$_____
Add. Alternate No. 1	118	P-403-8.2	BITUMINOUS BASE COURSE	TON	120	$_____	$_____
Add. Alternate No. 1	119	P-501-8.4	CEMENT CONCRETE PAVEMENT, 13"	SY	3180	$_____	$_____
Add. Alternate No. 1	120	P-501-8.5	CEMENT CONCRETE PAVEMENT, REINFORCED 13"	SY	440	$_____	$_____
Add. Alternate No. 1	121	P-603-5.1	BITUMINOUS TACK COAT	GAL	240	$_____	$_____
Add. Alternate No. 1	122	P-604-6.1	COMPRESSION JOINT SEALS FOR CONCRETE	LF	4515	$_____	$_____
Add. Alternate No. 1	123	P-605-5.1	JOINT SEALING FILLER	LF	430	$_____	$_____
Add. Alternate No. 1	124	P-620-5.1	RUNWAY & TAXIWAY PAVEMENT MARKING	SF	3775	$_____	$_____

UNIT PRICE BID

Section Title	Line Item	Item Code	Item Description	UofM	Quantity	Unit Price	Extension
Add. Alternate No. 1	125	P-620-5.2	REFLECTIVE MEDIA	LB	230	$_____	$_____
Add. Alternate No. 1	126	T-901-5.1	SEEDING (INCLUDING FERTILIZER)	ACRE	1.25	$_____	$_____
Add. Alternate No. 1	127	T-905-5.1	SELECT TOPSOIL BORROW (IMPORT) (CV)	CY	100	$_____	$_____
Add. Alternate No. 1	128	T-908-5.1	HYDROMULCHING	ACRE	1.25	$_____	$_____

UNIT PRICE BID

Section Title	Line Item	Item Code	Item Description	UofM	Quantity	Unit Price	Extension
Base Bid - Phase 4 Scope	129	40-05	MAINTENANCE & RESTORATION OF HAUL ROADS	LS	1	$_____	$_____
Base Bid - Phase 4 Scope	130		RESTORATION OF BATCH PLANT AND CONTRACTOR		1	$_____	$_____
		40-08	STORAGE AREAS	LS			
Base Bid - Phase 4 Scope	131	50-06	CONSTRUCTION LAYOUT & STAKING	LS	1	$_____	$_____
Base Bid - Phase 4 Scope	132		TRAFFIC PROVISIONS/AIRPORT SECURITY &		1	$_____	$_____
		70-08	DEVICES/PHASING	LS			
Base Bid - Phase 4 Scope	133	70-10	ORANGE CONSTRUCTION FENCE	LF	1000	$_____	$_____
Base Bid - Phase 4 Scope	134		REMOVE PAVEMENT MARKING BY WATER BLASTING		1000	$_____	$_____
		02 41 35		SF			
Base Bid - Phase 4 Scope	135	2511.507	RANDOM RIP RAP CLASS 2	CY	475	$_____	$_____
Base Bid - Phase 4 Scope	136	2511.508	RANDOM RIP RAP CLASS 4	CY	16	$_____	$_____
Base Bid - Phase 4 Scope	137		LIGHTING UNIT TYPE A WITH (4) LUMINAIRES, (1)		3	$_____	$_____
		2545.502	BULLHORN ARM, AND (1) 30' POLE	EA			
Base Bid - Phase 4 Scope	138	2545.503	RAISED LIGHT FOUNDATION	EA	3	$_____	$_____
Base Bid - Phase 4 Scope	139	2545.504	1.5" NON METALLIC CONDUIT	LF	750	$_____	$_____
Base Bid - Phase 4 Scope	140	2545.505	UNDERGROUND WIRE 1/C 6 AWG (CU)	LF	1350	$_____	$_____
Base Bid - Phase 4 Scope	141	2545.506	UNDERGROUND #8 WIRE	LF	750	$_____	$_____
Base Bid - Phase 4 Scope	142	2545.507	EXISTING SERVICE PANEL MODIFICATION	EA	1	$_____	$_____
Base Bid - Phase 4 Scope	143		ROLLED EROSION PREVENTION CATEGORY 45		5375	$_____	$_____
		2575.504	(INCLUDES MAINTENANCE)	SY			
Base Bid - Phase 4 Scope	144	32 12 16	PLANT-MIXED ASPHALT PAVEMENT	TON	3750	$_____	$_____
Base Bid - Phase 4 Scope	145		CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)		1	$_____	$_____
		C-100		LS			
Base Bid - Phase 4 Scope	146		ROCK CONSTRUCTION ENTRANCE (INCLUDES		1	$_____	$_____
		C-102-5.1	MAINTENANCE AND REMOVAL)	EA			
Base Bid - Phase 4 Scope	147		SILT FENCE, TYPE PREASSEMBLED (INCLUDES		4375	$_____	$_____
		C-102-5.2	MAINTENANCE AND REMOVAL)	LF			
Base Bid - Phase 4 Scope	148		INLET PROTECTION, TYPE B (INCLUDES		16	$_____	$_____
		C-102-5.5	MAINTENANCE AND REMOVAL)	EA			
Base Bid - Phase 4 Scope	149	C-105	MOBILIZATION	LS	1	$_____	$_____
Base Bid - Phase 4 Scope	150	D-701-5.2	18IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	710	$_____	$_____
Base Bid - Phase 4 Scope	151	D-701-5.3	24IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	240	$_____	$_____
Base Bid - Phase 4 Scope	152	D-701-5.4	30IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	577	$_____	$_____
Base Bid - Phase 4 Scope	153		30IN REINFORCED CONCRETE PIPE (RCP) FES W/		1	$_____	$_____
		D-701-5.6	TRASH GUARD, CLASS III	EA			
Base Bid - Phase 4 Scope	154		DRAIN TILE (6" PERFORATED, INCLUDING TRENCH,		110	$_____	$_____
		D-705-5.1	BACKFILL, FABRIC)	LF			
Base Bid - Phase 4 Scope	155	D-751-5.2	48IN DIA MANHOLE / CATCH BASIN	EA	7	$_____	$_____
Base Bid - Phase 4 Scope	156	D-751-5.3	60IN DIA MANHOLE / CATCH BASIN	EA	2	$_____	$_____
Base Bid - Phase 4 Scope	157	D-751-5.4	72IN DIA MANHOLE / CATCH BASIN	EA	3	$_____	$_____
Base Bid - Phase 4 Scope	158		NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN		18500	$_____	$_____
		L-108-5.1	DUCT BANK OR CONDUIT	LF			
Base Bid - Phase 4 Scope	159		NO. 6 AWG, SOLID, BARE COUNTERPOISE WIRE, INSTALLED IN TRENCH, ABOVE THE DUCT BANK OR CONDUIT, INCLUDING CONNECTIONS/TERMINATIONS, GROUND RODS AND GROUND CONNECTORS		950	$_____	$_____
		L-108-5.2		LF			
Base Bid - Phase 4 Scope	160		1/C #4/0 15KV CONCENTRIC NEUTRAL CABLE,		945	$_____	$_____
		L-108-5.3	INSTALLED IN DUCT BANK OR CONDUIT	LF			
Base Bid - Phase 4 Scope	161		1/C #4 5KV UNSHIELDED XLP MV-90 CABLE,		1000	$_____	$_____
		L-108-5.4	INSTALLED IN DUCT BANK OR CONDUIT	LF			
Base Bid - Phase 4 Scope	162		CONCRETE ENCASED ELECTRICAL CONDUIT, 6-WAY 6-INCH, PVC SCHEDULE 40 WITH FOUR 3-CELL TEXTILE/FABRIC INNERDUCTS IN EACH OF FOUR		300	$_____	$_____
		L-110-5.3	DUCTS	LF			
Base Bid - Phase 4 Scope	163	L-110-5.5	DRAIN LINE CONNECTION TO STORM STRUCTURE	EA	4	$_____	$_____
Base Bid - Phase 4 Scope	164		CONCRETE ENCASED ELECTRICAL CONDUIT, 4-WAY 4-		315	$_____	$_____
		L-110-5.6	INCH, PVC SCHEDULE 40	LF			
Base Bid - Phase 4 Scope	165		CONCRETE ENCASED ELECTRICAL CONDUIT, 2-WAY 6-		330	$_____	$_____
		L-110-5.7	INCH, PVC SCHEDULE 40	LF			
Base Bid - Phase 4 Scope	166	L-115-5.1	PRECAST AIRCRAFT-RATED ELECTRICAL MANHOLE	EA	4	$_____	$_____
Base Bid - Phase 4 Scope	167		REMOVAL OF EXISTING CONCRETE ENCASED		1	$_____	$_____
		L-125-5.9	DUCTBANK, CONDUIT, AND WIRE	LS			
Base Bid - Phase 4 Scope	168	P-101-5.1	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	200	$_____	$_____
Base Bid - Phase 4 Scope	169	P-101-5.2	REMOVE BITUMINOUS PAVEMENT (FULL DEPTH)	SY	4140	$_____	$_____
Base Bid - Phase 4 Scope	170	P-101-5.3	MILL BITUMINOUS PAVEMENT (DEPTH VARIES)	SY	105	$_____	$_____
Base Bid - Phase 4 Scope	171	P-101-5.4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	190	$_____	$_____
Base Bid - Phase 4 Scope	172	P-101-5.6	REMOVE STORM PIPE	LF	715	$_____	$_____
Base Bid - Phase 4 Scope	173	P-101-5.7	REMOVE STORM STRUCTURE	EA	7	$_____	$_____
Base Bid - Phase 4 Scope	174	P-152-5.1	COMMON EXCAVATION (EV)	CY	21350	$_____	$_____
Base Bid - Phase 4 Scope	175		UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES		150	$_____	$_____
		P-152-5.2	SUBGRADE PROOF ROLLING)	CY			
Base Bid - Phase 4 Scope	176	P-152-5.3	MUCK EXCAVATION (EV)	CY	50	$_____	$_____
Base Bid - Phase 4 Scope	177		SUBGRADE PREPARATION (INCLUDES SUBGRADE		15270	$_____	$_____
		P-152-5.4	PROOF ROLLING)	SY			
Base Bid - Phase 4 Scope	178	P-152-5.5	ROCK EXCAVATION	CY	50	$_____	$_____

UNIT PRICE BID

Section Title	Line Item	Item Code	Item Description	UofM	Quantity	Unit Price	Extension
Base Bid - Phase 4 Scope	179	P-152-5.6	DRAINAGE EXCAVATION	CY	50	$_____	$_____
Base Bid - Phase 4 Scope	180	P-154-5.1	GRANULAR BORROW (CV)	CY	7550	$_____	$_____
Base Bid - Phase 4 Scope	181	P-154-5.2	GEOTEXTILE FABRIC, TYPE V	SY	15270	$_____	$_____
Base Bid - Phase 4 Scope	182	P-154-5.3	REGRAVELING, 2" THICKNESS	SY	2400	$_____	$_____
Base Bid - Phase 4 Scope	183	P-209-5.1	CRUSHED AGGREGATE BASE COURSE (CV)	CY	2440	$_____	$_____
Base Bid - Phase 4 Scope	184	P-501-8.1	CEMENT CONCRETE PAVEMENT, 6"	SY	2100	$_____	$_____
Base Bid - Phase 4 Scope	185	P-501-8.2	CEMENT CONCRETE PAVEMENT, 12"	SY	12290	$_____	$_____
Base Bid - Phase 4 Scope	186	P-501-8.3	CEMENT CONCRETE PAVEMENT, REINFORCED 12"	SY	665	$_____	$_____
Base Bid - Phase 4 Scope	187	P-603-5.1	BITUMINOUS TACK COAT	GAL	650	$_____	$_____
Base Bid - Phase 4 Scope	188	P-604-6.1	COMPRESSION JOINT SEALS FOR CONCRETE	LF	16910	$_____	$_____
Base Bid - Phase 4 Scope	189	P-605-5.1	JOINT SEALING FILLER	LF	1600	$_____	$_____
Base Bid - Phase 4 Scope	190	P-610-6.1	12" CONCRETE CURB	LF	90	$_____	$_____
Base Bid - Phase 4 Scope	191	P-620-5.1	RUNWAY & TAXIWAY PAVEMENT MARKING	SF	9200	$_____	$_____
Base Bid - Phase 4 Scope	192	P-620-5.2	REFLECTIVE MEDIA	LB	590	$_____	$_____
Base Bid - Phase 4 Scope	193	T-901-5.1	SEEDING (INCLUDING FERTILIZER)	ACRE	3.25	$_____	$_____
Base Bid - Phase 4 Scope	194	T-905-5.1	SELECT TOPSOIL BORROW (IMPORT) (CV)	CY	50	$_____	$_____
Base Bid - Phase 4 Scope	195	T-908-5.1	HYDROMULCHING	ACRE	3.25	$_____	$_____

UNIT PRICE BID

Section Title	Line Item	Item Code	Item Description	UofM	Quantity	Unit Price	Extension
Midfield Base Bid	196	50-06	CONSTRUCTION LAYOUT & STAKING	LS	1	$_____	$_____
Midfield Base Bid	197	70-08	TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING	LS	1	$_____	$_____
Midfield Base Bid	198	02 41 35	REMOVE PAVEMENT MARKING BY WATER BLASTING	SF	815	$_____	$_____
Midfield Base Bid	199	P-154-5.2	GEOTEXTILE FABRIC, TYPE V	SY	4350	$_____	$_____
Midfield Base Bid	200	C-102-5.2	SILT FENCE, TYPE PREASSEMBLED (INCLUDES MAINTENANCE AND REMOVAL)	LF	75	$_____	$_____
Midfield Base Bid	201	C-102-5.3	FILTER LOG, TYPE WOOD FIBER BIOROLL (INCLUDES MAINTENANCE AND REMOVAL)	LF	940	$_____	$_____
Midfield Base Bid	202	C-102-5.5	INLET PROTECTION, TYPE B (INCLUDES MAINTENANCE AND REMOVAL)	EA	5	$_____	$_____
Midfield Base Bid	203	C-105	MOBILIZATION	LS	1	$_____	$_____
Midfield Base Bid	204	D-701-5.4	30IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	250	$_____	$_____
Midfield Base Bid	205	D-705-5.1	DRAIN TILE (6" PERFORATED, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	35	$_____	$_____
Midfield Base Bid	206	D-751-5.4	72IN DIA CATCH BASIN/MANHOLE	EA	2	$_____	$_____
Midfield Base Bid	207	P-101-5.4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	415	$_____	$_____
Midfield Base Bid	208	P-101-5.5	REMOVE CONCRETE PAVEMENT (FULL DEPTH)	SY	4460	$_____	$_____
Midfield Base Bid	209	P-101-5.6	REMOVE STORM PIPE	LF	250	$_____	$_____
Midfield Base Bid	210	P-101-5.7	REMOVE STORM STRUCTURE	EA	1	$_____	$_____
Midfield Base Bid	211	P-152-5.1	COMMON EXCAVATION (EV)	CY	1500	$_____	$_____
Midfield Base Bid	212	P-152-5.2	UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES SUBGRADE PROOF ROLLING)	CY	200	$_____	$_____
Midfield Base Bid	213	P-152-5.4	SUBGRADE PREPARATION (INCLUDES SUBGRADE PROOF ROLLING)	SY	4350	$_____	$_____
Midfield Base Bid	214	P-219-5.1	RECYCLED CONCRETE AGGREGATE BASE COURSE (CV)	CY	1330	$_____	$_____
Midfield Base Bid	215	P-501-8.2	CEMENT CONCRETE PAVEMENT, 12"	SY	4110	$_____	$_____
Midfield Base Bid	216	P-501-8.3	CEMENT CONCRETE PAVEMENT, REINFORCED 12"	SY	210	$_____	$_____
Midfield Base Bid	217	P-604-6.1	COMPRESSION JOINT SEALS FOR CONCRETE	LF	5600	$_____	$_____
Midfield Base Bid	218	P-620-5.3	PAVEMENT MARKING (INCL. REFLECTIVE BEADS)	LS	1	$_____	$_____
Midfield Base Bid	219	T-901-5.1	SEEDING (INCLUDING FERTILIZER, HYDROLUCH, STABILIZATION)	ACRE	0.25	$_____	$_____
Midfield Base Bid	220	T-905-5.1	SELECT TOPSOIL BORROW (IMPORT) (CV)	CY	50	$_____	$_____
Midfield Add. Alt	221	P-154-5.2	GEOTEXTILE FABRIC, TYPE V	SY	590	$_____	$_____
Midfield Add. Alt	222	P-101-5.4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	30	$_____	$_____
Midfield Add. Alt	223	P-101-5.5	REMOVE CONCRETE PAVEMENT (FULL DEPTH)	SY	590	$_____	$_____
Midfield Add. Alt	224	P-152-5.1	COMMON EXCAVATION (EV)	CY	250	$_____	$_____
Midfield Add. Alt	225	P-152-5.2	UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES SUBGRADE PROOF ROLLING)	CY	50	$_____	$_____
Midfield Add. Alt	226	P-152-5.4	SUBGRADE PREPARATION (INCLUDES SUBGRADE PROOF ROLLING)	SY	590	$_____	$_____
Midfield Add. Alt	227	P-219-5.1	RECYCLED CONCRETE AGGREGATE BASE COURSE (CV)	CY	180	$_____	$_____
Midfield Add. Alt	228	P-501-8.2	CEMENT CONCRETE PAVEMENT, 12"	SY	590	$_____	$_____
Midfield Add. Alt	229	P-604-6.1	COMPRESSION JOINT SEALS FOR CONCRETE	LF	730	$_____	$_____

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:

AASHTO R73	Standard Practice for Evaluation of Precast Concrete Drainage Productions
ASTM C14	Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe
ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C507	Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
ASTM C1479	Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations
ASTM C1840	Standard Practice for Inspection and Acceptance of Installed Reinforced Concrete Culvert, Storm Drain, and Storm Sewer Pipe

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 pipe 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 pipe 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. Not used.

701-2.7 Plastic gaskets. Not used.

701-2.8 Controlled low-strength material (CLSM). Controlled low-strength material shall conform to the requirements of Item P-153. When CLSM is used, all joints shall have gaskets.

701-2.9 Precast box culverts. Not used.

701-2.10 Precast concrete pipe. 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.

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 on 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.

b. Flexible pipe. For flexible pipe, the bed shall be roughly shaped to fit the pipe, and a bedding blanket of sand or fine granular material shall be provided as follows:

Flexible Pipe Bedding

Pipe Corrugation Depth		Minimum Bedding Depth	
inch	**mm**	**inch**	**mm**
1/2	12	1	25
1	25	2	50
2	50	3	75
2-1/2	60	3-1/2	90

c. Other pipe materials. For PVC, polyethylene, polypropylene, or fiberglass pipe, the bedding material shall consist of coarse sands and gravels with a maximum particle size of 3/4 inches (19 mm). For pipes installed under paved areas, no more than 12% of the material shall pass the No. 200 (0.075 mm) sieve. For all other areas, no more than 50% of the material shall pass the No. 200 (0.075 mm) sieve. The bedding shall have a thickness of at least 6 inches (150 mm) below the bottom of the pipe and extend up around the pipe for a depth of not less than 50% of the pipe's vertical outside diameter.

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, (4) plastic gaskets, (5) coupling bands.

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 pipe 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. Metal pipe shall be firmly joined by form-fitting bands conforming to the requirements of ASTM A760 for steel pipe and AASHTO M196 for aluminum pipe.

c. PVC, Polyethylene, or Polypropylene pipe. Joints for PVC, Polyethylene, or Polypropylene pipe shall conform to the requirements of ASTM D3212 when leak resistant joints are required. Joints for PVC and Polyethylene pipe shall conform to the requirements of AASHTO M304 when soil tight joints are required. Fittings for polyethylene pipe shall conform to the requirements of AASHTO M252 or ASTM M294. Fittings for polypropylene pipe shall conform to ASTM F2881, ASTM F2736, or ASTM F2764.

d. Fiberglass pipe. Joints and fittings shall be as detailed on the plans and in accordance with the manufacturers recommendations. Joints shall meet the requirements of ASTM D4161 for flexible elastomeric seals.

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. If a concrete cradle or CLSM embedment material is used, it shall conform to the plan details.

b. Plastic and fiberglass Pipe. Embedment material shall meet the requirements of ASTM D3282, A-1, A-2-4, A-2-5, or A-3. Embedment material shall be free of organic material, stones larger than 1.5 inches in the greatest dimension, or frozen lumps. Embedment material shall extend to 12 inches above the top of the pipe.

c. Metal Pipe. Embedment material shall be granular as specified in the contract document and specifications, and shall be free of organic material, rock fragments larger than 1.5 inches in the greatest dimension and frozen lumps. As a minimum, backfill materials shall meet the requirements of ASTM D3282, A-1, A-2, or A-3. Embedment material shall extend to 12 inches above the top of the pipe.

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 material shall be compacted to a density required under Item P-152.

Concrete cradles and flowable fills, such as controlled low strength material (CLSM) or controlled density fill (CDF), may be used for embedment provided adequate flotation resistance can be achieved by restraints, weighing, or placement technique.

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 relaid or replaced at the Contractor's expense. Evaluation of any damage to RCP shall be evaluated based on AASHTO R73.

Overfill material shall be place 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.

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 photo 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 end or inside face of structure to the end or inside face of structure, whichever is applicable. The identify each class, types 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

701-5.1 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. Pipe bedding material shall be considered incidental.

701-5.2 Payment will be made at the contract unit price per linear foot for 12in, 15in, 24in, and 30in pipe.

Payment will be made under:

Item 701-5.1	12IN REINFORCED CONCRETE PIPE (RCP), CLASS III per linear foot
Item 701-5.2	18IN REINFORCED CONCRETE PIPE (RCP) , CLASS III per linear foot
Item 701-5.3	24IN REINFORCED CONCRETE PIPE (RCP) , CLASS III per linear foot
Item 701-5.4	30IN REINFORCED CONCRETE PIPE (RCP) , CLASS III per linear foot
Item 701-5.5	36IN REINFORCED CONCRETE PIPE (RCP) , CLASS III per linear foot
Item 701-5.6	30IN REINFORCED CONCRETE PIPE (RCP) FES W/ TRASH GUARD , CLASS III 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.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M167	Standard Specification for Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches
AASHTO M190	Standard Specification for Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe Arches
AASHTO M196	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains
AASHTO M219	Standard Specification for Corrugated Aluminum Alloy Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches
AASHTO M243	Standard Specification for Field Applied Coating of Corrugated Metal Structural Plate for Pipe, Pipe-Arches, and Arches
AASHTO M252	Standard Specification for Corrugated Polyethylene Drainage Pipe
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

ASTM International (ASTM)

ASTM A760	Standard Specification for Corrugated Steel Pipe, Metallic Coated for Sewers and Drains
ASTM A761	Standard Specification for Corrugated Steel Structural Plate, Zinc Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches
ASTM A762	Standard Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains
ASTM A849	Standard Specification for Post-Applied Coatings, Pavings, and Linings for Corrugated Steel Sewer and Drainage Pipe
ASTM B745	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains
ASTM C14	Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe
ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C94	Standard Specification for Ready Mixed Concrete
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 C506	Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe

ASTM C507	Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe
ASTM C655	Standard Specification for Reinforced Concrete D-Load Culvert, Storm Drain and Sewer Pipe
ASTM C990	Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
ASTM C1433	Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers
ASTM D1056	Standard Specification for Flexible Cellular Materials Sponge or Expanded Rubber
ASTM D3034	Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM D3212	Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
ASTM D3262	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Sewer Pipe
ASTM D3282	Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
ASTM D4161	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Pipe Joints Using Flexible Elastomeric Seals
ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F667	Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings
ASTM F714	Standard Specification for Polyethylene (PE) Plastic Pipe (DR PR) Based on Outside Diameter
ASTM F794	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe & Fittings Based on Controlled Inside Diameter
ASTM F894	Standard Specification for Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe
ASTM F949	Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings
ASTM F2435	Standard Specification for Steel Reinforced Polyethylene (PE) Corrugated Pipe
ASTM F2562	Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage
ASTM F2736	Standard Specification for 6 to 30 in. (152 to 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe and Double Wall Pipe

ASTM F2764	Standard Specification for 30 to 60 in. (750 to 1500 mm) Polypropylene (PP) Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications
ASTM F2881	Standard Specification for 12 to 60 in. (300 to 1500 mm) Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications

National Fire Protection Association (NFPA)

NFPA 415	Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways

END ITEM D-701

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. The brick shall conform to the requirements of ASTM C32, Grade MS.

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.

a. Foundations. A prepared foundation shall be placed for all brick structures after the foundation excavation is completed and accepted. Unless otherwise specified, the base shall consist of reinforced concrete mixed, prepared, and placed in accordance with the requirements of Item P-610.

b. Laying brick. All brick shall be clean and thoroughly wet before laying so that they will not absorb any appreciable amount of additional water at the time they are laid. All brick shall be laid in freshly made mortar. Mortar not used within 45 minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted. An ample layer of mortar shall be spread on the beds and a shallow furrow shall be made in it that can be readily closed by the laying of the brick. All bed and head joints shall be filled solid with mortar. End joints of stretchers and side or cross joints of headers shall be fully buttered with mortar and a shoved joint made to squeeze out mortar at the top of the joint. Any bricks that may be loosened after the mortar has taken its set, shall be removed, cleaned, and re-laid with fresh mortar. No broken or chipped brick shall be used in the face, and no spalls or bats shall be used except where necessary to shape around irregular openings or edges; in which case, full bricks shall be placed at ends or corners where possible, and the bats shall be used in the interior of the course. In making closures, no piece of brick shorter than the width of a whole brick shall be used; and wherever practicable, whole brick shall be used and laid as headers.

c. Joints. All joints shall be filled with mortar at every course Exterior faces shall be laid up in advance of backing. Exterior faces shall be plastered or parged with a coat of mortar not less than 3/8 inch (9 mm) thick before the backing is laid up. Prior to parging, all joints on the back of face courses shall be cut flush. Unless otherwise noted, joints shall be not less than 1/4 inch (6 mm) nor more than 1/2 inch (12 mm) wide and the selected joint width shall be maintained uniform throughout the work.

d. Pointing. Face joints shall be neatly struck, using the weather-struck joint. All joints shall be finished properly as the laying of the brick progresses. When nails or line pins are used, the holes shall be immediately plugged with mortar and pointed when the nail or pin is removed.

e. Cleaning. Upon completion of the work all exterior surfaces shall be thoroughly cleaned by scrubbing and washing with water. If necessary to produce satisfactory results, cleaning shall be done with a 5% solution of muriatic acid which shall then be rinsed off with liberal quantities of water.

f. Curing and cold weather protection. The brick masonry shall be protected and kept moist for at least 48 hours after laying the brick. Brick masonry work or pointing shall not be done when there is frost on the brick or when the air temperature is below 50°F (10°C) unless the Contractor has, on the project ready to use, suitable covering and artificial heating devices necessary to keep the atmosphere surrounding the masonry at a temperature of not less than 60°F (16°C) for the duration of the curing period.

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.

Shop drawings that include the structure load ratings shall be submitted by contractor for drainage structures within the aircraft operation zones to demonstrate that they meet design loads for Boeing 747-400 aircrafts.

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. Shop drawings that include the structure load rating shall be submitted by contractor for precast drainage structures within the aircraft operation zones to demonstrate structures meet design loads for Boeing 747-400 aircrafts.

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 completed 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. Provision shall be made for any connections for lateral pipe, 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 to 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 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.

Shop drawings that include the structure load ratings shall be submitted by contractor for castings and frames for drainage structures within the aircraft operation zones to demonstrate that they meet design loads for Boeing 747-400 aircrafts.

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 by the unit.

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-751-5.1	DRAIN TILE ACCESS/INSPECTION PIT per each
Item D-751-5.2	48IN DIA MANHOLE / CATCH BASIN - per each
Item D-751-5.3	60IN DIA MANHOLE / CATCH BASEIN – per each
Item D-751-5.4	72IN DIA MANHOLE / CATCH BASIN – per each
Item D-751-5.5	84IN DIA MANHOLE / CATCH BASIN - per each
Item D-751-5.6	96IN DIA MANHOLE / CATCH BASIN – per each

REFERENCES

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

ASTM International (ASTM)

ASTM A27	Standard Specification for Steel Castings, Carbon, for General Application
ASTM A47	Standard Specification for Ferritic Malleable Iron Castings
ASTM A48	Standard Specification for Gray Iron Castings
ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
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 L-115 Electrical Manholes and Junction Structures

DESCRIPTION

115-1.1 This item shall consist of electrical manholes and junction structures (hand holes, pull boxes, junction cans, etc.) installed per this specification, at the indicated locations and conforming to the lines, grades and dimensions shown on the plans or as required by the RPR. This item shall include the installation of each electrical manhole and/or junction structures with all associated excavation, backfilling, sheeting and bracing, concrete, reinforcing steel, ladders, appurtenances, testing, dewatering and restoration of surfaces to the satisfaction of the RPR including removal of existing manholes and junction structures as shown on the plans.

EQUIPMENT AND MATERIALS

115-2.1 General.

a. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when so requested by the RPR.

b. 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.

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 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.

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 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 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.

115-2.2 Concrete structures. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures. Cast-in-place concrete structures shall be as shown on the plans.

115-2.3 Precast concrete structures. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another engineer-approved third-party certification program. Provide precast concrete structures where shown on the plans.

Precast concrete structures shall be an approved standard design of the manufacturer. Precast units shall have mortar or bitumastic sealer placed between all joints to make them watertight. The structure shall be designed to withstand 50,000 lb aircraft loads, unless otherwise shown on the plans. Openings or knockouts shall be provided in the structure as detailed on the plans.

Threaded inserts and pulling eyes shall be cast in as shown on the plans.

If the Contractor chooses to propose a different structural design, signed and sealed shop drawings, design calculations, and other information requested by the RPR shall be submitted by the Contractor to allow for a full evaluation by the RPR. The RPR shall review per the process defined in the General Provisions.

115-2.4 Junction boxes. Junction boxes shall be L-867 Class 1 (non-load bearing) or L-868 Class 1 (load bearing) airport light bases that are encased in concrete. The light bases shall have a L-894 blank cover, gasket, and stainless steel hardware. All bolts, studs, nuts, lock washers, and other similar fasteners used for the light fixture assemblies must be fabricated from 316L (equivalent to EN 1.4404), 18-8, 410, or 416 stainless steel. If 18-8, 410, or 416 stainless steel is utilized it shall be passivated and be free from any discoloration. Covers shall be 3/8-inch (9-mm) thickness for L-867 and 3/4-inch (19-mm) thickness for L-868. All junction boxes shall be provided with both internal and external ground lugs.

115-2.5 Mortar. The mortar shall be composed of one part of cement and two parts of mortar sand, by volume. The cement shall be per the requirements in ASTM C150, Type I. The sand shall be per the requirements in ASTM C144. Hydrated lime may be added to the mixture of sand and cement in an amount not to exceed 15% of the weight of cement used. The hydrated lime shall meet the requirements of ASTM C206. Water shall be potable, reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable, or other substances injurious to the finished product.

115-2.6 Concrete. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

115-2.7 Frames and covers. The frames shall conform to one of the following requirements:

a. ASTM A48	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	Ductile iron castings
f. ASTM A897	Austempered ductile iron castings

All castings specified shall withstand a maximum tire pressure of **200** psi and maximum load of **50,000** lbs.

All castings or structural steel units shall conform to the dimensions shown on the plans and shall be designed to support the loadings specified.

Each frame and cover 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.

Each cover shall have the word “ELECTRIC” or other approved designation cast on it. Each frame and cover shall be as shown on the plans or approved equivalent. No cable notches are required.

Each manhole shall be provided with a “DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER” safety warning sign as detailed in the Contract Documents and in accordance with OSHA 1910.146 (c)(2).

115-2.8 Ladders. Ladders, if specified, shall be galvanized steel or as shown on the plans.

115-2.9 Reinforcing steel. All reinforcing steel shall be deformed bars of new billet steel meeting the requirements of ASTM A615, Grade 60.

115-2.10 Bedding/special backfill. Bedding or special backfill shall be as shown on the plans.

115-2.11 Flowable backfill. Flowable material used to backfill shall conform to the requirements of Item P-153, Controlled Low Strength Material.

115-2.12 Cable trays. Cable trays shall be of galvanized steel oraluminum . Cable trays shall be located as shown on the plans.

115-2.13 Plastic conduit. Plastic conduit shall comply with Item L-110, Airport Underground Electrical Duct Banks and Conduits.

115-2.14 Conduit terminators. Conduit terminators shall be pre-manufactured for the specific purpose and sized as required or as shown on the plans.

115-2.15 Pulling-in irons. Pulling-in irons shall be manufactured with 7/8-inch (22 mm) diameter hot-dipped galvanized steel or stress-relieved carbon steel roping designed for concrete applications (7 strand, 1/2-inch (12 mm) diameter with an ultimate strength of 270,000 psi (1862 MPa)). Where stress-relieved carbon steel roping is used, a rustproof sleeve shall be installed at the hooking point and all exposed surfaces shall be encapsulated with a polyester coating to prevent corrosion.

115-2.16 Ground rods. Ground rods shall be one piece, copper clad steel. The ground rods shall be of the length and diameter specified on the plans, but in no case shall they be less than 8 feet (2.4 m) long nor less than 5/8 inch (16 mm) in diameter.

CONSTRUCTION METHODS

115-3.1 Unclassified excavation. It is the Contractor’s responsibility to locate existing utilities within the work area prior to excavation. Damage to utility lines, through lack of care in excavating, shall be repaired or replaced to the satisfaction of the RPR without additional expense to the Owner.

The Contractor shall perform excavation for structures and structure 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.

All excavation shall be unclassified and shall be considered incidental to Item L-115. Dewatering necessary for structure installation and erosion per federal, state, and local requirements is incidental to Item L-115.

Boulders, logs and all other objectionable material encountered in excavation shall be removed. All rock and 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, crevices, disintegrated rock and thin strata shall be removed. When concrete is to rest on a surface other than rock, special care shall be taken not to disturb the bottom of the excavation. Excavation to final grade shall not be made until just before the concrete or reinforcing is to be placed.

The Contractor shall provide all bracing, sheeting and shoring necessary to implement and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheeting and shoring shall be included in the unit price bid for the structure.

Unless otherwise provided, bracing, sheeting and shoring involved in the construction of this item shall be removed by the Contractor after the completion of the structure. Removal shall be effected in a manner that will not disturb or mar finished masonry. The cost of removal shall be included in the unit price bid for the structure.

After each excavation is completed, the Contractor shall notify the RPR. Structures shall be placed after the RPR has approved the depth of the excavation and the suitability of the foundation material.

Prior to installation the Contractor shall provide a minimum of 6 inches (150 mm) of sand or a material approved by the RPR as a suitable base to receive the structure. The base material shall be compacted and graded level and at proper elevation to receive the structure in proper relation to the conduit grade or ground cover requirements, as indicated on the plans.

115-3.2 Concrete structures. Concrete structures shall be built on prepared foundations conforming to the dimensions and form indicated on the plans. The concrete and construction methods 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.

115-3.3 Precast unit installations. Precast units shall be installed plumb and true. Joints shall be made watertight by use of sealant at each tongue-and-groove joint and at roof of manhole. Excess sealant shall be removed and severe surface projections on exterior of neck shall be removed.

115-3.4 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 to correct elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place and position before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

Field connections shall be made with bolts, unless indicated otherwise. Welding will not be permitted unless shown otherwise on the approved shop drawings and written approval is granted by the casting manufacturer. Erection equipment shall be suitable and safe for the workman. Errors in shop fabrication or deformation resulting from handling and transportation that prevent the proper assembly and fitting of parts shall be reported immediately to the RPR and approval of the method of correction shall be obtained. Approved corrections shall be made at Contractor’s expense.

Anchor bolts and anchors shall be properly located and built into connection work. Bolts and anchors shall be preset by the use of templates or such other methods as may be required to locate the anchors and anchor bolts accurately.

Pulling-in irons shall be located opposite all conduit entrances into structures to provide a strong, convenient attachment for pulling-in blocks when installing cables. Pulling-in irons shall be set directly into the concrete walls of the structure.

115-3.5 Installation of ladders. Ladders shall be installed such that they may be removed if necessary. Mounting brackets shall be supplied top and bottom and shall be cast in place during fabrication of the structure or drilled and grouted in place after erection of the structure.

115-3.6 Removal of sheeting and bracing. In general, all sheeting and bracing used to support the sides of trenches or other open excavations shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a structure shall be withdrawn, unless otherwise directed, before more than 6 inches (150 mm) of material is placed above the top of the structure and before any bracing is removed. Voids left by the sheeting shall be carefully refilled with

selected material and rammed tight with tools especially adapted for the purpose or otherwise as may be approved.

The RPR may direct the Contractor to delay the removal of sheeting and bracing if, in his judgment, the installed work has not attained the necessary strength to permit placing of backfill.

115-3.7 Backfilling. After a structure has been completed, the area around it shall be backfilled in horizontal layers not to exceed 6 inches (150 mm) in thickness measured after compaction to the density requirements in Item P-152. Each layer shall be deposited all 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.

Backfill shall not be placed against any structure until approval is given by the RPR. In the case of concrete, such approval shall not be given until tests made by the laboratory under supervision of the RPR establish that the concrete has attained sufficient strength to provide a factor of safety against damage or strain in withstanding any pressure created by the backfill or the methods used in placing it.

Where required, the RPR may direct the Contractor to add, at his own expense, sufficient water during compaction to assure a complete consolidation of the backfill. The Contractor shall be responsible for all damage or injury done to conduits, duct banks, structures, property or persons due to improper placing or compacting of backfill.

115-3.8 Connection of duct banks. To relieve stress of joint between concrete-encased duct banks and structure walls, reinforcement rods shall be placed in the structure wall and shall be formed and tied into duct bank reinforcement at the time the duct bank is installed.

115-3.9 Grounding. A ground rod shall be installed in the floor of all concrete structures so that the top of rod extends 6 inches (150 mm) above the floor. The ground rod shall be installed within one foot (30 cm) of a corner of the concrete structure. Ground rods shall be installed prior to casting the bottom slab. Where the soil condition does not permit driving the ground rod into the earth without damage to the ground rod, the Contractor shall drill a 4-inch (100 mm) diameter hole into the earth to receive the ground rod. The hole around the ground rod shall be filled throughout its length, below slab, with Portland cement grout. Ground rods shall be installed in precast bottom slab of structures by drilling a hole through bottom slab and installing the ground rod. Bottom slab penetration shall be sealed watertight with Portland cement grout around the ground rod.

A grounding bus of 4/0 bare stranded copper shall be exothermically bonded to the ground rod and loop the concrete structure walls. The ground bus shall be a minimum of one foot (30 cm) above the floor of the structure and separate from other cables. No. 2 American wire gauge (AWG) bare copper pigtails shall bond the grounding bus to all cable trays and other metal hardware within the concrete structure. Connections to the grounding bus shall be exothermic. If an exothermic weld is not possible, connections to the grounding bus shall be made by using connectors approved for direct burial in soil or concrete per UL 467. Hardware connections may be mechanical, using a lug designed for that purpose.

115-3.10 Cleanup and repair. After erection of all galvanized items, damaged areas shall be repaired by applying a liquid cold-galvanizing compound per MIL-P-21035. Surfaces shall be prepared and compound applied per the manufacturer's recommendations.

Prior to acceptance, the entire structure shall be cleaned of all dirt and debris.

115-3.11 Restoration. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt and rubbish from the site. The Contractor shall restore all disturbed areas equivalent to or better than their original condition. All sodding, grading and restoration shall be considered incidental to the respective Item L-115 pay item.

The Contractor shall grade around structures as required to provide positive drainage away from the structure.

Areas with special surface treatment, such as roads, sidewalks, or other paved areas shall have backfill compacted to match surrounding areas, and surfaces shall be repaired using materials comparable to original materials.

Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly 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.

After all work is completed, the Contractor shall remove all tools and other equipment, leaving the entire site free, clear and in good condition.

115-3.12 Inspection. Prior to final approval, the electrical structures shall be thoroughly inspected for conformance with the plans and this specification. Any indication of defects in materials or workmanship shall be further investigated and corrected. The earth resistance to ground of each ground rod shall not exceed 25 ohms. Each ground rod shall be tested using the fall-of-potential ground impedance test per American National Standards Institute / Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81. This test shall be performed prior to establishing connections to other ground electrodes.

115-3.13 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 shall construct a concrete slab around the top of adjusted structures located in graded areas that are not to be paved. The concrete slab shall conform to the dimensions shown on the plans.

115-3.14 Duct extension to existing ducts. Where existing concrete encased ducts are to be extended, the duct extension shall be concrete encased plastic conduit. The fittings to connect the ducts together shall be standard manufactured connectors designed and approved for the purpose. The duct extensions shall be installed according to the concrete-encased duct detail and as shown on the plans.

METHOD OF MEASUREMENT

115-4.1 Electrical manholes and junction structures shall be measured by each unit completed in place and accepted. The following items shall be included in the price of each unit: All required excavation and dewatering: sheeting and bracing; all required backfilling with on-site materials; restoration of all surfaces and finished grading and turfing; all required connections; temporary cables and connections; and ground rod testing.

115-4.2 Manhole elevation adjustments shall be measured 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

115-5.1 The accepted quantity of electrical manholes and junction structures will be paid for at the Contract unit price per each, complete and in place. 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 appurtenances and connections to duct banks 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.

115-5.2 Payment shall be made at the contract unit price for manhole elevation adjustments. This price shall 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, including but not limited to, spacers, concrete, rebar, dewatering, excavating, backfill, topsoil, sodding and pavement restoration, where required, to complete this item as shown in the plans and to the satisfaction of the RPR.

Payment will be made under:

Item L-115-5.1	Precast Aircraft-Rated Electrical Manhole - Per Each
Item L-115-5.2	L-867 Base Can with Blank Cover Used as a Splice Can – Per Each
Item L-115-5.3	Adjust Existing FAA Electrical Manhole to Finished Grade and Install New Aircraft Rate Casting – 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.

American National Standards Institute / Insulated Cable Engineers Association (ANSI/ICEA)

ANSI/IEEE STD 81	IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System
	Advisory Circular (AC)
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-53	Airport Lighting Equipment Certification Program
	Commercial Item Description (CID)
A-A 59544	Cable and Wire, Electrical (Power, Fixed Installation)
	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 A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A897	Standard Specification for Austempered Ductile Iron Castings
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C206	Standard Specification for Finishing Hydrated Lime
	FAA Engineering Brief (EB)
EB #83	In Pavement Light Fixture Bolts
	Mil Spec
MIL-P-21035	Paint High Zinc Dust Content, Galvanizing Repair
	National Fire Protection Association (NFPA)
NFPA-70	National Electrical Code (NEC)

END OF ITEM L-115

Item T-901 Seeding

DESCRIPTION

901-1.1 This item shall consist of soil preparation, seeding, and fertilizing 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:

Fine Fescue 10% Creeping Red Fescue, Fine Fescue 10% Creeping Red Fescue, Fine Fescue 50% Sheeps Fescue, Fine Fescue 20% Chewings Red Fescue, Fine Fescue 10% Hard Red Fescue (Cut Less Special) or approved equal.

Like or better cultivars may be used based on availability and market conditions:

Seed Properties and Rate of Application

Seed	Minimum Seed Purity (Percent)	Minimum Germination (Percent)	Rate of Application lb/acre (or lb/1,000 S.F.)
Cut Less (Special), or approved equal	*	*	6 lb/1,000 SF
MnDOT Seed Mix 33-361 (2575.508)	*	*	35 Ib/Acre

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 slow release Nitrogen type, NPK: 20-5-10 commercial fertilizer and shall be spread at the rate of 150 lb/acre (120 Ib/ac for MnDOT seed mix, Type 4 Fertilizer (2575.508)).

901-2.4 Soil for repairs. The soil for fill 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 include 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 at 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 pipe lines shall be capable of providing clearance for 5/8 inch (16 mm) solids. The power unit for the pump and agitator shall have controls 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 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 relative proportions specified, 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 fresh water 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 misses and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of known area.

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

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

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

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

METHOD OF MEASUREMENT

901-4.1 The quantity of seeding to be paid for shall be the number of units **per** acre measured on the ground surface, completed and accepted.

BASIS OF PAYMENT

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

Payment will be made under:

Item 901-5.1	SEEDING (INCLUDING FERTILIZER) per acre
Item 901-5.2	SEEDING (INCLUDING FERTILIZER, HYDROMULCH, STABILIZATION) per acre

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

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DULUTH INTERNATIONAL AIRPORT

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.

Shawn T. McMahon, PE

DATE JULY 13, 2022 LICENSE NO. 49856

DULUTH INTERNATIONAL AIRPORT (DLH)

TAXIWAY A RECONSTRUCTION - PHASES 2 & 4

DULUTH, MN

MARK	DATE	REVISIONS DESCRIPTION
1	7/25/2022	ADDENDUM 1

SEH FILE NO. DULA165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY SWB

SHEET TITLE
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G0.01

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				AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL	AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL
SCHEDULE A - TAXIWAY A RECONSTRUCTION, PHASE 2 (BASE BID)									
1	40-05	MAINTENANCE & RESTORATION OF HAUL ROADS	LS	1	0	1			
2	40-08	RESTORATION OF BATCH PLANT AND CONTRACTOR STORAGE AREAS	LS	1	0	1			
3	50-06	CONSTRUCTION LAYOUT & STAKING	LS	1.00	0.00	1.00			
4	60-05	FIELD OFFICE	LS	1	0	1			
5	70-08	TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING	LS	1	0	1			
6	70-10	ORANGE CONSTRUCTION FENCE	LF	2,250	0	2,250			
7	02 41 35	REMOVE PAVEMENT MARKING BY WATER BLASTING	SF	440	0	440			
8	02 41 35	REMOVE PAVEMENT MARKING, GROUND OFF	SF	35	0	35			
9	32 12 16	PLANT-MIXED ASPHALT PAVEMENT	TON	3,045	740	3,785			
10	C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1	0	1			
11	C-102-5.1	ROCK CONSTRUCTION ENTRANCE (INCLUDES MAINTENANCE AND REMOVAL)	EA	2	0	2			
12	C-102-5.2	SILT FENCE, TYPE PREASSEMBLED (INCLUDES MAINTENANCE AND REMOVAL)	LF	17,400.00	0.00	17,400.00			
13	C-102-5.3	FILTER LOG, TYPE WOOD FIBER BIOROLL (INCLUDES MAINTENANCE AND REMOVAL)	LF	2,200	0	2,200			
14	C-102-5.4	EROSION CONTROL BLANKET, CATEGORY 3N (WOOD FIBER HV) (INCLUDES MAINTENANCE)	SY	1,200	0	1,200			
15	C-102-5.5	INLET PROTECTION, TYPE B (INCLUDES MAINTENANCE AND REMOVAL)	EA	31	0	31			
16	C-105	MOBILIZATION	LS	1	0	1			
17	D-701-5.1	12IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	26	0	26			
18	D-701-5.2	18IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	247	0	247			
19	D-701-5.3	24IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	970	0	970			
20	D-701-5.5	36IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	277	0	277			
21	D-705-5.1	DRAIN TILE (6" PERFORATED, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	2,920.00	0.00	2,920.00			
22	D-705-5.2	DRAIN TILE (6" SDR35 PVC PIPE, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	995	0	995			
23	D-751-5.1	DRAIN TILE ACCESS/INSPECTION PIT	EA	13	0	13			
24	D-751-5.2	48IN DIA MANHOLE / CATCH BASIN	EA	7	0	7			
25	D-751-5.3	60IN DIA MANHOLE / CATCH BASIN	EA	3	0	3			
26	D-751-5.5	84IN DIA MANHOLE / CATCH BASIN	EA	1	0	1			
27	D-751-5.6	96IN DIA MANHOLE / CATCH BASIN	EA	1	0	1			
28	L-108-5.1	NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	67,500	0	67,500			
29	L-108-5.2	NO. 6 AWG, SOLID, BARE COUNTERPOISE WIRE, INSTALLED IN TRENCH, ABOVE THE DUCT BANK OR CONDUIT, INCLUDING CONNECTIONS/TERMINATIONS, GROUND RODS AND GROUND CONNECTORS	LF	6,200	0	6,200			
30	L-108-5.5	100-PR PE-39 TELEPHONE CABLE	LF	7,200.00	0.00	7,200.00			
31	L-110-5.1	NON-ENCASED ELECTRICAL CONDUIT, 1-WAY 2-INCH, PVC SCHEDULE 40	LF	4,000	0	4,000			
32	L-110-5.2	CONCRETE ENCASED ELECTRICAL CONDUIT, 2-WAY 2-INCH, PVC SCHEDULE 40	LF	400	0	400			
33	L-110-5.4	CONCRETE ENCASED ELECTRICAL CONDUIT, 8-WAY 4-INCH, PVC SCHEDULE 40	LF	500	0	500			
34	L-110-5.5	DRAIN LINE CONNECTION TO STORM STRUCTURE	EA	20	0	20			
35	L-110-5.8	CONCRETE ENCASED ELECTRICAL CONDUIT, 6-WAY 4-INCH, PVC SCHEDULE 40	LF	1,350	0	1,350			
36	L-115-5.1	PRECAST AIRCRAFT-RATED ELECTRICAL MANHOLE	EA	7	0	7			
37	L-115-5.2	L-867 BASE CAN WITH BLANK COVER USED AS A SPLICE CAN	EA	3	0	3			
38	L-115-5.3	ADJUST EXISTING FAA ELECTRICAL MANHOLE TO FINISHED GRADE AND INSTALL NEW CASTING	EA	1	0	1			
39	L-125-5.1	REMOVAL OF EXISTING TAXIWAY EDGE LIGHT FIXTURES AND SIGNS, INCLUDING BASE CAN, ISOLATION TRANSFORMER, SIGN FOUNDATION, CONDUIT, AND WIRE	LS	1	0	1			
40	L-125-5.2	L-861T(L) MEDIUM INTENSITY TAXIWAY EDGE LIGHT (WITHOUT ARCTIC KIT), BLUE LENS INSTALLED ON NEW L-867-B GALVANIZED BASE CAN (INCLUDES FIXTURES, TRANSFORMER, AND BASE CAN)	EA	39.00	0.00	39.00			
41	L-125-5.3	L-858(L) GUIDANCE SIGN, SIZE 2, INCLUDING FOUNDATION, ISOLATION TRANSFORMER, WIRE, BASE CAN, AND CONDUIT	EA	6	0	6			
42	L-125-5.4	L-829 4KW CONSTANT CURRENT REGULATOR	EA	1	0	1			
43	L-125-5.5	L-829 7.5KW CONSTANT CURRENT REGULATOR	EA	1	0	1			
44	L-125-5.6	L-868B CAN WITH BLANK COVER	EA	3	0	3			

STATEMENT OF ESTIMATED QUANTITIES

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITIY			FINAL QUANITTY		
				AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL	AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL
45	L-125-5.7	FAA UNFORESEEN CONDITIONS ALLOWANCE	LS	1	0	1			
46	L-125-5.8	TEMPORARILY REMOVE RUNWAY LIGHT FIXTURE, BASE CAN, CABLE, CONDUIT, AND ISOLATION TRANSFORMER, AND REPLACE LIGHT FIXTURE ON NEW BASE CAN WITH NEW ISOLATION TRANSFORMER IN LATER PHASE	EA	1	0	1			
47	P-101-5.1	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	1,100	0	1,100			
48	P-101-5.2	REMOVE BITUMINOUS PAVEMENT (FULL DEPTH)	SY	16,529	0	16,529			
49	P-101-5.3	MILL BITUMINOUS PAVEMENT (DEPTH VARIES)	SY	3,235.00	0.00	3,235.00			
50	P-101-5.4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	65	0	65			
51	P-101-5.5	REMOVE CONCRETE PAVEMENT (FULL DEPTH)	SY	550	0	550			
52	P-101-5.6	REMOVE STORM PIPE	LF	1,400	0	1,400			
53	P-101-5.7	REMOVE STORM STRUCTURE	EA	9	0	9			
54	P-101-5.8	REMOVE DRAIN TILE CLEANOUT	EA	8	0	8			
55	P-101-5.9	REMOVE DRAIN TILE	LF	2,980	0	2,980			
56	P-152-5.1	COMMON EXCAVATION (EV)	CY	21,000	2,550	23,550			
57	P-152-5.2	UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES SUBGRADE PROOF ROLLING)	CY	800	0	800			
58	P-152-5.3	MUCK EXCAVATION (EV)	CY	150.00	0.00	150.00			
59	P-152-5.4	SUBGRADE PREPARATION (INCLUDES SUBGRADE PROOF ROLLING)	SY	18,165	3,260	21,425			
60	P-152-5.5	ROCK EXCAVATION	CY	50	0	50			
61	P-154-5.1	GRANULAR BORROW (CV)	CY	8,680	1,465	10,145			
62	P-154-5.2	GEOTEXTILE FABRIC, TYPE V	SY	18,165	3,260	21,425			
63	P-209-5.1	CRUSHED AGGREGATE BASE COURSE (CV)	CY	3,265	640	3,905			
64	P-403-8.1	BITUMINOUS SURFACE COURSE	TON	910	125	1,035			
65	P-403-8.2	BITUMINOUS BASE COURSE	TON	760	125	885			
66	P-501-8.4	CEMENT CONCRETE PAVEMENT, 13"	SY	10,260	1,835	12,095			
67	P-501-8.5	CEMENT CONCRETE PAVEMENT, REINFORCED 13"	SY	740.00	0.00	740.00			
68	P-603-5.1	BITUMINOUS TACK COAT	GAL	910	585	1,495			
69	P-604-6.1	COMPRESSION JOINT SEALS FOR CONCRETE	LF	12,680	2,760	15,440			
70	P-605-5.1	JOINT SEALING FILLER	LF	2,975.00	25.00	3,000.00			
71	P-620-5.1	RUNWAY & TAXIWAY PAVEMENT MARKING	SF	15,730	0	15,730			
72	P-620-5.2	REFLECTIVE MEDIA	LB	960	0	960			
73	T-901-5.1	SEEDING (INCLUDING FERTILIZER)	ACRE	6	0	6			
74	T-905-5.1	SELECT TOPSOIL BORROW (IMPORT) (CV)	CY	100.00	0.00	100.00			
75	T-908-5.1	HYDROMULCHING	ACRE	6	0	6			

SEQ NOTES - SCHEDULE A

ITEM 2: RESTORATION INCLUDES GRADING, TURF ESTABLISHMENT, AND ANY OTHER MEASURES REQUIRED TO RETURN THE AREA TO PRE-CONSTRUCTION CONDITIONS OR BETTER, AS APPROVED BY ENGINEER.
ITEM 16: MOBILIZATION SHALL BE LIMITED TO 10-PERCENT OF THE TOTAL PROJECT COST.
ITEM 16: FURNISHING, INSTALLATION, AND REMOVAL OF ELECTRICAL JUMPERS REQUIRED FOR TEMPORARY ELECTRICAL CONSTRUCTION IS CONSIDERED INCIDENTAL TO THE WORK OF MOBILIZATION.
ITEMS 17-27: CONNECT TO EXISTING STORM DRAIN PIPE, STRUCTURE, DRAIN TILE, INSPECTION PIT, AND CLEANOUT ARE ALL INCIDENTAL TO THESE PAY ITEMS.
ITEM 21: DRAIN TILE PAY ITEM IS TO INCLUDE TRENCHING, BACKFILL MATERIAL, PIPE, AND FABRIC.
ITEM 22: DRAIN TILE PAY ITEM IS TO INCLUDE TRENCHING, BACKFILL MATERIAL, PIPE, AND FABRIC.
ITEM 48: 50 DUMP TRUCK LOADS OF MILLINGS ARE TO BE SALVAGED ON SITE PER PLANS. REMAINING MILLINGS SHALL BE DISPOSED OF PROPERLY OFF SITE BY CONTRACTOR.
ITEM 56-58: SEE EARTHWORK SUMMARY ON SHEET G0.44.
ITEM 60: SEE EARTHWORK SUMMARY ON SHEET G0.44.
ITEM 43: ALL ON-SITE STRIPPING, SALVAGING, REPLACING AND SPREADING QUANTITY WILL BE PAID FOR UNDER COMMON EXCAVATION PRIOR TO THE TOPSOIL BORROW (OBTAINED OFF-SITE) ITEM BEING PAID. SEE EARTHWORK SUMMARY ON SHEET G0.44.
GENERAL: TEMPORARY SANITARY FACILITIES, WATER FOR DUST CONTROL, TEMPORARY WATER ARE CONSIDERED INCIDENTAL TO THE PROJECT.

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SEH

DULUTH INTERNATIONAL AIRPORT

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.
Shawn T. McMahon, PE
DATE JULY 13, 2022 LICENSE NO. 49856

DULUTH INTERNATIONAL AIRPORT (DLH)
TAXIWAY A RECONSTRUCTION - PHASES 2 & 4
DULUTH, MN

MARK	DATE	DESCRIPTION
1	07-25-2022	ADDENDUM 1

REVISIONS

SEH FILE NO. DULAI165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY ---
DRAWN BY ---

SHEET TITLE
STATEMENT OF ESTIMATED QUANTITIES - SCHEDULE A

SHEET
G0.43

GENERAL NOTES:

1. THE EXISTING UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MAY NOT INCLUDE ALL UTILITIES PRESENT. THE CONTRACTOR SHALL BE RESPONSIBLE TO CALL MINNESOTA'S ONE-CALL NOTIFICATION CENTER (GSOC) AT 1-800-252-1166, AND COORDINATE FIELD LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO BEGINNING GRADING AND UTILITY WORK. THE CONTRACTOR SHALL IMMEDIATELY REPAIR ANY UTILITIES DAMAGED DURING CONSTRUCTION TO THE SATISFACTION OF THE UTILITY OWNER AT NO COST.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS REQUIRED BY THE CONSTRUCTION COVERED IN THE PLANS.
3. ALL WORK SHALL CONFORM TO APPLICABLE LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS.
4. THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
5. ALL ESTIMATES OF QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR AND SUBCONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING ALL QUANTITIES. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS AS SHOWN ON THE PLANS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL EXISTING AREAS, PAVEMENTS, STRUCTURES, OR OTHER FACILITIES DAMAGED DURING CONSTRUCTION ACTIVITIES TO EQUAL OR BETTER CONDITION AT NO COST TO THE OWNER.
7. THE CONTRACTOR SHALL REMOVE ALL DEBRIS RESULTING FROM WORK UNDER THIS CONTRACT TO AN APPROVED OFF-AIRPORT DUMP SITE.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE OWNER'S REPRESENTATIVE WITH REDLINED PLANS AND AS-BUILT SURVEYS, CERTIFIED BY A PROFESSIONAL LAND SURVEYOR IN THE STATE OF MINNESOTA.
9. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING.

SECURITY NOTES:

1. GENERAL INTENT: IT IS INTENDED THAT THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE AIRPORT SECURITY PLAN AND WITH THE SECURITY REQUIREMENTS SPECIFIED HEREIN BY AIRPORT OPERATIONS. THE CONTRACTOR SHALL DESIGNATE TO THE ENGINEER AND AIRPORT OPERATIONS, IN WRITING, THE NAME OF THEIR "CONTRACTOR SECURITY AND SAFETY OFFICER (CSSO)." THE CSSO SHALL BE AN EMPLOYEE OF THE CONTRACTOR AND REPRESENT THE CONTRACTOR ON THE SECURITY REQUIREMENTS FOR THE CONTRACT.
2. CONTRACTOR PERSONNEL SECURITY ORIENTATION: THE CSSO SHALL BE RESPONSIBLE FOR SCHEDULING ALL TRAINING REQUIRED FOR CONTRACTOR AND SUBCONTRACTOR PERSONNEL INTENDING TO WORK ON THE SITE. ALL SECURITY REQUIREMENTS WILL BE INCORPORATED INTO A SECURITY PLAN DEVELOPED BY THE CONTRACTOR AND APPROVED BY AIRPORT OPERATIONS. ALL CONTRACTOR EMPLOYEES SHALL BE BRIEFED ON SECURITY REQUIREMENTS PRIOR TO WORKING IN THE CONSTRUCTION AREA. THE AIRPORT SHALL BRIEF AND/OR TRAIN CONSTRUCTION RELATED VEHICLE EQUIPMENT DRIVERS ON OPERATIONS WITHIN AN AIRPORT/AIRCRAFT ENVIRONMENT. AIRPORT MANAGEMENT SHALL PROVIDE PRINTED MATERIAL TO THE CONTRACTOR THAT DEPICTS HAUL ROUTES, PROHIBITED MOVEMENT AREAS, AND DESCRIBE THE CONSEQUENCES FOR NON-COMPLIANCE WITH ESTABLISHED PROCEDURES. THE AIRPORT HAS IMPLEMENTED A ZERO-TOLERANCE APPROACH TO DRIVING VIOLATIONS.
3. PERSONNEL SECURITY FIRM: THE CONTRACTOR IS REQUIRED TO HIRE PROFESSIONAL SECURITY FOR THE PROJECT. THE SECURITY FIRM SHALL PROVIDE GATE GUARDS ANYTIME ACCESS GATES TO THE AIRFIELD ARE UNLOCKED AND IN USE. THE SECURITY FIRM WILL ALSO PERFORM ROUTINE SEARCHES OF DELIVERIES IN ACCORDANCE WITH AIRPORT SECURITY PROCEDURES. THE CONTRACTOR IS REQUIRED TO RECEIVE AIRPORT AUTHORITY APPROVAL ON SELECTION OF SECURITY FIRM.
4. IDENTIFICATION - EMPLOYEES: CONSTRUCTION PERSONNEL ON SITE FOR MORE THAN 5 DAYS (CONTRACTOR AND SUBCONTRACTORS) ARE REQUIRED TO BE BADGED. THE CSSO SHALL BE RESPONSIBLE FOR COORDINATING AND COMPLETING ALL NECESSARY DOCUMENTATION FOR BADGING. AS A REQUIREMENT OF BADGING, EACH EMPLOYEE SHALL ATTEND SAFETY AND SECURITY TRAINING AS CONDUCTED BY OPERATIONS. TRAINING WILL TAKE APPROXIMATELY TWO HOURS. BADGE APPLICATION AND PROCESSING WILL TAKE APPROXIMATELY ONE HOUR. BADGES FOR CONSTRUCTION PERSONNEL REQUIRE A FEE OF $175 PER BADGE. ALL BADGES MUST BE RETURNED TO THE AIRPORT AFTER PROJECT COMPLETION. FINAL PAYMENT WILL NOT BE MADE TO THE CONTRACTOR UNTIL ALL BADGES HAVE BEEN RETURNED. LOST BADGES RESULT IN A $200 PENALTY. ALL CONSTRUCTION PERSONNEL SHALL COMPLETE BADGE APPLICATION AND TRAINING AT LEAST SIX WEEKS PRIOR TO NOTICE TO PROCEED. DAILY OPERATIONS SHALL INCLUDE TURNING IN BADGES AT THE END OF THE WORKDAY AND CHECKING OUT THE BADGES AT THE BEGINNING OF THE NEXT WORK DAY. THE PROFESSIONAL SECURITY FIRM SHALL HANDLE THE BADGE CHECK IN/CHECK OUT PROCESS. IN THE RARE EXCEPTION AN EMPLOYEE IS NOT BADGED, THE CONTRACTOR SHALL PROVIDE AN ESCORT FOR THE UNBADGED EMPLOYEE. THE ESCORT CANNOT PERFORM ANY OTHER WORK WHILE ESCORTING AND CAN ESCORT UP TO FIVE PEOPLE MAXIMUM. ESCORT MUST BE WITHIN EARSHOT OF ALL PEOPLE BEING ESCORTED.
5. IDENTIFICATION - VEHICLES: THE CONTRACTOR, THROUGH THE CSSO, SHALL ESTABLISH AND MAINTAIN A LIST OF CONTRACTOR AND SUBCONTRACTOR VEHICLES AUTHORIZED TO OPERATE ON THE SITE OR DELIVER TO THE SITE. THE LIST MAY BE UPDATED, AS NEEDED, TO ACCOUNT FOR DIFFERENT OPERATIONAL COMPONENTS OF THE WORK.
6. SECURE ACCESS TO THE AIRFIELD: CONTRACTOR ACCESS TO THE SITE SHALL BE SHOWN ON THE PLANS. NO OTHER ACCESS POINTS SHALL BE ALLOWED UNLESS APPROVED BY AIRPORT OPERATIONS. ALL CONTRACTOR TRAFFIC AUTHORIZED TO ENTER THE SITE SHALL BE BADGED EMPLOYEES OR ESCORTED BY BADGED CONTRACTOR PERSONNEL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL TO AND FROM THE VARIOUS CONSTRUCTION AREAS ON THE SITE. THE SELECTED PROFESSIONAL SECURITY FIRM SHALL BE RESPONSIBLE FOR THE OPERATION AND SECURITY OF THE ACCESS GATES TO THE SITE. NO UNAUTHORIZED CONSTRUCTION PERSONNEL OR TRAFFIC SHALL BE ALLOWED WITHIN THE AIRPORT SECURITY FENCE. ACCESS GATES TO THE SITE SHALL BE LOCKED AND SECURED AT ALL TIMES WHEN NOT ATTENDED BY THE PROFESSIONAL SECURITY FIRM. THE CONTRACTOR IS RESPONSIBLE FOR THE IMMEDIATE CLEANUP OF ANY DEBRIS DEPOSITED ALONG THE ACCESS ROUTE AS A RESULT OF CONSTRUCTION TRAFFIC. DIRECTIONAL SIGNING FROM THE ACCESS GATE ALONG THE DELIVERY ROUTE TO THE STORAGE AREA, PLANT SITE, OR WORK SITE SHALL BE AS DIRECTED BY AIRPORT OPERATIONS. CONTRACTOR SHALL PROVIDE VISUAL CUES TO DELINEATE THE WORK AREAS. UP TO 8,000 FEET OF ORANGE SNOW FENCE, ADDITIONAL BARRELS/BARRICADES, AND SIGNAGE MAY BE REQUIRED TO CONTAIN EMPLOYEES WITHIN THE WORK AREA, AT NO ADDITIONAL COST TO THE CONTRACT.
7. COSTS ASSOCIATED WITH SECURITY: ALL COSTS ASSOCIATED WITH SECURITY ARE ASSOCIATED WITH THE TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING ITEM AS A LUMP SUM.
8. CONSTRUCTION RADIO CAR OPERATOR (CRCO): A CONSTRUCTION RADIO CAR IS NOT REQUIRED FOR THE PROPOSED WORK AREA. COORDINATE WITH ENGINEER OR AIRPORT FOR ACCESS OUTSIDE OF THE APPROVED WORK AREA.
9. MATERIAL DELIVERED TO THE SITE: ALL CONTRACTOR'S MATERIAL ORDERS FOR DELIVERY TO THE SITE WILL USE AS A DELIVERY ADDRESS THE STREET NAME ASSIGNED TO THE ACCESS POINT AT THE CONTRACTOR'S STAGING SITE AT THE AIRPORT. THE NAME "DULUTH INTERNATIONAL AIRPORT" SHALL NOT BE USED IN THE DELIVERY ADDRESS AT ANY TIME. THIS WILL PRECLUDE DELIVERY TRUCKS FROM ENTERING INTO THE TERMINAL COMPLEX, OR TAKING SHORT CUTS THROUGH THE PERIMETER GATES AND ENTERING INTO AIRCRAFT OPERATIONAL AREAS INAPPROPRIATELY.
10. FINES: PAYMENT OF ALL FINES ASSESSED TO DULUTH INTERNATIONAL AIRPORT DUE TO VIOLATIONS BY THE CONTRACTOR OF FAA, TSA, OR AIRFIELD SECURITY AND SAFETY REQUIREMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
    - 10.1. IF THE RESTRICTED AREA GATE IS FOUND TO BE OPEN OR UNLOCKED AND UNATTENDED, AIRPORT SECURITY POLICE AND/OR TSA MAY ISSUE THE CONTRACTOR A CITATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COURT COSTS AND IMPOSED FINES. IN ADDITION, AN UP TO $10,000.00 CHARGE MAY BE LEVIED BY THE DULUTH AIRPORT AUTHORITY AND/OR TSA FOR EACH VIOLATION SO DOCUMENTED. ALL FINES AND CHARGES SHALL BE DEDUCTED FROM FINAL PAYMENT TO THE CONTRACTOR IF FINES ARE NOT PAID WHEN DUE.
    - 10.2. IN THE EVENT THE CONTRACTOR DEVIATED FROM THE IDENTIFIED CONSTRUCTION LIMITS OR DESIGNATED HAUL ROUTES ONTO ACTIVE RUNWAY, TAXIWAY, OR SAFETY AREA, THE CONTRACTOR WILL BE FINED $1,000.00 PER OCCURRENCE. ALL FINES AND CHARGES SHALL BE DEDUCTED FROM FINAL PAYMENT DUE TO THE CONTRACTOR IF FINES ARE NOT PAID WHEN DUE.

EARTHWORK SUMMARY & NOTES:

1. STRIPPING, ON SITE STOCKPILING AND PLACING OF STRIPPED AND SALVAGED TOPSOIL WILL BE PAID FOR UNDER COMMON EXCAVATION.
2. EXCAVATION OR FIELD GRADING QUANTITIES OUTSIDE OF THE GRADING LIMITS SHALL BE DETERMINED QUANTITIES FROM A TOPOGRAPHIC SURVEY FROM BEFORE & AFTER THE WORK. THE SURVEY DATA COMPLETED BY THE CONTRACTOR SHALL BE SUBMITTED TO THE ENGINEER.
3. UNCLASSIFIED EXCAVATION QUANTITIES ARE ESTIMATES ONLY. QUANTITIES FOR PAYMENT MUST BE JUSTIFIED FROM A TOPOGRAPHIC SURVEY FROM BEFORE & AFTER THE WORK. THE SURVEY DATA SHALL BE SUBMITTED TO THE ENGINEER.

SEQ NOTES (FOR REFERENCE ONLY):

1. ALL BITUMINOUS PAVING COURSES CALCULATED AT 115 LB/SY/IN
2. ALL BITUMINOUS TACK COAT CALCULATED AT 0.05 GAL/SY

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITIY	FINAL QUANTITY
SCHEDULE D - MIDFIELD RAMP REPAIR, PHASE 1 - BASE BID					
196	50-06	CONSTRUCTION LAYOUT & STAKING	LS	1	
197	70-08	TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING	LS	1	
198	02 41 35	REMOVE PAVEMENT MARKING BY WATER BLASTING	SF	815	
199	P-154-5.2	GEOTEXTILE FABRIC, TYPE V	SY	4350	
200	C-102-5.2	SILT FENCE, TYPE PREASSEMBLED (INCLUDES MAINTENANCE AND REMOVAL)	LF	75	
201	C-102-5.3	FILTER LOG, TYPE WOOD FIBER BIOROLL (INCLUDES MAINTENANCE AND REMOVAL)	LF	940	
202	C-102-5.5	INLET PROTECTION, TYPE B (INCLUDES MAINTENANCE AND REMOVAL)	EA	5	
203	C-105	MOBILIZATION B,C	LS	1	
204	D-701-5.4	30IN REINFORCED CONCRETE PIPE (RCP), CLASS III H	LF	250	
205	D-705-5.1	DRAIN TILE (6" PERFORATED, INCLUDING TRENCH, BACKFILL, FABRIC) D	LF	35	
206	D-751-5.4	72IN DIA CATCH BASIN/MANHOLE	EA	2	
207	P-101-5.4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	415	
208	P-101-5.5	REMOVE CONCRETE PAVEMENT (FULL DEPTH) G	SY	4460	
209	P-101-5.6	REMOVE STORM PIPE	LF	250	
210	P-101-5.7	REMOVE STORM STRUCTURE	EA	1	
211	P-152-5.1	COMMON EXCAVATION (EV)	CY	1500	
212	P-152-5.2	UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES SUBGRADE PROOF ROLLING)	CY	200	
213	P-152-5.4	SUBGRADE PREPARATION (INCLUDES SUBGRADE PROOF ROLLING)	SY	4350	
214	P-219-5.1	RECYCLED CONCRETE AGGREGATE BASE COURSE (CV)	CY	1330	
215	P-501-8.2	CEMENT CONCRETE PAVEMENT, 12"	SY	4110	
216	P-501-8.3	CEMENT CONCRETE PAVEMENT, REINFORCED 12"	SY	210	
217	P-604-6.1	COMPRESSION JOINT SEALS FOR CONCRETE	LF	5600	
218	P-620-5.3	PAVEMENT MARKING (INCL. REFLECTIVE BEADS)	LS	1	
219	T-901-5.2	SEEDING (INCLUDING FERTILIZER, HYDROLUCH, STABILIZATION)	ACRE	0.25	
220	T-905-5.1	SELECT TOPSOIL BORROW (IMPORT) (CV) F	CY	50	
SCHEDULE E - MIDFIELD RAMP REPAIR, PHASE 1 - BID ALTERNATE					
221	P-154-5.2	GEOTEXTILE FABRIC, TYPE V	SY	590	
222	P-101-5.4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	30	
223	P-101-5.5	REMOVE CONCRETE PAVEMENT (FULL DEPTH) G	SY	590	
224	P-152-5.1	COMMON EXCAVATION (EV)	CY	250	
225	P-152-5.2	UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES SUBGRADE PROOF ROLLING)	CY	50	
226	P-152-5.4	SUBGRADE PREPARATION (INCLUDES SUBGRADE PROOF ROLLING)	SY	590	
227	P-219-5.1	RECYCLED CONCRETE AGGREGATE BASE COURSE (CV)	CY	180	
228	P-501-8.2	CEMENT CONCRETE PAVEMENT, 12"	SY	590	
229	P-604-6.1	COMPRESSION JOINT SEALS FOR CONCRETE	LF	730	

SEQ NOTES - SCHEDULE A

ITEM 203: MOBILIZATION SHALL BE LIMITED TO 10-PERCENT OF THE TOTAL PROJECT COST.
ITEMS 204-206: CONNECT TO EXISTING STORM DRAIN PIPE, STRUCTURE, DRAIN TILE, AND INSPECTION PIT ARE ALL INCIDENTAL TO THESE PAY ITEMS.
ITEM 205: DRAIN TILE PAY ITEM IS TO INCLUDE TRENCHING, BACKFILL MATERIAL, PIPE, AND FABRIC.
ITEM 220: ALL ON-SITE STRIPPING, SALVAGING, REPLACING AND SPREADING QUANTITY WILL BE PAID FOR UNDER COMMON EXCAVATION PRIOR TO THE TOPSOIL BORROW (OBTAINED OFF-SITE) ITEM BEING PAID. SEE EARTHWORK SUMMARY ON SHEET G0.44.
GENERAL: TEMPORARY SANITARY FACILITIES, WATER FOR DUST CONTROL, TEMPORARY WATER ARE CONSIDERED INCIDENTAL TO THE PROJECT.

1

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SEH

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.

Jarrod R. Nelson, PE — LICENSE NO. 26794
DATE JULY 13, 2022

DULUTH INTERNATIONAL AIRPORT
2022 MIDFIELD RAMP REPAIR - PHASE 1
DULUTH, MINNESOTA

MARK	DATE	DESCRIPTION
1	7/25/2022	ADDENDUM 1

REVISIONS

SEH FILE NO. DULAI 161944
STATE PROJECT NO. A6901-203
ISSUE DATE JULY 13, 2022
DESIGNED BY JN
DRAWN BY AA

SHEET TITLE
QUANTITIES

SHEET
G0.12

STATEMENT OF ESTIMATED QUANTITIES

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITIY			FINAL QUANITTY		
				AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL	AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL
SCHEDULE B - TAXIWAY A RECONSTRUCTION, PHASE 2 (ALTERNATE)									
76	40-05	MAINTENANCE & RESTORATION OF HAUL ROADS	LS	1	0	1			
77	40-08	RESTORATION OF BATCH PLANT AND CONTRACTOR STORAGE AREAS	LS	1	0	1			
78	50-06	CONSTRUCTION LAYOUT & STAKING	LS	1.00	0.00	1.00			
79	70-08	TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING	LS	1	0	1			
80	70-10	ORANGE CONSTRUCTION FENCE	LF	835	0	835			
81	02 41 35	REMOVE PAVEMENT MARKING BY WATER BLASTING	SF	105	0	110			
82	32 12 16	PLANT-MIXED ASPHALT PAVEMENT	TON	930	135	1,065			
83	C-105	MOBILIZATION	LS	1	0	1			
84	D-701-5.2	18IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	377.00	0.00	377.00			
85	D-705-5.1	DRAIN TILE (6" PERFORATED, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	630	0	630			
86	D-751-5.1	DRAIN TILE ACCESS/INSPECTION PIT	EA	4	0	4			
87	D-751-5.2	48IN DIA MANHOLE / CATCH BASIN	EA	1	0	1			
88	L-108-5.1	NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	12,050	0	12,050			
89	L-108-5.2	NO. 6 AWG, SOLID, BARE COUNTERPOISE WIRE, INSTALLED IN TRENCH, ABOVE THE DUCT BANK OR CONDUIT, INCLUDING CONNECTIONS/TERMINATIONS, GROUND RODS AND GROUND CONNECTORS	LF	2,100	0	2,100			
90	L-108-5.3	1/C #4/0 15KV CONCENTRIC NEUTRAL CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	410.00	0.00	410.00			
91	L-108-5.4	1/C #4 5KV UNSHIELDED XLP MV-90 CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	410	0	410			
92	L-110-5.1	NON-ENCASED ELECTRICAL CONDUIT, 1-WAY 2-INCH, PVC SCHEDULE 40	LF	4,000	0	4,000			
93	L-110-5.3	CONCRETE ENCASED ELECTRICAL CONDUIT, 6-WAY 6-INCH, PVC SCHEDULE 40 WITH FOUR 3-CELL TEXTILE/FABRIC INNERDUCTS IN EACH OF FOUR DUCTS	LF	175	0	175			
94	L-110-5.5	DRAIN LINE CONNECTION TO STORM STRUCTURE	EA	8	0	8			
95	L-110-5.6	CONCRETE ENCASED ELECTRICAL CONDUIT, 4-WAY 4-INCH, PVC SCHEDULE 40	LF	135	0	135			
96	L-110-5.7	CONCRETE ENCASED ELECTRICAL CONDUIT, 2-WAY 6-INCH, PVC SCHEDULE 40	LF	135.00	0.00	135.00			
97	L-115-5.1	PRECAST AIRCRAFT-RATED ELECTRICAL MANHOLE	EA	2	0	2			
98	L-125-5.1	REMOVAL OF EXISTING TAXIWAY EDGE LIGHT FIXTURES AND SIGNS, INCLUDING BASE CAN, ISOLATION TRANSFORMER, SIGN FOUNDATION, CONDUIT, AND WIRE	LS	1	0	1			
99	L-125-5.2	L-861T(L) MEDIUM INTENSITY TAXIWAY EDGE LIGHT (WITHOUT ARCTIC KIT), BLUE LENS INSTALLED ON NEW L-867-B GALVANIZED BASE CAN (INCLUDES FIXTURES, TRANSFORMER, AND BASE CAN)	EA	18	0	18			
100	L-125-5.3	L-858(L) GUIDANCE SIGN, SIZE 2, INCLUDING FOUNDATION, ISOLATION TRANSFORMER, WIRE, BASE CAN, AND CONDUIT	EA	2	0	2			
101	P-101-5.1	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	80	0	80			
102	P-101-5.2	REMOVE BITUMINOUS PAVEMENT (FULL DEPTH)	SY	2,370.00	0.00	2,370.00			
103	P-101-5.3	MILL BITUMINOUS PAVEMENT (DEPTH VARIES)	SY	440	0	440			
104	P-101-5.4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	110	0	110			
105	P-101-5.5	REMOVE CONCRETE PAVEMENT (FULL DEPTH)	SY	940	0	940			
106	P-101-5.6	REMOVE STORM PIPE	LF	435	0	435			
107	P-101-5.7	REMOVE STORM STRUCTURE	EA	2	0	2			
108	P-101-5.8	REMOVE DRAIN TILE CLEANOUT	EA	2.00	0.00	2.00			
109	P-101-5.9	REMOVE DRAIN TILE	LF	515	0	515			
110	P-152-5.1	COMMON EXCAVATION (EV)	CY	4,000	550	4,550			
111	P-152-5.2	UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES SUBGRADE PROOF ROLLING)	CY	200	0	200			
112	P-152-5.3	MUCK EXCAVATION (EV)	CY	50	0	50			
113	P-152-5.4	SUBGRADE PREPARATION (INCLUDES SUBGRADE PROOF ROLLING)	SY	4,115	675	4,790			
114	P-154-5.1	GRANULAR BORROW (CV)	CY	1,840.00	315.00	2,155.00			
115	P-154-5.2	GEOTEXTILE FABRIC, TYPE V	SY	4,115	675	4,790			
116	P-209-5.1	CRUSHED AGGREGATE BASE COURSE (CV)	CY	710	135	845			
117	P-403-8.1	BITUMINOUS SURFACE COURSE	TON	85	35	120			
118	P-403-8.2	BITUMINOUS BASE COURSE	TON	85	35	120			
119	P-501-8.4	CEMENT CONCRETE PAVEMENT, 13"	SY	3,165	15	3,180			
120	P-501-8.5	CEMENT CONCRETE PAVEMENT, REINFORCED 13"	SY	440.00	0.00	440.00			
121	P-603-5.1	BITUMINOUS TACK COAT	GAL	200	40	240			

STATEMENT OF ESTIMATED QUANTITIES

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITIY			FINAL QUANITTY		
				AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL	AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL
122	P-604-6.1	COMPRESSION JOINT SEALS FOR CONCRETE	LF	4,015	500	4,515			
123	P-605-5.1	JOINT SEALING FILLER	LF	425	5	430			
124	P-620-5.1	RUNWAY & TAXIWAY PAVEMENT MARKING	SF	3,775.00	0.00	3,775.00			
125	P-620-5.2	REFLECTIVE MEDIA	LB	230	0	230			
126	T-901-5.1	SEEDING (INCLUDING FERTILIZER)	ACRE	1	0	1			
127	T-905-5.1	SELECT TOPSOIL BORROW (IMPORT) (CV)	CY	100	0	100			
128	T-908-5.1	HYDROMULCHING	ACRE	1.25	0.00	1.25			

SEQ NOTES - SCHEDULE B

ITEM 77: RESTORATION INCLUDES GRADING, TURF ESTABLISHMENT, AND ANY OTHER MEASURES REQUIRED TO RETURN THE AREA TO PRE-CONSTRUCTION CONDITIONS OR BETTER, AS APPROVED BY ENGINEER.

ITEM 83: MOBILIZATION SHALL BE LIMITED TO 10-PERCENT OF THE TOTAL PROJECT COST.

ITEM 83: FURNISHING, INSTALLATION, AND REMOVAL OF ELECTRICAL JUMPERS REQUIRED FOR TEMPORARY ELECTRICAL CONSTRUCTION IS CONSIDERED INCIDENTAL TO THE WORK OF MOBILIZATION.

ITEMS 84-87: CONNECT TO EXISTING STORM DRAIN PIPE, STRUCTURE, DRAIN TILE, INSPECTION PIT, AND CLEANOUT ARE ALL INCIDENTAL TO THESE PAY ITEMS.

ITEM 85: DRAIN TILE PAY ITEM IS TO INCLUDE TRENCHING, BACKFILL MATERIAL, PIPE, AND FABRIC.

ITEM 102: 50 DUMP TRUCK LOADS OF MILLINGS ARE TO BE SALVAGED ON SITE PER PLANS. REMAINING MILLINGS SHALL BE DISPOSED OF PROPERLY OFF SITE BY CONTRACTOR.

ITEM 110-112: SEE EARTHWORK SUMMARY ON SHEET G0.45.

ITEM 127: ALL ON-SITE STRIPPING, SALVAGING, REPLACING AND SPREADING QUANTITY WILL BE PAID FOR UNDER COMMON EXCAVATION PRIOR TO THE TOPSOIL BORROW (OBTAINED OFF-SITE) ITEM BEING PAID. SEE EARTHWORK SUMMARY ON SHEET G0.45.

GENERAL: TEMPORARY SANITARY FACILITIES, WATER FOR DUST CONTROL, TEMPORARY WATER ARE CONSIDERED INCIDENTAL TO THE PROJECT.

1

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DULUTH INTERNATIONAL AIRPORT

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.

Shawn T. McMahon, PE — LICENSE NO. 49856

DATE JULY 13, 2022

DULUTH INTERNATIONAL AIRPORT (DLH)

TAXIWAY A RECONSTRUCTION - PHASES 2 & 4

DULUTH, MN

MARK	DATE	DESCRIPTION
1	07-25-2022	ADDENDUM 1

REVISIONS

SEH FILE NO. DULAI165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY ---

SHEET TITLE
STATEMENT OF ESTIMATED QUANTITIES - SCHEDULE B

SHEET
G0.44

STATEMENT OF ESTIMATED QUANTITIES

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITIY			FINAL QUANITTY		
				AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL	AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL
SCHEDULE C - TAXIWAY A RECONSTRUCTION, PHASE 4 (BASE BID)									
129	40-05	MAINTENANCE & RESTORATION OF HAUL ROADS	LS	1	0	1			
130	40-08	RESTORATION OF BATCH PLANT AND CONTRACTOR STORAGE AREAS	LS	1	0	1			
131	50-06	CONSTRUCTION LAYOUT & STAKING	LS	1	0	1			
132	70-08	TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING	LS	1	0	1			
133	70-10	ORANGE CONSTRUCTION FENCE	LF	1,000	0	1,000			
134	02 41 35	REMOVE PAVEMENT MARKING BY WATER BLASTING	SF	1,000	0	1,000			
135	2512	RANDOM RIP RAP CLASS 2	CY	475	0	475			
136	2512	RANDOM RIP RAP CLASS 4	CY	16	0	16			
137	2546	LIGHTING UNIT TYPE A WITH (4) LUMINAIRES, (1) BULLHORN ARM, AND (1) 30' POLE	EA	3	0	3			
138	2546	RAISED LIGHT FOUNDATION	EA	3	0	3			
139	2546	1.5" NON METALLIC CONDUIT	LF	750	0	750			
140	2546	UNDERGROUND WIRE 1/C 6 AWG (CU)	LF	1,350	0	1,350			
141	2546	UNDERGROUND #8 WIRE	LF	750	0	750			
142	2546	EXISTING SERVICE PANEL MODIFICATION	EA	1	0	1			
143	2576	ROLLED EROSION PREVENTION CATEGORY 45 (INCLUDES MAINTENANCE)	SY	5,375	0	5,375			
144	32 12 16	PLANT-MIXED ASPHALT PAVEMENT	TON	3,750	0	3,750			
145	C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1	0	1			
146	C-102-5.1	ROCK CONSTRUCTION ENTRANCE (INCLUDES MAINTENANCE AND REMOVAL)	EA	1	0	1			
147	C-102-5.2	SILT FENCE, TYPE PREASSEMBLED (INCLUDES MAINTENANCE AND REMOVAL)	LF	4,375	0	4,375			
148	C-102-5.5	INLET PROTECTION, TYPE B (INCLUDES MAINTENANCE AND REMOVAL)	EA	16	0	16			
149	C-105	MOBILIZATION	LS	1	0	1			
150	D-701-5.2	18IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	710	0	710			
151	D-701-5.3	24IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	240	0	240			
152	D-701-5.4	30IN REINFORCED CONCRETE PIPE (RCP), CLASS III	LF	577	0	577			
153	D-701-5.6	30IN REINFORCED CONCRETE PIPE (RCP) FES W/ TRASH GUARD, CLASS III	EA	1	0	1			
154	D-705-5.1	DRAIN TILE (6" PERFORATED, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	110	0	110			
155	D-751-5.2	48IN DIA MANHOLE / CATCH BASIN	EA	7	0	7			
156	D-751-5.3	60IN DIA MANHOLE / CATCH BASIN	EA	2	0	2			
157	D-751-5.4	72IN DIA MANHOLE / CATCH BASIN	EA	3	0	3			
158	L-108-5.1	NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	18,500	0	18,500			
159	L-108-5.2	NO. 6 AWG, SOLID, BARE COUNTERPOISE WIRE, INSTALLED IN TRENCH, ABOVE THE DUCT BANK OR CONDUIT, INCLUDING CONNECTIONS/TERMINATIONS, GROUND RODS AND GROUND CONNECTORS	LF	950	0	950			
160	L-108-5.3	1/C #4/0 15KV CONCENTRIC NEUTRAL CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	945	0	945			
161	L-108-5.4	1/C #4 5KV UNSHIELDED XLP MV-90 CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	1,000	0	1,000			
162	L-110-5.3	CONCRETE ENCASED ELECTRICAL CONDUIT, 6-WAY 6-INCH, PVC SCHEDULE 40 WITH FOUR 3-CELL TEXTILE/FABRIC INNERDUCTS IN EACH OF FOUR DUCTS	LF	300	0	300			
163	L-110-5.5	DRAIN LINE CONNECTION TO STORM STRUCTURE	EA	4	0	4			
164	L-110-5.6	CONCRETE ENCASED ELECTRICAL CONDUIT, 4-WAY 4-INCH, PVC SCHEDULE 40	LF	315	0	315			
165	L-110-5.7	CONCRETE ENCASED ELECTRICAL CONDUIT, 2-WAY 6-INCH, PVC SCHEDULE 40	LF	330	0	330			
166	L-115-5.1	PRECAST AIRCRAFT-RATED ELECTRICAL MANHOLE	EA	4	0	4			
167	L-125-5.9	REMOVAL OF EXISTING CONCRETE ENCASED DUCTBANK, CONDUIT, AND WIRE	LS	1	0	1			
168	P-101-5.1	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	200	0	200			
169	P-101-5.2	REMOVE BITUMINOUS PAVEMENT (FULL DEPTH)	SY	4,140	0	4,140			
170	P-101-5.3	MILL BITUMINOUS PAVEMENT (DEPTH VARIES)	SY	105	0	105			
171	P-101-5.4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	190	0	190			
172	P-101-5.6	REMOVE STORM PIPE	LF	715	0	715			
173	P-101-5.7	REMOVE STORM STRUCTURE	EA	7	0	7			
174	P-152-5.1	COMMON EXCAVATION (EV)	CY	21,350	0	21,350			
175	P-152-5.2	UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES SUBGRADE PROOF ROLLING)	CY	150	0	150			

STATEMENT OF ESTIMATED QUANTITIES

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITIY			FINAL QUANITTY		
				AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL	AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL
176	P-152-5.3	MUCK EXCAVATION (EV)	CY	50	0	50			
177	P-152-5.4	SUBGRADE PREPARATION (INCLUDES SUBGRADE PROOF ROLLING)	SY	15,270	0	15,270			
178	P-152-5.5	ROCK EXCAVATION	CY	50	0	50			
179	P-152-5.6	DRAINAGE EXCAVATION	CY	50	0	50			
180	P-154-5.1	GRANULAR BORROW (CV)	CY	7,550	0	7,550			
181	P-154-5.2	GEOTEXTILE FABRIC, TYPE V	SY	15,270	0	15,270			
182	P-154-5.3	REGRAVELING, 2" THICKNESS	SY	2,400	0	2,400			
183	P-209-5.1	CRUSHED AGGREGATE BASE COURSE (CV)	CY	2,440	0	2,440			
184	P-501-8.1	CEMENT CONCRETE PAVEMENT, 6"	SY	2,100	0	2,100			
185	P-501-8.2	CEMENT CONCRETE PAVEMENT, 12"	SY	12,290	0	12,290			
186	P-501-8.3	CEMENT CONCRETE PAVEMENT, REINFORCED 12"	SY	665	0	665			
187	P-603-5.1	BITUMINOUS TACK COAT	GAL	650	0	650			
188	P-604-6.1	COMPRESSION JOINT SEALS FOR CONCRETE	LF	16,910	0	16,910			
189	P-605-5.1	JOINT SEALING FILLER	LF	1,600	0	1,600			
190	P-610-6.1	12" CONCRETE CURB	LF	90	0	90			
191	P-620-5.1	RUNWAY & TAXIWAY PAVEMENT MARKING	SF	9,200	0	9,200			
192	P-620-5.2	REFLECTIVE MEDIA	LB	590	0	590			
193	T-901-5.1	SEEDING (INCLUDING FERTILIZER)	ACRE	3	0	3			
194	T-905-5.1	SELECT TOPSOIL BORROW (IMPORT) (CV)	CY	50	0	50			
195	T-908-5.1	HYDROMULCHING	ACRE	3	0	3			

SEQ NOTES - SCHEDULE C

ITEM 130: RESTORATION INCLUDES GRADING, TURF ESTABLISHMENT, AND ANY OTHER MEASURES REQUIRED TO RETURN THE AREA TO PRE-CONSTRUCTION CONDITIONS OR BETTER, AS APPROVED BY ENGINEER.

ITEM 149: MOBILIZATION SHALL BE LIMITED TO 10-PERCENT OF THE TOTAL PROJECT COST.

ITEM 149: FURNISHING, INSTALLATION, AND REMOVAL OF ELECTRICAL JUMPERS REQUIRED FOR TEMPORARY ELECTRICAL CONSTRUCTION IS CONSIDERED INCIDENTAL TO THE WORK OF MOBILIZATION.

ITEMS 150-157: CONNECT TO EXISTING STORM DRAIN PIPE, STRUCTURE, DRAIN TILE, INSPECTION PIT, AND CLEANOUT ARE ALL INCIDENTAL TO THESE PAY ITEMS.

ITEM 154: DRAIN TILE PAY ITEM IS TO INCLUDE TRENCHING, BACKFILL MATERIAL, PIPE, AND FABRIC.

ITEM 169: 50 DUMP TRUCK LOADS OF MILLINGS ARE TO BE SALVAGED ON SITE PER PLANS. REMAINING MILLINGS SHALL BE DISPOSED OF PROPERLY OFF SITE BY CONTRACTOR.

ITEM 174-176: SEE EARTHWORK SUMMARY ON SHEET G0.46.

ITEM 178-179: SEE EARTHWORK SUMMARY ON SHEET G0.46.

ITEM 193: NOTE SEEDING AT BIO-RETENTION AREA REQUIRED A DIFFERENT SEED MIX THAN CUT LESS OR APPROVED EQUAL.

ITEM 194: ALL ON-SITE STRIPPING, SALVAGING, REPLACING AND SPREADING QUANTITY WILL BE PAID FOR UNDER COMMON EXCAVATION PRIOR TO THE TOPSOIL BORROW (OBTAINED OFF-SITE) ITEM BEING PAID. SEE EARTHWORK SUMMARY ON SHEET G0.46.

GENERAL: TEMPORARY SANITARY FACILITIES, WATER FOR DUST CONTROL, TEMPORARY WATER ARE CONSIDERED INCIDENTAL TO THE PROJECT.

1

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DULUTH INTERNATIONAL AIRPORT

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Shawn T. McMahon, PE

DATE JULY 13, 2022 LICENSE NO. 48856

DULUTH INTERNATIONAL AIRPORT (DLH)

TAXIWAY A RECONSTRUCTION - PHASES 2 & 4
DULUTH, MN

MARK	DATE	DESCRIPTION
1	07-25-2022	ADDENDUM 1

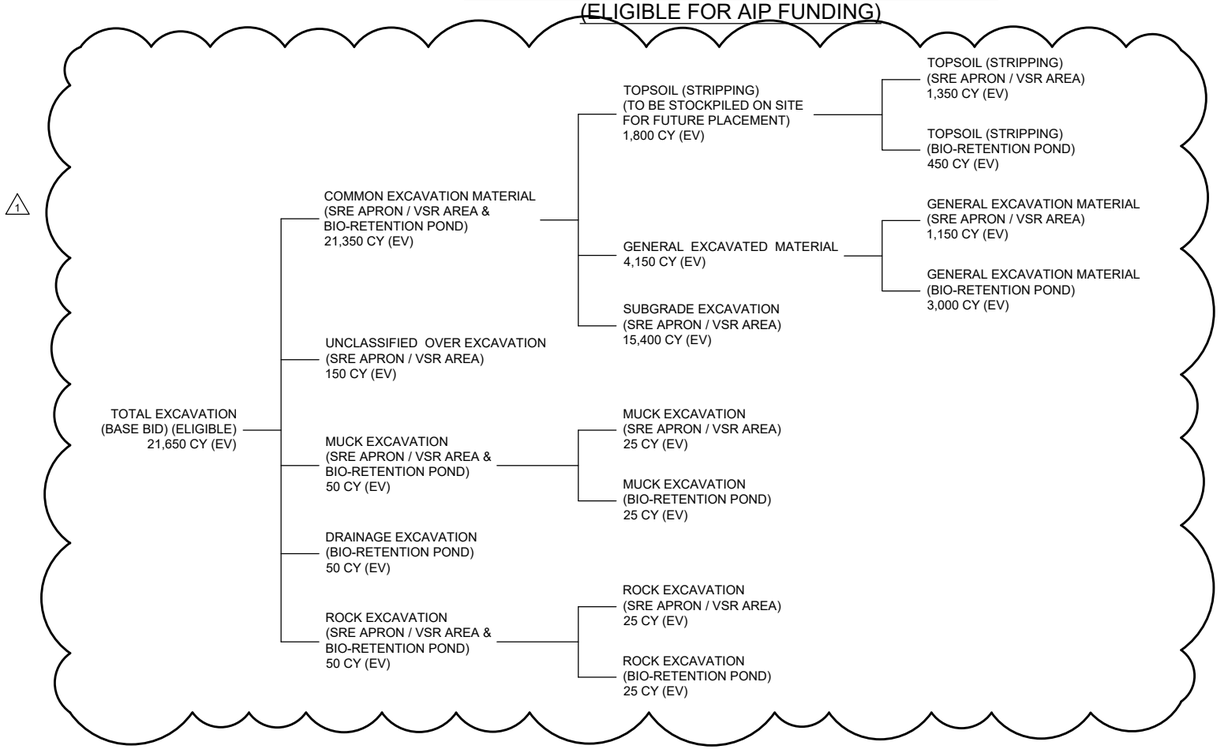
REVISIONS

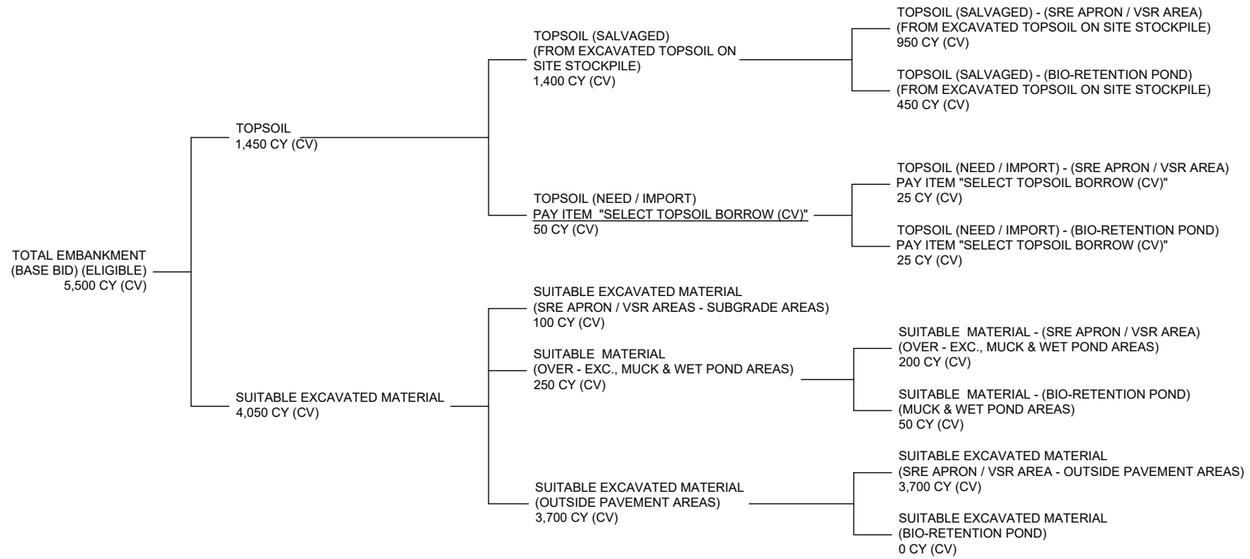
SEH FILE NO. DULA165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY ---

SHEET TITLE
STATEMENT OF ESTIMATED QUANTITIES - SCHEDULE C

SHEET
G0.45

EARTHWORK SUMMARY SCHEDULE C
TXY A PHASE 4 (BASE BID) & BIO-RETENTION POND
(ELIGIBLE FOR AIP FUNDING)





NOTES:

1) FOR EARTHWORK AND GRADING NOTES SEE "EARTHWORK SUMMARY (BASE BID)" SHT. G0.46

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Shawn T. McMahon, PE
DATE JULY 13, 2022 LICENSE NO. 49856

DULUTH INTERNATIONAL AIRPORT (DLH)
TAXIWAY A RECONSTRUCTION - PHASES 2 & 4
DULUTH, MN

MARK	DATE	REVISIONS
1	07-25-2022	ADDENDUM 1

SEH FILE NO. DULAI165102167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY SWB
CHECKED BY

SHEET TITLE
EARTHWORK SUMMARY - PHASE 4 & BIO-RETENTION POND (BASE BID)

SHEET
G0.48

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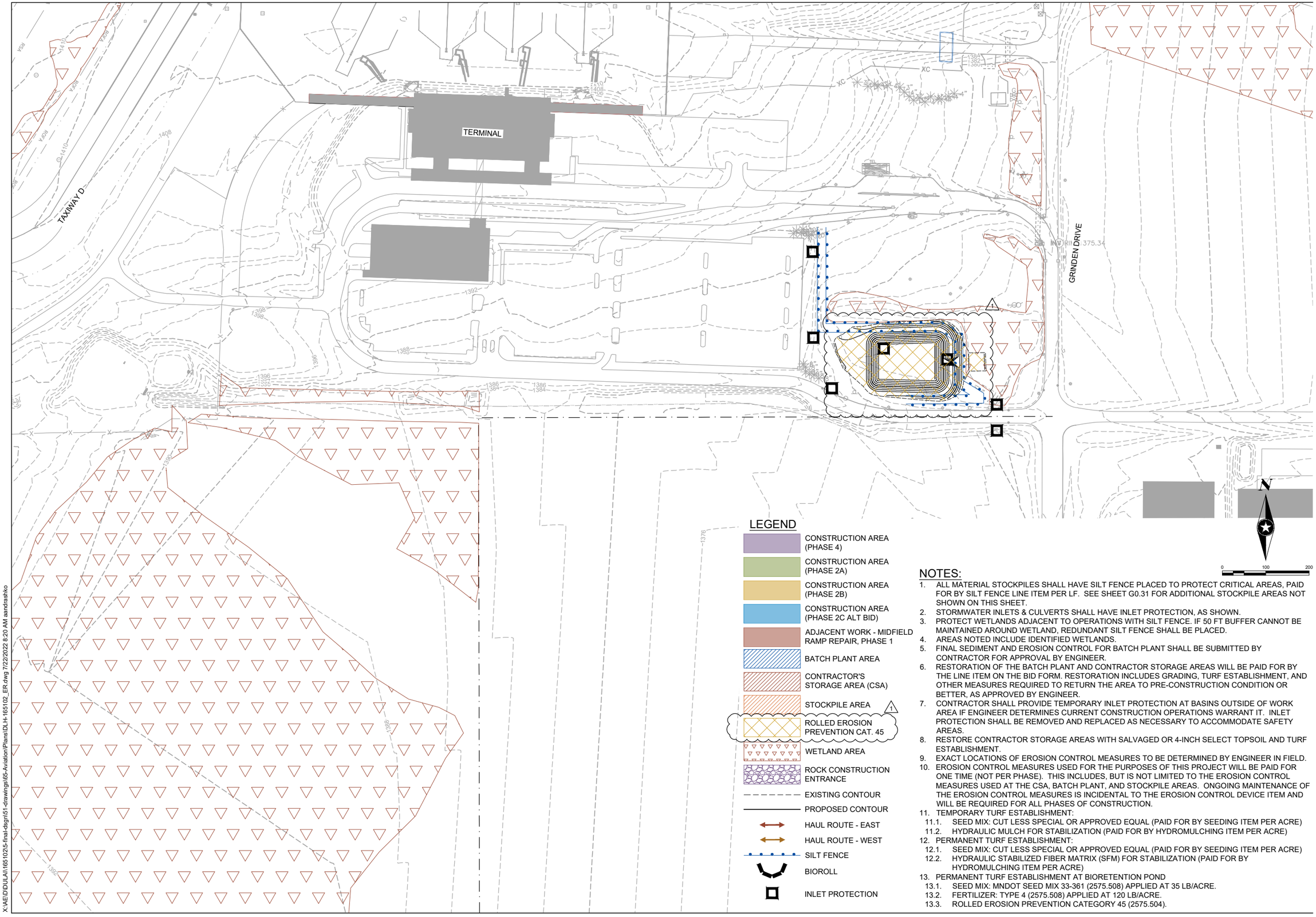

LEGEND

- CONSTRUCTION AREA (PHASE 4)
- CONSTRUCTION AREA (PHASE 2A)
- CONSTRUCTION AREA (PHASE 2B)
- CONSTRUCTION AREA (PHASE 2C ALT BID)
- ADJACENT WORK - MIDFIELD RAMP REPAIR, PHASE 1
- BATCH PLANT AREA
- CONTRACTOR'S STORAGE AREA (CSA)
- STOCKPILE AREA (1)
- ROLLED EROSION PREVENTION CAT. 45
- WETLAND AREA
- ROCK CONSTRUCTION ENTRANCE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- HAUL ROUTE - EAST
- HAUL ROUTE - WEST
- SILT FENCE
- BIOROLL
- INLET PROTECTION

NOTES:

1. ALL MATERIAL STOCKPILES SHALL HAVE SILT FENCE PLACED TO PROTECT CRITICAL AREAS, PAID FOR BY SILT FENCE LINE ITEM PER LF. SEE SHEET G0.31 FOR ADDITIONAL STOCKPILE AREAS NOT SHOWN ON THIS SHEET.
2. STORMWATER INLETS & CULVERTS SHALL HAVE INLET PROTECTION, AS SHOWN.
3. PROTECT WETLANDS ADJACENT TO OPERATIONS WITH SILT FENCE. IF 50 FT BUFFER CANNOT BE MAINTAINED AROUND WETLAND, REDUNDANT SILT FENCE SHALL BE PLACED.
4. AREAS NOTED INCLUDE IDENTIFIED WETLANDS.
5. FINAL SEDIMENT AND EROSION CONTROL FOR BATCH PLANT SHALL BE SUBMITTED BY CONTRACTOR FOR APPROVAL BY ENGINEER.
6. RESTORATION OF THE BATCH PLANT AND CONTRACTOR STORAGE AREAS WILL BE PAID FOR BY THE LINE ITEM ON THE BID FORM. RESTORATION INCLUDES GRADING, TURF ESTABLISHMENT, AND OTHER MEASURES REQUIRED TO RETURN THE AREA TO PRE-CONSTRUCTION CONDITION OR BETTER, AS APPROVED BY ENGINEER.
7. CONTRACTOR SHALL PROVIDE TEMPORARY INLET PROTECTION AT BASINS OUTSIDE OF WORK AREA IF ENGINEER DETERMINES CURRENT CONSTRUCTION OPERATIONS WARRANT IT. INLET PROTECTION SHALL BE REMOVED AND REPLACED AS NECESSARY TO ACCOMMODATE SAFETY AREAS.
8. RESTORE CONTRACTOR STORAGE AREAS WITH SALVAGED OR 4-INCH SELECT TOPSOIL AND TURF ESTABLISHMENT.
9. EXACT LOCATIONS OF EROSION CONTROL MEASURES TO BE DETERMINED BY ENGINEER IN FIELD.
10. EROSION CONTROL MEASURES USED FOR THE PURPOSES OF THIS PROJECT WILL BE PAID FOR ONE TIME (NOT PER PHASE). THIS INCLUDES, BUT IS NOT LIMITED TO THE EROSION CONTROL MEASURES USED AT THE CSA, BATCH PLANT, AND STOCKPILE AREAS. ONGOING MAINTENANCE OF THE EROSION CONTROL MEASURES IS INCIDENTAL TO THE EROSION CONTROL DEVICE ITEM AND WILL BE REQUIRED FOR ALL PHASES OF CONSTRUCTION.
11. TEMPORARY TURF ESTABLISHMENT:
    - 11.1. SEED MIX: CUT LESS SPECIAL OR APPROVED EQUAL (PAID FOR BY SEEDING ITEM PER ACRE)
    - 11.2. HYDRAULIC MULCH FOR STABILIZATION (PAID FOR BY HYDROMULCHING ITEM PER ACRE)
12. PERMANENT TURF ESTABLISHMENT:
    - 12.1. SEED MIX: CUT LESS SPECIAL OR APPROVED EQUAL (PAID FOR BY SEEDING ITEM PER ACRE)
    - 12.2. HYDRAULIC STABILIZED FIBER MATRIX (SFM) FOR STABILIZATION (PAID FOR BY HYDROMULCHING ITEM PER ACRE)
13. PERMANENT TURF ESTABLISHMENT AT BIORETENTION POND
    - 13.1. SEED MIX: MNDOT SEED MIX 33-361 (2575.508) APPLIED AT 35 LB/ACRE.
    - 13.2. FERTILIZER: TYPE 4 (2575.508) APPLIED AT 120 LB/ACRE.
    - 13.3. ROLLED EROSION PREVENTION CATEGORY 45 (2575.504).

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DULUTH INTERNATIONAL AIRPORT

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

Shawn T. McMahon, PE

DATE JULY 13, 2022 LICENSE NO. 49856

DULUTH INTERNATIONAL AIRPORT (DLH)

TAXIWAY A RECONSTRUCTION - PHASES 2 & 4
DULUTH, MN

MARK	DATE	DESCRIPTION
1	7/25/2022	ADDENDUM 1

REVISIONS

SEH FILE NO. DULA165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY ---

SHEET TITLE
EROSION CONTROL PLAN - BIO-RETENTION POND

SHEET
C0.12

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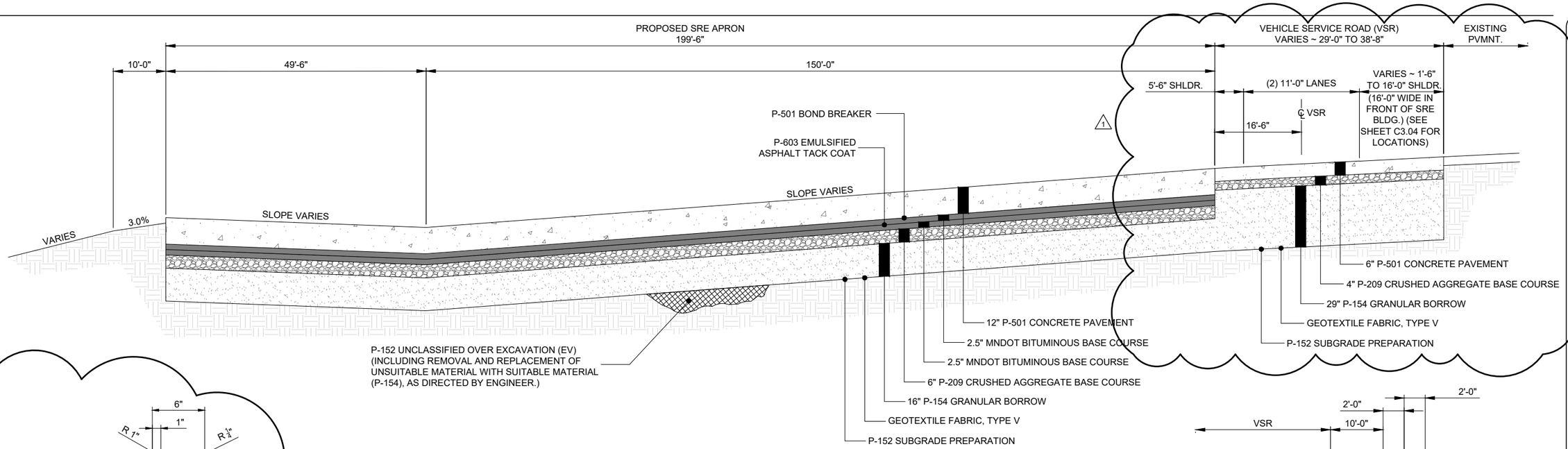
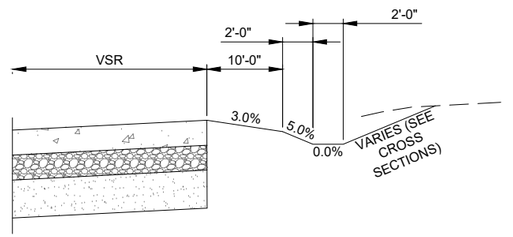
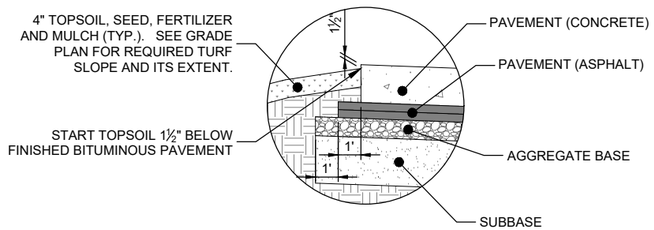


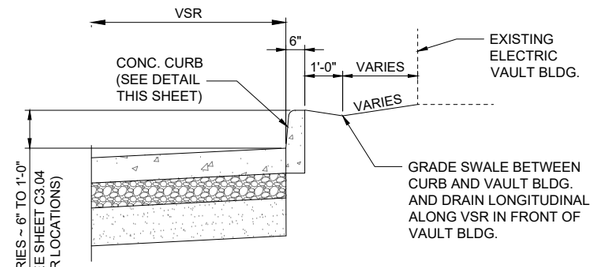
SRE APRON (PHASE 4) TYPICAL SECTION
NTS



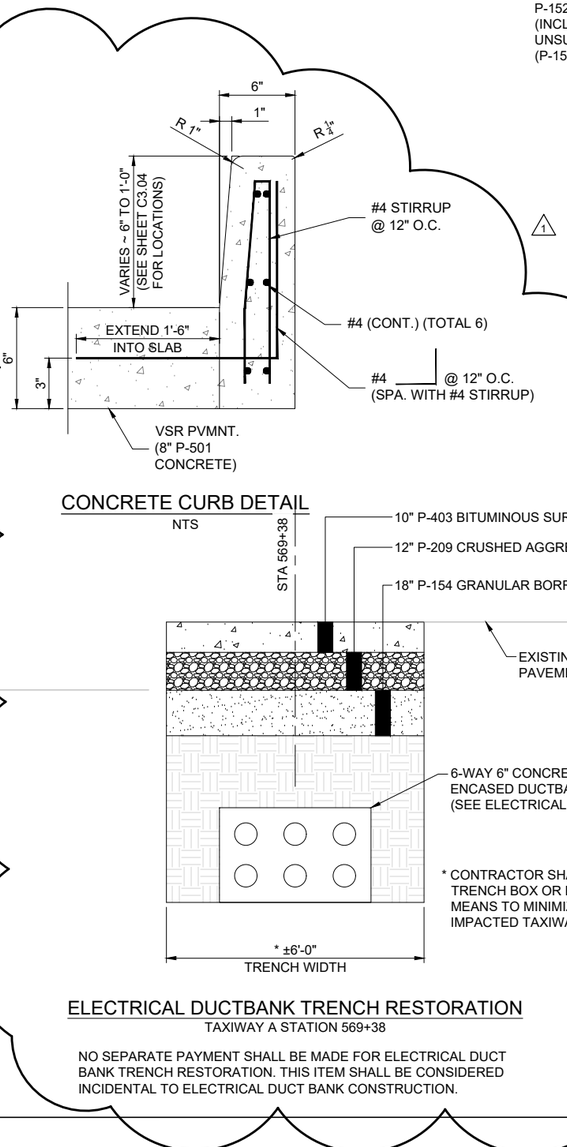
VSR DETAIL WITHOUT ADJACENT PAVEMENT
NTS



PAVEMENT EDGE DETAIL
NTS



VSR DETAIL WITH CURB
NTS



CONCRETE CURB DETAIL
NTS

ELECTRICAL DUCTBANK TRENCH RESTORATION
TAXIWAY A STATION 569+38

NO SEPARATE PAYMENT SHALL BE MADE FOR ELECTRICAL DUCT BANK TRENCH RESTORATION. THIS ITEM SHALL BE CONSIDERED INCIDENTAL TO ELECTRICAL DUCT BANK CONSTRUCTION.

TYPICAL SECTION NOTES:

1. TYPICAL SECTIONS DRAWN TO SCALE EXCEPT WHERE THERE ARE DIMENSION BREAKS.
2. UNCLASSIFIED OVER EXCAVATION AS DIRECTED BY ENGINEER.
3. "UNCLASSIFIED OVER EXCAVATION (EV)" INCLUDES MATERIAL EXCAVATED BELOW THE TYPICAL SECTION, AS DIRECTED BY ENGINEER. EXCAVATED MATERIAL TO BECOME PROPERTY OF CONTRACTOR. REPLACEMENT OF EXCAVATED MATERIAL WITH SUITABLE GRANULAR MATERIAL WILL BE INCIDENTAL TO THE SUBGRADE EXCAVATION.
4. CONTRACTOR CAN USE FAA P-403 PAVEMENT FOR STABILIZED BASE INSTEAD OF THE SPECIFIED MNDOT BITUMINOUS MIXTURE.
5. CONTRACTOR CAN SUBSTITUTE P-219 SPECIFICATION FOR P-209 WITH NO ADDITIONAL PRICE ADJUSTMENT.
6. ALL SUBSURFACE UTILITIES NOT DESIGNATED FOR REMOVAL TO BE PROTECTED BY CONTRACTOR. ANY DAMAGED UTILITIES TO BE REPAIRED BY CONTRACTOR AT NO COST TO OWNER.
7. WHEN EXCAVATING AT THE EDGE OF EXISTING PAVEMENTS, CARE SHOULD BE TAKEN TO NOT UNDERMINE THE EXISTING PAVEMENTS. DAMAGED PAVEMENTS SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF THE CONTRACTOR.
8. CONCRETE PAVEMENT REMOVAL INCLUDES CONCRETE & BITUMINOUS BASE PAVEMENT. AGGREGATE BASE REMOVAL IS INCLUDED IN UNCLASSIFIED OR COMMON EXCAVATION.
9. ALL ITEMS REQUIRED FOR DRAIN TILE (EXCAVATION, TRENCH, FILTER MATERIAL, FABRIC, CONNECTIONS, BACKFILLING, AND ASSOCIATED COMPACTION) ARE INCIDENTAL TO 6" PERFORATED PIPE INSTALLATION.
10. PIPE PERFORATIONS TO BE ORIENTED DOWNWARDS, WITH A MAXIMUM OF 3" OF COURSE FILTER AGGREGATE BENEATH THE PIPE.
11. DRAIN TILE TRENCH TO BE EXCAVATED INTO COMPACTED SUBGRADE. GEOTEXTILE FABRIC TO BE PLACED ALONG SUBGRADE INTERFACE AND AROUND TRENCH, COMPLETELY ENCLOSING THE PIPE, WITH SUFFICIENT OVERLAP TO PREVENT SUBBASE CONTAMINATION OF THE FILTER AGGREGATE.
12. SEE DRAIN TILE PLAN FOR EXACT DEPTHS AND GRADES OF THE PERFORATED UNDERDRAIN PIPES.
13. SEE CROSS SECTION SHEETS FOR EXACT CROSS SECTION GRADES AT A GIVEN STATION.

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Shawn T. McMahon, PE
DATE JULY 13, 2022 LICENSE NO. 49856

DULUTH INTERNATIONAL AIRPORT (DLH)
TAXIWAY A
RECONSTRUCTION -
PHASES 2 & 4
DULUTH, MN

MARK	DATE	REVISIONS
1	07-25-2022	ADDENDUM 1

SEH FILE NO. DULAI165102\167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY ---

SHEET TITLE
TYPICAL SECTION -
SRE APRON

SHEET
C1.04

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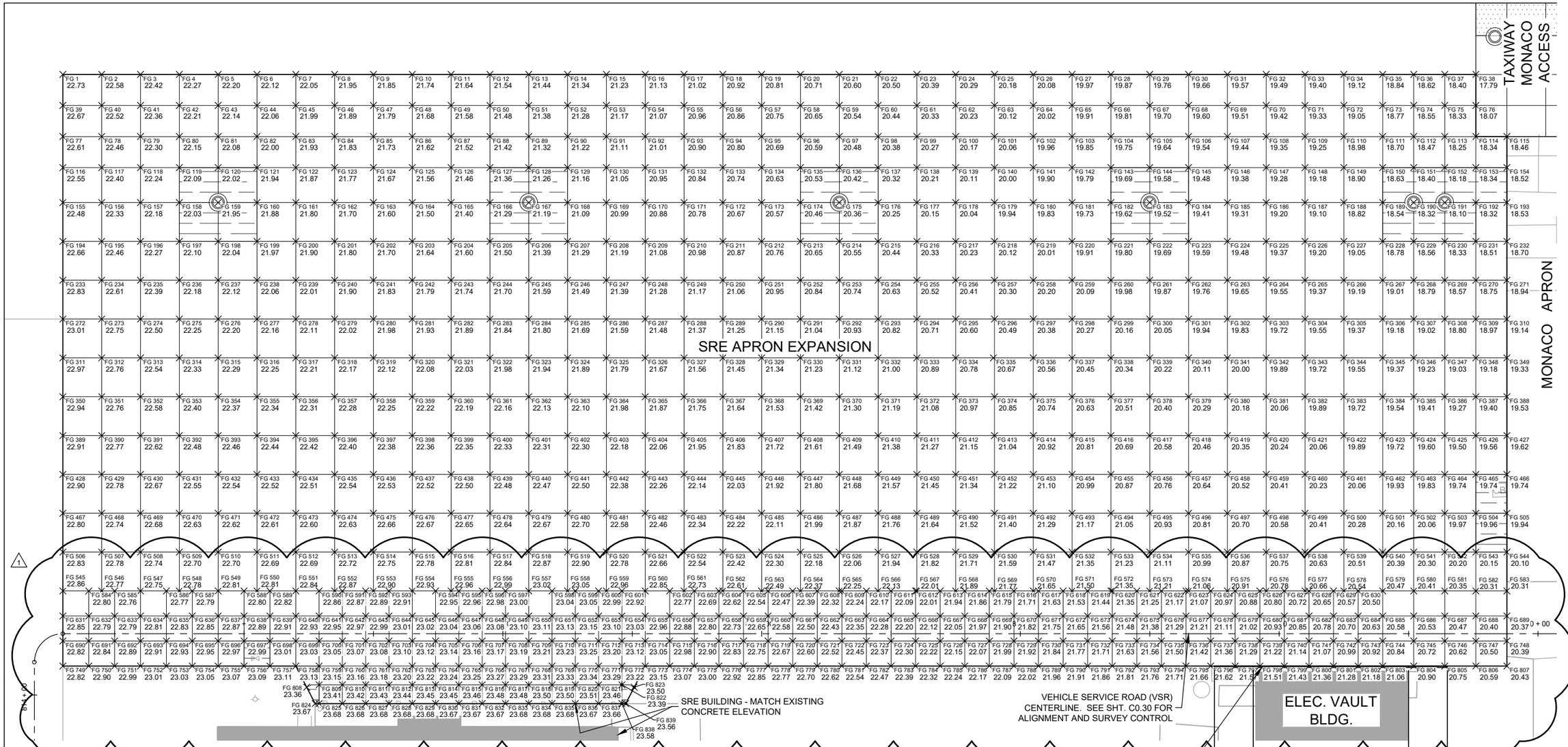


SRE APRON - PCC JOINT SPOT ELEVATION PLAN

NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING ELEVATION TIE IN AREAS ADJACENT TO THE PROPOSED PAVEMENT. CONTRACTOR SHALL ALSO VERIFY ALL STRUCTURE ELEVATIONS WITHIN THE PCC PAVEMENT AREAS INCLUDING BUT NOT LIMITED TO PROPOSED AND EXISTING UTILITIES, STORM SEWER AND ALL OTHER STRUCTURES.
2. GRADING SPOT ELEVATION SHOWN ON SHEETS C3.01 & C3.03 HAVE OMITTED FIRST SIGNIFICANT FIGURE FOR CLARITY - ADD 1400 FOR TRUE ELEVATION.
3. SEE JOINTING PLANS SHTS. C7.00 - C7.03 FOR JOINT SPACING AND ADDITIONAL JOINTING DETAILS.
4. WORK WITHIN OBJECT FREE AREAS AND SAFETY AREAS SHALL BE COORDINATED WITH AIRPORT AUTHORITY FOR APPROPRIATE CLOSURE LIMITS AND DATES TO OPTIMIZE AIRPORT OPERATIONS.

LEGEND

PROPOSED PORTLAND CEMENT CONCRETE (PCC) & PANELS - **SRE APRON PANELS**

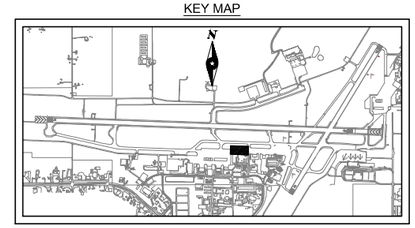
GEOMETRIC CONTROL NOTES:

1. COORDINATES SHOWN ARE BASED ON THE ST. LOUIS COUNTY SOUTH COORDINATE SYSTEM. PACS/SACS CONTROL INFORMATION AT THE AIRPORT WILL BE PROVIDED TO THE CONTRACTOR TO SET PROJECT CONTROL SHOWN ON SHEET C0.30.
2. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS FOR TIE IN OF PROPOSED PAVEMENT TO EXISTING PAVEMENT.

N

0 20' 40'

KEY MAP



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Shawn T. McMahon, PE

DATE JULY 13, 2022 LICENSE NO. 49856

MARK	DATE	DESCRIPTION
1	07-25-2022	ADDENDUM 1

SEH FILE NO. DULAI165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY SWB

DULUTH INTERNATIONAL AIRPORT (DLH)
TAXIWAY A
RECONSTRUCTION -
PHASES 2 & 4
DULUTH, MN

SHEET TITLE
PCC JOINT ELEVATION PLAN (SRE APRON) - PHASE 4

SHEET
C3.04

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 481	1422.58	567+09.00	312.00 RT.	169226.50	563755.30
FG 482	1422.46	567+24.00	312.00 RT.	169225.95	563770.29
FG 483	1422.34	567+39.00	312.00 RT.	169225.40	563785.28
FG 484	1422.22	567+54.00	312.00 RT.	169224.86	563800.27
FG 485	1422.11	567+69.00	312.00 RT.	169224.31	563815.26
FG 486	1421.99	567+84.00	312.00 RT.	169223.77	563830.25
FG 487	1421.87	567+99.00	312.00 RT.	169223.22	563845.24
FG 488	1421.76	568+14.00	312.00 RT.	169222.67	563860.23
FG 489	1421.64	568+29.00	312.00 RT.	169222.13	563875.22
FG 490	1421.52	568+44.00	312.00 RT.	169221.58	563890.21
FG 491	1421.40	568+59.00	312.00 RT.	169221.03	563905.20
FG 492	1421.29	568+74.00	312.00 RT.	169220.49	563920.19
FG 493	1421.17	568+89.00	312.00 RT.	169219.94	563935.18
FG 494	1421.05	569+04.00	312.00 RT.	169219.39	563950.17
FG 495	1420.93	569+19.00	312.00 RT.	169218.85	563965.16
FG 496	1420.81	569+34.00	312.00 RT.	169218.30	563980.15
FG 497	1420.70	569+49.00	312.00 RT.	169217.75	563995.14
FG 498	1420.58	569+64.00	312.00 RT.	169217.21	564010.13
FG 499	1420.41	569+79.00	312.00 RT.	169216.66	564025.12
FG 500	1420.28	569+94.00	312.00 RT.	169216.11	564040.11

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 501	1420.16	570+09.00	312.00 RT.	169215.57	564055.10
FG 502	1420.06	570+21.00	312.00 RT.	169215.13	564067.09
FG 503	1419.97	570+33.00	312.00 RT.	169214.69	564079.08
FG 504	1419.96	570+45.00	312.00 RT.	169214.26	564091.08
FG 505	1419.94	570+57.00	312.00 RT.	169213.82	564103.07
FG 506	1422.83	564+99.00	327.00 RT.	169219.16	563544.89
FG 507	1422.78	565+14.00	327.00 RT.	169218.61	563559.88
FG 508	1422.74	565+29.00	327.00 RT.	169218.07	563574.87
FG 509	1422.70	565+44.00	327.00 RT.	169217.52	563589.86
FG 510	1422.70	565+59.00	327.00 RT.	169216.97	563604.85
FG 511	1422.69	565+74.00	327.00 RT.	169216.43	563619.84
FG 512	1422.69	565+89.00	327.00 RT.	169215.88	563634.83
FG 513	1422.72	566+04.00	327.00 RT.	169215.33	563649.82
FG 514	1422.75	566+19.00	327.00 RT.	169214.79	563664.81
FG 515	1422.78	566+34.00	327.00 RT.	169214.24	563679.80
FG 516	1422.81	566+49.00	327.00 RT.	169213.69	563694.79
FG 517	1422.84	566+64.00	327.00 RT.	169213.15	563709.78
FG 518	1422.87	566+79.00	327.00 RT.	169212.60	563724.77
FG 519	1422.90	566+94.00	327.00 RT.	169212.05	563739.76
FG 520	1422.78	567+09.00	327.00 RT.	169211.51	563754.75

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 521	1422.66	567+24.00	327.00 RT.	169210.96	563769.74
FG 522	1422.54	567+39.00	327.00 RT.	169210.41	563784.73
FG 523	1422.42	567+54.00	327.00 RT.	169209.87	563799.72
FG 524	1422.30	567+69.00	327.00 RT.	169209.32	563814.71
FG 525	1422.18	567+84.00	327.00 RT.	169208.78	563829.70
FG 526	1422.06	567+99.00	327.00 RT.	169208.23	563844.69
FG 527	1421.94	568+14.00	327.00 RT.	169207.68	563859.68
FG 528	1421.82	568+29.00	327.00 RT.	169207.14	563874.67
FG 529	1421.71	568+44.00	327.00 RT.	169206.59	563889.66
FG 530	1421.59	568+59.00	327.00 RT.	169206.04	563904.65
FG 531	1421.47	568+74.00	327.00 RT.	169205.50	563919.64
FG 532	1421.35	568+89.00	327.00 RT.	169204.95	563934.63
FG 533	1421.23	569+04.00	327.00 RT.	169204.40	563949.62
FG 534	1421.11	569+19.00	327.00 RT.	169203.86	563964.61
FG 535	1420.99	569+34.00	327.00 RT.	169203.31	563979.60
FG 536	1420.87	569+49.00	327.00 RT.	169202.76	563994.59
FG 537	1420.75	569+64.00	327.00 RT.	169202.22	564009.58
FG 538	1420.63	569+79.00	327.00 RT.	169201.67	564024.57
FG 539	1420.51	569+94.00	327.00 RT.	169201.12	564039.56
FG 540	1420.39	570+09.00	327.00 RT.	169200.58	564054.55

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 541	1420.30	570+21.00	327.00 RT.	169200.14	564066.54
FG 542	1420.20	570+33.00	327.00 RT.	169199.70	564078.54
FG 543	1420.15	570+45.00	327.00 RT.	169199.27	564090.53
FG 544	1420.10	570+57.00	327.00 RT.	169198.83	564102.52
FG 545	1422.86	564+99.00	342.00 RT.	169204.17	563544.34
FG 546	1422.77	565+14.00	342.00 RT.	169203.62	563559.33
FG 547	1422.75	565+29.00	342.00 RT.	169203.08	563574.32
FG 548	1422.78	565+44.00	342.00 RT.	169202.53	563589.31
FG 549	1422.81	565+59.00	342.00 RT.	169201.98	563604.30
FG 550	1422.81	565+74.00	342.00 RT.	169201.44	563619.29
FG 551	1422.84	565+89.00	342.00 RT.	169200.89	563634.28
FG 552	1422.87	566+04.00	342.00 RT.	169200.34	563649.27
FG 553	1422.90	566+19.00	342.00 RT.	169199.80	563664.26
FG 554	1422.93	566+34.00	342.00 RT.	169199.25	563679.25
FG 555	1422.96	566+49.00	342.00 RT.	169198.70	563694.24
FG 556	1422.99	566+64.00	342.00 RT.	169198.16	563709.23
FG 557	1423.02	566+79.00	342.00 RT.	169197.61	563724.22
FG 558	1423.05	566+94.00	342.00 RT.	169197.06	563739.21
FG 559	1422.96	567+09.00	342.00 RT.	169196.52	563754.20
FG 560	1422.85	567+24.00	342.00 RT.	169195.97	563769.19

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 561	1422.73	567+39.00	342.00 RT.	169195.42	563784.18
FG 562	1422.61	567+54.00	342.00 RT.	169194.88	563799.17
FG 563	1422.49	567+69.00	342.00 RT.	169194.33	563814.16
FG 564	1422.37	567+84.00	342.00 RT.	169193.79	563829.15
FG 565	1422.25	567+99.00	342.00 RT.	169193.24	563844.14
FG 566	1422.13	568+14.00	342.00 RT.	169192.69	563859.13
FG 567	1422.01	568+29.00	342.00 RT.	169192.15	563874.12
FG 568	1421.89	568+44.00	342.00 RT.	169191.60	563889.11
FG 569	1421.77	568+59.00	342.00 RT.	169191.05	563904.10
FG 570	1421.65	568+74.00	342.00 RT.	169190.51	563919.09
FG 571	1421.50	568+89.00	342.00 RT.	169189.96	563934.08
FG 572	1421.35	569+04.00	342.00 RT.	169189.41	563949.08
FG 573	1421.21	569+19.00	342.00 RT.	169188.87	563964.07
FG 574	1421.06	569+34.00	342.00 RT.	169188.32	563979.06
FG 575	1420.91	569+49.00	342.00 RT.	169187.77	563994.05
FG 576	1420.78	569+64.00	342.00 RT.	169187.23	564009.04
FG 577	1420.66	569+79.00	342.00 RT.	169186.68	564024.03
FG 578	1420.54	569+94.00	342.00 RT.	169186.13	564039.02
FG 579	1420.47	570+09.00	342.00 RT.	169185.59	564054.01
FG 580	1420.41	570+21.00	342.00 RT.	169185.15	564066.00

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 581	1420.35	570+33.00	342.00 RT.	169184.71	564077.99
FG 582	1420.31	570+45.00	342.00 RT.	169184.28	564089.98
FG 583	1420.31	570+57.00	342.00 RT.	169183.84	564101.97
FG 584	1422.80	565+09.00	342.00 RT.	169203.80	563554.34
FG 585	1422.76	565+19.00	342.00 RT.	169203.44	563564.33
FG 586	1422.77	565+39.00	342.00 RT.	169202.71	563584.32
FG 587	1422.79	565+49.00	342.00 RT.	169202.35	563594.31
FG 588	1422.80	565+69.00	342.00 RT.	169201.62	563614.30
FG 589	1422.82	565+79.00	342.00 RT.	169201.25	563624.29
FG 590	1422.86	565+98.00	342.00 RT.	169200.56	563643.28
FG 591	1422.87	566+07.00	342.00 RT.	169200.23	563652.27
FG 592	1422.89	566+16.00	342.00 RT.	169199.91	563661.27
FG 593	1422.91	566+25.00	342.00 RT.	169199.58	563670.26
FG 594	1422.95	566+43.00	342.00 RT.	169198.92	563688.25
FG 595	1422.96	566+52.00	342.00 RT.	169198.59	563697.24
FG 596	1422.98	566+61.00	342.00 RT.	169198.27	563706.24
FG 597	1423.00	566+70.00	342.00 RT.	169197.94	563715.23
FG 598	1423.04	566+88.00	342.00 RT.	169197.28	563733.22
FG 599	1423.05	566+97.00	342.00 RT.	169196.95	563742.21
FG 600	1422.99	567+06.00	342.00 RT.	169196.63	563751.21

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 601	1422.92	567+15.00	342.00 RT.	169196.30	563760.20
FG 602	1422.77	567+33.50	342.00 RT.	169195.63	563778.69
FG 603	1422.69	567+43.00	342.00 RT.	169195.28	563788.18
FG 604	1422.62	567+52.50	342.00 RT.	169194.93	563797.68
FG 605	1422.54	567+62.00	342.00 RT.	169194.59	563807.17
FG 606	1422.47	567+71.50	342.00 RT.	169194.24	563816.66
FG 607	1422.39	567+81.00	342.00 RT.	169193.89	563826.16
FG 608	1422.32	567+90.50	342.00 RT.	169193.55	563835.65
FG 609	1422.24	568+00.00	342.00 RT.	169193.20	563845.14
FG 610	1422.17	568+09.50	342.00 RT.	169192.86	563854.64
FG 611	1422.09	568+19.00	342.00 RT.	169192.51	563864.13
FG 612	1422.01	568+28.50	342.00 RT.	169192.16	563873.63
FG 613	1421.94	568+38.00	342.00 RT.	169191.82	563883.12
FG 614	1421.86	568+47.50	342.00 RT.	169191.47	563892.61
FG 615	1421.79	568+57.00	342.00 RT.	169191.13	563902.11
FG 616	1421.71	568+66.50	342.00 RT.	169190.78	563911.60
FG 617	1421.63	568+76.00	342.00 RT.	169190.43	563921.09
FG 618	1421.53	568+85.50	342.00 RT.	169190.09	563930.59
FG 619	1421.44	568+95.00	342.00 RT.	169189.74	563940.08
FG 620	1421.35	569+04.50	342.00 RT.	169189.40	563949.57

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 621	1421.25	569+14.00	342.00 RT.	169189.05	563959.07
FG 622	1421.17	569+23.50	342.00 RT.	169188.70	563968.56
FG 623	1421.07	569+33.00	342.00 RT.	169188.36	563978.06
FG 624	1420.97	569+42.50	342.00 RT.	169188.01	563987.55
FG 625	1420.88	569+52.00	342.00 RT.	169187.66	563997.04
FG 626	1420.80	569+61.50	342.00 RT.	169187.32	564006.54
FG 627	1420.72	569+71.00	342.00 RT.	169186.97	564016.03
FG 628	1420.65	569+80.50	342.00 RT.	169186.63	564025.52
FG 629	1420.57	569+90.00	342.00 RT.	169186.28	564035.02
FG 630	1420.50	569+99.50	342.00 RT.	169185.93	564044.51
FG 631	1422.85	564+99.00	351.67 RT.	169194.51	563543.99
FG 632	1422.79	565+09.00	351.67 RT.	169194.14	563553.99
FG 633	1422.79	565+19.00	351.67 RT.	169193.78	563563.98
FG 634	1422.81	565+29.00	351.67 RT.	169193.42	563573.97
FG 635	1422.83	565+39.00	351.67 RT.	169193.05	563583.97
FG 636	1422.85	565+49.00	351.67 RT.	169192.69	563593.96
FG 637	1422.87	565+59.00	351.67 RT.	169192.32	563603.95
FG 638	1422.89	565+69.00	351.67 RT.	169191.96	563613.95
FG 639	1422.91	565+79.00	351.67 RT.	169191.59	563623.94
FG 640	1422.93	565+89.00	351.67 RT.	169191.23	563633.93

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 641	1422.95	565+98.00	351.67 RT.	169190.90	563642.93
FG 642	1422.97	566+07.00	351.67 RT.	169190.57	563651.92
FG 643	1422.99	566+16.00	351.67 RT.	169190.25	563660.91
FG 644	1423.01	566+25.00	351.67 RT.	169189.92	563669.91
FG 645	1423.02	566+34.00	351.67 RT.	169189.59	563678.90
FG 646	1423.04	566+43.00	351.67 RT.	169189.26	563687.90
FG 647	1423.06	566+52.00	351.67 RT.	169188.93	563696.89
FG 648	1423.08	566+61.00	351.67 RT.	169188.61	563705.88
FG 649	1423.10	566+70.00	351.67 RT.	169188.28	563714.88
FG 650	1423.11	566+79.00	351.67 RT.	169187.95	563723.87
FG 651	1423.13	566+88.00	351.67 RT.	169187.62	563732.87
FG 652	1423.15	566+97.00	351.67 RT.	169187.29	563741.86
FG 653	1423.10	567+06.00	351.67 RT.	169186.97	563750.85
FG 654	1423.03	567+15.00	351.67 RT.	169186.64	563759.85
FG 655	1422.96	567+24.00	351.67 RT.	169186.31	563768.84
FG 656	1422.88	567+33.50	351.67 RT.	169185.96	563778.34
FG 657	1422.80	567+43.00	351.67 RT.	169185.62	563787.83
FG 658	1422.73	567+52.50	351.67 RT.	169185.27	563797.32
FG 659	1422.65	567+62.00	351.67 RT.	169184.93	563806.82
FG 660	1422.58	567+71.50	351.67 RT.	169184.58	563816.31

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 661	1422.50	567+81.00	351.67 RT.	169184.23	563825.80
FG 662	1422.43	567+90.50	351.67 RT.	169183.89	563835.30
FG 663	1422.35	568+00.00	351.67 RT.	169183.54	563844.79
FG 664	1422.28	568+09.50	351.67 RT.	169183.20	563854.29
FG 665	1422.20	568+19.00	351.67 RT.	169182.85	563863.78
FG 666	1422.12	568+28.50	351.67 RT.	169182.50	563873.27
FG 667	1422.05	568+38.00	351.67 RT.	169182.16	563882.77
FG 668	1421.97	568+47.50	351.67 RT.	169181.81	563892.26
FG 669	1421.90	568+57.00	351.67 RT.	169181.47	563901.75
FG 670	1421.82	568+66.50	351.67 RT.	169181.12	563911.25
FG 671	1421.75	568+76.00	351.67 RT.	169180.77	563920.74
FG 672	1421.65	568+85.50	351.67 RT.	169180.43	563930.24
FG 673	1421.56	568+95.00	351.67 RT.	169180.08	563939.73
FG 674	1421.48	569+04.50	351.67 RT.	169179.74	563949.22
FG 675	1421.38	569+14.00	351.67 RT.	169179.39	563958.72
FG 676	1421.29	569+23.50	351.67 RT.	169179.04	563968.21
FG 677	1421.21	569+33.00	351.67 RT.	169178.70	563977.70
FG 678	1421.11	569+42.50	351.67 RT.	169178.35	563987.20
FG 679	1421.02	569+52.00	351.67 RT.	169178.00	563996.69
FG 680	1420.93	569+61.50	351.67 RT.	169177.66	564006.18

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 681	1420.85	569+71.00	351.67 RT.	169177.31	564015.68
FG 682	1420.78	569+80.50	351.67 RT.	169176.97	564025.17
FG 683	1420.70	569+90.00	351.67 RT.	169176.62	564034.67
FG 684	1420.63	569+99.50	351.67 RT.	169176.27	564044.16
FG 685	1420.58	570+09.00	351.67 RT.	169175.93	564053.65
FG 686	1420.53	570+21.00	351.67 RT.	169175.49	564065.65
FG 687	1420.47	570+33.00	351.67 RT.	169175.05	564077.64
FG 688	1420.40	570+45.00	351.67 RT.	169174.62	564089.63
FG 689	1420.37	570+57.00	351.67 RT.	169174.18	564101.62
FG 690	1422.82	564+99.00	361.33 RT.	169184.85	563543.64
FG 691	1422.84	565+09.00	361.33 RT.	169184.48	563553.63
FG 692	1422.89	565+19.00	361.33 RT.	169184.12	563563.63
FG 693	1422.91	565+29.00	361.33 RT.	169183.75	563573.62
FG 694	1422.93	565+39.00	361.33 RT.	169183.39	563583.61
FG 695	1422.95	565+49.00	361.33 RT.	169183.03	563593.61
FG 696	1422.97	565+59.00	361.33 RT.	169182.66	563603.60
FG 697	1422.99	565+69.00	361.33 RT.	169182.30	563613.59
FG 698	1423.01	565+79.00	361.33 RT.	169181.93	563623.59
FG 699	1423.03	565+89.00	361.33 RT.	169181.57	563633.58
FG 700	1423.05	565+98.00	361.33 RT.	169181.24	563642.57

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 701	1423.07	566+07.00	361.33 RT.	169180.91	563651.57
FG 702	1423.08	566+16.00	361.33 RT.	169180.59	563660.56
FG 703	1423.10	566+25.00	361.33 RT.	169180.26	563669.56
FG 704	1423.12	566+34.00	361.33 RT.	169179.93	563678.55
FG 705	1423.14	566+43.00	361.33 RT.	169179.60	563687.54
FG 706	1423.16	566+52.00	361.33 RT.	169179.27	563696.54
FG 707	1423.17	566+61.00	361.33 RT.	169178.95	563705.53
FG 708	1423.19	566+70.00	361.33 RT.	169178.62	563714.53
FG 709	1423.21	566+79.00	361.33 RT.	169178.29	563723.52
FG 710	1423.23	566+88.00	361.33 RT.	169177.96	563732.51
FG 711	1423.25	566+97.00	361.33 RT.	169177.63	563741.51
FG 712	1423.20	567+06.00	361.33 RT.	169177.31	563750.50
FG 713	1423.12	567+15.00	361.33 RT.	169176.98	563759.50
FG 714	1423.05	567+24.00	361.33 RT.	169176.65	563768.49
FG 715	1422.98	567+33.50	361.33 RT.	169176.30	563777.98
FG 716	1422.90	567+43.00	361.33 RT.	169175.96	563787.48
FG 717	1422.83	567+52.50	361.33 RT.	169175.61	563796.97
FG 718	1422.75	567+62.00	361.33 RT.	169175.27	563806.46
FG 719	1422.67	567+71.50	361.33 RT.	169174.92	563815.96
FG 720	1422.60	567+81.00	361.33 RT.	169174.57	563825.45

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SEH

DULUTH INTERNATIONAL AIRPORT

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.

Shawn T. McMahon, PE

DATE JULY 13, 2022 LICENSE NO. 49856

DULUTH INTERNATIONAL AIRPORT (DLH)

TAXIWAY A RECONSTRUCTION - PHASES 2 & 4

DULUTH, MN

MARK	DATE	DESCRIPTION
1	07-25-2022	ADDENDUM 1

REVISIONS

SEH FILE NO. DULAI165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY SWB

SHEET TITLE
PCC JOINT ELEVATION TABLES (SRE APRON) - PHASE 4

SHEET
C3.07

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SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 721	1422.52	567+90.50	361.33 RT.	169174.23	563834.95
FG 722	1422.45	568+00.00	361.33 RT.	169173.88	563844.44
FG 723	1422.37	568+09.50	361.33 RT.	169173.54	563853.93
FG 724	1422.30	568+19.00	361.33 RT.	169173.19	563863.43
FG 725	1422.22	568+28.50	361.33 RT.	169172.84	563872.92
FG 726	1422.15	568+38.00	361.33 RT.	169172.50	563882.41
FG 727	1422.07	568+47.50	361.33 RT.	169172.15	563891.91
FG 728	1421.99	568+57.00	361.33 RT.	169171.81	563901.40
FG 729	1421.92	568+66.50	361.33 RT.	169171.46	563910.90
FG 730	1421.84	568+76.00	361.33 RT.	169171.11	563920.39
FG 731	1421.77	568+85.50	361.33 RT.	169170.77	563929.88
FG 732	1421.71	568+95.00	361.33 RT.	169170.42	563939.38
FG 733	1421.63	569+04.50	361.33 RT.	169170.07	563948.87
FG 734	1421.56	569+14.00	361.33 RT.	169169.73	563958.36
FG 735	1421.50	569+23.50	361.33 RT.	169169.38	563967.86
FG 736	1421.42	569+33.00	361.33 RT.	169169.04	563977.35
FG 737	1421.36	569+42.50	361.33 RT.	169168.69	563986.85
FG 738	1421.29	569+52.00	361.33 RT.	169168.34	563996.34
FG 739	1421.22	569+61.50	361.33 RT.	169168.00	564005.83
FG 740	1421.14	569+71.00	361.33 RT.	169167.65	564015.33

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 741	1421.07	569+80.50	361.33 RT.	169167.31	564024.82
FG 742	1420.99	569+90.00	361.33 RT.	169166.96	564034.31
FG 743	1420.92	569+99.50	361.33 RT.	169166.61	564043.81
FG 744	1420.84	570+09.00	361.33 RT.	169166.27	564053.30
FG 745	1420.72	570+21.00	361.33 RT.	169165.83	564065.29
FG 746	1420.62	570+33.00	361.33 RT.	169165.39	564077.29
FG 747	1420.50	570+45.00	361.33 RT.	169164.96	564089.28
FG 748	1420.39	570+57.00	361.33 RT.	169164.52	564101.27
FG 749	1422.82	564+99.00	371.00 RT.	169175.19	563543.29
FG 750	1422.90	565+09.00	371.00 RT.	169174.82	563553.28
FG 751	1422.99	565+19.00	371.00 RT.	169174.46	563563.27
FG 752	1423.01	565+29.00	371.00 RT.	169174.09	563573.27
FG 753	1423.03	565+39.00	371.00 RT.	169173.73	563583.26
FG 754	1423.05	565+49.00	371.00 RT.	169173.37	563593.25
FG 755	1423.07	565+59.00	371.00 RT.	169173.00	563603.25
FG 756	1423.09	565+69.00	371.00 RT.	169172.64	563613.24
FG 757	1423.11	565+79.00	371.00 RT.	169172.27	563623.23
FG 758	1423.13	565+89.00	371.00 RT.	169171.91	563633.23
FG 759	1423.15	565+98.00	371.00 RT.	169171.58	563642.22
FG 760	1423.16	566+07.00	371.00 RT.	169171.25	563651.22

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 761	1423.18	566+16.00	371.00 RT.	169170.93	563660.21
FG 762	1423.20	566+25.00	371.00 RT.	169170.60	563669.20
FG 763	1423.22	566+34.00	371.00 RT.	169170.27	563678.20
FG 764	1423.24	566+43.00	371.00 RT.	169169.94	563687.19
FG 765	1423.25	566+52.00	371.00 RT.	169169.61	563696.19
FG 766	1423.27	566+61.00	371.00 RT.	169169.29	563705.18
FG 767	1423.29	566+70.00	371.00 RT.	169168.96	563714.17
FG 768	1423.31	566+79.00	371.00 RT.	169168.63	563723.17
FG 769	1423.33	566+88.00	371.00 RT.	169168.30	563732.16
FG 770	1423.34	566+97.00	371.00 RT.	169167.97	563741.16
FG 771	1423.29	567+06.00	371.00 RT.	169167.65	563750.15
FG 772	1423.22	567+15.00	371.00 RT.	169167.32	563759.14
FG 773	1423.15	567+24.00	371.00 RT.	169166.99	563768.14
FG 774	1423.07	567+33.50	371.00 RT.	169166.64	563777.63
FG 775	1423.00	567+43.00	371.00 RT.	169166.30	563787.13
FG 776	1422.92	567+52.50	371.00 RT.	169165.95	563796.62
FG 777	1422.85	567+62.00	371.00 RT.	169165.61	563806.11
FG 778	1422.77	567+71.50	371.00 RT.	169165.26	563815.61
FG 779	1422.70	567+81.00	371.00 RT.	169164.91	563825.10
FG 780	1422.62	567+90.50	371.00 RT.	169164.57	563834.59

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 781	1422.54	568+00.00	371.00 RT.	169164.22	563844.09
FG 782	1422.47	568+09.50	371.00 RT.	169163.88	563853.58
FG 783	1422.39	568+19.00	371.00 RT.	169163.53	563863.07
FG 784	1422.32	568+28.50	371.00 RT.	169163.18	563872.57
FG 785	1422.24	568+38.00	371.00 RT.	169162.84	563882.06
FG 786	1422.17	568+47.50	371.00 RT.	169162.49	563891.56
FG 787	1422.09	568+57.00	371.00 RT.	169162.15	563901.05
FG 788	1422.02	568+66.50	371.00 RT.	169161.80	563910.54
FG 789	1421.96	568+76.00	371.00 RT.	169161.45	563920.04
FG 790	1421.91	568+85.50	371.00 RT.	169161.11	563929.53
FG 791	1421.86	568+95.00	371.00 RT.	169160.76	563939.02
FG 792	1421.81	569+04.50	371.00 RT.	169160.41	563948.52
FG 793	1421.76	569+14.00	371.00 RT.	169160.07	563958.01
FG 794	1421.71	569+23.50	371.00 RT.	169159.72	563967.51
FG 795	1421.66	569+33.00	371.00 RT.	169159.38	563977.00
FG 796	1421.62	569+42.50	371.00 RT.	169159.03	563986.49
FG 797	1421.57	569+52.00	371.00 RT.	169158.68	563995.99
FG 798	1421.51	569+61.50	371.00 RT.	169158.34	564005.48
FG 799	1421.43	569+71.00	371.00 RT.	169157.99	564014.97
FG 800	1421.36	569+80.50	371.00 RT.	169157.65	564024.47

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 801	1421.28	569+90.00	371.00 RT.	169157.30	564033.96
FG 802	1421.18	569+99.50	371.00 RT.	169156.95	564043.46
FG 803	1421.06	570+09.00	371.00 RT.	169156.61	564052.95
FG 804	1420.90	570+21.00	371.00 RT.	169156.17	564064.94
FG 805	1420.75	570+33.00	371.00 RT.	169155.73	564076.93
FG 806	1420.59	570+45.00	371.00 RT.	169155.30	564088.92
FG 807	1420.43	570+57.00	371.00 RT.	169154.86	564100.92
FG 808	1423.36	565+93.23	379.17 RT.	169163.59	563637.15
FG 809	1423.41	565+98.00	378.25 RT.	169164.34	563641.96
FG 810	1423.42	566+07.00	378.25 RT.	169164.01	563650.95
FG 811	1423.43	566+16.00	378.25 RT.	169163.68	563659.95
FG 812	1423.44	566+25.00	378.25 RT.	169163.35	563668.94
FG 813	1423.45	566+34.00	378.25 RT.	169163.02	563677.93
FG 814	1423.45	566+43.00	378.25 RT.	169162.70	563686.93
FG 815	1423.46	566+52.00	378.25 RT.	169162.37	563695.92
FG 816	1423.48	566+61.00	378.25 RT.	169162.04	563704.92
FG 817	1423.48	566+70.00	378.25 RT.	169161.71	563713.91
FG 818	1423.50	566+79.00	378.25 RT.	169161.38	563722.90
FG 819	1423.50	566+88.00	378.25 RT.	169161.06	563731.90
FG 820	1423.51	566+97.00	378.25 RT.	169160.73	563740.89

SRE APRON - PCC SPOT ELEVATION TABLES (F.G.)

PNT. #	ELEV	STA (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
FG 821	1423.46	567+06.00	378.25 RT.	169160.40	563749.89
FG 822	1423.39	567+15.00	378.25 RT.	169160.07	563758.88
FG 823	1423.50	567+19.77	379.17 RT.	169158.98	563763.62
FG 824	1423.67	565+96.50	385.50 RT.	169157.15	563640.19
FG 825	1423.68	565+98.00	385.50 RT.	169157.09	563641.69
FG 826	1423.68	566+07.00	385.50 RT.	169156.76	563650.69
FG 827	1423.68	566+16.00	385.50 RT.	169156.43	563659.68
FG 828	1423.68	566+25.00	385.50 RT.	169156.11	563668.68
FG 829	1423.68	566+34.00	385.50 RT.	169155.78	563677.67
FG 830	1423.67	566+43.00	385.50 RT.	169155.45	563686.66
FG 831	1423.67	566+52.00	385.50 RT.	169155.12	563695.66
FG 832	1423.67	566+61.00	385.50 RT.	169154.80	563704.65
FG 833	1423.68	566+70.00	385.50 RT.	169154.47	563713.65
FG 834	1423.68	566+79.00	385.50 RT.	169154.14	563722.64
FG 835	1423.68	566+88.00	385.50 RT.	169153.81	563731.63
FG 836	1423.67	566+97.00	385.50 RT.	169153.48	563740.63
FG 837	1423.66	567+06.00	385.50 RT.	169153.16	563749.62
FG 838	1423.58	567+15.00	385.50 RT.	169152.83	563758.62
FG 839	1423.56	567+16.50	385.50 RT.	169152.77	563760.11

△1

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SEH

DULUTH INTERNATIONAL AIRPORT

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.

Shawn T. McMahon, PE

DATE JULY 13, 2022 LICENSE NO. 48856

DULUTH INTERNATIONAL AIRPORT (DLH)

TAXIWAY A RECONSTRUCTION - PHASES 2 & 4
DULUTH, MN

MARK	DATE	DESCRIPTION
1	07-25-2022	ADDENDUM 1

REVISIONS

SEH FILE NO. DULAI165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY SWB

SHEET TITLE
PCC JOINT ELEVATION TABLES (SRE APRON) - PHASE 4

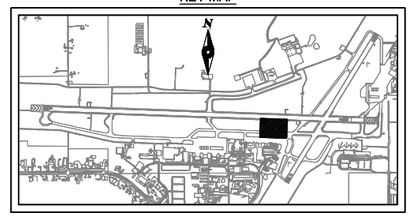
△1

SHEET
C3.07A

LEGEND

- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- TSA — TAXIWAY SAFETY AREA
- PROPOSED GRADING LIMIT
- PROPOSED STORM PIPE
- PROPOSED STORM CATCH BASIN
- PROPOSED MANHOLE
- EXISTING STORM PIPE
- EXISTING STORM CATCH BASIN
- EXISTING STORM MANHOLE
- EXISTING LIGHT
- EXISTING ASPHALT MILLING / 2" BITUMINOUS OVERLAY AREA
- EXISTING ASPHALT MILLING / VARIABLE DEPTH OVERLAY AREA
- GRADING AREA (ALT. BID)

KEY MAP



N

0 40' 80'

CATCH SLOPE VARIES 1% TO 3%

EXISTING GROUND LINE CONTOUR (TYP.)

PROPOSED GROUND LINE CONTOUR (TYP.)

GRADE AT 5% AWAY FROM PAVEMENT FOR 10.0' (TYP.). SEE TYPICAL SECTIONS FOR DETAILS

HORIZONTAL CONTROL LINE AND CENTERLINE OF TAXIWAY A4

EXISTING WIND CONE TO REMAIN IN PLACE AND BE PROTECTED.

PROPOSED GRADING LIMIT CATCH SLOPE LINE (TYP.)

EDGE OF EXISTING TAXIWAY EDGE (TYP.)

[MATCH LINE - SEE SHEET C4.01]

TAXIWAY A4

ELECTRIC STRUCTURE N=169873.02, E=564880.77 F.G. RIM EL.=1417.72

ELECTRIC STRUCTURE N=169866.60, E=564721.78 F.G. RIM EL.=1417.67

ELECTRIC STRUCTURE N=169580.05, E=565077.78 F.G. RIM EL.=1413.28

ELECTRIC STRUCTURE N=169562.25, E=565339.01 F.G. RIM EL.=1412.74

ELECTRIC STRUCTURE N=169574.89, E=564666.71 F.G. RIM EL.=1414.39

ELECTRIC STRUCTURE (ADJUST RIM TO MATCH F.G. EL.) N=169552.74, E=565052.33 F.G. RIM EL.=1414.21 E.G. RIM EL. = 1413.38 (ADJUST / RAISE RIM 0.83')

ELECTRIC STRUCTURE N=169572.61, E=565077.49 F.G. RIM EL.=1413.39

ELECTRIC STRUCTURE N=169564.40, E=565122.12 F.G. RIM EL.=1413.40

ELECTRIC STRUCTURE N=169557.37, E=565119.39 F.G. RIM EL.=1413.66

GRADE AT 5% AWAY FROM PAVEMENT FOR 10.0' (TYP.). SEE TYPICAL SECTIONS FOR DETAILS

HORIZONTAL CONTROL LINE AND CENTERLINE OF TAXIWAY A

MATCH EXISTING TAXIWAY A

TAXIWAY A

TAXIWAY A

SLOPE VARIES 5% TO 10%

GRADE AREA TO DRAIN TO CATCH BASIN (TYP.)

2" ASPHALT MILLING AND VARIABLE THICKNESS BITUMINOUS OVERLAY AREA TO TRANSITION SLOPES FROM PROPOSED 1.5% TAXIWAY A SHOULDER CROSS SLOPE TO THE EXISTING APRON PAVEMENT.

TAXIWAY A (END TRANSITION MILLING) STA. 583+27.00

TAXIWAY A (END FULL DEPTH CONSTRUCTION) STA. 582+77.00

TAXIWAY A STA. 578+05.52 OFF=97.50 RT.

PROVIDE 1.5" DROP AT EDGE OF EXISTING APRON PAVEMENT AND GRADE AT 5% FOR 10' AWAY FROM PAVEMENT (TYP.)

TAXIWAY A STA. 582+25.00 OFF=97.50 RT.

ASPHALT MILLING TRANSITION AREA TO TRANSITION THE EXISTING CROSS SLOPES TO MATCH THE PROPOSED 1.5% CROWNED CROSS SLOPE AT STA. 582+77

MATCH EXISTING TOWER APRON PAVEMENT ELEVATIONS

TOWER APRON

TAXIWAY A STA. 582+25.00 OFF=137.50 RT.

TAXIWAY A STA. 583+27.00 OFF=137.50 RT.

NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING PIPES, INLETS MANHOLE INVERTS AND ALL OTHER ELEVATIONS FOR TIE IN TO PROPOSED PAVEMENT TO EXISTING PAVEMENT.
2. GRADING SPOT ELEVATION SHOWN HAVE OMITTED FIRST SIGNIFICANT FIGURE FOR CLARITY - ADD 1400 FOR TRUE ELEVATION.
3. WORK WITHIN OBJECT FREE AREAS AND SAFETY AREAS SHALL BE COORDINATED WITH AIRPORT AUTHORITY FOR APPROPRIATE CLOSURE LIMITS AND DATES TO OPTIMIZE AIRPORT OPERATIONS.
4. STRIPPING, ON SITE STOCKPILING AND PLACING OF ALL TOPSOIL (INCLUDING IMPORTED TOPSOIL) WILL BE PAID FOR UNDER COMMON EXCAVATION.
5. ELECTRICAL STRUCTURES SHOWN ARE TO IDENTIFY THE LOCATION / RIM ELEVATIONS. SEE THE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.

GEOMETRIC CONTROL NOTES:

1. COORDINATES SHOWN ARE BASED ON THE ST. LOUIS COUNTY SOUTH COORDINATE SYSTEM. PACS/SACS CONTROL INFORMATION AT THE AIRPORT WILL BE PROVIDED TO THE CONTRACTOR TO SET PROJECT CONTROL SHOWN ON SHEET C0.30.
2. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS FOR TIE IN OF PROPOSED PAVEMENT TO EXISTING PAVEMENT.

GRADING PLAN - FINISHED GRADE POINTS TABLES

PNT. #	ELEVATION	STATION (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
100	1414.23	576+07.18	-72.50 LT.	169578.02	564666.89
101	1414.01	576+28.51	-77.99 LT.	169582.73	564688.40
102	1414.02	576+35.72	-106.00 LT.	169610.46	564696.63
103	1413.96	576+31.85	-107.00 LT.	169611.60	564692.80
104	1413.56	576+28.94	-119.00 LT.	169623.70	564690.33
105	1413.93	576+44.62	-140.57 LT.	169644.68	564706.78
106	1413.79	576+34.64	-141.16 LT.	169645.63	564696.83
107	1415.01	576+47.40	-208.00 LT.	169711.97	564712.02
108	1414.87	576+37.39	-208.00 LT.	169712.33	564702.02
109	1415.95	576+49.40	-256.50 LT.	169760.36	564715.78
110	1415.82	576+39.39	-256.50 LT.	169760.73	564705.78
111	1417.47	576+44.62	-372.43 LT.	169876.39	564715.23
112	1417.28	576+34.64	-371.84 LT.	169876.17	564705.24

GRADING PLAN - FINISHED GRADE POINTS TABLES

PNT. #	ELEVATION	STATION (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
113	1417.96	576+39.52	-392.25 LT.	169896.38	564710.85
114	1417.95	576+33.53	-392.24 LT.	169896.59	564704.87
115	1418.04	577+73.54	-392.47 LT.	169891.72	564844.80
116	1418.06	577+81.52	-392.49 LT.	169891.44	564852.77
117	1417.41	577+68.35	-371.84 LT.	169871.29	564838.85
118	1417.28	577+78.36	-371.84 LT.	169870.93	564848.86
119	1415.95	577+63.60	-256.50 LT.	169756.20	564829.91
120	1415.82	577+73.61	-256.50 LT.	169755.83	564839.92
121	1415.01	577+65.60	-208.00 LT.	169707.66	564830.14
122	1414.87	577+75.61	-208.00 LT.	169707.29	564840.14
123	1413.90	577+68.43	-139.10 LT.	169638.70	564830.46
124	1413.79	577+78.36	-141.16 LT.	169640.39	564840.46
125	1413.85	577+74.77	-115.76 LT.	169615.14	564835.94

GRADING PLAN - FINISHED GRADE POINTS TABLES

PNT. #	ELEVATION	STATION (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
126	1413.54	577+84.50	-119.00 LT.	169618.03	564845.79
127	1413.79	577+81.15	-107.00 LT.	169606.16	564842.00
128	1413.80	577+84.49	-77.99 LT.	169577.05	564844.28
129	1413.88	578+05.82	-72.50 LT.	169570.78	564865.39
130	1413.68	579+29.03	-72.50 LT.	169566.29	564988.53
131	1412.99	579+29.03	-119.00 LT.	169612.76	564990.22
132	1413.32	581+02.53	-72.50 LT.	169559.97	565161.91
133	1412.64	581+02.53	-119.00 LT.	169606.44	565163.61
134	1412.80	582+77.00	-72.50 LT.	169553.62	565336.26
135	1412.11	582+77.00	-119.00 LT.	169600.09	565337.96
136	1414.88	583+69.20	-119.00 LT.	169596.73	565430.10
137	1414.30	575+83.06	72.50 RT.	169434.00	564637.51
138	1413.71	575+83.06	112.00 RT.	169394.52	564636.07

GRADING PLAN - FINISHED GRADE POINTS TABLES

PNT. #	ELEVATION	STATION (TXY A)	OFFSET (TXY A)	NORTHING	EASTING
139	1412.71	575+83.06	127.51 RT.	169379.02	564635.50
140	1412.57	575+83.06	155.44 RT.	169351.11	564634.48
141	1414.16	576+42.46	72.50 RT.	169431.83	564696.86
142	1413.57	576+42.46	112.00 RT.	169392.36	564695.42
143	1412.39	576+42.46	128.09 RT.	169376.28	564694.83
144	1412.26	576+42.46	154.79 RT.	169349.60	564693.86
145	1413.95	577+63.00	72.50 RT.	169427.44	564817.32
146	1413.36	577+63.00	112.00 RT.	169387.97	564815.88
147	1411.80	577+53.83	128.77 RT.	169371.54	564806.11
148	1411.66	577+53.81	155.26 RT.	169345.06	564805.12

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DULUTH INTERNATIONAL AIRPORT

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.

Shawn T. McMahon, PE

DATE JULY 13, 2022 LICENSE NO. 43856

DULUTH INTERNATIONAL AIRPORT (DLH)

TAXIWAY A RECONSTRUCTION - PHASES 2 & 4

DULUTH, MN

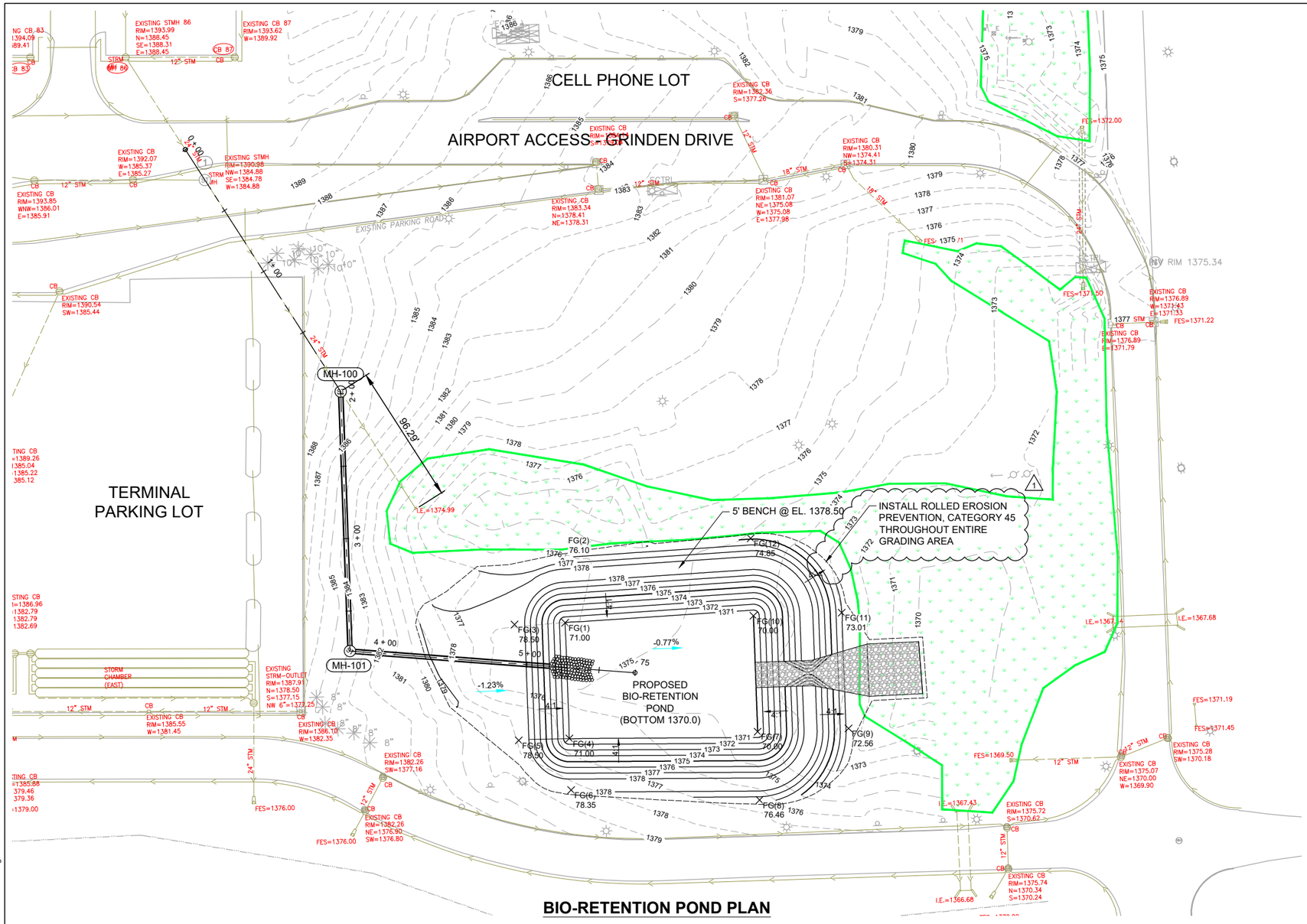
MARK	DATE	DESCRIPTION
1	07-25-2022	ADDENDUM 1

REVISIONS

SEH FILE NO. DULAI165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY ---
DRAWN BY SWB

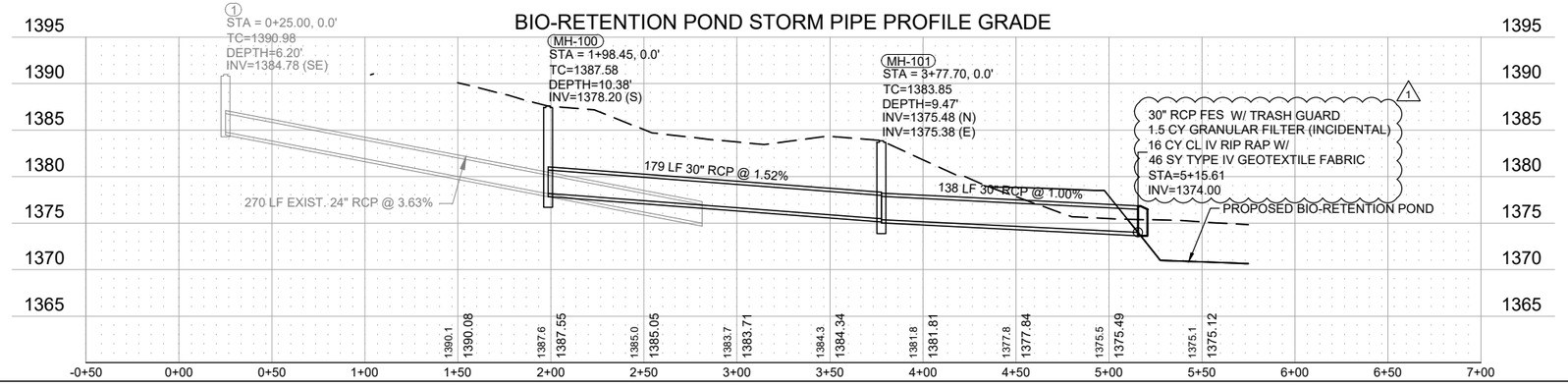
SHEET TITLE
GRADING PLAN - PHASES 2A & 2B

SHEET
C4.02

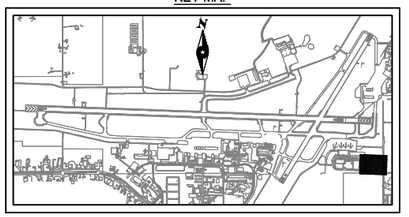


BIO-RETENTION POND PLAN

BIO-RETENTION POND STORM PIPE PROFILE GRADE



KEY MAP



NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING PIPES, INLETS MANHOLE INVERTS AND ALL OTHER ELEVATIONS FOR TIE IN TO PROPOSED PAVEMENT TO EXISTING PAVEMENT.
2. GRADING SPOT ELEVATIONS SHOWN HAVE OMITTED FIRST SIGNIFICANT FIGURE FOR CLARITY - ADD 1400 FOR TRUE ELEVATION.
3. WORK WITHIN OBJECT FREE AREAS AND SAFETY AREAS SHALL BE COORDINATED WITH AIRPORT AUTHORITY FOR APPROPRIATE CLOSURE LIMITS AND DATES TO OPTIMIZE AIRPORT OPERATIONS.
4. STRIPPING, ON SITE STOCKPILING AND PLACING OF ALL TOPSOIL (INCLUDING IMPORTED TOPSOIL) WILL BE PAID FOR UNDER COMMON EXCAVATION.
5. INSTALLATION OF ROLLED EROSION PREVENTION, CATEGORY 45 (PAID FOR BY BID ITEM (2575.504) SHALL COVER THE GRADING AREA SHOWN (SIDE SLOPES, BENCH, AND BOTTOM) OF THE BIO-RETENTION POND.

GEOMETRIC CONTROL NOTES:

1. COORDINATES SHOWN ARE BASED ON THE ST. LOUIS COUNTY SOUTH COORDINATE SYSTEM. PACS/SACS CONTROL INFORMATION AT THE AIRPORT WILL BE PROVIDED TO THE CONTRACTOR TO SET PROJECT CONTROL SHOWN ON SHEET C0.30.
2. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS FOR TIE IN OF PROPOSED PAVEMENT TO EXISTING PAVEMENT.

BIO-RETENTION POND GRADING
FINISHED GRADE POINTS TABLES

PNT. #	ELEVATION	NORTHING	EASTING
FG(1)	1371.00	168329.00	568487.97
FG(2)	1376.10	168373.60	568487.73
FG(3)	1378.50	168329.00	568452.97
FG(4)	1371.00	168249.00	568487.97
FG(5)	1378.50	168249.00	568452.97
FG(6)	1378.35	168213.38	568487.88
FG(7)	1370.00	168249.00	568617.97
FG(8)	1376.46	168201.83	568617.57
FG(9)	1372.56	168249.00	568680.73
FG(10)	1370.00	168329.00	568617.97
FG(11)	1373.01	168329.00	568678.94
FG(12)	1374.85	168382.59	568617.97

LEGEND

- PROPOSED GRADING LIMIT
- PROPOSED STORM PIPE
- CB — PROPOSED STORM CATCH BASIN
- ST — PROPOSED MANHOLE
- STM — EXISTING STORM PIPE
- CB — EXISTING STORM CATCH BASIN
- ST — EXISTING STORM MANHOLE
- EXISTING LIGHT

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DULUTH INTERNATIONAL AIRPORT

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.
Shawn T. McMahon, PE
DATE JULY 13, 2022 LICENSE NO. 48856

DULUTH INTERNATIONAL AIRPORT (DLH)
TAXIWAY A RECONSTRUCTION - PHASES 2 & 4
DULUTH, MN

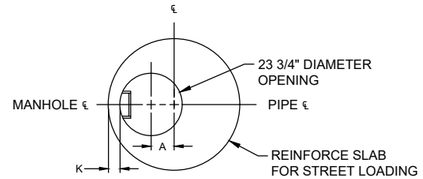
MARK	DATE	DESCRIPTION
1	7/25/2022	ADDENDUM 1

REVISIONS

SEH FILE NO. DULA165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY SWB

SHEET TITLE
BIO-RETENTION POND PLAN

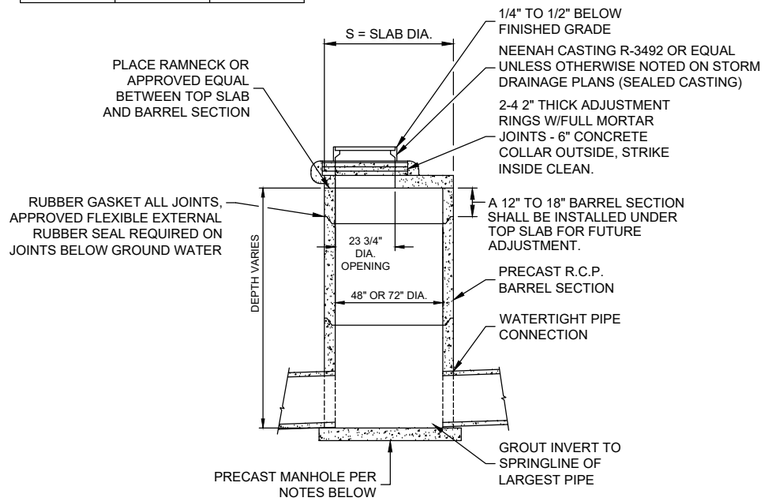
SHEET
C4.06



COVER SLAB

DIMENSION CHART

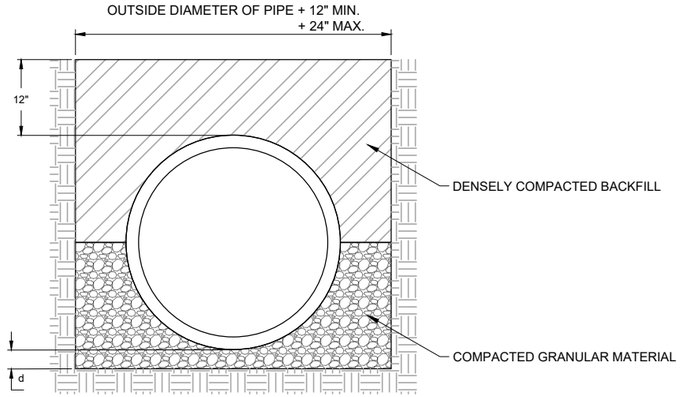
	MANHOLE TYPE	
	B	D
DIA.	48"	72"
A	9.5"	21.5"
S	58"	86"
K	7.5"	9.5"



CATCH BASIN / MANHOLE
(23 $\frac{3}{4}$" DIA. OPENING)

NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING PIPES, INLETS, MANHOLE INVERTS AND ALL OTHER ELEVATIONS FOR TIE IN TO PROPOSED CONDITIONS.
2. STRUCTURES SHALL BE PRECAST CONCRETE CONFORMING TO REQUIREMENTS OF ITEM D-701, AC 150/5320-5D AND ASTM C 858; STANDARD SPECIFICATION FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES.
3. STRUCTURES AND CASTING FRAMES SHALL MEET ALL REQUIRED AIRPORT AIRCRAFT DESIGN LOADS.
4. SHOP DRAWINGS SUBMITTALS SHALL BE FURNISHED WITH SEALED ENGINEERING CALCULATIONS BY AN ENGINEER LICENSED TO PRACTICE IN THE STATE OF MINNESOTA.
5. SEE STORM DRAINAGE PLANS FOR ADDITIONAL INFORMATION AND DETAILS.
6. WORK WITHIN TAXIWAY "A" (TOFA & TSA) SHALL BE COORDINATED WITH AIRPORT AND AIRLINE AUTHORITIES FOR APPROPRIATE CLOSURE LIMITS AND DATES TO OPTIMIZE AIRPORT OPERATIONS.



DEPTH OF BEDDING MATERIAL BELOW PIPE	
INNER PIPE DIA.	d
27" & SMALLER	3"
30" TO 60"	4"
66" & LARGER	6"

LEGEND

B_c = OUTSIDE DIAMETER
d = DEPTH OF BEDDING MATERIAL BELOW PIPE

NOTES:

1. IN ROCK TRENCHES MIN. d IS 6" BELOW PIPE BELL AND MIN. TRENCH WIDTH IS 36".
2. USE REPLACEMENT BACKFILL IN AREAS SPECIFIED ON PLANS AND SPEC.

CLASS B TRENCH BEDDING FOR REINFORCED CONCRETE PIPE

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DULUTH INTERNATIONAL AIRPORT

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Shawn T. McMahon, PE
DATE JULY 13, 2022 LICENSE NO. 49856

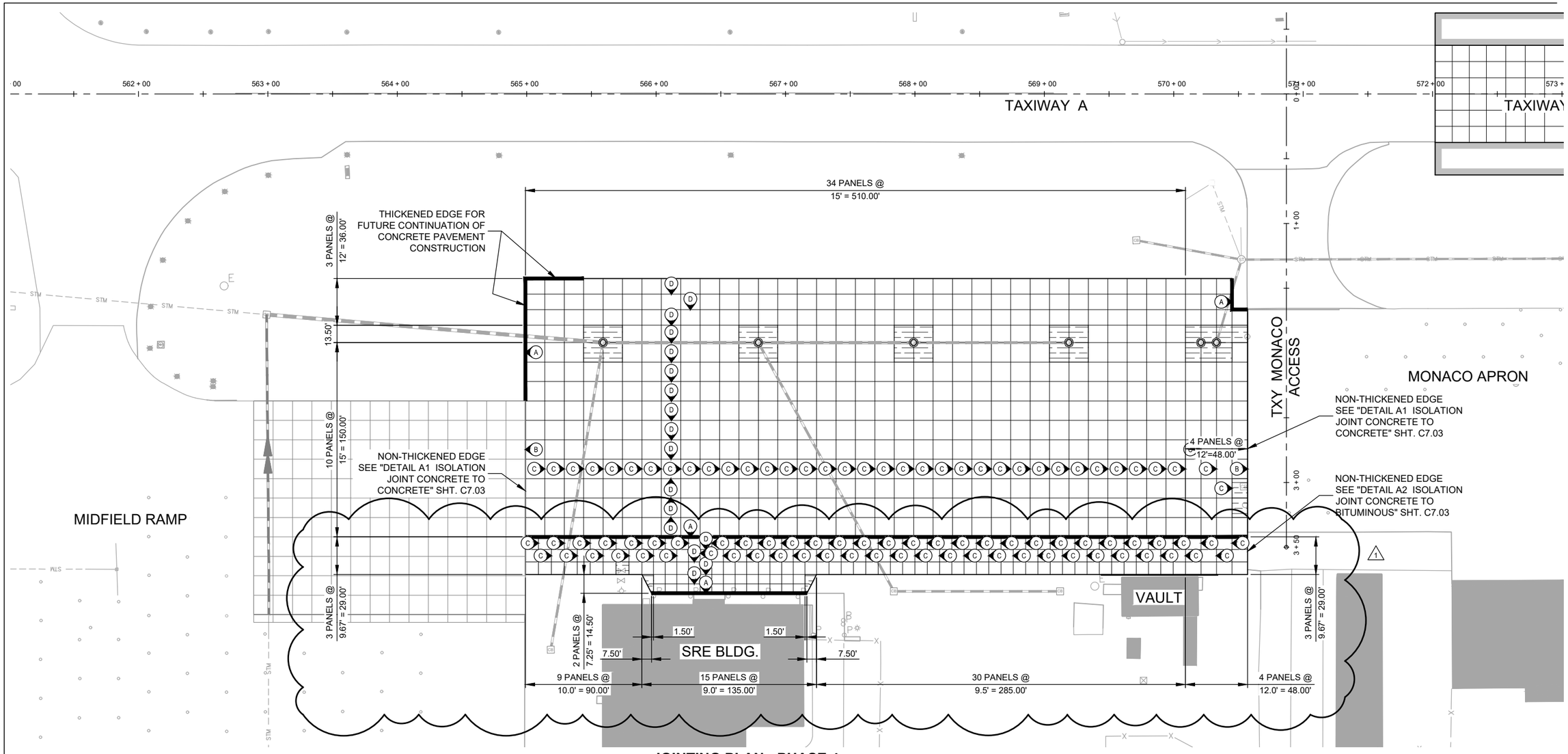
DULUTH INTERNATIONAL AIRPORT (DLH)
TAXIWAY A
RECONSTRUCTION - PHASES 2 & 4
DULUTH, MN

MARK	DATE	REVISIONS DESCRIPTION
1	7/25/2022	ADDENDUM 1

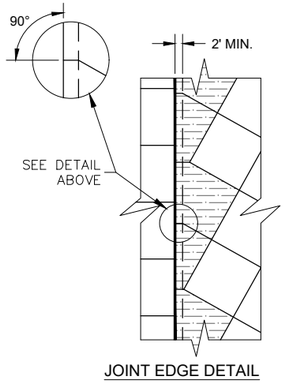
SEH FILE NO. DULA165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY SWB

SHEET TITLE
STORM SEWER DETAILS

SHEET
C5.11



JOINTING PLAN - PHASE 4



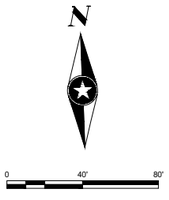
JOINT EDGE DETAIL

LEGEND

- JOINT TYPE, SEE PAVEMENT JOINT DETAILS (SHEET PC1 THRU PC2)
- PROPOSED PORTLAND CEMENT CONCRETE (PCC) & PANELS
- PROPOSED REINFORCED PORTLAND CEMENT CONCRETE (PCC)
- PROPOSED BITUMINOUS PAVEMENT
- TYPE A THICKENED EDGE ISOLATION JOINT LOCATION (SEE SHT. C7.03 FOR DETAILS)

GENERAL NOTES:

1. SEE SHEET C7.03 FOR PAVEMENT JOINT DETAILS FOR ADDITIONAL CONSTRUCTION AND GENERAL NOTES.
2. SEE SHEETS C3.00 - C3.07 FOR CONCRETE PAVEMENT LIMIT LOCATIONS.
2. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS FOR TIE IN OF PROPOSED PAVEMENT TO EXISTING PAVEMENT
3. ALL SUBSURFACE UTILITIES TO BE PROTECTED BY CONTRACTOR. ANY DAMAGED UTILITIES TO BE REPAIRED BY CONTRACTOR AT NO COST TO OWNER
4. ALL JOINT TYPES ARE CONTINUOUS UNLESS NOTED OTHERWISE.
5. PORTLAND CEMENT CONCRETE PAVEMENT JOINTS SHALL NOT VARY MORE THAN 1/2-INCH FROM THEIR DESIGNATED POSITION AND SHALL BE TRUE TO LINE WITH NOT MORE THAN 1/4-INCH VARIATION IN 10-FEET, ANY JOINT(S) THAT ARE NOT PARALLEL OR PERPENDICULAR, OTHER THAN IRREGULAR SLABS, SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE GOVERNMENT.
6. SHOULD THE CONTRACTOR REVISE THE PAVING DIRECTION OR PAVE MULTIPLE PANEL WIDTHS, THIS PAVEMENT JOINT LAYOUT WILL BE REVISED ACCORDINGLY. ANY CHANGES TO THE JOINT LAYOUT MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
7. ALL MATERIALS AND WORK NECESSARY TO CONSTRUCT JOINTS PER JOINTING PLAN (SAWING, DOWELS, REINFORCEMENT, ETC.) ARE CONSIDERED INCIDENTAL TO THE CEMENT CONCRETE PAVEMENT LINE ITEM.
8. CONTRACTOR SHALL SUBMIT CONCRETE PAVING PLAN FOR REVIEW AND APPROVAL FROM ENGINEER PRIOR TO THE START OF CONSTRUCTION, INCLUDING PLANNED CONSTRUCTION JOINTS, PAVING HEADERS AND HAND POUR LOCATIONS. HAND POURS SHALL BE HELD TO A MINIMUM AND ONLY USED WHERE SLIP FORM PAVING IS NOT PRACTICAL.



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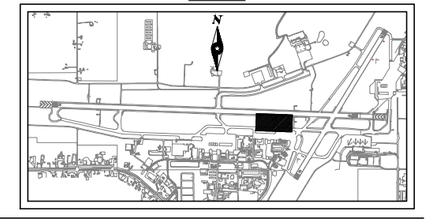

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Shawn T. McMahon, PE

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TAXIWAY A
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PHASES 2 & 4
DULUTH, MN

MARK	DATE	DESCRIPTION
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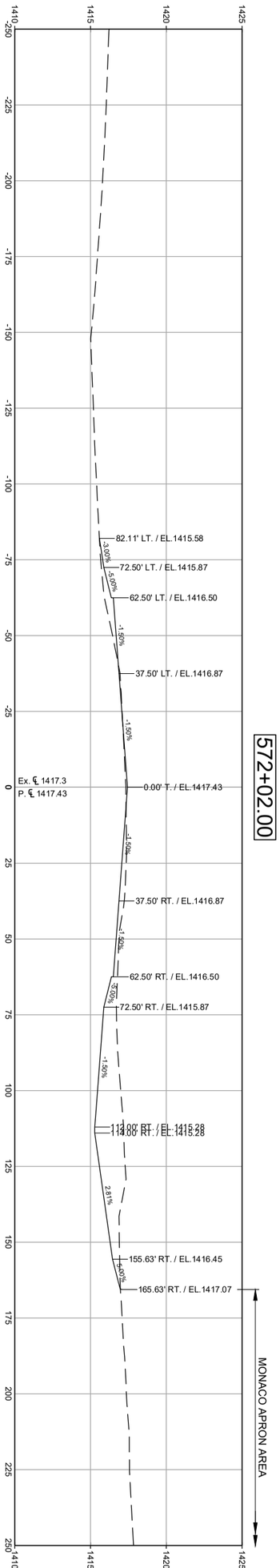
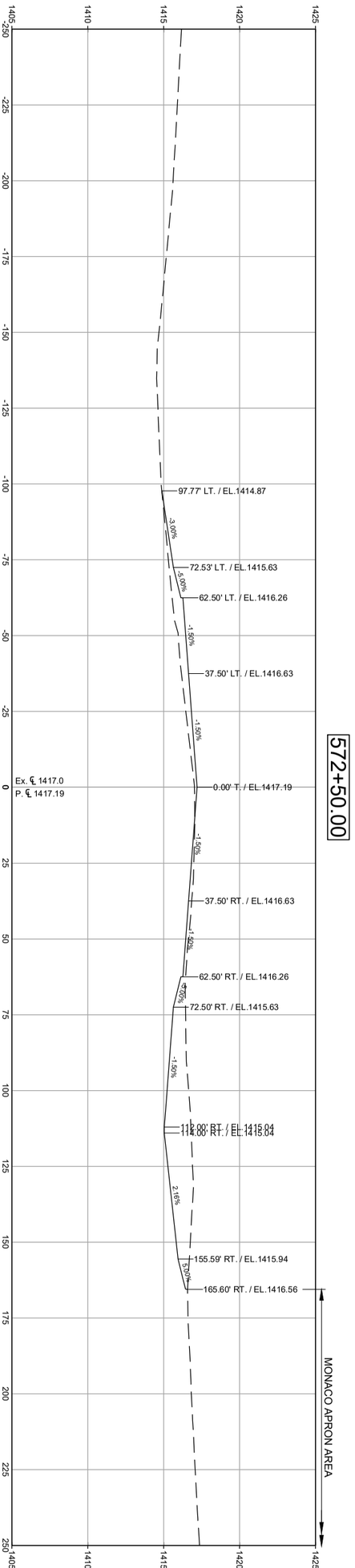
SHEET TITLE
JOINTING PLAN -
PHASE 4

SHEET
C7.02





SHEET
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SHEET TITLE
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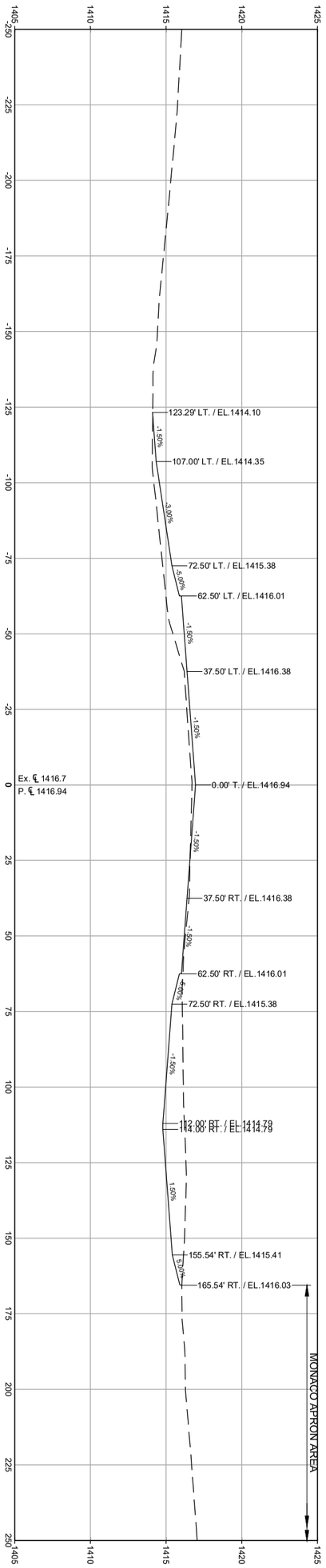

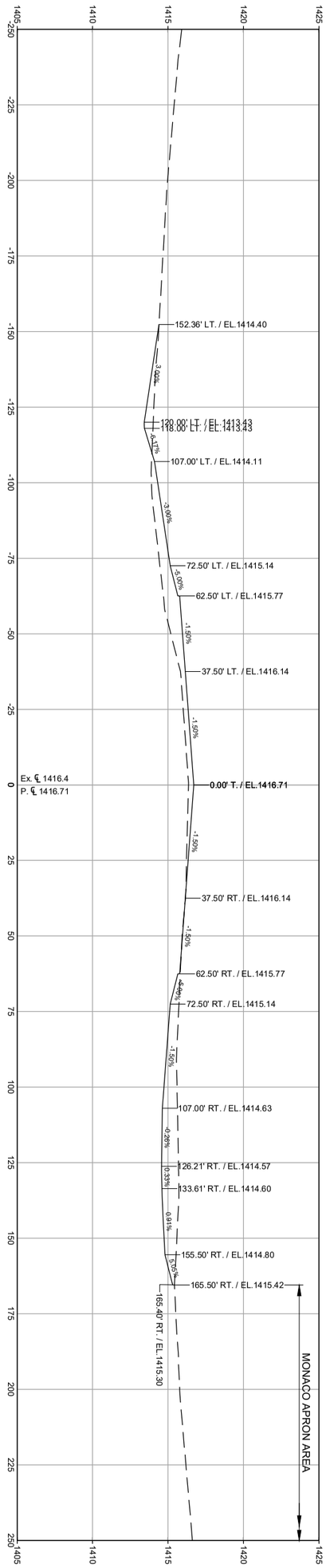

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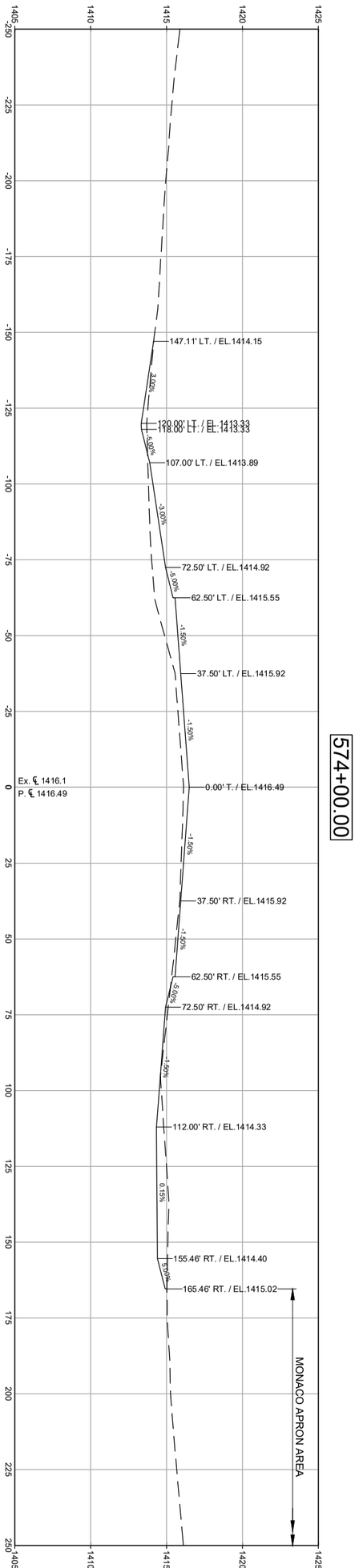

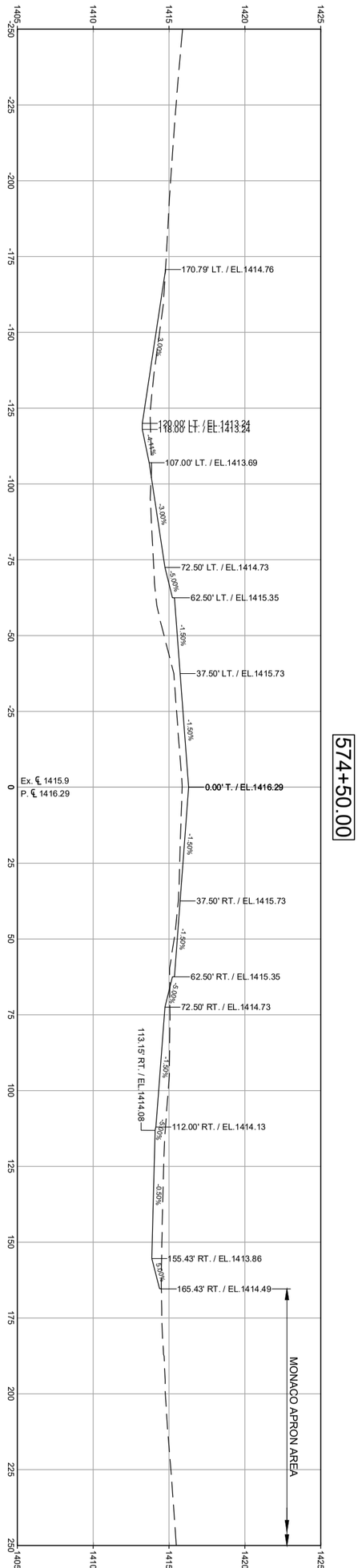

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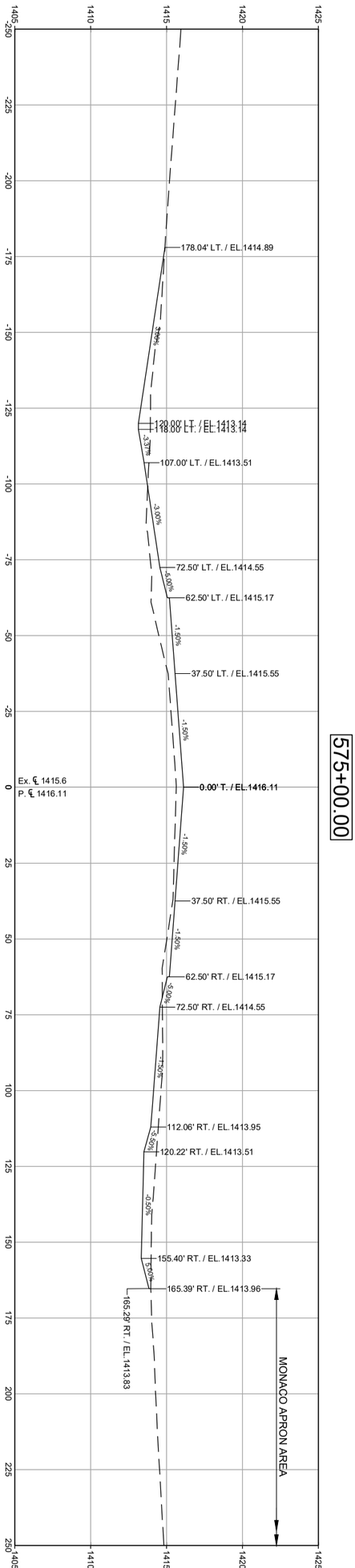

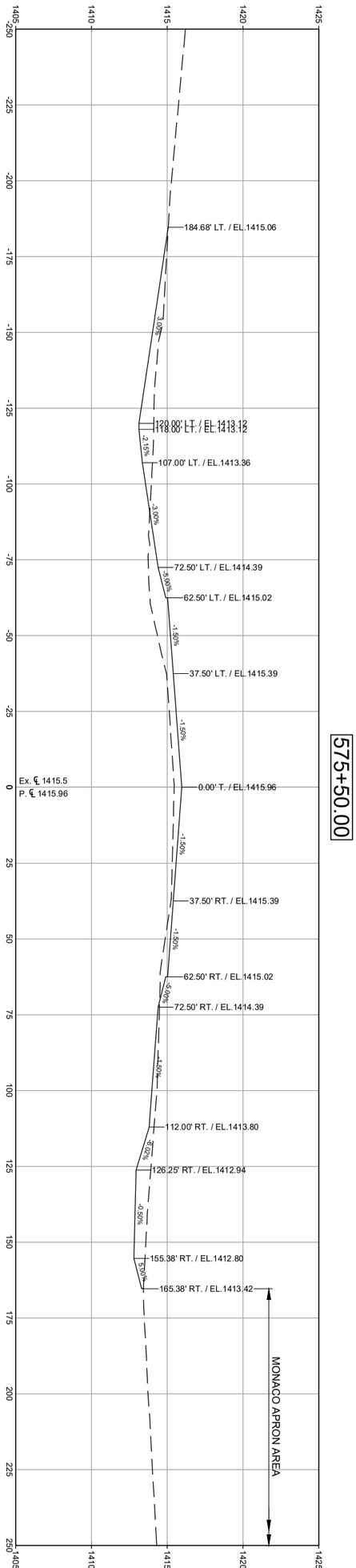

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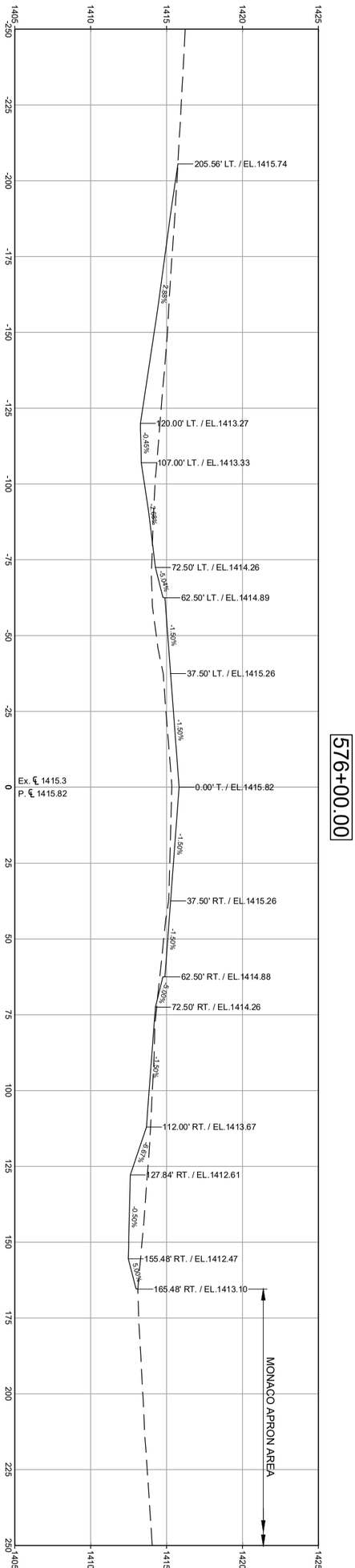

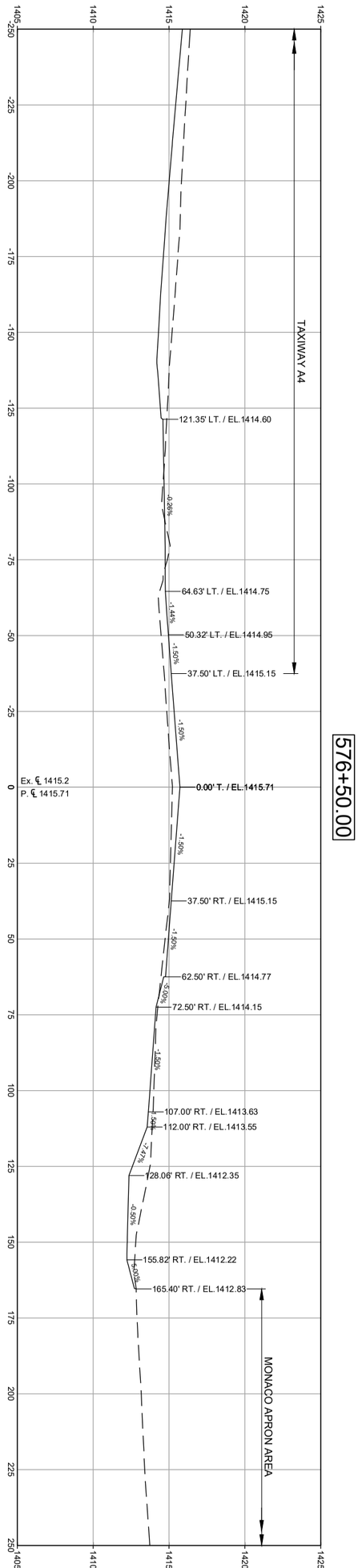

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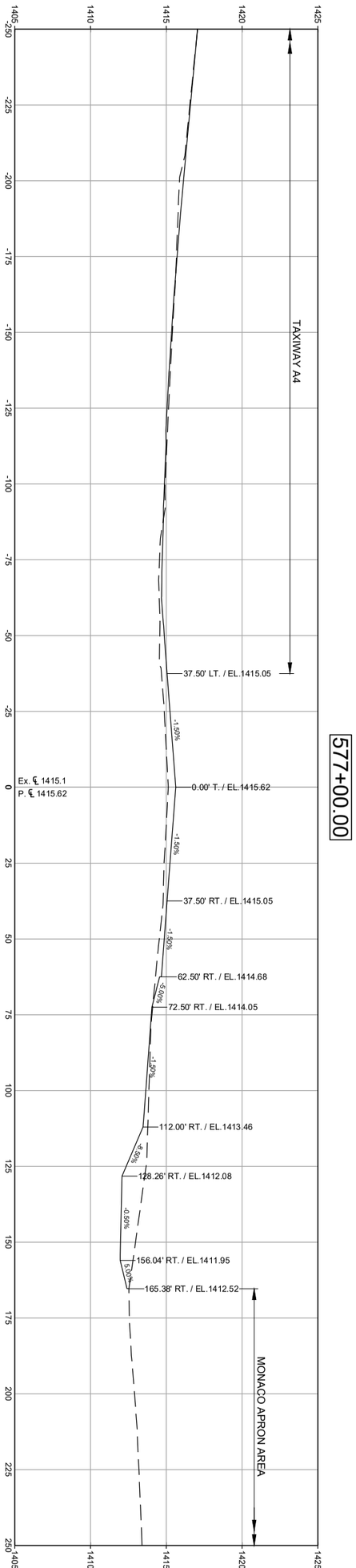

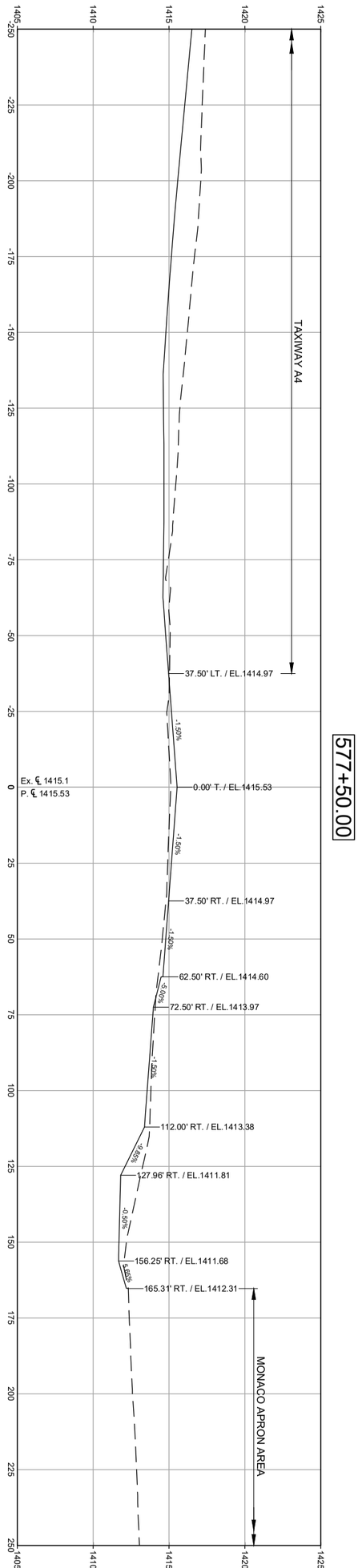

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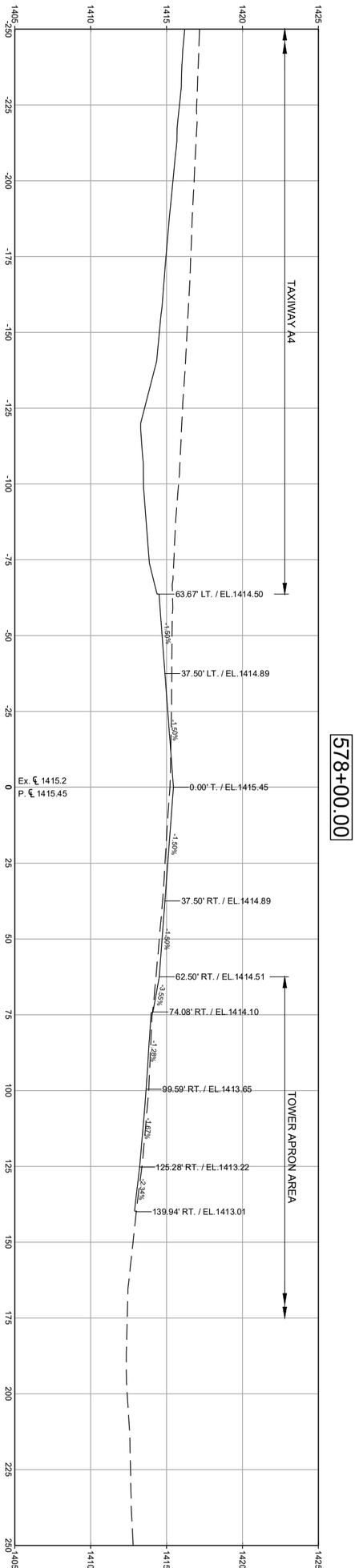

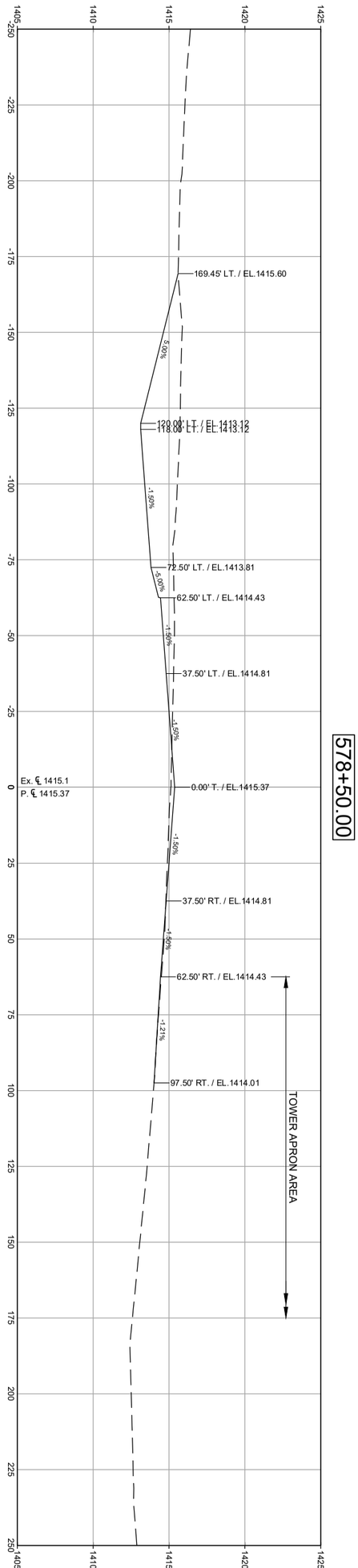

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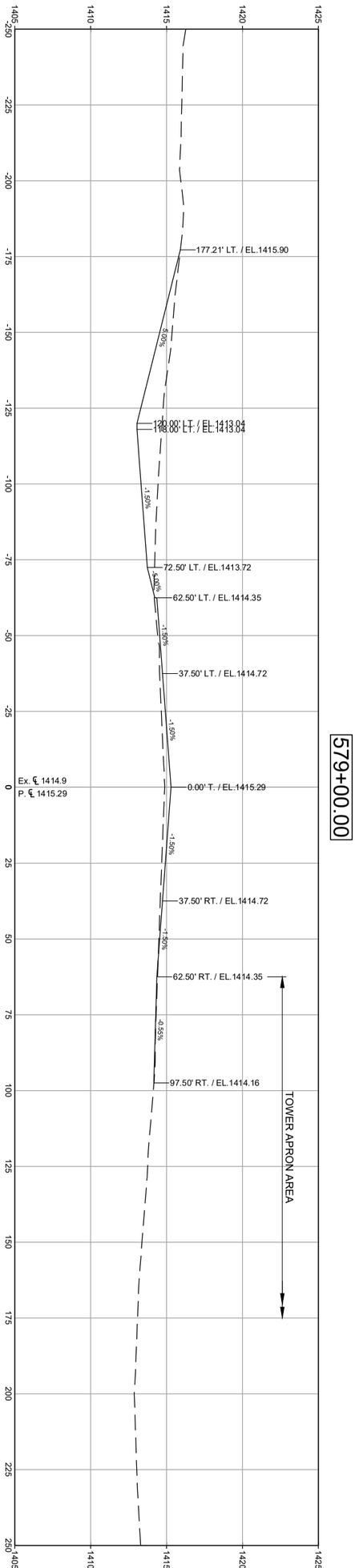

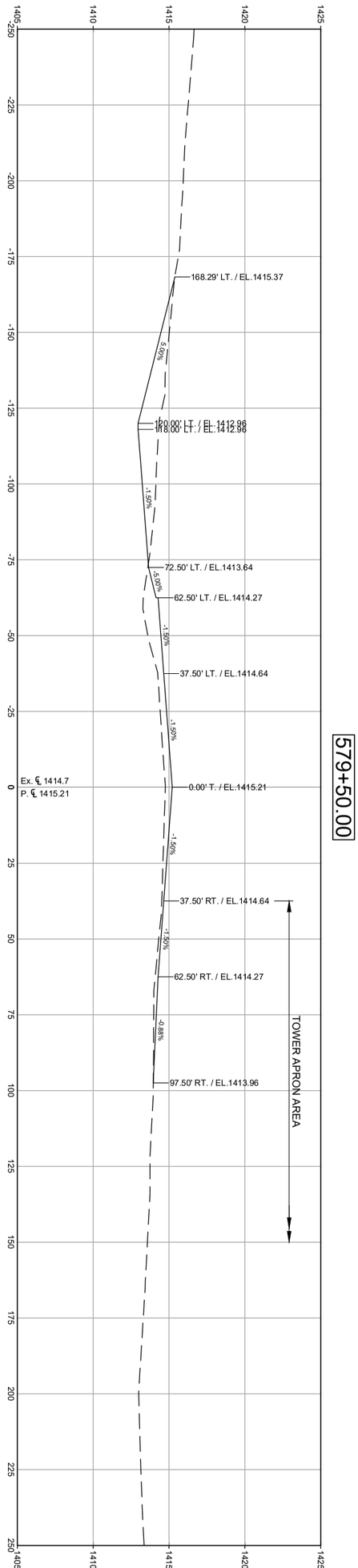

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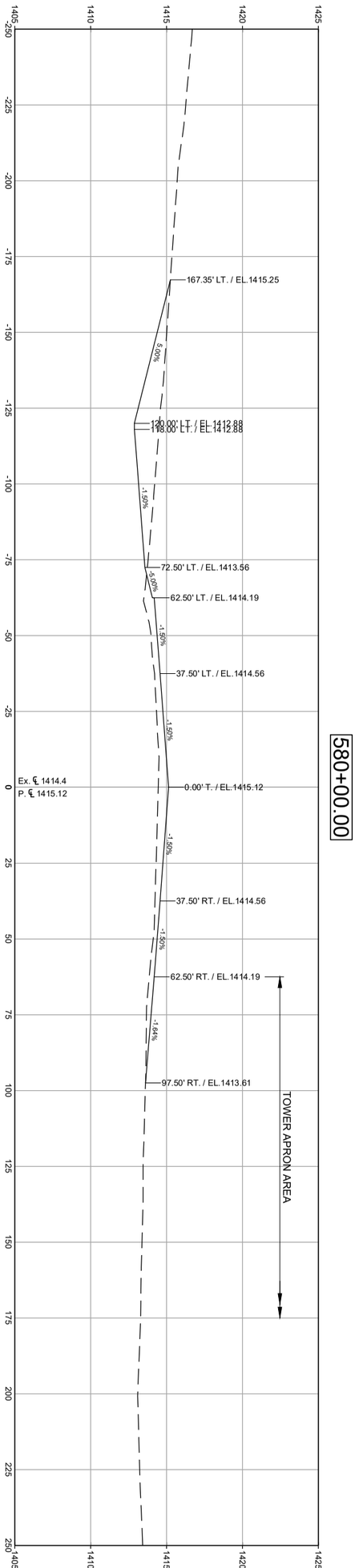

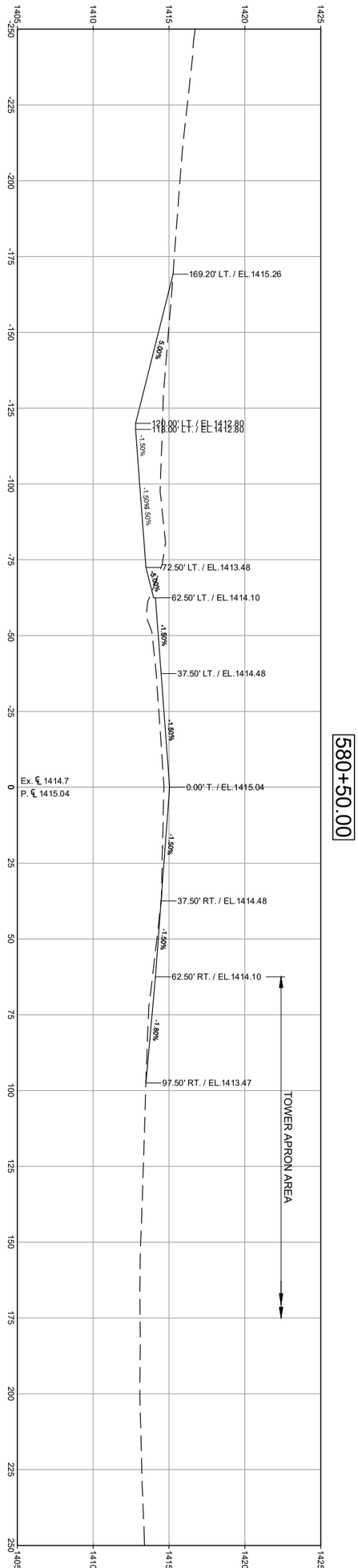

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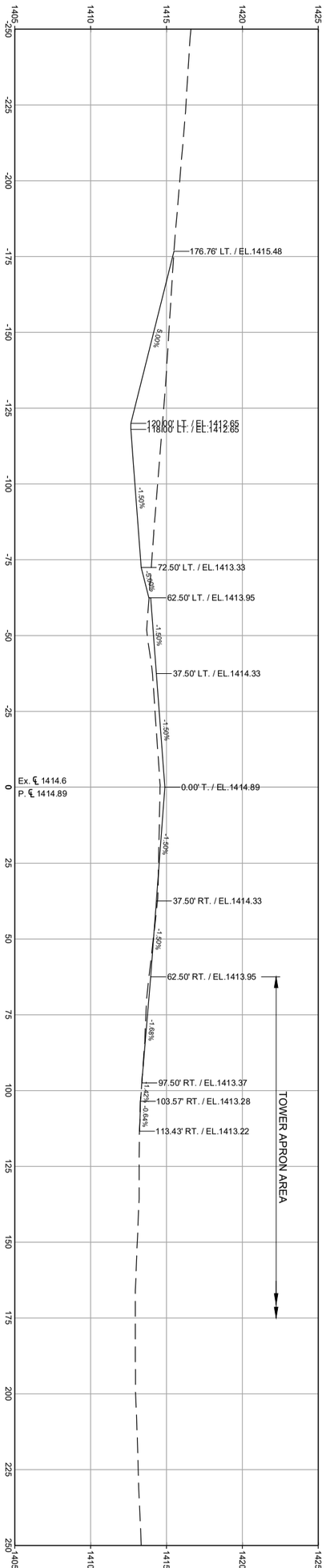

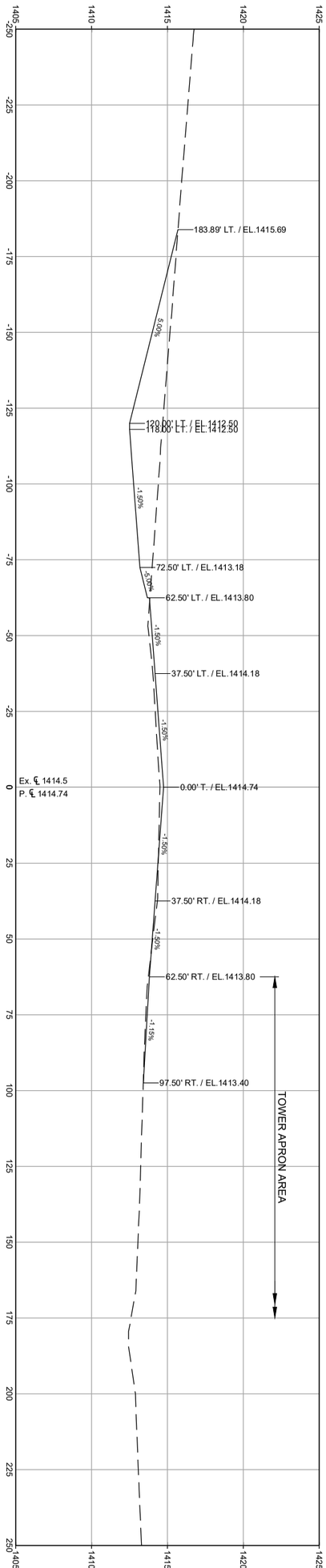

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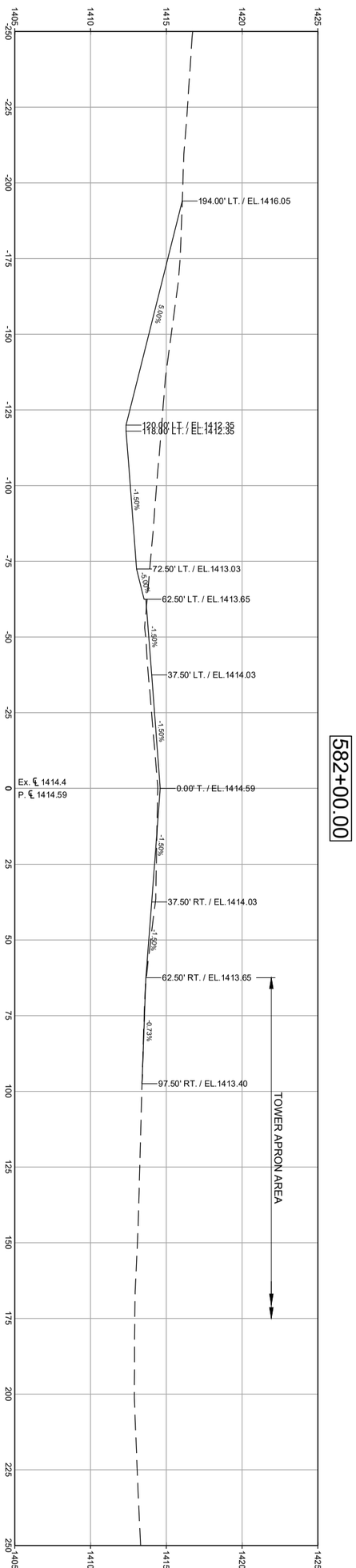

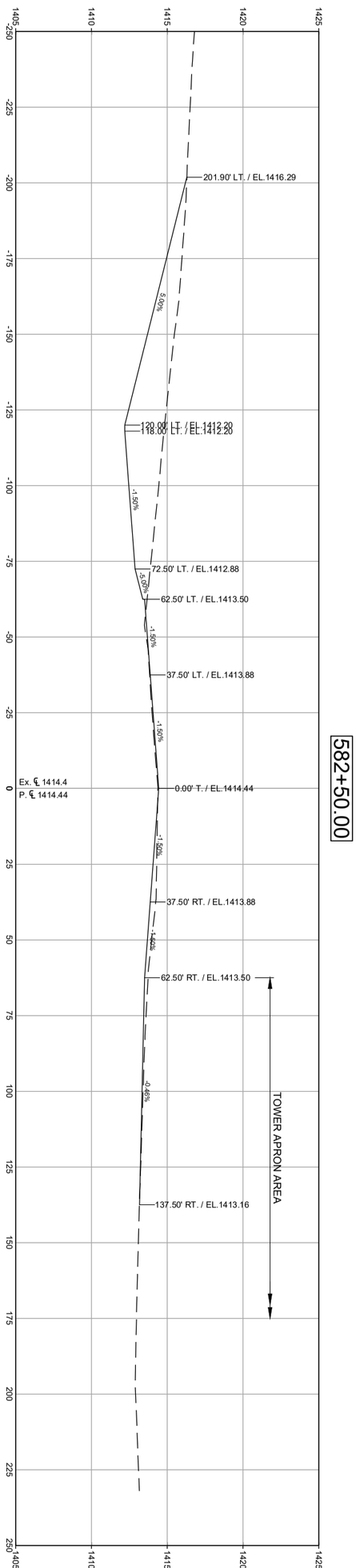

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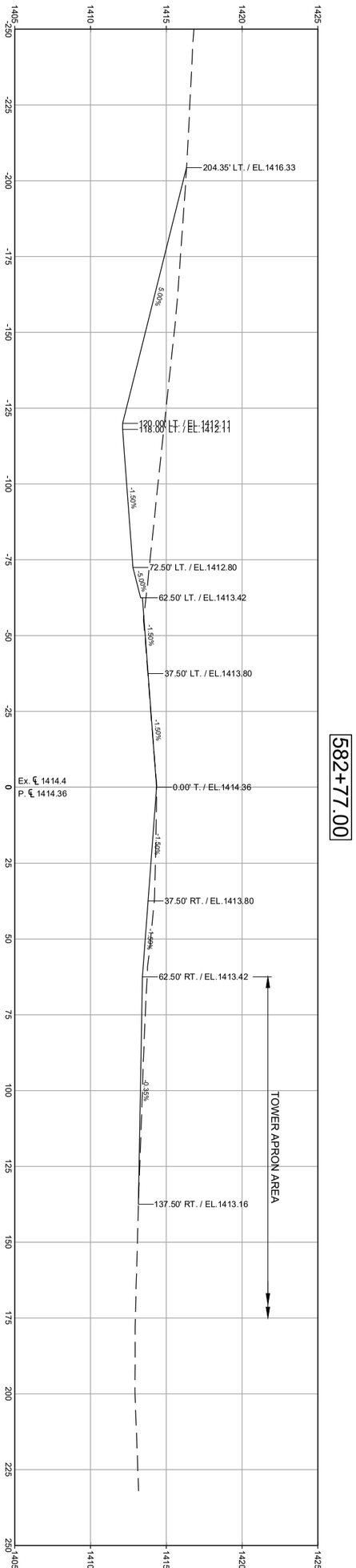

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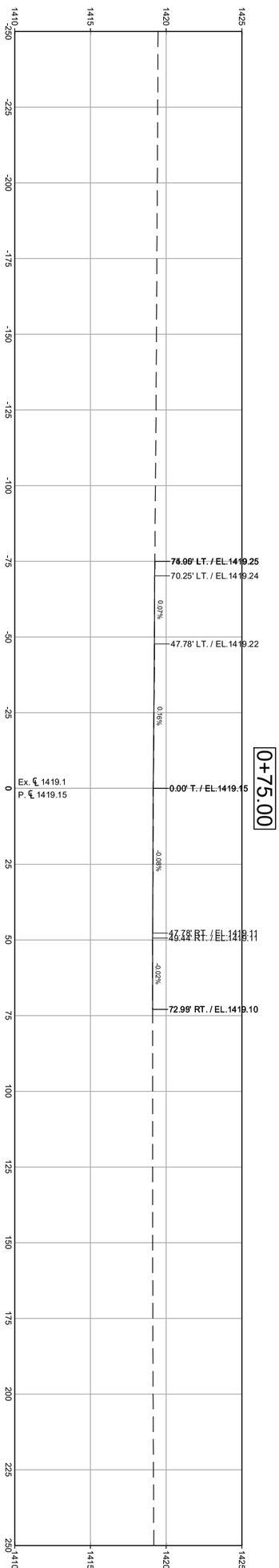

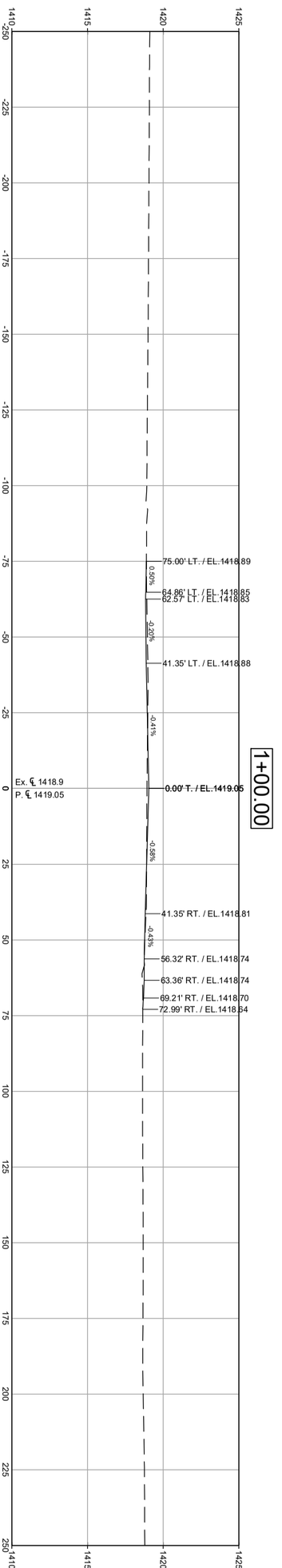

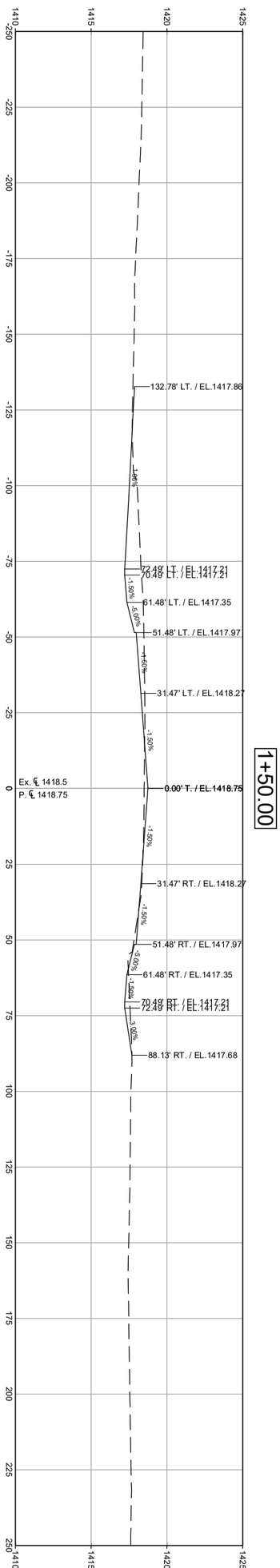

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SHEET TITLE
CROSS SECTIONS - TAXIWAY A4

SEH FILE NO. DULAI165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
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1	07-25-2022	ADDENDUM 1

REVISIONS

DULUTH INTERNATIONAL AIRPORT (DLH)

TAXIWAY A
RECONSTRUCTION -
PHASES 2 & 4
DULUTH, MN

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.

Shawn T. McMahon, PE

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3535 VADNAIS CENTER DR
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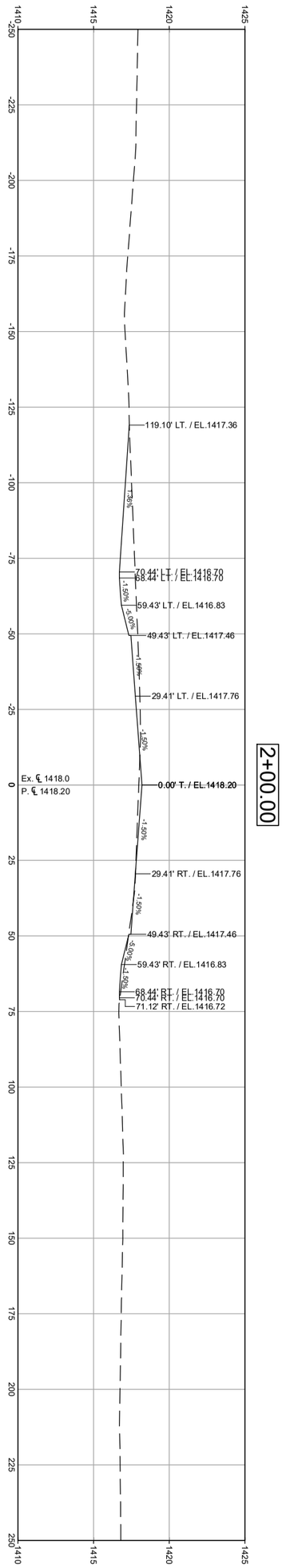

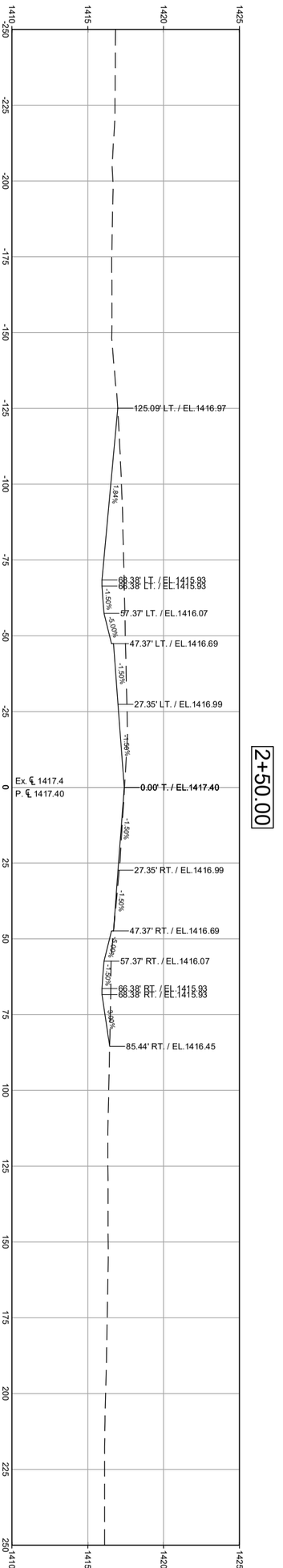

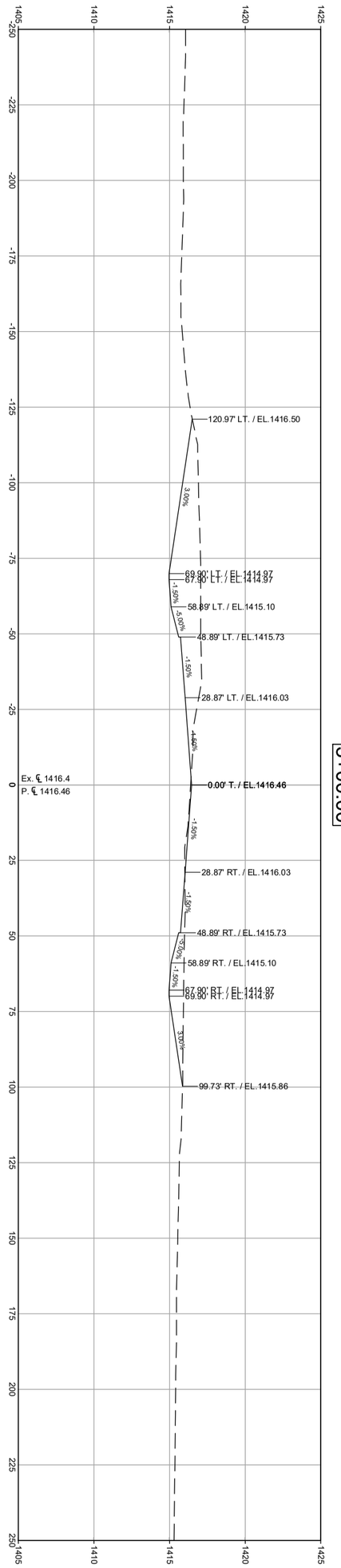

SHEET
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SHEET TITLE
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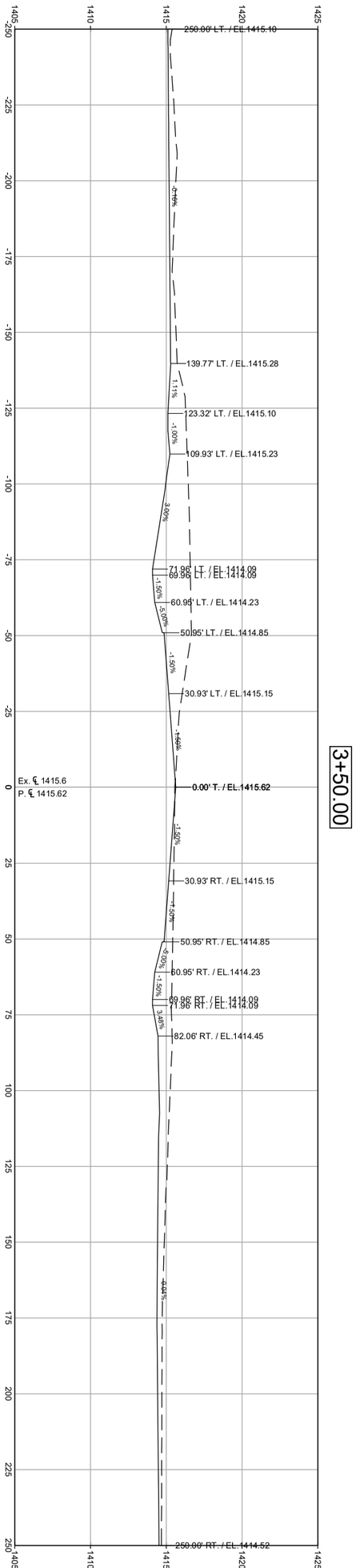

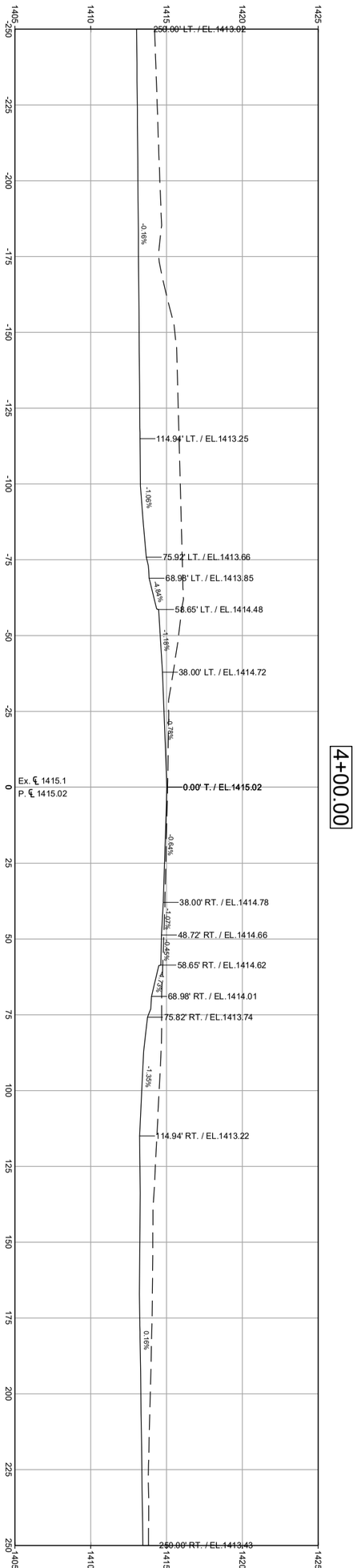

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SHEET TITLE
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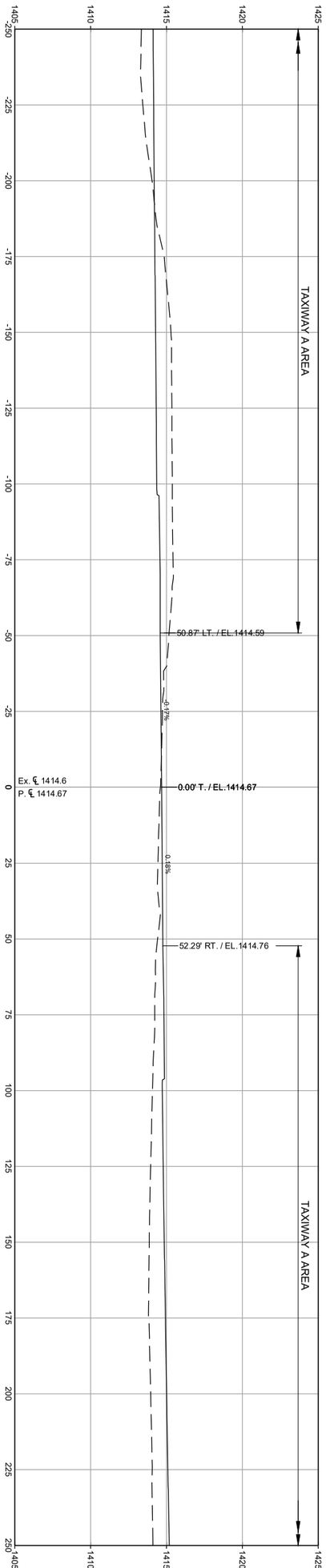

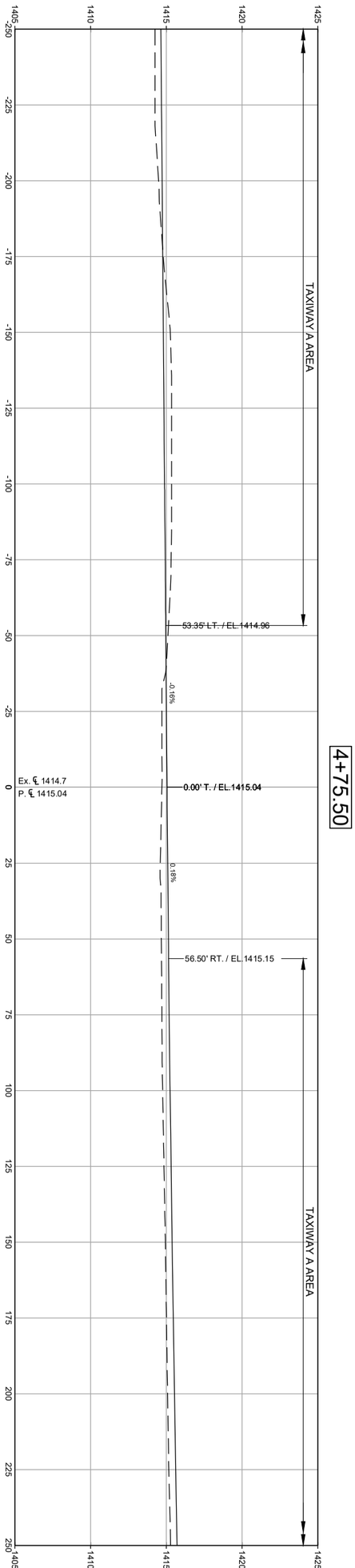

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SHEET TITLE
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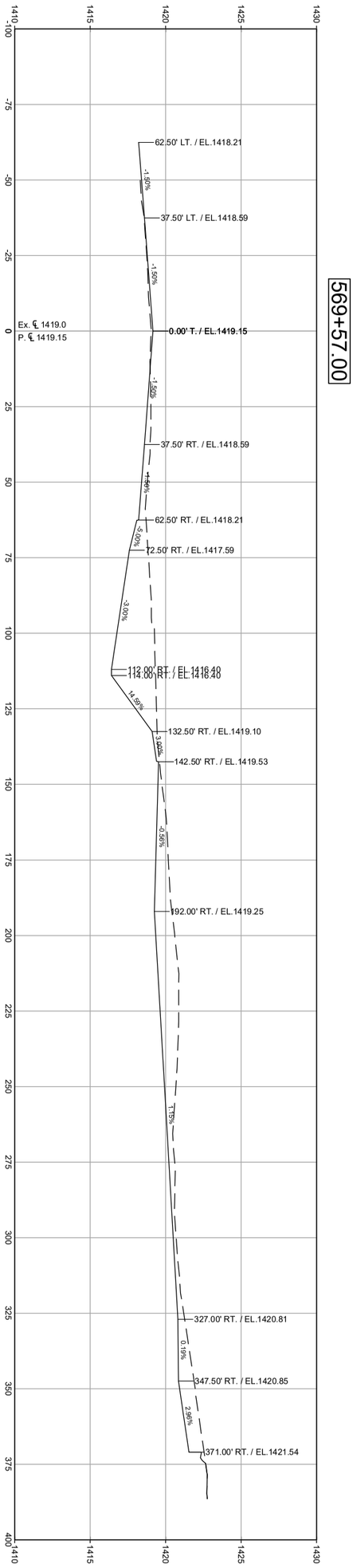

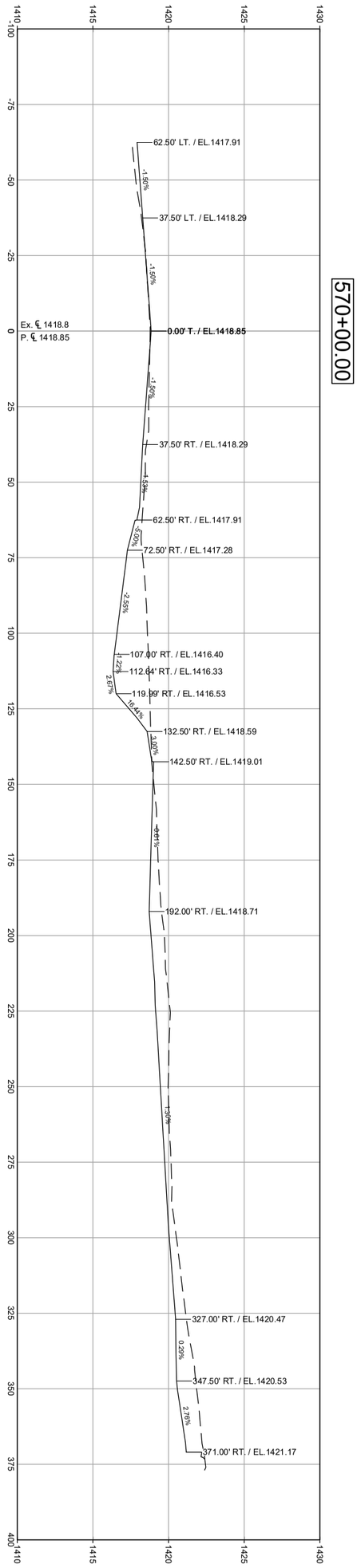

SHEET
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SHEET TITLE
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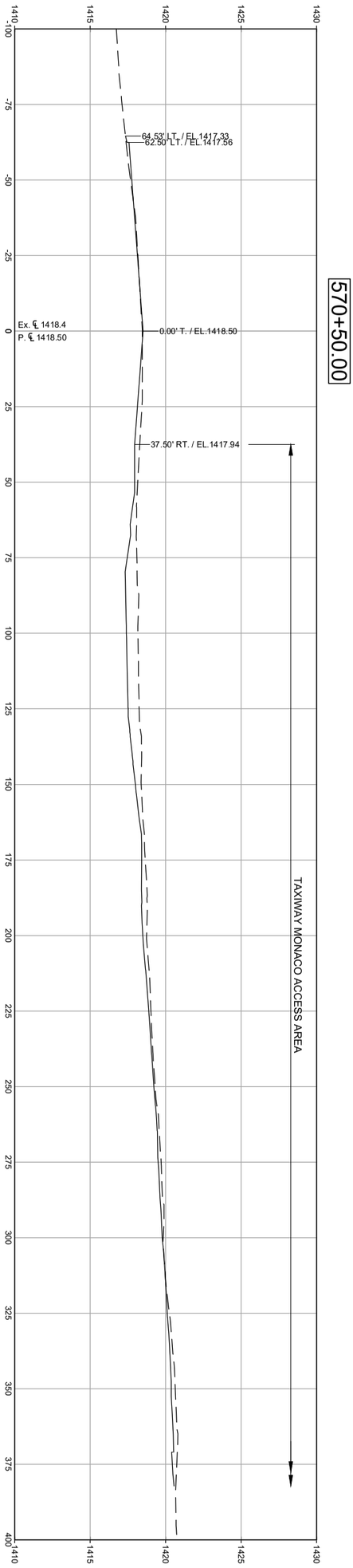

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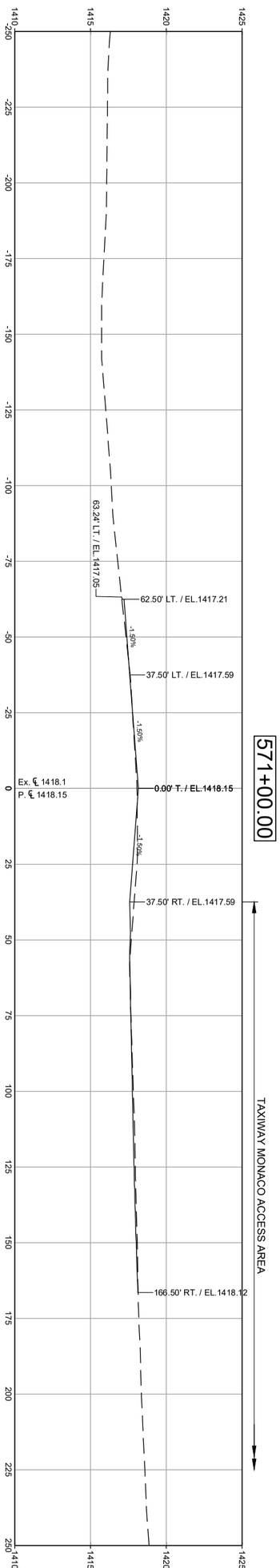

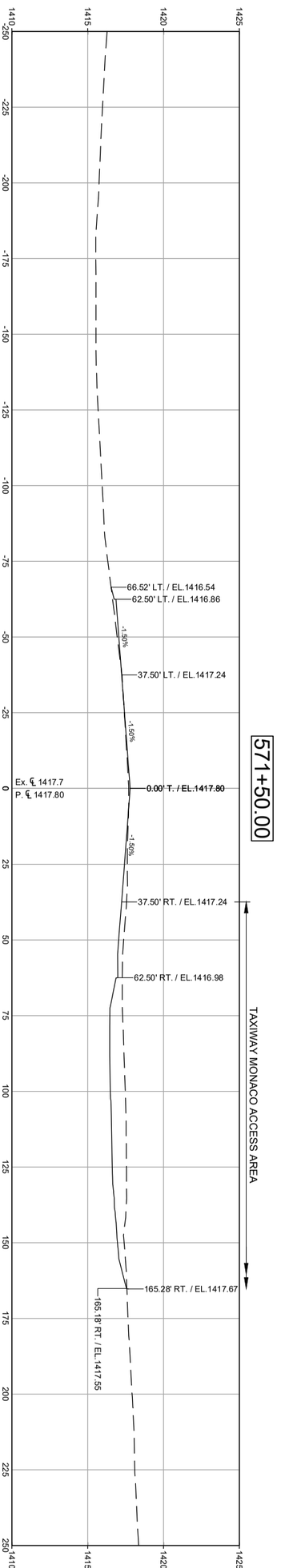

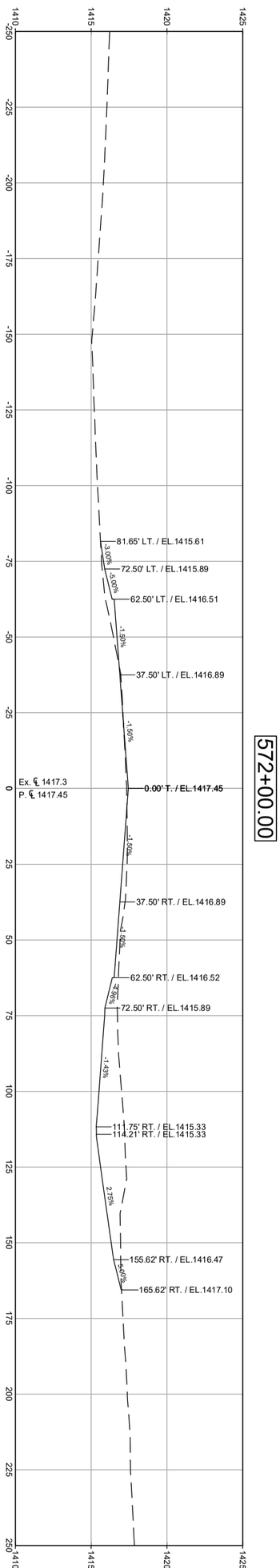

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CROSS SECTION -
TAXIWAY A (ALT BID)

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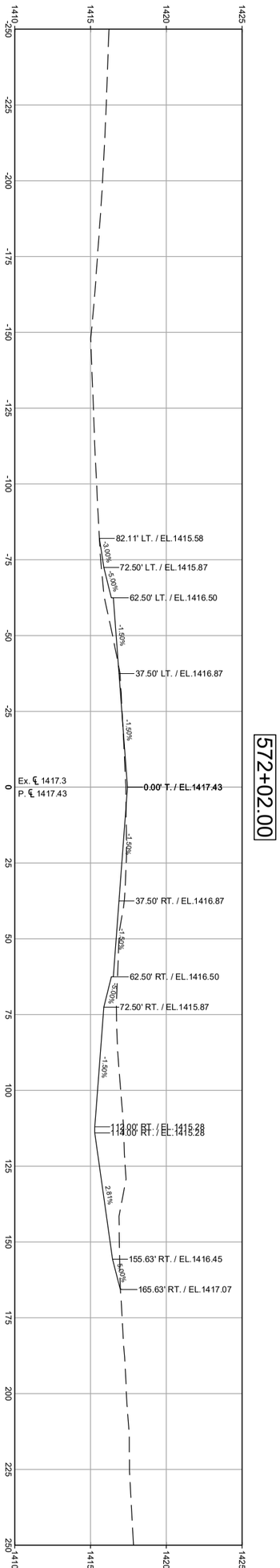

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SHEET TITLE
CROSS SECTION -
TAXIWAY A (ALT BID)

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STATE PROJECT NO. A6901-205
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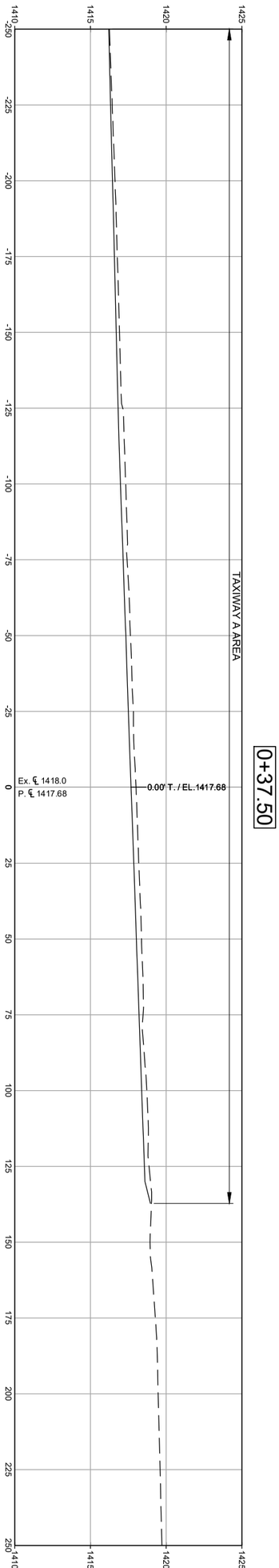

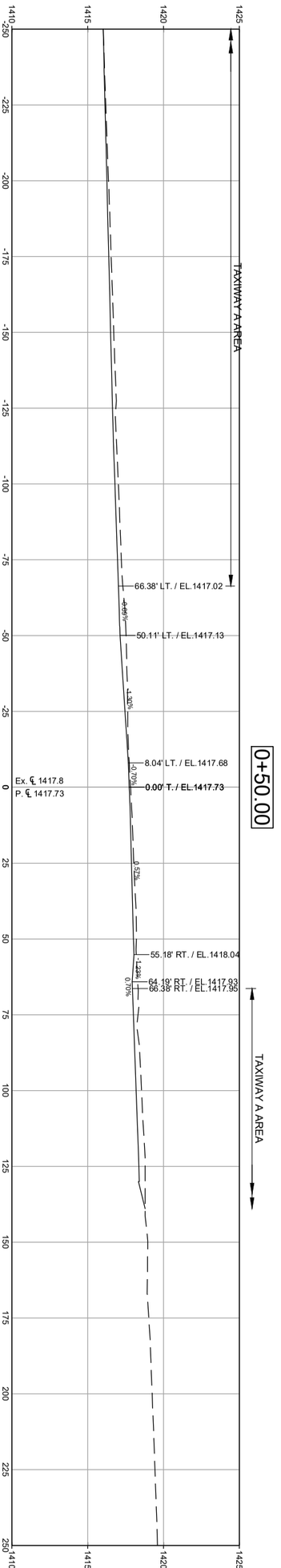

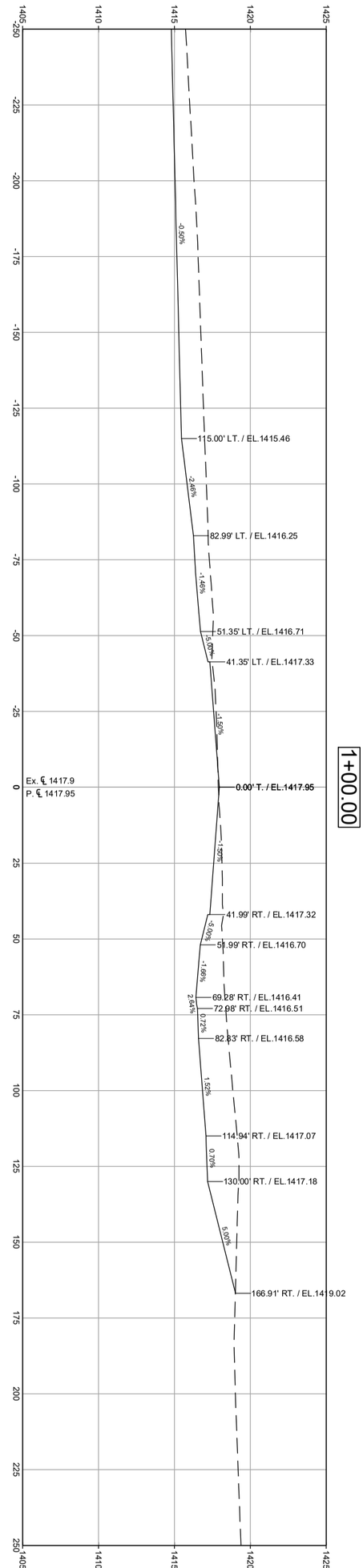

SHEET
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SHEET TITLE
CROSS SECTIONS - TAXIWAY MONACO (ALT BID)

SEH FILE NO. DULAI165102/167744
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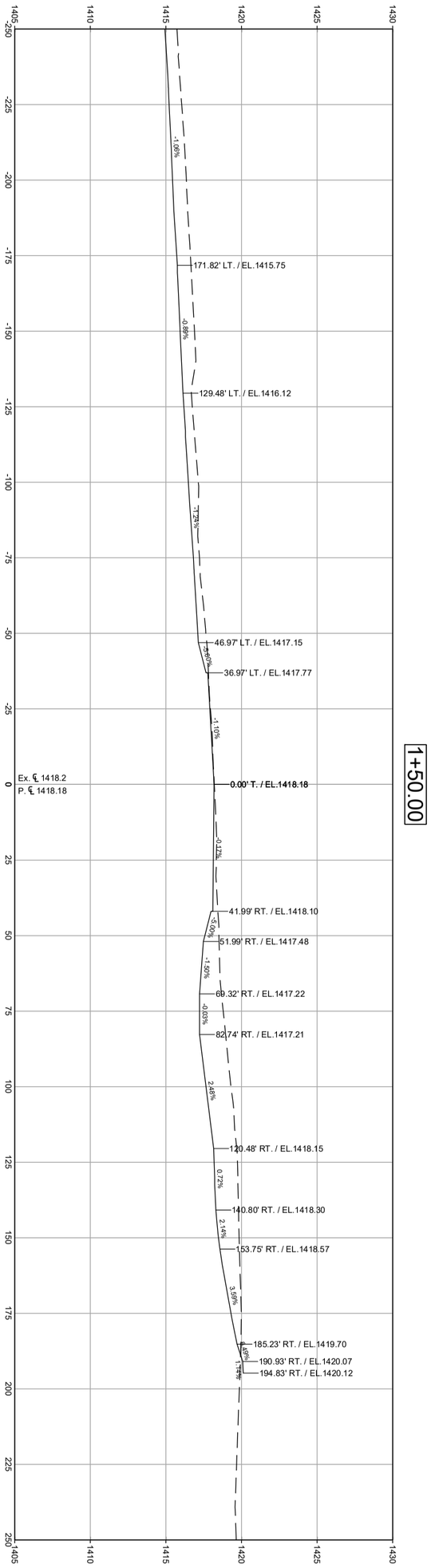

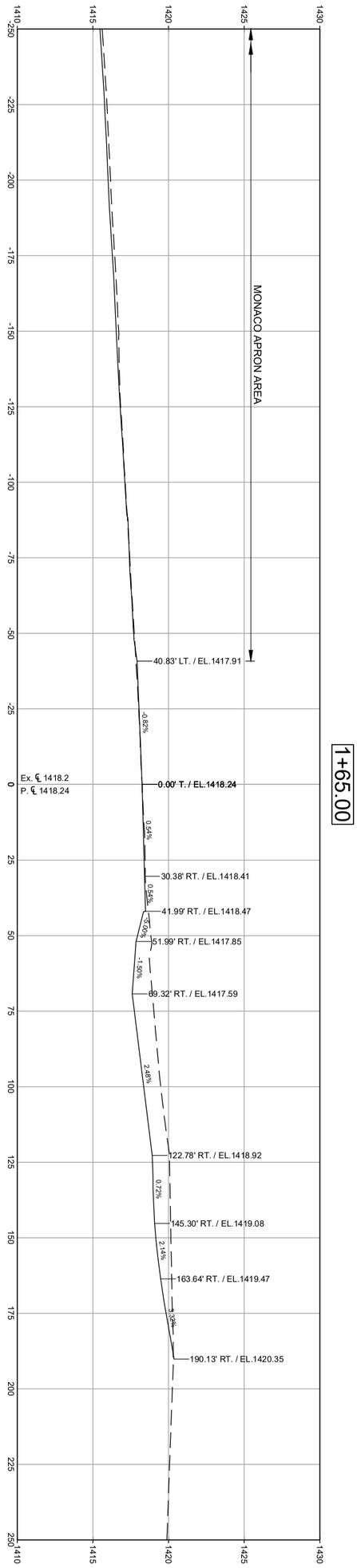

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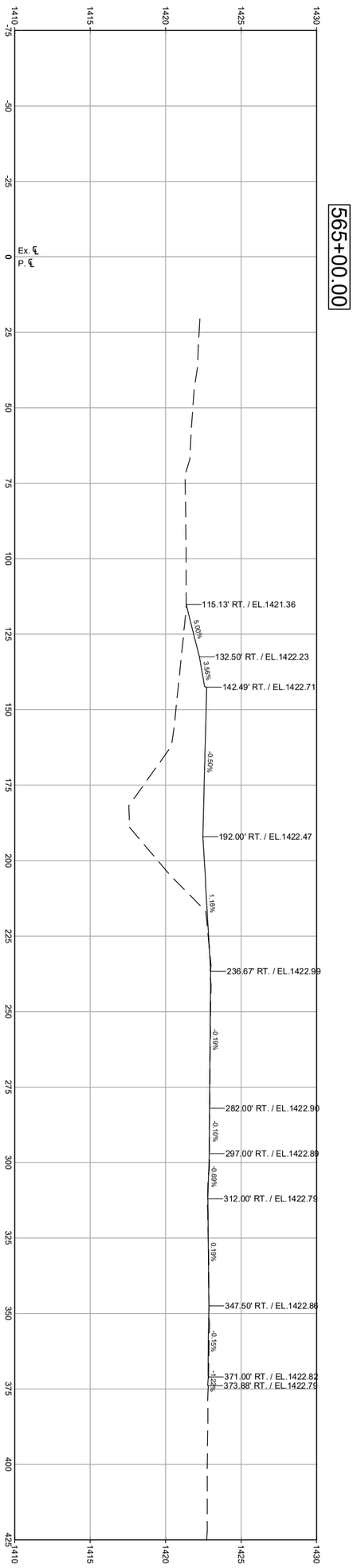

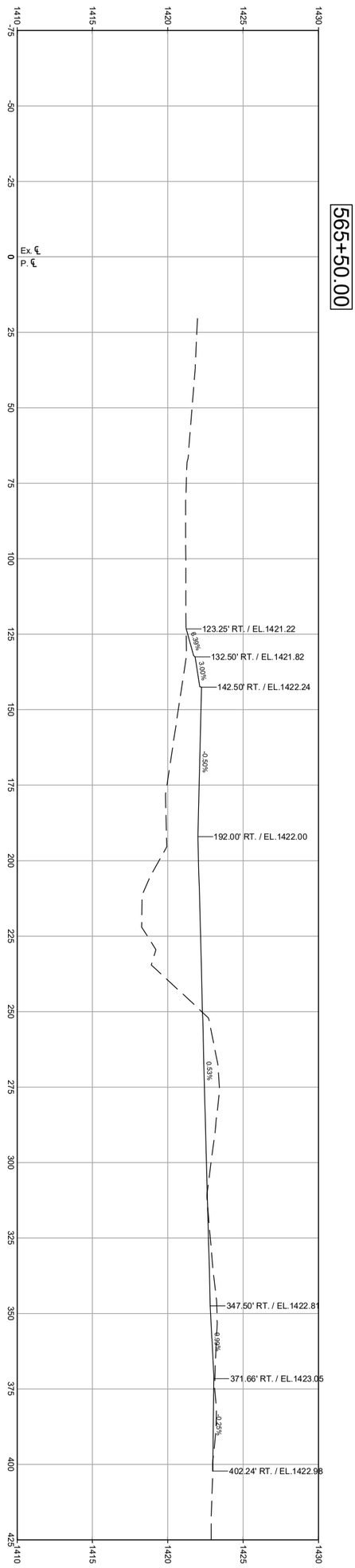

SHEET X3.00

SHEET TITLE
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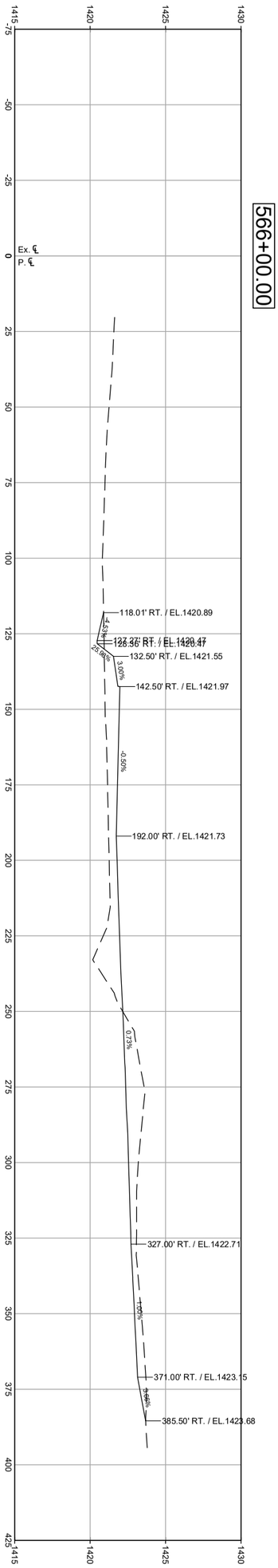

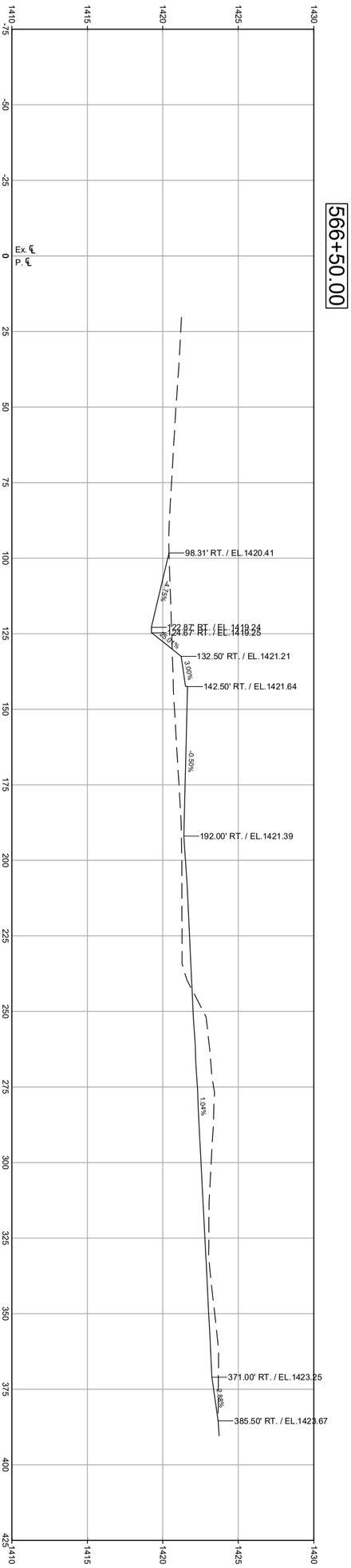

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SHEET TITLE
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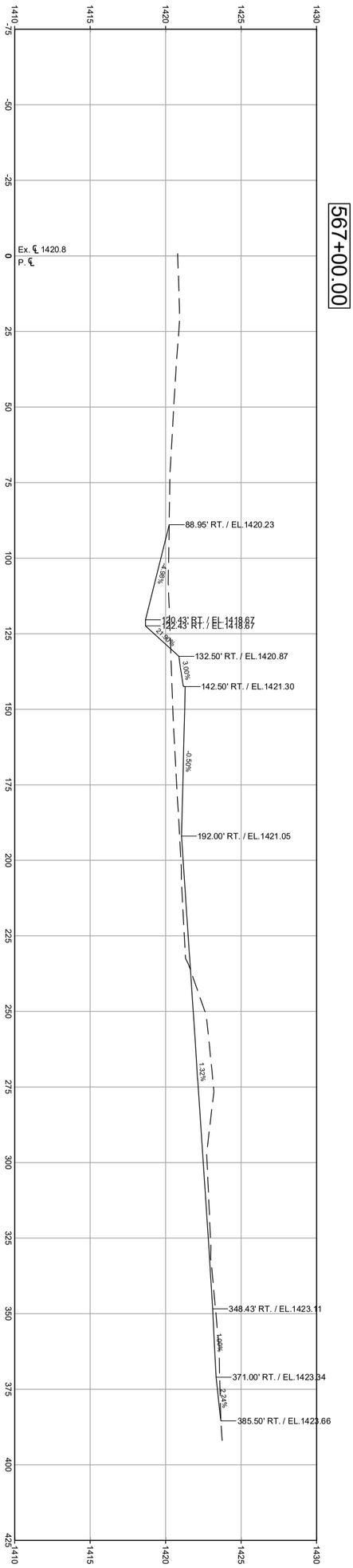

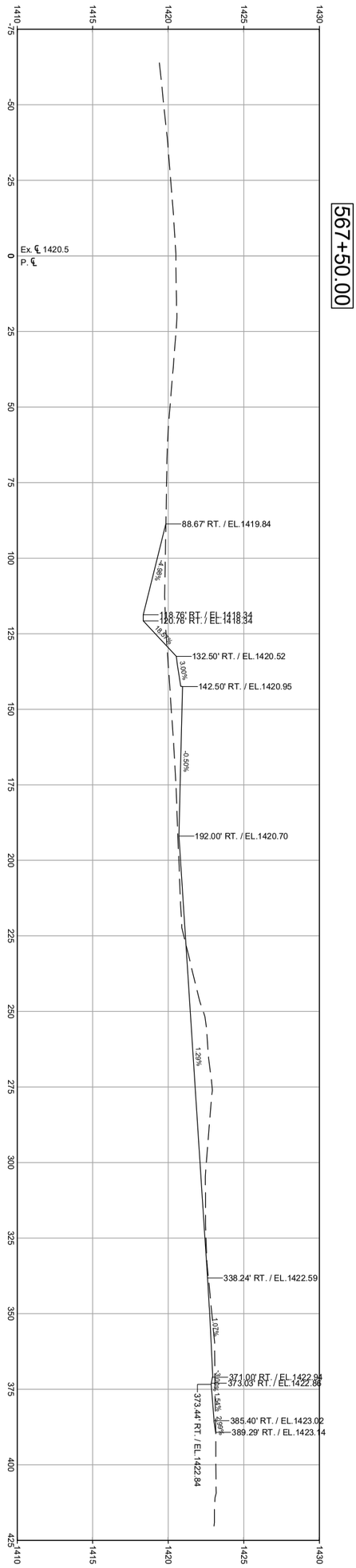

SHEET
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SHEET TITLE
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DULUTH INTERNATIONAL AIRPORT

SEH
3535 VADNAIS CENTER DR
ST PAUL, MN 55110
PHONE: 651.490.2000
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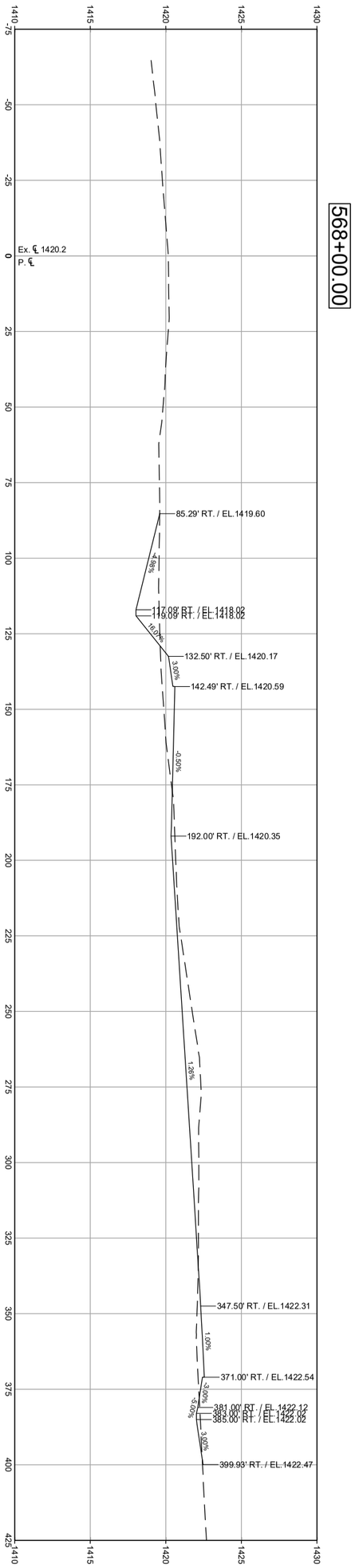

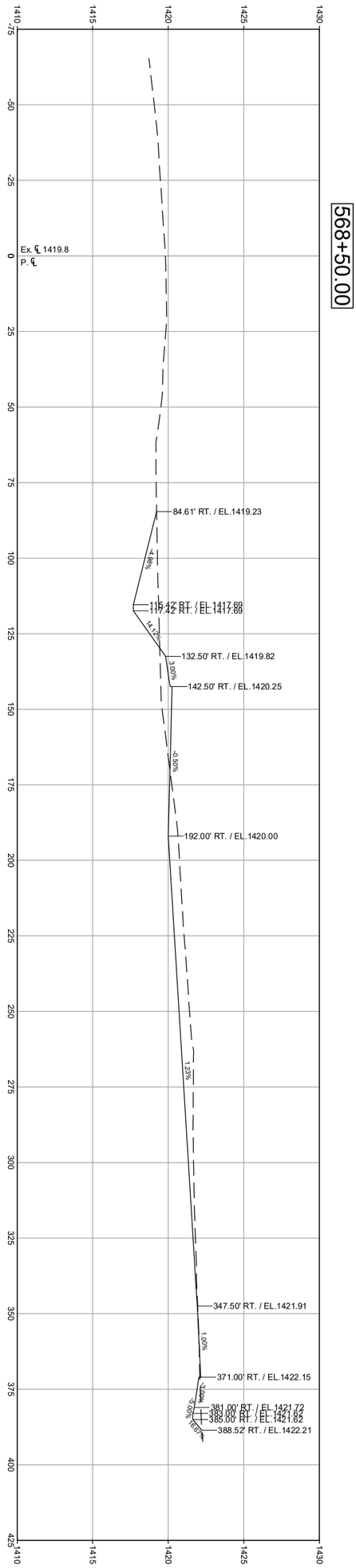

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SHEET TITLE
CROSS SECTIONS - TAXIWAY A (PH 4)

SEH FILE NO. DULAI165102/167744
STATE PROJECT NO. A6901-205
ISSUE DATE JULY 13, 2022
DESIGNED BY CSS
DRAWN BY SWB

MARK	DATE	DESCRIPTION
1	07-25-2022	ADDENDUM 1

REVISIONS

DULUTH INTERNATIONAL AIRPORT (DLH)

TAXIWAY A RECONSTRUCTION - PHASES 2 & 4
DULUTH, MN

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.

Shawn T. McMahon, PE
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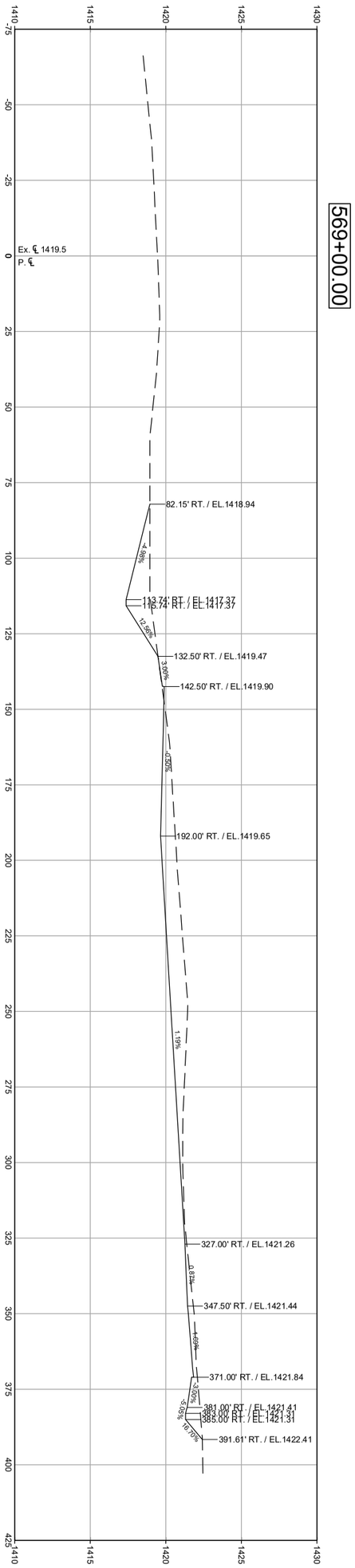
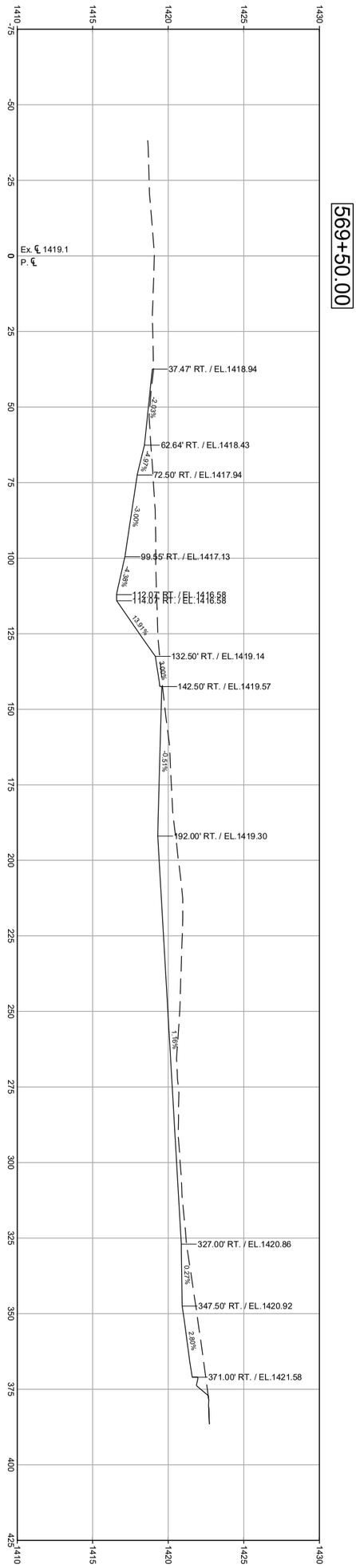
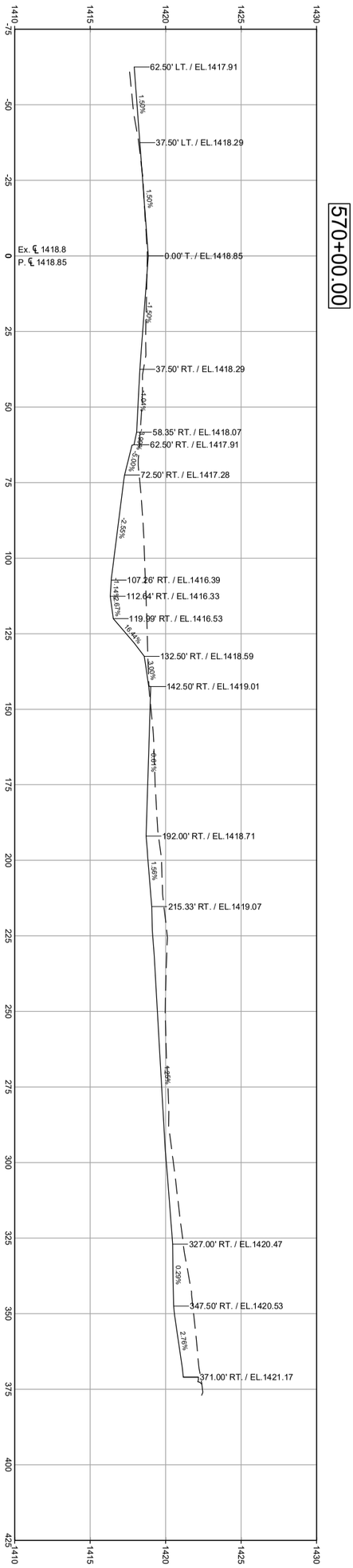
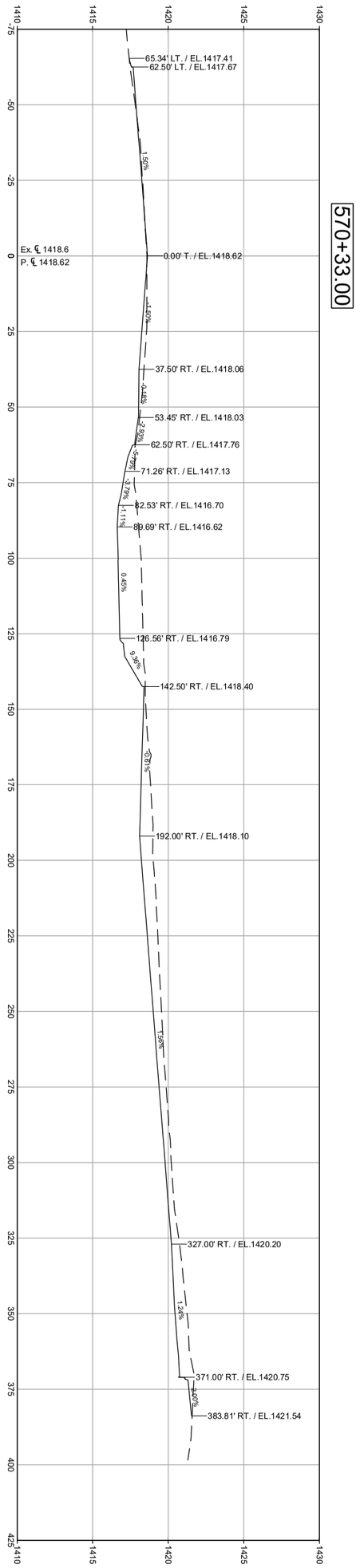




SHEET X3.05	SHEET TITLE: CROSS SECTIONS - TAXIWAY A (PH 4)	SEH FILE NO. DULAI165102/167744 STATE PROJECT NO. A6901-205 ISSUE DATE JULY 13, 2022 DESIGNED BY CSS DRAWN BY SWB Short Elliott Hendrickson, Inc. ® (SEH) © 2022 Short Elliott Hendrickson, Inc.	1 07-25-2022 ADDENDUM 1 MARK DATE DESCRIPTION REVISIONS	DULUTH INTERNATIONAL AIRPORT (DLH) TAXIWAY A RECONSTRUCTION - PHASES 2 & 4 DULUTH, MN	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. Shawn T. McMahon, PE DATE JULY 13, 2022 LICENSE NO. 49856	DULUTH INTERNATIONAL AIRPORT	SEH 3535 VADNAIS CENTER DR ST PAUL, MN 55110 PHONE: 651.490.2000 FAX: 651.490.2150 WATTS: 800.325.2055 www.sehinc.com

X:\AE\D\DULAI\165102\5-final-dsgn\51-drawings\65-Aviation\Plans\DLH-165102_TXY A XS(PH 4).dwg 7/21/2022 7:34 PM sbarnett





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SHEET TITLE
CROSS SECTIONS - TAXIWAY A (PH 4)

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TAXIWAY A
RECONSTRUCTION -
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