

**DOCUMENT 00 00 11**

**ADDENDUM NO. 1**

**May 27, 2021**

**2021 Taxiway A Reconstruction – Phase 1 (East)**

**City of Duluth No. 21-4402**

**AIP No. 3-27-0024-069-2021**

**Duluth International Airport (DLH)**

**Duluth Airport Authority**

**SEH No. DULAI 159002**

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 May 11, 2021 for this work. Bids submitted for the construction of this work shall conform to this document.

This addendum consists of 1 page and attached Pre-Bid Meeting slideshow, pre-bid meeting minutes, Section No. L-125 – Installation of Airport Lighting Systems, Section No. P-152 – Excavation, Subgrade, and Embankment, Section No. S-50 – Contaminated Soil, Pond Water, and Groundwater, and Drawing G0.22.

**Changes to Bidding Requirements:**

1. Document 00 21 13 – Instructions to Bidders: Article 6 “Pre-Bid conference.” See the attached Pre-Bid Meeting slideshow.
2. Document 00 21 13 – Instructions to Bidders: Article 6 “Pre-Bid conference.” See the attached Pre-Bid Meeting minutes.
3. Document 00 41 00 – Bid Form: A new bid form and updated quantities will be uploaded on [BidExpress](#).

**Changes to Specifications: (Section No. and Title, Article and Paragraph, Page No., Describe Change)**

4. Section No. L-125 – Installation of Airport Lighting Systems: REPLACE with attached Section No. L-125 – Installation of Airport Lighting Systems.
5. Section No. P-152 – Excavation, Subgrade, and Embankment: REPLACE with attached Section No. P-152 – Excavation, Subgrade, and Embankment.
6. Section No. S-50 – Contaminated Soil, Pond Water, and Groundwater: ADD attached Section No. S-50 – Contaminated Soil, Pond Water, and Groundwater

**Changes to Drawings:**

7. Drawing G0.22 – Quantities: REPLACE with attached G0.22.

Note: Receipt of this Addendum No.1, dated May 28, 2021 shall be acknowledged on [BidExpress](#). Failure to do so will not allow Bidder to submit Bid.

**END OF ADDENDUM**



# Duluth International Airport

2021 Taxiway A Reconstruction – Phase 1 (East) Pre-Bid Meeting



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# Meeting Overview

## Administrative Elements

- Schedule
- Phasing
- Security and Badging
- Access and Haul Routes
- Staging and Storage
- Batch Plant Operations
- Quality Control/Staking
- DBE/Wage Rates
- Permits

## Construction Elements

- Removals
- Pavement Design – Typical Section
- Jointing Plan
- Electrical Components
- Drainage and Drain Tile
- Airfield Pavement Markings and Signage
- Restoration
- Addendum/Questions

# Project Schedule

- May 13 Advertisement for bids
- May 25 Pre-Bid Meeting
- June 3 Bid Opening
- September FAA Grant Offer
- Sept/Oct Contract Award
- May 31, 2022 Construction
- Sept 12, 2022 Substantial Completion



# Project Construction Area Taxiway A Reconstruction – Phase 1



**Ph1A**

**PHASE INFORMATION**



**DURATION - 65 DAYS**

Phase 1A includes reconstructing Taxiway A from the RSA on the west side of Runway 3/21 to past the furthest west passenger boarding bridge of the commercial service apron. This will include reconstruction of the northern portion of the commercial service apron.

Work elements will include:

- 1 Existing pavement removal on Taxiway A and the Commercial Service Apron
- 2 Construction of upgraded drain tile and improved drainage system
- 3 Installation of new taxiway edge lights and guidance signs
- 4 Construction of concrete pavement section of Taxiway A and Apron. Taxiway A will be 75 feet wide with 25-foot shoulders.
- 5 Minor grading in areas surround Taxiway A construction
- 6 Painting of Taxiway A pavement markings



**CONSTRUCTION SAFETY CONSIDERATIONS**

- 7 When work is taking place inside the Taxiway Safety Area of Taxiway A, construction work shall yield and retreat to aircraft using the taxiway.
- 8 Construction work shall retreat as necessary for commercial service aircraft arriving to or leaving the terminal.



**CLOSURES**

- 9 Runway 3/21 will be closed
- 10 Portions of Taxiway A and Commercial Service Apron will be closed
- 11 Taxiway D will be closed



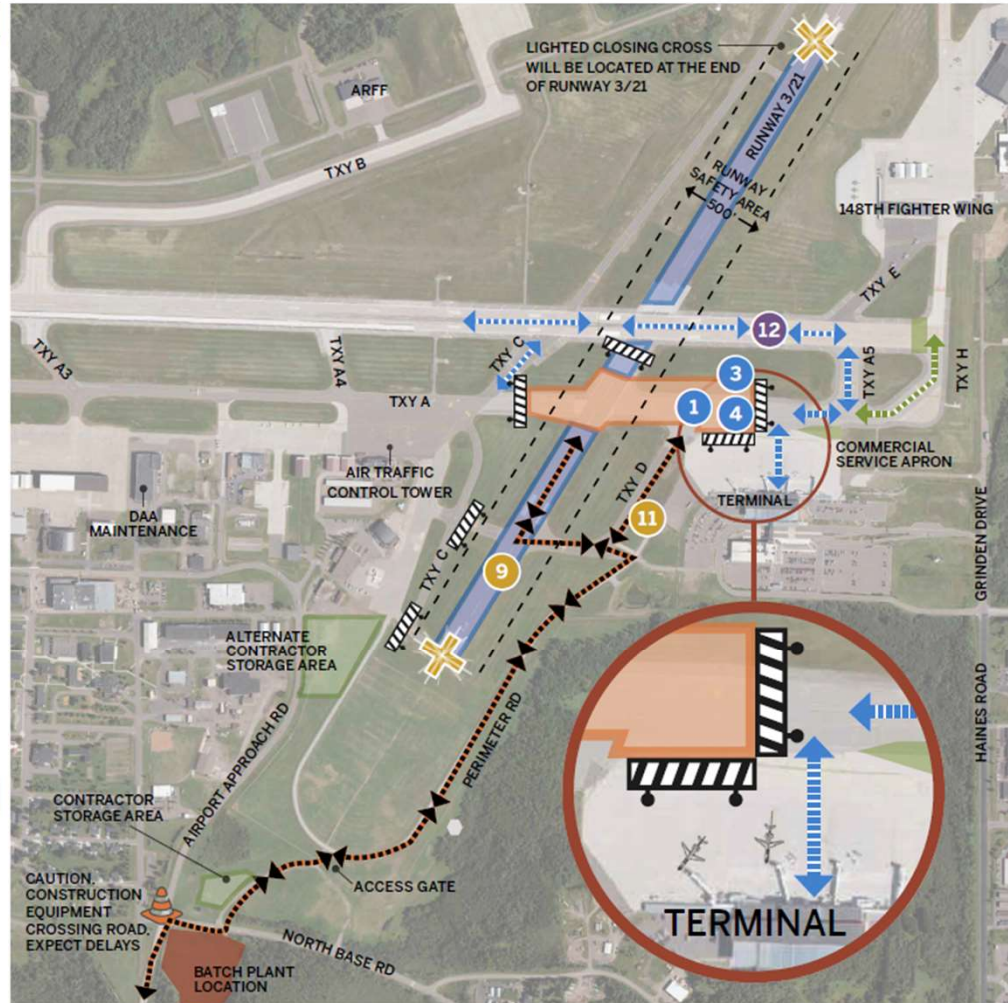
**AVAILABLE AIRFIELD**

- 12 Runway 9/27 full length
- 13 Terminal, hangars, and miscellaneous facilities will be accessible
- 14 Commercial service and general aviation aprons
- 15 Runway 27 at Taxiway C Departures



**INSTRUMENT APPROACH PROCEDURE IMPACTS**

- 16 Instrument approach procedures to Runway 9/27 will be impacted by the unavailability of the parallel Taxiway A. It is anticipated all approaches will have higher than normal minimums during Phase I of the Taxiway A Reconstruction Project.
- 17 All Runway 3/21 Approaches will be unavailable during Phase 1A



**LEGEND**

- LOW PROFILE BARRICADE
- LIGHTED RUNWAY CLOSING CROSS
- CONSTRUCTION HAUL ROUTE
- CLOSED PAVEMENT
- CONSTRUCTION AREA (CLOSED)
- CONTRACTOR STORAGE AREA
- AIRCRAFT ROUTE
- 148TH FW TAXI ROUTE



# Duluth International Airport

## PHASE 1B TAXIWAY A RECONSTRUCTION



### Ph1B PHASE INFORMATION DURATION - 40 DAYS

Phase 1B includes reconstructing Taxiway A from the furthest west passenger boarding bridge of the commercial service apron to south of the new Taxiway Connector A5. This will include reconstruction of the northern portion of the commercial service apron.

Work elements will include:

- 1 Existing pavement removal on Taxiway A and the Commercial Service Apron
- 2 Construction of upgraded drain tile and improved drainage system
- 3 Installation of new taxiway edge lights and guidance signs
- 4 Construction of subsurface layers and pavement on Taxiway A and Apron
- 5 Minor grading in areas surround Taxiway A construction
- 6 Painting of Taxiway A pavement markings

### CONSTRUCTION SAFETY CONSIDERATIONS

- 7 When work is taking place inside the Taxiway Safety Area of Taxiway A, construction work shall yield and retreat to aircraft using the taxiway.
- 8 Construction work shall retreat as necessary for commercial service aircraft arriving to or leaving the terminal.

### CLOSURES

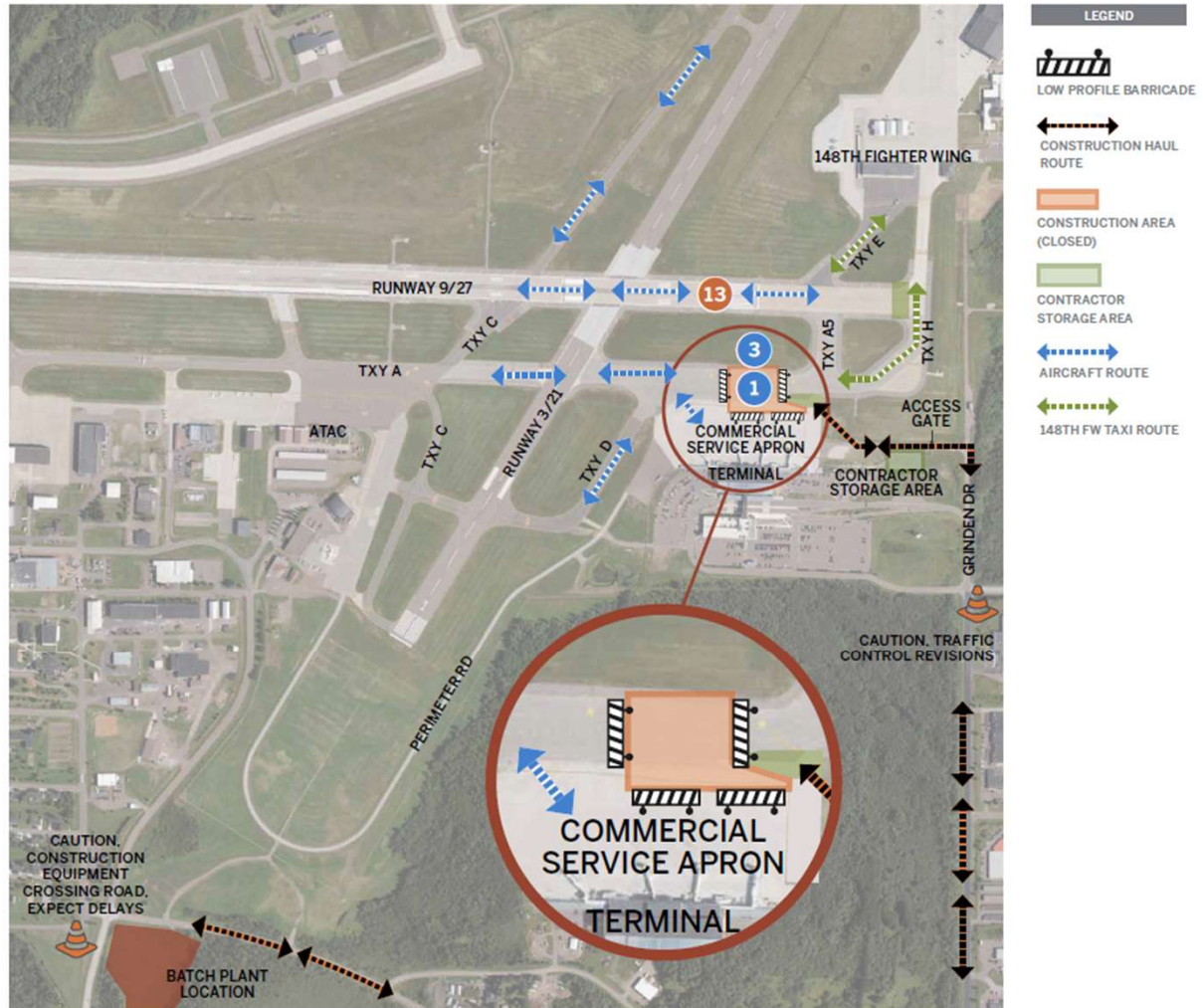
- 9 Portions of Taxiway A and Commercial Service Ramp will be closed

### AVAILABLE AIRFIELD

- 10 Runway 9/27 full length
- 11 Runway 3/21 full length
- 12 Terminal, hangars and miscellaneous facilities will be accessible

### IAP INSTRUMENT APPROACH PROCEDURE IMPACTS

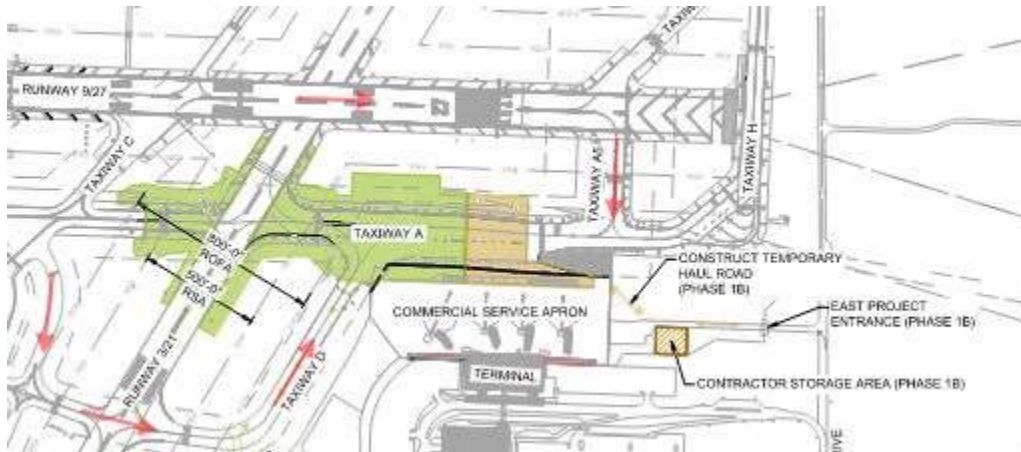
- 13 Instrument approach procedures to Runway 9/27 will be impacted by the unavailability of the parallel Taxiway A. It is anticipated all approaches will have higher than normal minimums during Phase I of the Taxiway A Reconstruction Project.



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# Project Construction Area

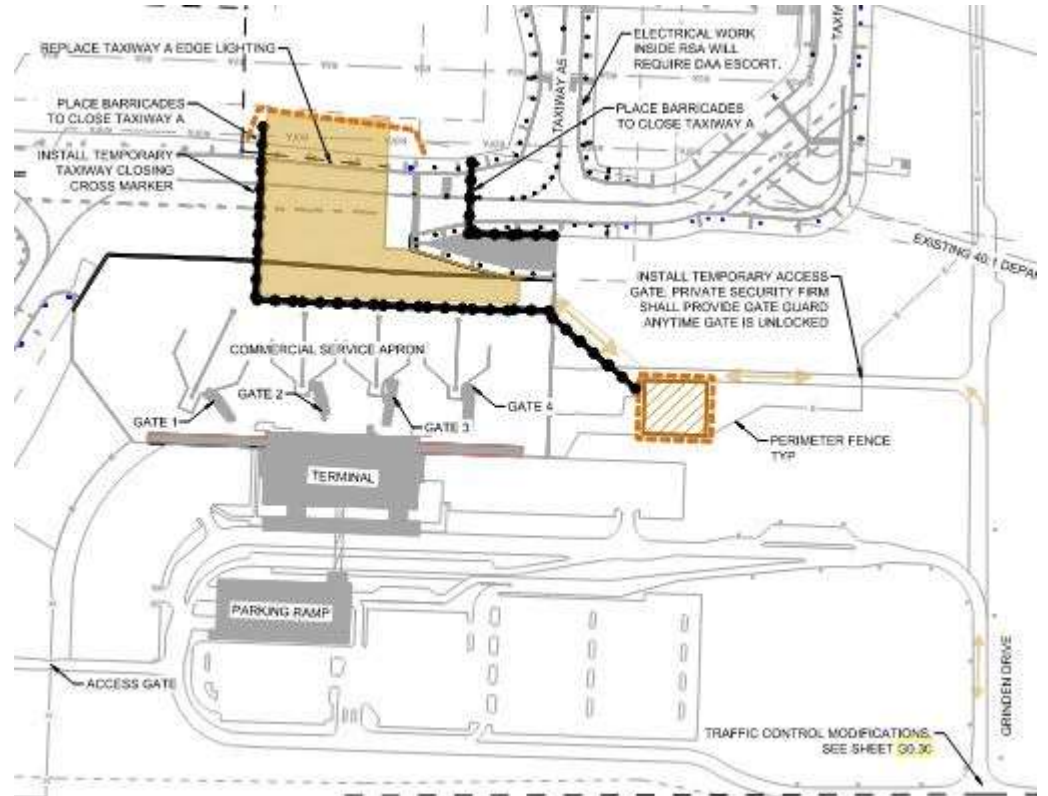
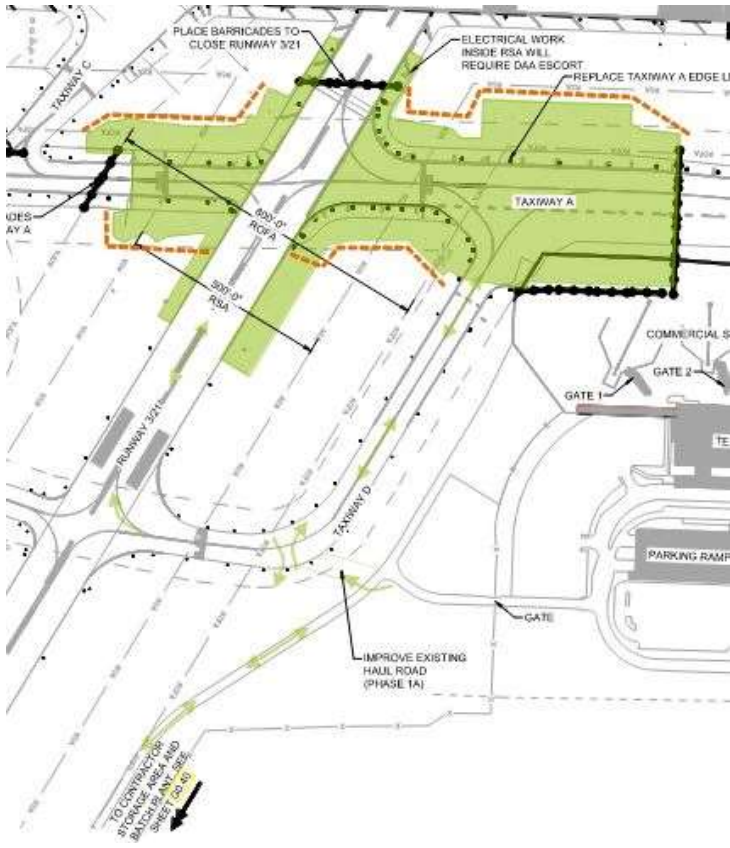
## Taxiway A Reconstruction – Phase 1



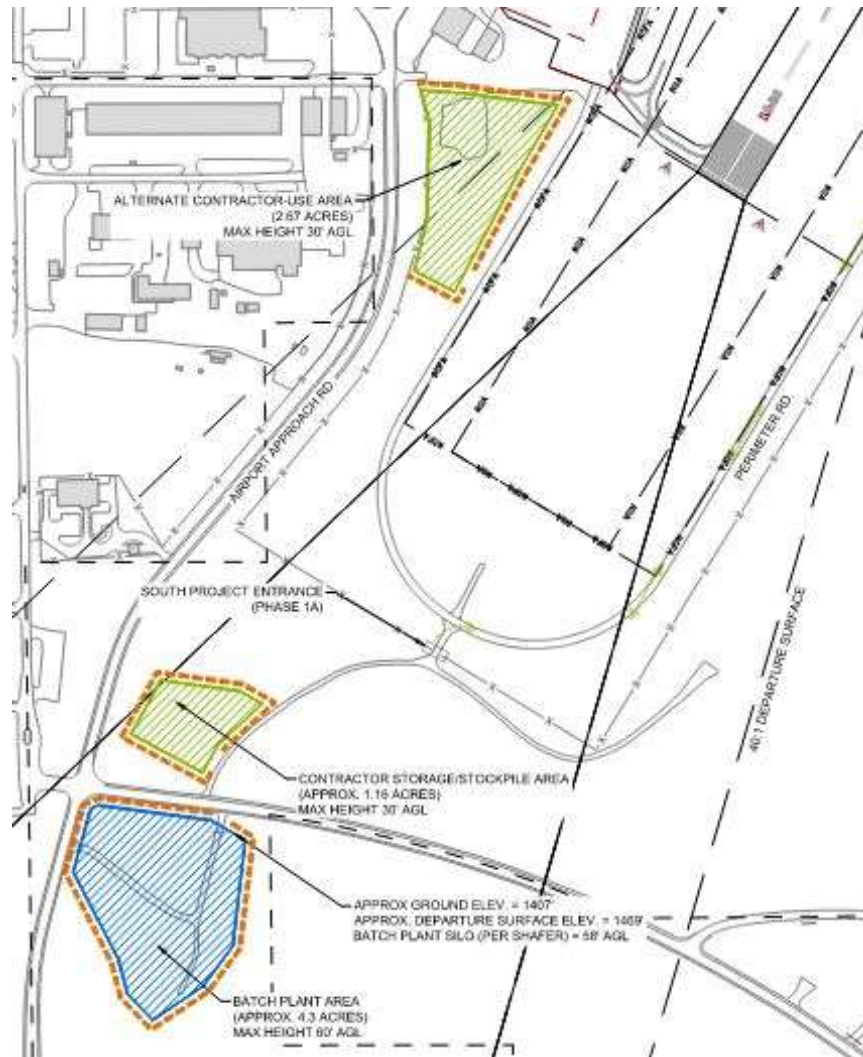
- Phases
  - 1A
  - 1B
- Access
- Haul Road
- Batch Plant
- Storage



# Haul Route and Phase 1B Storage



# Batch Plant and Phase 1A Storage



# Security and Badging

- Security
  - TSA Mandated
  - Requirement to contract with professional security firm
  - Gate access
- Badging
  - All personnel must be badged or under escort
  - Badges take 2-3 weeks to process
  - \$175 per badge processing fee
  - No final payment until all badges are returned



# Quality Control/Construction Staking

- Quality Control Program – C100
  - Contractor's responsibility
  - Written document
  - Testing plan
- Quality Assurance
  - Owner's responsibility
  - Payment factors according to PWLs
- Construction Staking
  - Contractor's Responsibility

# Contract Requirements

- DBE Goal – 4%
- Wage Rates
  - Posted in plans
  - Federal Davis Bacon Rates
  - MN Department of Labor Rates
- Buy American Requirements
- Permits
  - NPDES/SWPPP
  - City of Duluth

# Removals

- Removals for Apron
  - 13"-14" Concrete
  - 6"-7" Bituminous
  - 12"-18" Aggregate base
- Removals for Taxiway
  - 20.5" Bituminous
  - 12"-18" Aggregate base
- Refer to soil borings in specifications
- Some millings property of DAA
- Removed electrical components property of DAA



# Typical Section

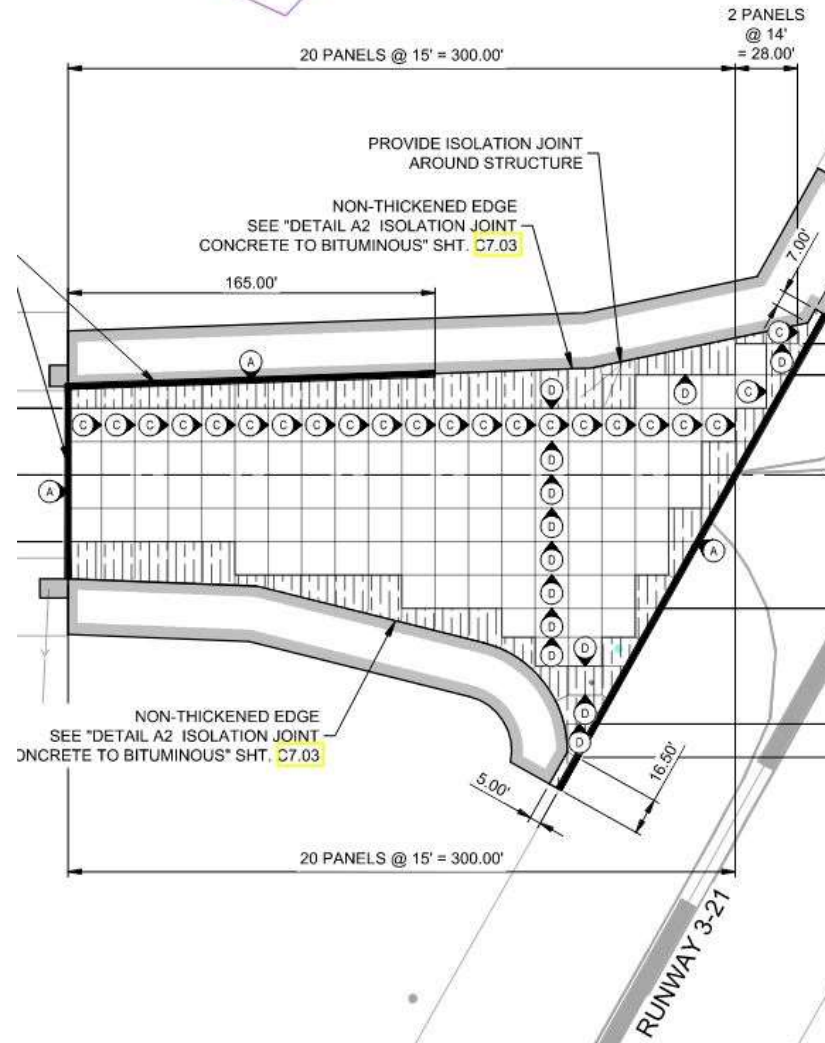
## Taxiway

- 13" P-501 Concrete
- Bond Breaker
- 5" MNDOT Bituminous Base Course
- 6" P-209 Crushed Aggregate Base Course
- 15" P-154 Granular Borrow
- Geotextile Fabric

## Apron

- 12" P-501 Concrete
- Bond Breaker
- 5" MNDOT Bituminous Base Course
- 6" P-209 Crushed Aggregate Base Course
- 16" P-154 Granular Borrow
- Geotextile Fabric

# Jointing Plan and Details

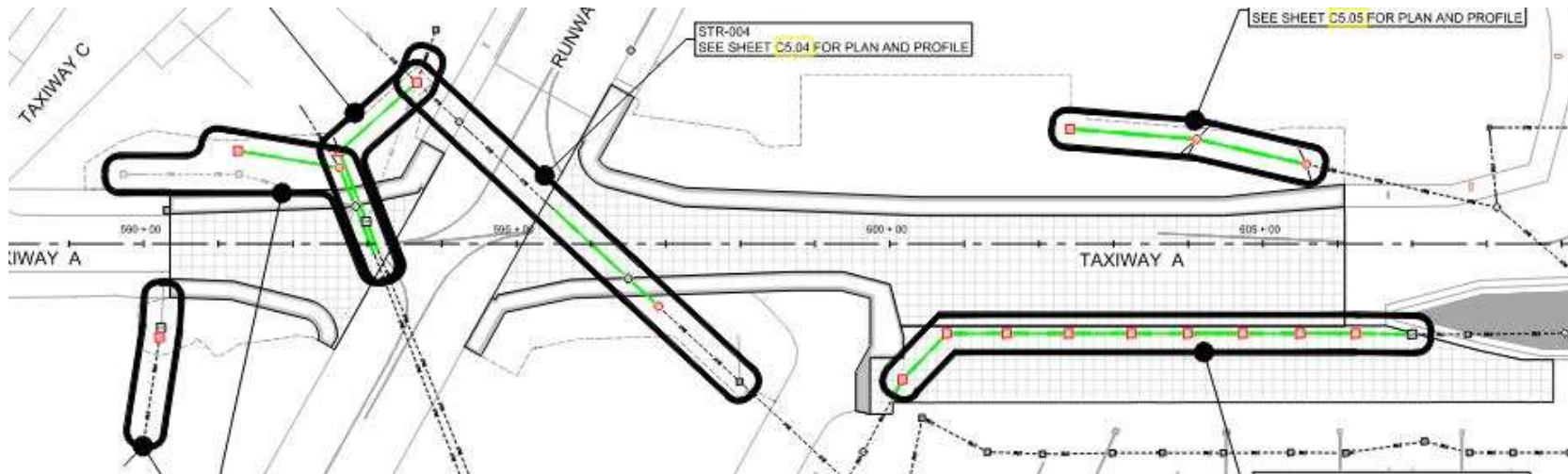


# Electrical Components

- Existing utilities – locate, flag, protect
- Maintain existing circuit operations
- Existing fixture removals should be turned over to the Airport
- Protect isolation transformer until new fixture is installed. Verify mating prior to procurement.
- New homerun conductors in existing ductbanks. Turn over existing homeruns to DAA.
- ALCMS Programming Updates



# Storm Drainage and Drain Tile



# Airfield Pavement Markings and Signage

- Temporary markings
- Guidance sign modifications
- Primer application – before runway opening
- Final application – approximately 28 days after runway opening

# Restoration

## Locations

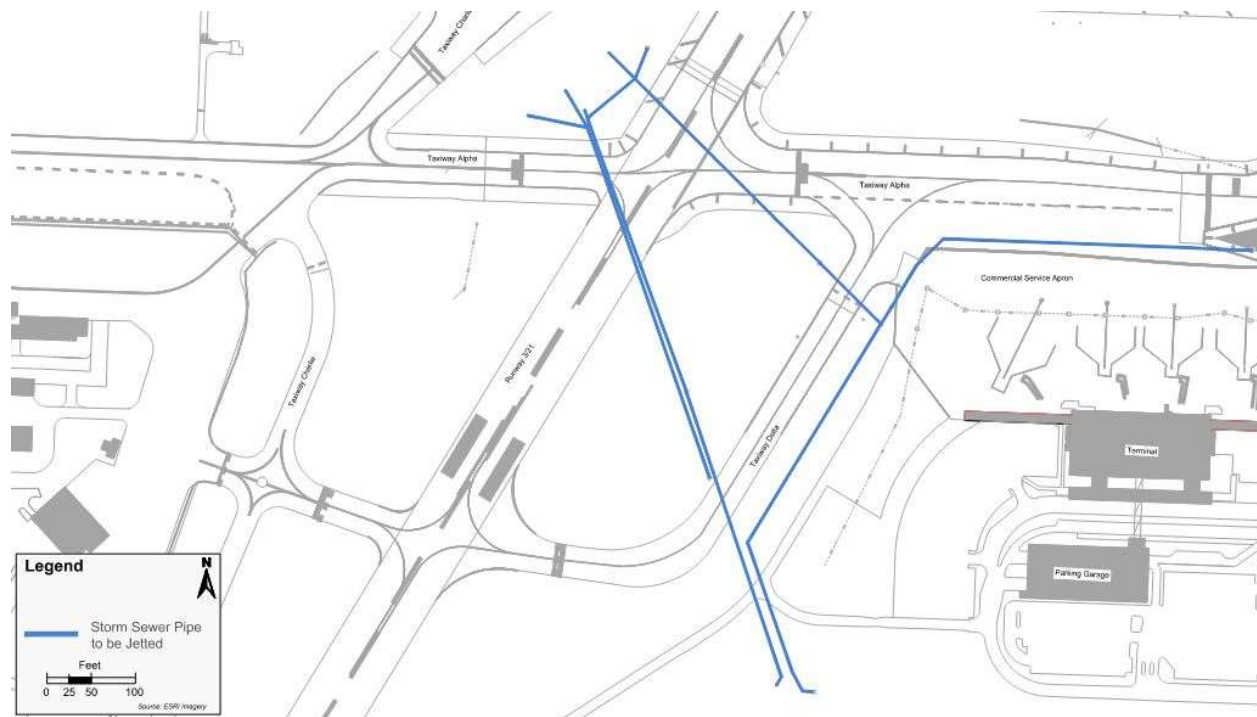
- Batch plant area
- Storage areas
- Haul routes

## Standards

- Turf areas must be graded and mowable
- Roads must be restored to equal or better
- Hydromulch required

# Wet Pond Work

- Wet pond excavation, hauling, and disposal of contaminated soils
- Storm sewer pipe jetting



# Addendum

- Any questions that result in a change to the bidding documents will be formally answered via addendum
- Verbal responses are not final
- No addenda have been issued at this time



# Duluth International Airport

## 2021 Taxiway A Reconstruction – Phase 1 (East) Pre-Bid Meeting

- Questions?



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## MEETING MINUTES

**RE:** Taxiway A Reconstruction - Phase 1 (East)  
Duluth International Airport (DLH)

**Date of Meeting:** Tuesday, May 25, 2021

**Project Manager:** Shawn McMahon

**Time of Meeting:** 1:00 p.m.

**SEH No.:** DULAI 159002 16.00

**Location of Meeting:** Virtual OR 4701 Grinden Drive,  
Duluth, MN 55811 Airport  
Terminal 3rd Floor Amutuzzio  
Conference Room

**Attendees:** See attached attendance roster

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. Steve Wabrowetz – DAA, Airside Manager
  - 3. Ryan Welch – DAA, Airside Manager
  
- B. Engineer Representative – Short Elliott Hendrickson, Inc.
  - 1. Shawn McMahon, PE – SEH, Project Manager, 651.925.7541
  - 2. Allison Andrashko, EIT – SEH, Project Engineer, 507.261.7617
  - 3. Andy Loftus, PE, LEED AP – Burns & McDonnell, Electrical Engineer
  - 4. Kevin Watson, PE – Burns & McDonnell, Electrical Engineer

### II. Project Information

- A. Project Documents: Bidding Documents are available to view and download at no cost as [www.bidexpress.com](http://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®.
  
- B. Major Items of Work Include: 19,420 SY 13-inch P-501 PCC, 9,570 SY 12-inch P-501 PCC, 9,755 tons bituminous pavement (State Spec. and P-403 mixes), 27,905 CY excavation, 6,495 CY P-209 crushed aggregate base, 17,600 CY P-154 granular borrow, pavement marking, turf restoration, lighting and conduit, 1,795 LF storm drain pipe with inlets, and 4,350 LF drain tile.
  
- C. Anticipated Project Schedule:
  - 1. Receive Bids: June 3, 2021
  - 2. Anticipated Contract Award: September 2021
  - 3. Anticipated Start of Construction: May 31, 2022 (105 Calendar Days)
  - 4. Anticipated Substantial Completion: September 12, 2022
  
- D. Phasing:

Engineers | Architects | Planners | Scientists

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

651.490.2000 | 800.325.2055 | 888.908.8166 fax | [sehinc.com](http://sehinc.com)

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1. Phase 1A: Reconstruct Taxiway A from the RSA on the west side of Runway 3/21 to just past the western aircraft bay of the Commercial Service Apron, including the northern portion of the Commercial Service Apron (65 Calendar Days)/
2. Phase 1B: Reconstruct Taxiway A from just past the western aircraft bay of the Commercial Service Apron to the turf island south of Taxiway A5, including the northern portion of the Commercial Service Apron 40 Calendar Days).

E. Airport Security:

1. Bidders must thoroughly examine Project Documents for security related requirements.
2. Airport shall remain in full operation during construction
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.
6. Access gate for Phase 1A is already in place. A temporary gate will need to be installed for Phase 1B and then removed after construction is complete as part of this project.
7. DAA offered to go to the Contractor's office for badging/security training instead of having all those needed to be badged come to the airport.
8. Badging is required for the majority of contractor staff working. The group discussed that if trucking is there multiple days, the driver should be badged. In cases where the trucking staff is only there for a day or two, the driver can be escorted by the contractor. The escort will not be able to perform other job duties while escorting. Escorts must be in visual range and have ability to communicate, either by voice or radio.

F. Access and Haul Routes

1. Contractor will meet daily with Unify (aircraft ground operations) to clarify flight schedule and need for contractor to stop work in areas affected by wingtip clearance.

G. Staging and Storage

III. **Contract Requirements**

- A. Quality Control
  1. Contactor's responsibility
  2. Written quality control plan
  3. Testing schedule
- B. Quality Assurance
  1. Owner's responsibility
  2. Payment factors according to PWLs
- C. Construction Staking – Contractor's Responsibility
- D. Disadvantaged Business Enterprise
- E. Wage Rates
  1. Equal Employment Opportunity (EEO)

2. State and Federal prevailing wage rate requirements

F. Buy American Certification

G. Permits – Contractor's Responsibility. Some permits include, but not limited to:

1. SWPPP
2. NPDES
3. City of Duluth Stormwater Permit
  - a. Question: Any other City of Duluth Permits necessary? Response: Information will be added via addendum.

IV. **Project Work**

A. Removals

1. Apron Area: Approximately 13"-14" Portland Cement Concrete (PCC) underlain by 6"-7" of Bituminous
2. Taxiway A Area: Approximately 20.5" of Bituminous pavement
3. Shoulder Area: Approximately 4" of Bituminous pavement
4. Apparent aggregate base is 12"-18" thick
5. Taxiway Edge Lights

B. Typical Section

1. Taxiway:
  - a. 13" P-501 Concrete Pavement
  - b. 5" MnDOT Bituminous Base Course
  - c. 6" P-209 Crushed Aggregate Base
  - d. 15" P-154 Granular Borrow
  - e. Geotextile Fabric
2. Apron:
  - a. 12" P-501 Concrete Pavement
  - b. 5" MnDOT Bituminous Base Course
  - c. 6" P-209 Crushed Aggregate Base
  - d. 16" P-154 Granular Borrow
  - e. Geotextile Fabric

C. Jointing Plan

D. Electrical Components

1. Existing utilities – locate, flag, protect
2. Maintain existing circuit operations
3. Existing fixture removals should be turned over to the Airport
4. Protect isolation transformer until new fixture is installed. Contractor to verify mating of new fixture with existing light infrastructure prior to procurement.
5. New homerun conductors in existing ductbanks. Turn over existing homeruns to DAA.
6. ALCMS Programming Updates

E. Storm Drainage and Drain Tile

F. Airfield Pavement Marking and Signage

1. Primer application – Before runway opening
2. Final application – Approximately 28 days after runway opening
3. Temporary Markings

G. Restoration

1. Locations: Batch plant, storage areas, haul roads
  - a. Air Base Road is planned to be reconstructed in 2021, so haul route will be over a new roadway.
2. Restored to equal or better conditions

H. Wet Pond Work

1. Wet pond excavation, hauling, and disposal of contaminated sediment
  - a. Question: What contaminant is expected? Response: that is currently being tested and more information will be provided via addendum. Airport tests all MPCA required contaminants, and pond currently is in compliance with levels present.
2. Storm Sewer Pipe Jetting

V. **Addendum**

VI. **Questions**

SEH believes that this document accurately reflects the business transacted during the meeting. If any attendee believes that there are any inconsistencies, omissions or errors in the minutes, they should notify the writer at once. Unless objections are raised within seven (7) days, we will consider this account accurate and acceptable to all.

**If there are errors contained in this document, or if relevant information has been omitted, please contact Shawn McMahon at 651.925.7541.**

C:

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# PRE-BID ATTENDANCE ROSTER

**RE:** Taxiway A Reconstruction - Phase 1 (East)  
Duluth International Airport (DLH)

**Project Manager:** Shawn McMahon

**Date of Meeting:** Tuesday, May 25, 2021

**Time of Meeting:** 1:00 pm

**Location:** Virtual OR 4701 Grinden Drive, Duluth,  
MN 55811, Airport Terminal 3rd Floor,  
Amutuzzio Conference Room

**SEH No.:** DULAI 159002 16.00

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**Please Print**

Name: Shawn McMahon \_\_\_\_\_  
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Name: Steve Wabrowetz \_\_\_\_\_  
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Name: Allison Andrashko \_\_\_\_\_  
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Engineers | Architects | Planners | Scientists

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Phone: 218.666.5698 \_\_\_\_\_  
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Name: Troy George \_\_\_\_\_  
Representing: PEC Solutions \_\_\_\_\_  
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Name: Brad Mattson \_\_\_\_\_  
Representing: Shafer \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Mobile: \_\_\_\_\_  
Email: \_\_\_\_\_

Name: Greg Pelkey \_\_\_\_\_  
Representing: Shafer \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Mobile: \_\_\_\_\_  
Email: \_\_\_\_\_

## Item L-125 Installation of Airport Lighting Systems

### DESCRIPTION

**125-1.1** This item shall consist of airport lighting systems furnished and installed in accordance with this specification, the referenced specifications, and the applicable advisory circulars (ACs). The systems shall be installed at the locations and in accordance with the dimensions, design, and details shown in the plans. This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the RPR.

**125-1.2** The Contractor shall ascertain that all lighting system components furnished are compatible in all respects with each other and the remainder of the new/existing system. Any non-compatible components furnished by the Contractor shall be replaced at no additional cost to the airport sponsor with a similar unit, approved by the RPR (different model or different manufacturer) that is compatible with the remainder of the airport lighting system.

**125-1.3** The Contractor is responsible for using the latest editions of the referenced FAA Advisory Circulars, including any changes, in effect at the time of bidding. The advisory circulars may be obtained free of charge on the internet at the following address:

[http://www.faa.gov/airports\\_airtraffic/airports/resources/advisory\\_circulars/](http://www.faa.gov/airports_airtraffic/airports/resources/advisory_circulars/)

### EQUIPMENT AND MATERIALS

#### 125-2.1 General.

**a.** Airport lighting equipment and materials covered by Federal Aviation Administration (FAA) specifications shall be certified under the Airport Lighting Equipment Certification Program in accordance with AC 150/5345-53, current version. FAA certified airfield lighting shall be compatible with each other to perform in compliance with FAA criteria and the intended operation. If the Contractor provides equipment that does not perform as intended because of incompatibility with the system, the Contractor assumes all costs to correct the system for to operate properly.

**b.** Manufacturer's certifications shall not relieve the Contractor of their responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

**c.** All materials and equipment used shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be clearly made with arrows or circles (highlighting is not acceptable). The Contractor shall be responsible for delays in the project accruing directly or indirectly from late submissions or resubmissions of submittals.

**d.** The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be submitted in electronic PDF format, tabbed by specification section. The RPR reserves the right to reject any or all equipment, materials or

procedures, which, in the RPR's opinion, does not meet the system design and the standards and codes, specified herein.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner. All LED light fixtures must be warranted by the manufacturer for a minimum of four (4) years after date of installation inclusive of all electronics.

**125-2.2 Concrete.** The concrete for bases, footings, etc. shall be proportioned, placed, and cured in accordance with P-610 "Concrete Portland Cement Concrete."

**125-2.3 Conduit/Duct.** Conduit shall conform to Specification Item L-110 Airport Underground Electrical Duct Banks and Conduits.

**125-2.4 Cable and Counterpoise.** Cable and Counterpoise shall conform to Item L-108 Underground Power Cable for Airports.

**125-2.5 Tape.** Rubber and plastic electrical tapes shall be Scotch Electrical Tape Numbers 23 and 88 respectively, as manufactured by 3M Company or an approved equal.

**125-2.6 Cable Connections.** Cable Connections shall conform to Item L-108 Installation of Underground Cable for Airports.

**125-2.7 Retroreflective Markers.** Not required.

**125-2.8 Taxiway Lights.** Runway and taxiway lights shall be of the types indicated on the drawings and conform to the requirements of AC 150/5345-46. Lamps shall be of size and type indicated, or as required by fixture manufacturer for each lighting fixture required under this contract. Filters shall be of colors conforming to the specification for the light concerned or to the standard referenced.

Elevated taxiway edge lighting fixtures shall be light emitting diode (LED) type. Arctic heater kits are NOT required but fixtures shall have provisions for adding option at a later time.

In-pavement and elevated Runway edge lighting fixtures shall be incandescent type. In pavement fixtures shall be provided with optional Snow Plow Ring and final depth of fixture shall be coordinated with RPR prior to installation.

**125-2.9 Light Base and Transformer Housings.** Light Base and Transformer Housings should conform to the requirements of AC 150/5345-42. Light bases shall be Type L-867 and L-868, and shall be provided as indicated on drawings or as required to accommodate the fixture or device installed thereon. Base plates, cover plates, and adapter plates shall be provided to accommodate various sizes of fixtures.

**125-2.10 Isolation Transformers.** Isolation Transformers shall be Type L-830, size as required for each installation. Transformer shall conform to AC 150/5345-47.

**125-2.11 Constant Current Regulator (CCR).** The constant current regulator shall be a Type L-829 conforming to the requirements of AC 150/5345-10. The regulator(s) shall be of the size and steps indicated on drawings, CCR(s) shall be floor mounted but capable of stacking vertically with other CCR's. CCR(s) shall include meggering option and shall be compatible with existing DLH ALCMS. Contractor shall coordinate existing system prior to procurement of CCR. Input shall be single phase with output of 6.6A maximum current at 60 Hz. Lightning protection shall be provided on the input and output of the regulator. The regulator shall have an integrated digital ammeter indicating the output current. Control voltage shall be coordinated with existing ALCMS currently installed. All necessary program and additional wiring to connect the new CCR into the existing ALCMS and airfield vault infrastructure (power, control, etc.) shall be incidental to the CCR.

**125-2.13 GUIDANCE SIGNS.** The Lighted guidance signs shall be double face Type L-858(L), Size as indicated on electrical and civil drawings, LED illuminated, 6.6A, conforming to the requirements of AC 150/5345-44 and as detailed on the contract drawings.

**125-2.14 GUIDANCE SIGN PANELS FOR EXISTING SIGNS.** The Lighted guidance sign panels indicated to be replaced shall be fully compatible with existing Lumacurve signs and shall conform to the requirements of AC 150/5345-44 and as detailed on the contract drawings.

## **INSTALLATION**

**125-3.1 Installation.** The Contractor shall furnish, install, connect and test all equipment, accessories, conduit, cables, wires, buses, grounds and support items necessary to ensure a complete and operable airport lighting system as specified here and shown in the plans.

The equipment installation and mounting shall comply with the requirements of the National Electrical Code and state and local code agencies having jurisdiction.

The Contractor shall install the specified equipment in accordance with the applicable advisory circulars and the details shown on the plans.

The Contractor shall provide core-drilling as required to install the new in-pavement taxiway lighting fixture and shall be incidental to the installation. Contractor shall coordinate locations with RPR prior to work and provide all necessary labor and equipment for a fully functioning system. Should in-pavement fixtures fall within a close enough proximity to pavement jointing, lighting fixture block outs shall be provided as shown on drawings.

**125-3.2 Testing.** All lights shall be fully tested by continuous operation for not less than 24 hours as a completed system prior to acceptance. The test shall include operating the constant current regulator in each step not less than 10 times at the beginning and end of the 24-hour test. The fixtures shall illuminate properly during each portion of the test.

**125-3.3 Shipping and Storage.** Equipment shall be shipped in suitable packing material to prevent damage during shipping. Store and maintain equipment and materials in areas protected from weather and physical damage. Any equipment and materials, in the opinion of the RPR, damaged during construction or storage shall be replaced by the Contractor at no additional cost to the owner. Painted or galvanized surfaces that are damaged shall be repaired in accordance with the manufacturer's recommendations.

**125-3.4 Elevated and In-pavement Lights.** Water, debris, and other foreign substances shall be removed prior to installing fixture base and light.

A jig or holding device shall be used when installing each light fixture to ensure positioning to the proper elevation, alignment, level control, and azimuth control. Light fixtures shall be oriented with the light beams parallel to the runway or taxiway centerline and facing in the required direction. The outermost edge of fixture shall be level with the surrounding pavement. Surplus sealant or flexible embedding material shall be removed. The holding device shall remain in place until sealant has reached its initial set.

**125-3.5 ALCMS and CCR's.** CCR's shall be installed in the Airfield Vault and programmed to interface with existing ALCMS. Branch circuit conductor and conduit to power new CCR's shall be incidental to the CCR installation.



## METHOD OF MEASUREMENT

**125-4.1** Base cans and junction plazas will be measured by the number of each type installed as completed units in place, ready for operation, and accepted by the RPR.

**125-4.2** Runway and taxiway lights will be measured by the number of each type installed as completed units in place, ready for operation, and accepted by the RPR.

**125-4.3** Guidance signs and replacement panels will be measured by the number of each type and size installed as completed units, in place, ready for operation, and accepted by the RPR.

**125-4.4** Removal of salvage airfield lighting fixtures and signs will be measured with lump sum and accepted by the RPR.

**125-4.5** Constant Current Regulators will be measured by the number of each type and size installed as completed units, in place, ready for operation, and accepted by the RPR.

## BASIS OF PAYMENT

**125-5.1** Payment will be made at the Contract unit price for each complete taxiway light installed by the Contractor and accepted by the RPR. This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

Payment will be made under:

- Item L-125-5.1 L-867 BASE CAN WITH BLANK COVER – PER EA.
- Item L-125-5.2 L-861T (L), T/W ELEVATED LED EDGE LIGHT – PER EA.
- Item L-125-5.3 L-861T (L), T/W ELEVATED LED EDGE LIGHT (EXISTING BASECAN) – PER EA.
- Item L-125-5.4 L-850C, R/W HIRL IN-PAVEMENT EDGE LIGHT – PER EA.
- Item L-125-5.5 L-862, R/W ELEVATED EDGE LIGHT – PER EA.
- Item L-125-5.6 L-858(L) SIGN, SIZE 1 (INCLUDING SIGN PAD) – PER EA.
- Item L-125-5.7 L-858(L) SIGN, SIZE 2 (INCLUDING SIGN PAD) – PER EA.
- Item L-125-5.8 L-858(L) SIGN, SIZE 2 PANEL REPLACEMENT – PER EA.
- Item L-125-5.9 L-829 CONSTANT CURRENT REGULATOR – PER EA.
- Item L-125-5.10 REMOVE AND SALVAGE LIGHT FIXTURE AND SIGNS - LUMP SUM
- Item L-125-5.11 INSTALL 3-CAN JUNCTION PLAZA – PER EA.

## REFERENCES

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

### Advisory Circulars (AC)

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

**END OF ITEM L-125**

## Item P-152 Excavation, Subgrade, and Embankment

### DESCRIPTION

**152-1.1** This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

**152-1.2 Classification.** All material excavated shall be classified as defined below:

**a. Unclassified excavation.** Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature which is not otherwise classified and paid for under one of the following items:

**Topsoil Stripped and Salvaged.** All areas shows as being graded, assuming 4-inches of topsoil is stripped and salvaged. Item P-905 Topsoil is a separate item that includes the imported topsoil material and is paid for separately.

**General Excavated Material.** All areas requiring excavation to meet proposed subgrade elevation outside the pavement limits.

**Subgrade Excavation.** All areas requiring excavation to meet proposed subgrade elevation below pavement areas. This excavation includes the removal of the existing aggregate base material.

**Unclassified Over Excavation.** Additional areas below proposed subgrade not meeting compaction specifications that need removed and replaced with suitable material.

**152-1.3 Unsuitable excavation.** Unsuitable material shall be disposed. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR.

### CONSTRUCTION METHODS

**152-2.1 General.** Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151 (not applicable for this project).

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed of off-site at the Contractor's expense.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the

Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

**a. Blasting.** Blasting will not be allowed as part of this contract.

**152-2.2 Excavation.** No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate, or agree to any adjustments made to the original ground lines.

Digital terrain model (DTM) files of the existing surfaces, finished surfaces and other various surfaces were used to develop the design plans.

Volumetric quantities were calculated by comparing DTM files of the applicable design surfaces and generating Triangle Volume Reports. Electronic copies of DTM files and a paper copy of the original topographic map will be issued to the successful bidder.

Existing grades on the design cross sections or DTM's, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map. Contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect. For this purpose, spot elevations which are within 0.1 foot (30 mm) of the stated elevations for ground surfaces, or within 0.04 foot (12 mm) for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface. If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the RPR in writing at least two weeks before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design cross sections or DTM's. Disturbance of existing grade in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.

All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes as shown on the plans. All unsuitable material shall be disposed of off-site at the Contractor's expense.

The grade shall be maintained so that the surface is well drained at all times.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

**a. Selective grading.** When selective grading is indicated on the plans, the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

**b. Undercutting.** Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12 inches (300 mm) below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed of off-site. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard (per cubic meter) for **Unclassified Over Excavation**. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as unclassified over excavation.

**c. Over-break.** Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-break shall be graded or removed by the Contractor and disposed of as directed by the RPR. The RPR shall determine if the displacement of such material was unavoidable and their own decision shall be final. Payment will not be made for the removal and disposal of over-break that the RPR determines as avoidable. Unavoidable over-break will be classified as “Unclassified Excavation.”

**d. Removal of utilities.** The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

**152-2.3 Borrow excavation.** Borrow areas are not required.

There are no borrow sources within the boundaries of the airport property. The Contractor shall locate and obtain borrow sources, subject to the approval of the RPR. The Contractor shall notify the RPR at least 15 days prior to beginning the excavation so necessary measurements and tests can be made by the RPR. All borrow pits shall be opened to expose the various strata of acceptable material to allow obtaining a uniform product. Borrow areas shall be drained and left in a neat, presentable condition with all slopes dressed uniformly. Borrow areas shall not create a hazardous wildlife attractant.

**152-2.4 Drainage excavation.** Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches, or basins; or other types as shown on the plans. This does not include sediment cleanout of wet ponds specified on sheet C0.03 (see spec for S-50 CONTAMINATED SOIL, POND WATER, AND GROUNDWATER). The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be disposed of. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted. Once the basins have been cleaned out, no construction equipment will be allowed inside the basin.

**a. Storm Sewer pipe jetting**

Storm sewer pipe jetting shall be performed following permanent vegetation stabilization after construction in all storm sewer pipes collecting runoff from the project area to remove any sediment that accumulated during construction (see Appendix G for map of storm sewer pipes that require jetting). Contractor shall be responsible for any damage caused to storm sewer pipes during jetting. Contractor shall verify which storm sewer pipes are to be jetted.

**152-2.5 Preparation of cut areas or areas where existing pavement has been removed.** In those areas on which a subbase or base course is to be placed, the top 12 inches (300 mm) of subgrade shall be



compacted to not less than 100 % of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM **D1557**. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

**152-2.6 Preparation of embankment area.** All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

**152-2.7 Control Strip.** The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

**152-2.8 Formation of embankments.** The material shall be constructed in lifts as established in the control strip, but not less than 6 inches (150 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within  $\pm 2\%$  of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The RPR will take samples of excavated materials which will be used in embankment for testing to obtain a Moisture-Density Relations of Soils Report (Proctor) in accordance with D 1557. A new Proctor shall be obtained for each soil type based on visual classification.

Density tests will be taken by the RPR for every 3,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

If the material has greater than 30% retained on the 3/4-inch (19.0 mm) sieve, follow AASHTO T-180 Annex Correction of maximum dry density and optimum moisture for oversized particles.

Rolling operations shall be continued until the embankment is compacted to not less than **100%** of maximum density for non-cohesive soils, and **95%** of maximum density for cohesive soils as determined by ASTM **D1557**. Under all areas to be paved, the embankments shall be compacted to a depth of **14 inches** and to a density of not less than **95%** percent of the maximum density as determined by ASTM **D1557**. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas and not within the basins, no compaction will be required on the top **4 inches (100 mm)** which shall be prepared for a seedbed in accordance with **Item T-901**.

The in-place field density shall be determined in accordance with ASTM D1556. The RPR shall perform all density tests. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 12 inches (300 mm) of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet (60 cm) in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

**152-2.9 Proof rolling.** The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. Before start of embankment, and after compaction is completed, the subgrade area shall be proof rolled with a 20 ton (18.1 metric ton). Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 80/100/150 psi (0.551 MPa/0.689 MPa/1.034 MPa) in the presence of the RPR. Apply coverage as specified by the RPR under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch (25 mm) or show permanent deformation greater than 1 inch (25 mm) shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item. Proof rolling is incidental to the work performed.

**152-2.10 Compaction requirements.** The subgrade under areas to be paved shall be compacted to a depth of **12 inches (300 mm)** and to a density of not less than 100 percent of the maximum dry density as determined by ASTM **D1557**. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 12 inches (300 mm) and to a density of not less than 95 percent of the maximum density as determined by ASTM **D1557**.

The material to be compacted shall be within  $\pm 2\%$  of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the  $\frac{3}{4}$  inch (19.0 mm) sieve, follow the methods in **ASTM D1557**. Tests for moisture content and compaction will be taken at a minimum of **2,000 S.Y.** of subgrade. All quality assurance testing shall be done by **the RPR**.

The in-place field density shall be determined in accordance with **ASTM D1556**.

Density tests will be taken by the RPR for every **2,000** square yards) (meters) of completed subgrade. If a nuclear gage is used for density determination, two random readings shall be made for each **2,000** square yards (meters).

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the RPR and the finished subgrade shall be maintained.

**152-2.11 Finishing and protection of subgrade.** Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the RPR.

**152-2.12 Haul.** All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

**152-2.13 Surface Tolerances.** In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

**a. Smoothness.** The finished surface shall not vary more than +/- ½ inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

**b. Grade.** The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/- 0.05 feet (15 mm) of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to be placed, grade shall not vary more than 0.10 feet (30 mm) from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

**152-2.14 Topsoil.** When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as specified by the RPR, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

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

## METHOD OF MEASUREMENT

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

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

**152-3.3** Stockpiled material shall be paid for on the basis of the number of cubic yards measured in the stockpiled position.

Excavation or field grading quantities outside of the grading limits shall be determined quantities from a topographic survey from before and after the work. The survey data shall be submitted to the Engineer.

Unclassified excavation quantities are estimates only. Quantities for payment must be justified from a topographic survey from before and after the work. The survey data shall be submitted to the Engineer.

### **BASIS OF PAYMENT**

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

Payment will be made under.

Item P-152 Common Excavation (EV) per cubic yard

Item P-152 Unclassified Over Excavation (EV) per cubic yard

Item P-152 Muck Excavation (EV) per cubic yard

Item P-152 Storm Sewer Pipe Jetting per linear feet

Item P-152 Subgrade Preparation per square yard

### **REFERENCES**

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

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180      Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698      Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>))

ASTM D1556      Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D1557      Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2700 kN-m/m<sup>3</sup>))

ASTM D6938      Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2      Operational Safety on Airports During Construction Software

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66

Design and Construction of Airport Pavements on Expansive Soils

**END OF ITEM P-152**

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## S-50

### **(2105) CONTAMINATED SOIL, POND WATER, AND GROUNDWATER**

All contaminated material found on the Project shall be handled according to the following provision unless otherwise directed by the Engineer. The Contractor shall comply with all applicable safety regulations imposed by federal and state law for handling pollutants, contaminants, or hazardous substances, wastes, or materials, including but not limited to 29 CFR PART 1910 and all subsequent revisions thereof. **The Contractor shall file a project Health and Safety Plan with the Engineer at the Preconstruction Conference.**

#### S-50.1

### **CONTAMINATED SOIL, POND WATER, AND GROUNDWATER**

(A) An investigation of the wet ponds designated for sediment removed found contaminated soil within them. The ponds are named 1 and 2, shown in the appendix F of the plan set.

The process for removing sediment from these ponds is as follows, unless otherwise directed by the Engineer:

- 1) Contractor shall survey the pond outlet weir devices to find the outlet elevation (reference Appendix F for pond outlet configurations). The designed pond bottom depth is 5 feet below the surveyed outlet elevation.
- 2) Contractor shall jet clean stormsewer pipes discharging to Pond 1 and 2 from the project area to remove construction sediment from the pipes. Refer to Appendix G for a map of which stormsewer pipes should be jet cleaned (see spec for item P-152).
- 3) Contractor shall dewater contaminated water from ponds according to sections 2 and 10 in the Construction Stormwater NPDES/SDS permit by opening the pond drain lines using the drain valves (refer to Appendix F for outlet configurations) or other means approved by the Engineer. Contractor shall review contaminated pond water sampling results and ensure dewatering methods comply with all MPCA stormwater and industrial stormwater permit guidelines. Contractor may have to filter or dispose of pond water to comply with permitting guidelines. Contractor shall confirm proper dewatering methods with Engineer.
- 4) Contractor shall close drain lines after dewatering ponds to allow sediment to dry to levels acceptable for disposal. Contractor is responsible for determining adequate sediment dryness level for disposal at landfill.
- 5) If adequate drying cannot be achieved as described in step 3, contractor shall notify Engineer and follow S-50.4 (**TEMPORARY STOCKPILE OF CONTAMINATED MATERIAL**) until excavated sediment reaches conditions it can be disposed of.
- 6) Contractor shall not disturb side slopes of pond.
- 7) Contractor shall excavate sediment from pond bottom down to the depth determined in step 1, which is 5 feet below the outlet elevation of each pond. Contractor shall get Engineer approval of final depth to excavate ponds to.
- 8) Contractor shall not penetrate or disturb the clay liner that was originally installed in ponds

(B) The Contractor may assume that **up to 700 cubic yards of contaminated soil may be encountered** during excavation activities.

(C) Stormsewer pipes discharging to ponds 1 and 2 shall be jet cleaned to remove construction sediment after final stabilization has been initiated in the project area. Refer to Appendix G for map of which stormsewer pipes must be jet cleaned.

(D) The Contractor may assume that contaminated pond water will be encountered based on construction plans and known site conditions at the time of letting as identified in S-50.1 (**CONTAMINATED SOIL, POND WATER, AND GROUNDWATER**). If contaminated groundwater is encountered follow procedures outlined in S-50.5 (**CONTAMINATED GROUNDWATER CONTINGENCY**).

(E) Data from the environmental testing for sediment and pond water that has been completed for this project are available for review by potential bidders. Please contact Shawn McMahon (651.925.7541, smcmahon@sehinc.com) to arrange data review.

**S-50.2****CONTAMINATED SOIL AND POND WATER MANAGEMENT**

(A) Contractor shall notify the Engineer no less than three (3) working days prior to beginning the excavation and removal of contaminated soil to allow the Engineer time to arrange for the Owner's Environmental Consultant to be at the site to observe and document the excavation, handling and disposal of the contaminated soil and dewatering of contaminated pond water.

(B) Engineer shall provide approval and the Owner's Environmental Consultant must be present before any excavation of contaminated soil and dewatering of contaminated pond water shall take place. Owner's Environmental Consultant will determine which soils are to be considered contaminated. Engineer must approve excavation of any soils beyond the limits shown on the cross sections in the Plan.

(C) Contractor shall manage open excavation areas to prevent to the extent possible, the flow of rainwater runoff into the excavation. Rainwater that comes into contact with contaminated soil is considered contaminated. As approved by the Engineer, Contractor shall use, but not be limited to, the following runoff management methods: minimize the drainage area around the excavation, place berms up gradient of the excavation to divert runoff and/or cover the excavation. If rainwater needs to be removed from the excavation use procedures described within Groundwater Contingency Section below.

(D) All contaminated soils excavated from areas described in S-50.1 (**CONTAMINATED SOIL, POND WATER, AND GROUNDWATER**) shall be field screened by the Owner's Environmental Consultant and soils determined to be contaminated shall be hauled to a Minnesota permitted solid waste or industrial landfill facility for disposal as daily cover if it meets the requirements of daily cover.

- 1) Contractor is responsible for providing all required information to the landfill (typically waste profile forms and soil analytical laboratory reports) in order to obtain landfill acceptance of the contaminated soil.
- 2) Contractor shall determine if the Owner's existing soil analytical data (obtained from the Engineer) are sufficient for the landfill to accept the contaminated soil. Contractor shall immediately inform the Engineer if additional soil analytical data are required by the landfill. As approved by the Engineer, Contractor shall dig test pits or conduct environmental drilling in order for the Owner's Environmental Consultant to access contaminated soil to collect samples for additional analyses required by the landfill. Sample analytical turnaround time is typically 5 working days (Monday through Friday). The Contractor is responsible for any additional soil sample laboratory analyses required by the landfill. If the Contractor determines that they want to change the landfill disposal location after they have completed additional analytical, all costs associated with collecting additional samples and analyses shall be the responsibility of the Contractor and assumed to be incidental.
- 3) Contractor shall provide the landfill-required waste profile form(s) to the Engineer for review and signature a minimum of two weeks prior to beginning excavation. The Engineer can approve an alternate deadline.
- 4) The Engineer must receive written approval (e-mail is acceptable) from the landfill accepting the contaminated material for daily cover/disposal at the landfill facility before contaminated material can be hauled to the landfill facility.
- 5) Loads are required to be covered (tarp) while in transit at no cost to the Owner.
- 6) Contractor shall provide copies of all shipping papers (manifests) and landfill scale tickets for each load to the Owner's Environmental Consultant daily while material is being hauled to the landfill. The Engineer can approve an alternate deadline.

(E) If sediment drying cannot be achieved through dewatering the ponds, the contaminated soil must be temporarily stockpiled at a location approved by the Engineer if the Engineer determines that the excavated soil cannot be immediately hauled to the landfill (for example, because of unknown contaminant concentrations or types). Any additional costs for temporarily stockpiling contaminated soil as required by S-50.4 (**TEMPORARY**

**STOCKPILE OF CONTAMINATED MATERIAL)** will be considered Extra Work and will be paid for in accordance with MnDOT 1402.5.

(F) If Contractor elects to move a secured stockpile to a new location because the stockpile is in the way of construction, the cost of moving and re-stockpiling the soil as required by S-50.4 (**TEMPORARY STOCKPILE OF CONTAMINATED MATERIAL)** shall be incidental.

(G) If Contractor elects to temporarily stockpile soil described in S-50.1 (**CONTAMINATED SOIL, POND WATER, AND GROUNDWATER)** before hauling it to the landfill, all costs incurred for temporarily stockpiling the contaminated soil as required by S-50.4 (**TEMPORARY STOCKPILE OF CONTAMINATED MATERIAL)** shall be incidental. Fencing is required unless directed otherwise by the Engineer.

(H) Measurement and Payment

Measurement will be made by the volume (cubic yards) of the material disposed. Payment will be made under Item 58 (WET POND EXCAVATION, HAULING, AND DISPOSAL OF CONTAMINATED SEDIMENT (EV)) for the material removed from the ponds identified in S-50.1 (**CONTAMINATED SOIL, POND WATER, AND GROUNDWATER)** at the Contract bid price per cubic yard, which shall be payment in full for all permits, disposal fees, excavating, loading and hauling of material, jet cleaning stormsewer pipes, tarping loads (incidental), geotextile, and all costs relative thereto.

Measurement for pond dewatering will be made in lump sum. The payment will be made under Item 58 (WET POND DEWATERING OF CONTAMINATED WATER) for the ponds identified in S-50.1 (**CONTAMINATED SOIL, POND WATER, AND GROUNDWATER)** at the Contract bid price per each wet pond dewatered, which shall be payment in full for all permits, dewatering, filtering, and disposal of contaminated pond water, and all costs relative thereto.

**S-50.3****CONTAMINATED SOIL CONTINGENCY PLAN**

(A) Contractor shall follow the procedure outlined in MnDOT 1717 in the event on-site observations indicate contaminated materials or contaminated soil as listed in MnDOT 1717 are encountered in the Project area in locations other than those described in S-50.1 (**CONTAMINATED SOIL, POND WATER, AND GROUNDWATER**).

(B) Contractor shall not excavate any contaminated materials or soil until the Engineer has given approval to the Contractor to resume work in the contaminated area and only when the Owner's Environmental Consultant is present. The Owner's Environmental Consultant will observe and document the excavation work in the contaminated area, and will screen soil to determine which materials or soils are contaminated. Contaminated materials or soils shall not be excavated beyond the limits shown on the cross sections in the Plan, or as approved by the Engineer.

(C) Contractor shall haul contaminated materials or soil to a Minnesota permitted solid waste or industrial landfill facility for disposal as daily cover if it meets the requirements of daily cover.

- 1) Contractor is responsible for providing all required information to the landfill (typically waste profile forms and soil analytical laboratory reports) in order to obtain landfill acceptance of the contaminated soil.
- 2) Contractor will be responsible for any soil sample laboratory analyses required by the landfill. As approved by Engineer, Contractor shall dig test pits or conduct environmental drilling in order for the Owner's Environmental Consultant to access contaminated soil to collect samples for analyses required by the landfill. Sample analytical turnaround time is typically 5 working days (Monday through Friday). This cost will be incidental.
- 3) Contractor shall provide the landfill-required waste profile form(s) to the Engineer for review and signature a minimum of 48 hours prior to beginning excavation. The Engineer can approve an alternate deadline.
- 4) Engineer must receive written approval (e-mail is acceptable) from the landfill accepting the contaminated material for daily cover/disposal at the landfill before contaminated material can be hauled to the landfill facility.
- 5) Loads are required to be covered (tarpred) while in transit at no cost to the Owner.
- 6) Contractor shall provide copies of all shipping papers (manifests) and landfill scale tickets for each load to the Owner's Environmental Consultant daily while material is being hauled to the landfill. The Engineer can approve an alternate deadline.

(D) The contaminated soil must be temporarily stockpiled at a location approved by the Engineer if the Engineer determines that the excavated contaminated soil from any known or unexpected contaminated areas cannot be immediately hauled to the landfill (for example, because of unknown contaminant concentrations or types). If Contractor elects to move a secured pile because the stockpile is in the way of construction, the cost of moving and re-stockpiling the soil shall be incidental. Any additional costs for temporarily stockpiling contaminated soil as required by S-50.4 (**TEMPORARY STOCKPILE OF CONTAMINATED MATERIAL**) is Extra Work and will be paid for in accordance with MnDOT 1402.5.

(E) If the Contractor elects to temporarily stockpile contaminated soil, all costs incurred for temporarily stockpiling the contaminated soil as required by S-50.4 (**TEMPORARY STOCKPILE OF CONTAMINATED MATERIAL**) shall be incidental.

(F) Measurement and Payment

Excavation and loading of contaminated material found in areas other than those described in S-50.1 (**CONTAMINATED SOIL, POND WATER, AND GROUNDWATER**) is Extra Work and will be paid for in accordance with MnDOT 1402.5.

**S-50.4**                    **TEMPORARY STOCKPILE OF CONTAMINATED MATERIAL**

The Engineer shall approve location of the stockpile(s) on the Project. Contractor shall place contaminated soil from separate contaminated areas into separate stockpiles or as approved by the Engineer. Contractor shall stockpile the contaminated soil on minimum 10 mil plastic, cover the stockpile (minimum at end of each work day) with minimum 10 mil reinforced plastic, and securely anchor stockpile cover. Contractor shall surround stockpile by temporary fencing, if Engineer determines that additional security measures are necessary. Contractor shall be responsible for the maintenance of the stockpile cover (and fencing if installed) for the duration of the Contract or until all contaminated materials are removed. Inspect the stockpile a minimum of once per week.

**S-50.5**                    **CONTAMINATED GROUNDWATER CONTINGENCY**

(A)        Contractor shall follow the procedure outlined in MnDOT 1717 in the event on-site observations indicate contaminated groundwater as listed in MnDOT 1717 is encountered in the Project area.

(B)        Contractor shall not dewater until the Engineer has given approval to the Contractor to resume work in the contaminated area and only when the Owner's Environmental Consultant is present. The Owner's Environmental Consultant will observe and document the dewatering activities in the contaminated area.

(C)        Owner's Environmental Consultant will collect all initial groundwater samples necessary to apply for the appropriate permit or will review historical groundwater analytical samples in the vicinity of proposed dewatering activities.

(D)        The Contractor shall be responsible for obtaining all necessary permits and completing all required documentation reports for discharge of contaminated groundwater. If the permitting authority requires the Contractor to obtain a permit, the Contractor shall submit the permit application to the Engineer for review and approval prior to submitting the application to the permitting authority. The Contractor shall submit any required discharge reports to the Engineer for review and approval prior to submitting the report to the permitting authority.

(E)        The Contractor shall be responsible for necessary sampling and testing of the dewatered groundwater as required by the permitting authority for discharge. The Contractor shall measure the rate of groundwater discharge during dewatering. The Contractor shall record the rate of discharge daily, and shall submit a discharge report to the Engineer weekly, or as approved by the Engineer.

(F)        The Contractor shall provide copies of all discharge water sample analytical data, flow rate data, correspondence, etc. required by the permitting authority to the Engineer AT THE SAME TIME the discharge water sample analytical data, flow rate data, correspondence and monitoring reports etc. are provided to the permitting authority.

(G)        If initial analytical samples collected by the Owner's Environmental Consultant indicate that pre-treatment is necessary prior to discharge of groundwater then the Contractor shall supply a portable groundwater treatment system. This system includes but is not limited to the following components: flow equalizer, suspended solids removal, oil/water separator, activated carbon filtration, and/or aerator, or as approved by the Engineer. The portable groundwater treatment system shall have a treatment capacity equal to or greater than the rate of temporary construction dewatering. The Engineer shall approve the portable groundwater treatment system prior to mobilization of any groundwater treatment system components to the Project site.

(H)        Treatment of the contaminated groundwater with a portable groundwater treatment system including but not limited to groundwater treatment equipment, equipment mobilization and demobilization, equipment installation, equipment operation and maintenance, and all costs relative thereto, is Extra Work and will be paid for in accordance with MnDOT 1402.5. Mobilizations to another site in the Project area resulting from discovery that contaminated groundwater must be treated prior to discharge shall be compensated in accordance with MnDOT 1402.5.



**GENERAL NOTES:**

- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS REQUIRED BY THE CONSTRUCTION COVERED IN THE PLANS.
- ALL WORK SHALL CONFORM TO APPLICABLE LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS.
- THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
- 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.
- 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.
- THE CONTRACTOR SHALL REMOVE ALL DEBRIS RESULTING FROM WORK UNDER THIS CONTRACT TO AN APPROVED OFF-AIRPORT DUMP SITE.
- 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.
- CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING.

**SECURITY NOTES:**

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.

- COSTS ASSOCIATED WITH SECURITY:** ALL COSTS ASSOCIATED WITH SECURITY ARE ASSOCIATED WITH THE TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING ITEM AS A LUMP SUM.
- 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.
- 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.
- 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.**
  - 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.
  - 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:**

- STRIPPING, ON SITE STOCKPILING AND PLACING OF STRIPPED AND SALVAGED TOPSOIL WILL BE PAID FOR UNDER COMMON EXCAVATION.**
- 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.
- 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.
- SEE SHEET G0.50 FOR THE EARTHWORK SUMMARY AND NOTES.

**SEQ NOTES (FOR REFERENCE ONLY):**

- ALL BITUMINOUS PAVING COURSES CALCULATED AT 115 LB/SY/IN
- ALL BITUMINOUS TACK COAT CALCULATED AT 0.05 GAL/SY
- REFLECTIVE MEDIA CALCULATED AT 115 SF/GAL AND 7 IBS/GAL
- SCHEDULE A / SCHEDULE B CLARIFICATION: THE USE OF SCHEDULES IS FOR GRANT FUNDING PURPOSES ONLY. BOTH SCHEDULES WILL BE INCLUDED IN THE PROJECT. DETERMINATION OF QUANTITIES FOR EACH SCHEDULE WILL BE BY SURVEY, CALCULATION, OR AGREEMENT BETWEEN CONTRACTOR AND ENGINEER.

STATEMENT OF ESTIMATED QUANTITIES					
ITEM NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	FINAL QUANTITY
<b>SCHEDULE A - TAXIWAY A RECONSTRUCTION, PHASE 1 (ELIGIBLE FOR AIP FUNDING)</b>					
1	40-05	MAINTENANCE & RESTORATION OF HAUL ROADS	LS	1	
2	40-08	RESTORATION OF BATCH PLANT AND CONTRACTOR STORAGE AREAS	LS	1	
3	50-06	CONSTRUCTION LAYOUT & STAKING	LS	1	
4	60-05	FIELD OFFICE	LS	1	
5	70-08	TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING	LS	1	
6	70-10	ORANGE CONSTRUCTION FENCE	LF	8,000	
7	02 41 35	REMOVE PAVEMENT MARKING BY WATER BLASTING	SF	39,160	
8	02 41 35	REMOVE PAVEMENT MARKING, GROUND OFF	SF	935	
9	31 34 10	GEOTEXTILE FABRIC, TYPE V	SY	33,745	
10	32 12 13	PLANT-MIXED ASPHALT PAVEMENT	TON	6,925	
11	C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1	
12	C-102	ROCK CONSTRUCTION ENTRANCE	EA	5	
13	C-102	SILT FENCE, TYPE PREASSEMBLED (INCLUDES MAINTENANCE)	LF	12,400	
14	C-102	FILTER LOG, TYPE WOOD FIBER BIOROLL (INCLUDES MAINTENANCE)	LF	2,200	
15	C-102	EROSION CONTROL BLANKET, CATEGORY 3N (WOOD FIBER HV)	SY	1,200	
16	C-102	INLET PROTECTION, TYPE B (INCLUDES MAINTENANCE)	EA	30	
17	C-105	MOBILIZATION	LS	1	
18	D-701	12IN REINFORCED CONCRETE PIPE (RCP)	LF	690	
19	D-701	15IN REINFORCED CONCRETE PIPE (RCP)	LF	190	
20	D-701	18IN REINFORCED CONCRETE PIPE (RCP)	LF	400	
21	D-701	24IN REINFORCED CONCRETE PIPE (RCP)	LF	515	
22	D-705	DRAIN TILE (#8 PERFORATED, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	3,900	
23	D-705	DRAIN TILE (#8 SDR35 PVC PIPE, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	450	
24	D-751	DRAIN TILE ACCESS/INSPECTION PIT	EA	16	
25	D-751	48IN DIA MANHOLE / CATCH BASIN	EA	15	
26	D-751	48IN DIA CATCH BASIN (HIGH CAPACITY CASTING)	EA	2	
27	D-751	72IN DIA CATCH BASIN	EA	1	
28	L-108	#8 AWG, 5kV, L-824, TYPE C CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	19,404	
29	L-108	#6 AWG, SOLID, BARE, COPPER COUNTERPOISE WIRE, INSTALLED IN TRENCH	LF	9,220	
30	L-110	ELECTRICAL DEMOLITION	LS	1	
31	L-110	NON-CONCRETE ENCASED, ELECTRICAL CONDUIT, 1-WAY, 2-INCH, PVC SCH 40	LS	7,835	
32	L-110	CONCRETE ENCASED, ELECTRICAL CONDUIT, 2-WAY, 2-INCH, PVC SCH 40	LF	805	
33	L-110	DIRECTIONALLY BORED, ELECTRICAL CONDUIT, 3-WAY 2-INCH, HDPE SCH 80	LF	580	
34	L-125	INSTALL L-867B BASE CAN WITH BLANK COVER	EA	5	
35	L-125	INSTALL L-861T (L) T/W ELEVATED LED EDGE LIGHT	EA	42	
36	L-125	INSTALL L-861T (L) T/W ELEVATED LED EDGE LIGHT (EXISTING BASECAN)	EA	29	
37	L-125	INSTALL L-850C R/W HIRL IN PAVEMENT EDGE LIGHT	EA	4	
38	L-125	INSTALL L-862 R/W ELEVATED EDGE LIGHT	EA	2	
39	L-125	INSTALL L-858(L) SIGN SIZE 1 (INCLUDING SIGN PAD)	EA	3	
40	L-125	INSTALL L-858(L) SIGN SIZE 2 (INCLUDING SIGN PAD)	EA	3	
41	L-125	INSTALL L-858(L) SIZE 2 PANEL REPLACEMENT	EA	1	
42	L-125	L-829 CONSTANT CURRENT REGULATOR	EA	2	
43	L-125	REMOVE AND SALVAGE LIGHT FIXTURE OR SIGN	LS	1	
44	L-125	INSTALL 2-CAN JUNCTION PLAZA	EA	4	
45	L-125	INSTALL HANDHOLE	EA	6	
46	P-101	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	1,330	
47	P-101	REMOVE BITUMINOUS PAVEMENT (FULL DEPTH)	SY	33,890	
48	P-101	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	1,510	
49	P-101	REMOVE CONCRETE PAVEMENT (FULL DEPTH)	SY	9,780	
50	P-101	REMOVE STORM PIPE	LF	2,150	
51	P-101	REMOVE STORM STRUCTURE	EA	20	
52	P-101	REMOVE DRAIN TILE CLEANOUT	EA	18	
53	P-101	REMOVE DRAIN TILE	LF	3,100	
54	P-152	COMMON EXCAVATION (EV)	CY	23,410	
55	P-152	UNCLASSIFIED OVER EXCAVATION (EV)	CY	1,000	
56	P-152	MUCK EXCAVATION (EV)	CY	200	
57	P-152	STORM SEWER PIPE JETTING	LF	4,700	
58	P-152	SUBGRADE PREPARATION	SY	31,300	
59	P-154	GRANULAR BORROW (CV)	CY	15,000	
60	P-209	CRUSHED AGGREGATE BASE COURSE (CV)	CY	5,210	
61	P-403	BITUMINOUS SURFACE COURSE	TON	775	
62	P-403	BITUMINOUS BASE COURSE	TON	775	
63	P-501	CEMENT CONCRETE PAVEMENT, 12"	SY	8,970	
64	P-501	CEMENT CONCRETE PAVEMENT, REINFORCED 12"	SY	600	
65	P-501	CEMENT CONCRETE PAVEMENT, 13"	SY	11,715	
66	P-501	CEMENT CONCRETE PAVEMENT, REINFORCED 13"	SY	2,550	
67	P-603	BITUMINOUS TACK COAT	GAL	1,540	
68	P-604	COMPRESSION JOINT SEALS FOR CONCRETE	LF	31,400	
69	P-605	JOINT SEALING FILLER	LF	2,950	
70	P-620	RUNWAY & TAXIWAY PAVEMENT MARKING	SF	71,500	
71	P-620	TEMPORARY PAVEMENT MARKING	SF	1,870	
72	P-620	REFLECTIVE MEDIA	LB	4,450	
73	S-50	WET POND EXCAVATION, HAULING, AND DISPOSAL OF CONTAMINATED SEDIM	CY	700	
74	S-50	WET POND DEWATERING OF CONTAMINATED WATER	EA	2	
75	T-901	SEEDING (INCLUDING FERTILIZER) (CLT LESS SPECIAL OR APPROVED EQUAL)	ACRE	9	
76	T-905	SELECT TOPSOIL BORROW (IMPORT) (CV)	CY	500	
77	T-908	HYDROMULCHING	ACRE	9	
<b>SCHEDULE B - TAXIWAY A RECONSTRUCTION, PHASE 1 (NON ELIGIBLE FOR AIP FUNDING)</b>					
78	32 12 13	PLANT-MIXED ASPHALT PAVEMENT	TON	1,500	
79	P-152	COMMON EXCAVATION (EV)	CY	4,495	
80	P-152	SUBGRADE PREPARATION	SY	5,835	
81	P-154	GRANULAR BORROW (CV)	CY	2,600	
82	P-154	GEOTEXTILE FABRIC, TYPE V	SY	6,440	
83	P-209	CRUSHED AGGREGATE BASE COURSE (CV)	CY	1,285	
84	P-403	BITUMINOUS SURFACE COURSE	TON	75	
85	P-403	BITUMINOUS BASE COURSE	TON	75	
86	P-501	CEMENT CONCRETE PAVEMENT, 13"	SY	4,520	
87	P-501	CEMENT CONCRETE PAVEMENT, REINFORCED 13"	SY	635	
88	P-603	BITUMINOUS TACK COAT	GAL	325	
89	P-604	COMPRESSION JOINT SEALS FOR CONCRETE	LF	5,350	
90	P-605	JOINT SEALANT FOR PAVEMENT	LF	700	

**ITEM NOTES:**

- ITEM 1: TEMPORARY HAUL ROAD ADJACENT TO TAXIWAY D INCIDENTAL TO MAINTENANCE & RESTORATION OF HAUL ROAD LINE ITEM.
- 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 17: MOBILIZATION SHALL BE LIMITED TO 10 PERCENT OF THE TOTAL PROJECT COST.
- ITEM 22: DRAIN TILE PAY ITEM IS TO INCLUDE TRENCHING, BACKFILL MATERIAL, PIPE, AND FABRIC.
- ITEM 23: DRAIN TILE PAY ITEM IS TO INCLUDE TRENCHING, BACKFILL MATERIAL, PIPE AND FABRIC.
- ITEM 47: 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 54 : FOR COMMON EXCAVATION BREAK DOWN SEE EARTHWORK SUMMARY SHT. G0.50.
- ITEM 76: ESTIMATED TOPSOIL TO BE IMPORTED FROM OFF SITE SOURCES. SEE EARTHWORK SUMMARY SHT. G0.50 FOR ADDITIONAL INFORMATION.
- ITEM 79: FOR COMMON EXCAVATION BREAK DOWN SEE EARTHWORK SUMMARY SHT. G0.50.

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HEREBY CERTIFY THAT THE PLAN SPECIFICATION OR SUPERVISION AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

*[Signature]*  
Shawn T. Madisson, PE  
DATE: MAY 11, 2021 LICENSE NO: 48858

DULUTH INTERNATIONAL AIRPORT (DLH)  
2021 TAXIWAY A  
RECONSTRUCTION - PHASE 1  
(EAST)  
DULUTH, MN

159002  
ADDENDUM 1  
DATE: 5/27/21  
DESCRIPTION: REVISIONS

DLH 159002  
STATE PROJECT NO. A6901-201  
ISSUE DATE: MAY 11, 2021  
DESIGNED BY: STM  
DRAWN BY: AKA  
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SHEET TITLE  
QUANTITIES

SHEET  
G0.22