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Addendum 2
Solicitation 26-4406
DLH Taxiway A Reconstruction Ph 7 and Midfield Ramp Repair Ph 4

This addendum serves to notify all bidders of the following changes to the solicitation documents:

All changes are identified in the attached documents provided by the Project Engineer.

Please acknowledge receipt of this Addendum by checking the acknowledgement box within the solicitation at www.bidexpress.com.

Posted: 6/2/2026

DOCUMENT 00 00 12

ADDENDUM NO. 2
June 2, 2026

Taxiway A Reconstruction - Phase 7 and Midfield Ramp Repair - Phase 4
City of Duluth No. 26-4406
Duluth International Airport (DLH)
Duluth Airport Authority (DAA)
AIP No. 3-27-0024-084-2025
SP Nos. A6901-226 & A6901-229

SEH No. DULAI 186683 & 188850

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 8, 2026 and Addendum No. 1 dated May 26, 2026 for this work. Bids submitted for the construction of this work shall conform to this document.

This addendum consists of the revised bid form reflected in BidExpress, the attached document of Responses to Contractor Questions, revisions to the specifications, and revisions to drawings.

Changes to Bidding Requirements:

1. Document 00 21 13 – Instructions to Bidders: INSERT item 3.01 G. into Article 3 – Qualifications of Bidders as follows:

   G. Form CM 32-34 (Bid Express).

2. Document 00 41 00 – Bid Form: INSERT item 2.01 D. into Article 2 – Attachments to this Bid as follows:

   D. Form CM 32-34 (Bid Express).

3. Document 00 41 00 – Bid Form: The Bid Form has been revised to reflect the addition of revised bid items and quantities. The Bid Form is updated in BidExpress.

Changes to Specifications:

4. Specification 02 66 12 Synthetic Liner (Geomembrane Containment): Additional specification added to project manual to address synthetic liner product requirements. INSERT in its entirety.

5. Specification 31 23 16 Backfills: Additional specification added to project manual to address granular backfill material requirements. INSERT in its entirety.

6. Appendix B – Prevailing Wage Rates: Federal prevailing wage rates for the state of Minnesota counties including Carlton, Cook, Itasca, Koochiching, Lake, Pine, and St. Louis were updated on 05/18/2026 per Davis-Bacon Act Wage Determination Number MN20260231, Modification Number 1. DELETE in its entirety and REPLACE with attached updated specification section.

Changes to Drawings:

7. Plan Set A – Drawings G5.03, G5.04, and G5.05 – Statement of Estimated Quantities: Updated to reflect the addition of revised bid items and quantities. DELETE in their entirety and REPLACE with the attached revised drawings.

8. Plan Set A – Drawing G6.00 – Earthwork Summary (Base Bid): Updated to reflect the additional excavation and embankment quantities required for subgrade peat removal operations as identified on revised Plan Set A – Drawing C1.01 – Typical Section TXY Holding Bay and as identified on revised Plan Set A – Drawing C4.06. DELETE in its entirety and REPLACE with the attached revised drawing.

9. Plan Set A – Drawing G6.01 – Earthwork Summary (Alt Bid): Updated to reflect minor revisions to the earthwork summary. DELETE in its entirety and REPLACE with the attached revised drawing.

10. Plan Set A – Drawing C1.01 – Typical Section TXY Holding Bay: Updated to reflect the additional excavation and embankment work required for subgrade peat removal operations. DELETE in its entirety and REPLACE with the attached revised drawing.

11. Plan Set A – Drawings C4.01 – Grading Plan (Alt Bid): Updated to reflect the placement of a subgrade geogrid product under portions of proposed Taxiway A pavement that will be constructed over deep underlying peat material. DELETE in its entirety and REPLACE with the attached revised drawing.

12. Plan Set A – Drawing C4.04 – Grading Plan: Updated to reflect the placement of a subgrade geogrid product under portions of proposed Taxiway A pavement that will be constructed over deep underlying peat material. DELETE in its entirety and REPLACE with the attached revised drawing.

13. Plan Set A – Drawing C4.06 – Grading Plan: Updated to reflect the approximate area of required subgrade peat material removal beneath the proposed holding bay pavement. DELETE in its entirety and REPLACE with the attached revised drawing.

14. Plan Set A – Drawing C4.11 – Existing Southeast Storm Water Pond Expansion & Improvements: Updated to reflect the required installation of designated seed mix at the easterly project limit. DELETE in its entirety and REPLACE with the attached revised drawing.

15. Plan Set A – Drawing C5.04 – Storm Sewer Schedule: Updated to reflect the addition of a storm sewer pipe bedding detail and a catch basin / manhole detail. DELETE in its entirety and REPLACE with the attached Drawing G5.04 – Storm Sewer Schedule & Details.

Attachments:
Responses to Contractor Questions
Revised Specification Sections
Revised Drawings

NOTE: Receipt of this Addendum No. 2, dated June 2, 2026 shall be acknowledged on BidExpress. Failure to do so will not allow Bidder to submit Bid.

Jarrod Nelson, PE
License Number 26794

END OF ADDENDUM

Building a Better World for All of Us®

RESPONSES TO CONTRACTOR QUESTIONS

TO: Addendum No. 2

FROM: Jarrod Nelson, PE (Lic. 26794)

DATE: June 2, 2026

RE: Contractor Questions
SEH No. DULAI 186683 & 188850 14.00

1. When will soil boring information and hazardous waste / environmental assessment be available for this project?
   See Addendum No. 1 dated Tuesday, May 26, 2026.
2. What are the groundwater treatment system requirements for the PFAS contaminated groundwater discussed at the pre-bid meeting as these systems vary significantly in overall treatment capacity / capability as well in cost?
   Anticipated PFAS contaminated groundwater item is for Midfield Ramp portion of work. If groundwater is encountered and if the contractor chooses to dewater while working, the water will need to be disposed of properly based on permit requirements which should be obtained by the contractor. Expecting City or NPDES permit needed for dewatering and SEH environmental will need to see a draft of the permit before it is submitted. See Addendum No. 1 dated Tuesday, May 26, 2026.
3. What are the requirements for gate staffing associated with the pond dredging on the north side of the Airport?
   For the purposes of bidding, a gate guard shall be stationed at both north side airfield gates for the north side stormwater pond dredging work, as indicated on Sheet G4.02.
4. Is the pond dredging associated with the north pond considered contaminated and will this material need to be landfilled?
   PFAS is observed in pondwater at north side pond dredging site. PFAS not observed at significant levels in the material to be dredged. See Addendum No. 1 dated Tuesday, May 26, 2026 regarding requirements for managing materials at project site.
5. Can the input to the south pond be taken offline during the construction duration? If not, can the storm water be directed to the adjacent wetlands during the construction duration?
   No, the stormwater input to the south pond cannot be taken offline during the construction duration. Due to site constraints, including site topography, including existing wetlands on the north side of the pond and including limited space, existing trees, and existing light poles on the south side of the pond, it is anticipated that the contractor will bypass/pump stormwater around the existing pond site, to low-lying areas on the east end of the pond site. The contractor will be required to submit a bypass plan that will include how they will complete their work in accordance with the NPDES permit requirements.
6. Is the water level in the north pond able to be reduced such that we are excavating / dredging in the dry?
   Dredging is expected to occur with wet conditions, due to the significant volume of pondwater.
7. Is the hanger associated with the Mid-Field construction on a full footing or is it slab on grade?
   We do not have original building documents or other information to confirm what type of footing is present. Based on prior excavation near the northeast corner of the hanger, SEH anticipates that

the piers between doors and at corners likely extend deeper, possibly to frost depth, and that the slab between piers may be a floating slab, possibly with a thickened edge. It is possible that there is a frost footing around the entire perimeter and it is possible that conditions may vary along the building, considering the lack of a joint between building floor and apron at some doors but not others. The bidding documents show trench drain construction details for both conditions that we anticipate as likely possibilities. We expect that the selected general contractor will work with SEH structural upon early removals to relay what is encountered so that construction details can be verified. If the provided details do not address existing conditions, adjustments will be made during the construction process.

8. Can the current operational hanger doors be de-energized in lieu of the poly system called out in the plans and specifications? With the consistent wind speeds at the airport, it would be a challenge to install and maintain a system that is subject to the winds.
   This may or may not be possible. There is a deep crack in the floor slab very near to where the planned sawcut is. If that floor slab is loose, or not structurally sound after the sawcut is made, that floor slab concrete will need to be replaced via the item provided on the bid form. We do not anticipate that work could be done properly with the door shut.
9. There is a small amount of P-401 called out in the project. It appears that this is just temporary mix between phases if the alternates are not awarded. Would you consider using P-403 for this bid item as P-401 must be a virgin mix for the final lift and it's an entirely different mix design with substantial cost for the separate design?
   It is correct that the small quantity of P-401 is for the temporary mix between phases of the Taxiway A reconstruction. You should bid this asphalt pavement for the designated P-401 mix, due to FAA requirements for full strength asphalt pavements, despite the substantial cost.
10. Will a dewatering item be added for maintenance of the existing stormwater system while the proposed storm sewer is being constructed or is this considered incidental to the storm sewer construction?
    No, a dewatering item will not be added for maintenance of the existing stormwater system while the proposed storm sewer is being constructed. Bypass pumping of stormwater for storm sewer construction is considered incidental to the storm sewer construction.
11. There is a detail for storm bedding called out in the Midfield Ramp Plans, C6.05, but there is not a detail provided in the Taxiway A plans. Does this detail represent what is required for Taxiway A as well?
    Yes. Plan Set A – Sheet C5.04 – Storm Sewer Schedule & Details will be revised and issued via addendum, reflecting the same pipe bedding detail.
12. Where is the gas vent system shown on plan sheet C4.11 covered in the SEQ?
    See the "Gas Vent Penetration" detail on Plan Set A – Sheet C4.13 – Storm Water Pond Details that indicates the gas vent system is "Incidental to Synthetic Liner".
13. Could SEH provide CAD files for takeoff purposes?
    No, our office will not be sharing CAD files during the bidding process.
14. Would SEH be able to provide existing grades on the overall grading plan? C4.00
    No, our office will not be providing existing grades on the overall grading plan during the bidding phase.
15. What is the synthetic liner material specification in the southeast pond? HDPE? PVC?
    See the attached specification section 02 66 12 included with Addendum No. 2 dated June 2, 2026.
16. Do we know the OEM for signs requiring replacement panels?
    Yes. The OEM for replacement signs in Phase 7 is Lumacurve.
17. Bid Item 57 is to reinstall an existing sign and specifies replacing the isolation transformer. Do you know the Iso size required?
    Yes, that isolation transformer will be 100W.

18. The current project specifications call only for the inclusion of warning tape; however, I strongly recommend revising the specification to require red integral color concrete encasement for all airfield electrical duct banks.
    There is no requirement in FAA specifications for colored concrete on airfield electrical duct banks. There will be no requirement for colored concrete duct banks for this project.

JCS

c: JRN, AA

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SECTION 02 66 12

SYNTHETIC LINER (GEOMEMBRANE CONTAINMENT)

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Textured geomembrane material requirements.
   2. Handling and installation procedures.
   3. Field testing and documentation.
   4. Subgrade requirements.

B. Related Requirements:
   1. Section 02 66 31 - Pond Cover Material
   2. Section 31 23 19 - Dewatering
   3. Section 31 23 34 - Trench Excavation and Backfill

1.02 MEASUREMENT AND PAYMENT :

A. The work is measured by completed in place geomembrane including through anchor trenches. Additional for overlap and scraps is not included in measurement.

B. All work described in this section and on drawings with necessary associated items to make the work functionally complete is considered incidental to the project.

C. Contractor will pay for geomembrane acceptance testing, destructive seam conformance testing and will submit destructive samples to the laboratory and receive destructive test results. Contractor will pay for the Leak Location Testing, and shall apply water and assist with testing as described in this section. All other testing is borne by the Contractor.

1.03 REFERENCES

A. ASTM:
   1. D570 - Standard Test Method for Water Absorption of Plastics
   2. D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
   3. D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
   4. D1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting
   5. D1238 - Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
   6. D1505- Standard Test Method for Density of Plastics by the Density-Gradient Technique
   7. D1603 - Standard Test Method for Carbon Black Content in Olefin Plastics
   8. D3895 - Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry
   9. D4437 - Standard Practice for Non-destructive Testing (NDT) for Determining the Integrity of Seams Used in Joining Flexible Polymeric Sheet Geomembranes
   10. D4833 - Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
   11. D5199 - Standard Test Method for Measuring the Nominal Thickness of Geosynthetics
   12. D5323 - Standard Practice for Determination of 2 % Secant Modulus for Polyethylene Geomembranes
   13. D5397 - Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test
   14. D5721 - Standard Practice for Air-Oven Aging of Polyolefin Geomembranes
   15. D5885 - Standard Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High-Pressure Differential Scanning Calorimetry

16. D6693 - Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes
17. D7466 - Standard Test Method for Measuring the Asperity Height of Textured Geomembrane
18. E96 - Standard Test Methods for Water Vapor Transmission of Materials

B. Geosynthetic Research Institute (GRI):
1. GM13 - Test Methods, Test Properties and Testing Frequency for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes
2. GM19 - Seam Strength and Related Properties of Thermally Bonded Polyolefin Geomembranes

1.04 PRE-INSTALLATION CONFERENCE

A. Prior to installation of geomembrane, a conference shall be held at site to review panel layout and seaming technique, sequence of work, repair methods, seam testing methods, sample storage and handling, reports and record keeping, and other topics that may be necessary at the time. This conference shall be attended by Engineer, Owner, Contractor, and geomembrane installer.

1.05 PRE-WATER TESTING CONFERENCE

A. A pre-water testing conference shall be held at site to discuss the specified inspections, quality control testing, and water balance testing. The duties, responsible parties, and scheduling of the action should be made clear to all participants.

1.06 INSPECTIONS

A. See additional requirements under INSPECTION Section.

1.07 SCHEDULING

A. Geomembrane installer shall coordinate its work schedule with Contractor. Installer shall begin installation of geomembrane within two weeks of notice to begin by Contractor and shall proceed with geomembrane work until completed.

1.08 SUBMITTALS

A. Contractor shall submit with bid the name of the proposed manufacturer and installer of the High Density Polyethylene (HDPE) and Proof of Responsibility for the installer.

B. Submittals shall be in accordance with Section 01 33 00.

C. Submit the following within 30 days after Contract award for each type of geomembrane:
1. Test and Evaluation Reports:
   a. Certified test reports completed by an approved independent testing laboratory on the geomembrane to be installed that indicated compliance with these specifications.
2. Shop Drawings:
   a. A layout plan including proposed seaming methods and details of the geomembrane sheet layout showing proposed geomembrane sheet width, length, numbers and position of factory extruded panels and indicating the location of all field welds and/or seams, methods of sealing to structures, and openings through the geomembrane.
   b. Construction details for all geomembrane related work including minimum panel overlap, temporary panel anchoring methods and a plan for permanent geomembrane anchoring with traffic routing identified.
3. Manufacturers' Instructions:
   a. Manufacturer's complete written instructions for storage, handling, installation, seaming, and repairing of the geomembrane in compliance with this specification and the warranty.
4. Certificates:
   a. A letter from the geomembrane manufacturer that states:

1) Manufacturer has reviewed and approved the specifications for the base preparation upon which the geomembrane is to be installed.

5. Qualification Statements:
   a. Resumes of geomembrane installer's superintendent and master seamer including dates and duration of employment.
   b. A letter or statement of qualifications from the geomembrane manufacturer:
      1) Full-time installer qualifications per Article 1.06. A resume shall be included with the letter.
      2) Master seamer qualifications per Article 1.06. Provide resume of master seamer.
6. Field Quality Control:
   a. Identification of the independent laboratory and contact person that will perform, at Contractor's expense, the shear and peel testing.
7. Warranty Information:
   a. Copies of the warranties for preliminary approval by Engineer.

D. Submit the following prior to shipment of the geomembrane material to the site:
   1. Product Data:
      a. The origin (resin suppliers name, resin production plant), identification (brand name, number) and production date of the resin.
   2. Source Quality Control:
      a. A copy of the quality control certificates issued by the resin supplier noting results of the density and melt index.
      b. Reports on the test conducted to verify the quality of the resin used to manufacture the geomembrane rolls supplied including specific gravity and melt index.
      c. The quality control plan that the manufacturer will be using for the geomembranes being supplied.
      d. Reports by the geomembrane manufacturer to verify the quality of the sheet.
      e. A quality control certificate for every 2 rolls including as a minimum; roll number and identification, results of tests for thickness, tensile strength, tear resistance, asperity height for textured, puncture resistance, carbon black content and dispersion.

E. Submit the following before installation:
   1. Installation schedule
   2. Qualifications:
      a. List of proposed seaming personnel including experience information.
   3. Certificates:
      a. Certificate that extrudate to be used is comprised of the same resin as geomembrane to be used.
      b. Extrudate rod certification.
      c. Geomembrane installer's certification that final surface is suitable and acceptable for geomembranes installation signed by installer and Contractor.
      d. The three most recent certified calibration certificates for tensile testing machine. The most recent calibration shall be no more than 3 months prior to start of installation.
   4. Product Data:
      a. List of seaming devices to be used with identification numbers.

F. During installation and within 5 days of completion of installation, submit to Engineer and Contractor the following:
   1. Test and Evaluation Reports
      a. Daily progress reports summarizing location of geomembranes and quantity of panels deployed, length of seam welded, name of welder employed, destructive and non-destructive tests performed, weather conditions and other conditions pertinent to each day's work performed.
      b. Destructive and non-destructive test results.
      c. Contractor shall submit shear and peel test results to Engineer within 24 hours of taking the weld samples.

G. Upon completion of geomembrane installation and prior to covering, submit the following to Engineer:

1. Field Quality Control:
   a. Letter from installer stating that the geomembrane was installed in accordance with manufacturer's specifications and instructions.

1.09 QUALITY ASSURANCE

A. Manufacturer shall have minimum 5 years continuous experience in manufacture of HDPE geomembrane and experience totaling 2,000,000 square feet of manufactured HDPE geomembrane for minimum of 3 completed facilities.

B. Installer and Seamer Qualifications
   1. Installer shall have minimum 5 years continuous experience in installation of HDPE and LLPDE geomembranes and experience totaling 2,000,000 sq ft of installed geomembrane for a minimum of 3 completed facilities of equal or greater square footage to this project.
   2. Personnel performing seaming operations shall be qualified by experience or successfully passing seaming tests. Minimum of one seamer shall have experience seaming minimum 1,000,000 square feet of HDPE and LLPDE geomembrane of 40 mil or greater using same type of seaming apparatus in use at site. Most experienced seamer, "master seamer," shall provide direct supervision, as required, over less experienced seamers.

1.10 TESTING LABORATORY

A. Contractor shall arrange for acceptance and destructive seam testing by a qualified testing agency, acceptable to Owner and Engineer and independent of Contractor and geomembrane installer. Contractor will pay for destructive seam conformance testing and will submit destructive samples to the laboratory and receive destructive test results.

B. Laboratory tests shall be as listed under "Geomembrane Acceptance Testing" and "Destructive Seam Testing" articles below.

1.11 DELIVERY, STORAGE AND HANDLING

A. Store and handle products in accordance with manufacturer's recommendations.

B. Materials shall be suitably prepared and packaged to prevent damage or deterioration during shipping and storage.

C. Store geomembrane material in location where it is protected from vandalism, vehicular traffic, damage from construction activities, and direct sunlight.

1.12 WARRANTY

A. Material Warranty: Contractor shall provide Owner with manufacturer's written warranty against manufacturing defects and material degradation of the geomembrane for a period of 20 years from the date of project final payment by the Owner.
   1. Contractor shall furnish Owner with a written warranty covering the above requirements and those contained in this specification.

B. Installation Warranty:
   1. Contractor shall warrant the installation of the geomembrane against defects for a period of 5 years from the date of project final payment by Owner.
   2. Contractor, or his designated representative, shall repair any defects due to improper installation that occur during the warranty period at no cost to Owner.

C. Leakage Warranty:
   1. The liner supplier shall warrant that their liner being supplied to the Owner will limit leakage to less than 500 gallons per day per acre. Provide liner system warranty and/or performance bond that will cover all appropriate items that would cause the liner to leak beyond the 500 gal/acre/day

leakage requirement, i.e. rocks, abrasion, settlement, liner flotation, seaming, pipe perforations, construction technique, ice, etc.

2. Contractor will also provide a pond system meeting all project requirements and testing that has passed a third party Water Balance Test paid for and performed by Owner to verify that the pond meets permit requirements. The test verifies whether a 500 gal/acre/day leakage rate is not exceeded. Requirements for the test are in the MPCA "Prefill and Balance Criteria Guidance Document", @ web address: http://www.pca.state.mn.us/index.php/view-document.html?gid=15336. The Contractor shall be responsible for all repairs and additional testing needed for the project to pass the Water Balance Test. It is understood that this test may not be able to be conducted until 2016.
3. The warranty shall cover investigation to determine the leaks and full repair of any leaks to the geomembrane due to issues including settlement, flotation, pipe perforations, punctures, and seam failure. Repair includes all costs involved with mobilizations, inspection, removal of any cover materials to access the liner including sand, geotextile and rip rap and acceptable repair of the liner in accordance with specifications in this section.

D. The liner material, installation and leakage warranties and/or bonds shall be in published forms and shall apply to all similar work. A copy of each warranty shall be placed on file with the Owner and the Engineer prior to installation of the synthetic liner.

E. The warranties shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by Contractor under requirements of the Contract Documents.

PART 2 PRODUCTS

2.01 GENERAL

A. Materials supplied under these specifications shall be first quality products designed and manufactured specifically for the purposes of this work, and which have satisfactorily demonstrated by prior use to be suitable and durable for these purposes. Recycled polymer shall not be used in any amount.

2.02 GEOMEMBRANE MATERIAL

A. The geomembrane shall be fabricated from polyethylene resin, as specified in GRI Test Method GM13 for HDPE.

B. The geomembrane shall contain a maximum of 1 percent by weight of additives, filler, or extenders, excluding carbon black.

C. The geomembrane material shall have no striations, roughness (except where textured geomembrane is specified), or bubbles on the surface.

D. Geomembrane shall be free of creases, holes, blister, undisbursed raw materials or any sign of contamination by foreign matter. Any such defect shall be cause for rejection of material by Engineer and Contractor shall immediately remove the defective material from the Site.

E. Material shall be resistant to, and not be affected by, sensitive to, or break down under exposure to, ultra-violet light, and shall be manufactured in a roll width of not less than 15 feet.

F. Contractor shall supply to Engineer a quality control certificate certifying the test results of the applicable physical properties for the geomembrane as stated below.

G. Each roll of furnished geomembrane shall be marked to show a minimum of the following information: product type, manufacturer, product thickness, length, width, manufacturing batch code, roll number, date of manufacture and physical dimension.

H. Acceptable Manufacturers:
   1. Material for geomembrane production shall be provided by GSE Environmental, Agru America, Inc., or approved equivalent, as determined by the Engineer.

I. The geomembrane material shall be manufactured to the following characteristics based on minimum average roll values:

60 Mil – Textured HDPE

Property	**(HDPE)**	**Test Method**
Textured	Double-Sided	NA
Thickness - (Min. Avg.) (Mils)	60	ASTM D5199
Asperity Height (Mils)	20	ASTM D 7466
Density (g/cc, min.)	0.94	ASTM D792/D1505
Melt Flow Index (g/10 min., max.)	0.3	ASTM D1238 Condition E (190 C 2.16 kg)
Carbon Black Content	2-3%	ASTM D1603
Carbon Black Dispersion		ASTM D5596
10 Views: 9 in Categories 1 or 2; 1 in Category 3		
Minimum Tensile Properties (each direction):		
1. Tensile Strength at Yield (lbs./inch width)	126	ASTM D6693 Type IV Dumbbell at 2 ipm
2. Tensile Strength at Break (lbs./inch width)	90	ASTM D6693 Type IV Dumbbell at 2 ipm
3. Elongation at Break (percent)	100	ASTM D6693 Type IV Dumbbell at 2 ipm
4. Elongation at Yield (percent)	12	ASTM D6693 Type IV Dumbbell at 2 ipm
5. Fusion Seams (lbs./inch width)		ASTM D4437
Shear:	95% of sheet tensile at yield	
Peel:	72% of sheet tensile at yield	
6. Extrusion Seams (lbs./inch width)		ASTM D4437
Shear:	95% of sheet tensile at yield	
Peel:	62% of sheet tensile at yield	
Tear and Impact Properties:		
1. C-Tear Strength (lbs./sq. inch)	42	ASTM D1004 Die C
2. Puncture Resistance (lbs.)	90	ASTM D4833

60 Mil – Textured HDPE

Property	(HDPE)	Test Method
Environmental Resistance Properties:		
1. Low Temp/Brittleness	-94° F	ASTM D746 Procedure B
2. UV Resistance (% of strength retained after 1,600 hours)	50%	ASTM D5885
3. Oven aging at 85° F (% of strength retained after 90 days)		ASTM D5721
Standard Pressure	55% OR	ASTM D3895
High Pressure	80%	ASTM D5885
4. Oxidative Induction Time (OIT) (minutes)		
Standard Pressure	100	ASTM D3895
High Pressure	400	ASTM D5885
5. Environmental Stress Crack (minimum hours)	300	ASTM D5397
6. Water Absorption (max. % wt. change)	0.1	ASTM D570
7. Moisture Vapor Transmission (g/m^2 day)	0.003	ASTM E96
8. Multi-axial Break Resistance %	15	ASTM D5617

2.03 GEOMEMBRANE ACCEPTANCE TESTING

A. Test Methods:
   1. Contractor will collect acceptance testing samples from geomembrane material produced for direct use on the project and prior to delivery to the site. The rate of sampling will be one per 10 acres or minimum 3 of geomembrane material to be delivered to the site. At least one sample will also be obtained for each geomembrane material production batch for each shipment. Installer shall not ship to, or receive at, the site geomembrane from more than two production batches in any single shipment without the prior written approval of Engineer. Samples collected will be of a size determined by the testing laboratory. The Contractor will indicate the machine direction on the samples and will ship samples to the third party testing laboratory.
   2. The tests and the test methods to be performed on HDPE geomembrane roll samples are listed below. The specifications and methods used in evaluating the results are discussed below under "Procedures for Determining Geomembrane Roll Test Failures". Unless specified otherwise, sample specimens shall be prepared in accordance with the referenced test method. The results for tear resistance and each of the tensile property tests shall be reported for both the machine and cross direction.

Property	Test Method	Minimum Testing Frequency
Thickness	ASTM D 5199	1 roll/10 acres, min. 3[1]
Asperity height	ASTM D 7466	1 roll/10 acres, min. 3[3]
Density	ASTM D 1505 / D 792	1 roll/10 acres, min. 3
Tear resistance	ASTM D 1004	1 roll/10 acres, min. 3
Tensile properties2 • Yield Strength • Break Strength • Yield elongation Break elongation	ASTM D 6693	1 roll/10 acres, min. 3

Notes:
1. Manufacturer to perform quality control testing at the specified frequencies (minimum) on the geomembrane rolls to be supplied to project.
2. Machine direction and cross machine direction average values shall be on the basis of 5 test specimens each direction. Yield elongation is calculated using a gage length of 1.3 in. Break elongation is calculated using a gage length of 2.0 in.
3. Alternate the measurement side for double side-textured sheet.

B. The testing laboratory shall be responsible for performing the tests on samples submitted to them as described above under "Test Method" column of the table above. The results of the tests performed shall be reported to Engineer.

C. Procedures for Determining Geomembrane Roll Test Failures:
   1. Article 2.02 lists the acceptance specifications for the geomembrane material. For those tests where results are reported for both machine and cross direction, each result shall be compared to the listed specification to determine acceptance.
   2. The following procedure shall be used for interpreting results:
      a. If the test values meet the stated specification in the table provided in article 2.02, then the roll and the lot will be accepted for use at the job site. If the sample represents all rolls from an entire shipment, then the entire shipment will also be considered accepted.
      b. If the result does not meet the specifications, then the roll and the batch may be retested using specimens either from the original roll sample or from another sample collected by the Engineer. For retesting, two additional tests shall be performed for the failed test procedure. (Each additional test shall consist of multiple specimen tests if multiple specimens are called for in the test procedure). If both of the retests are acceptable, then the roll and batch will be considered to have passed this particular acceptance test; if either of the two additional tests fail, then the roll and batch will be considered unsuitable without further recourse. Engineer may obtain samples from other rolls in the batch. On the basis of testing these samples, Engineer may choose to accept a portion of the batch while rejecting the remainder.
      c. If retesting does not result in passing test results as defined in the preceding paragraph, or if there is any other nonconformity with the material specifications, then installer shall withdraw the rolls from use in the project. Installer shall be responsible at his/her sale risk, cost, and expense for removing this geomembrane from the site and replacing it with acceptable geomembrane.

PART 3 EXECUTION

3.01 GENERAL

A. All perforations through the liner will be completed with prefabricated boots and stainless steel straps with neoprene, including perforations for vent piping and fence posts.

B. Contractor shall have provided submittals and received approval of material and verified the preparation of the subbase the geomembrane is to be placed upon prior to commencing installation of the geomembrane. Engineer shall be notified 7 days prior to commencing installation.

C. Contractor shall visually inspect all delivered geomembrane materials for damage and identification. All material damaged by or defective because of shipping, handling, and/or replacement shall be clearly labeled and repaired immediately or if repair is not possible the damaged/defective material shall be immediately removed from the Site.

D. Contractor shall be responsible for storage, shipping, and handling of material per the manufacturer's recommendations and shall be done in such a manner as to prevent damage to any part of the work.

E. Sufficient sandbags and materials shall be on-site to complete installation of the geomembrane prior to commencement of any geomembrane installation.

F. An authorized technical representative of the geomembrane manufacturer shall be on-site full-time through the installation.

G. Geomembrane panels shall be laid in strict accordance to the manufacturer's instructions and Shop Drawings.

H. As each sheet is unrolled, Contractor shall carry out further visual inspection of the sheet surface. All defects shall be repaired prior to installation. Owner retains the right to reject all defective material.

I. The geomembrane field seams shall be visually inspected and, in addition, all field seams shall be checked for its entire length using a non-destructive testing method per manufacturer's recommendation. Any weak or unbounded seam shall be repaired.

J. No cutting of materials shall take place directly on geomembrane. Instead, materials shall be cut on a piece of plywood or at a minimum held off the primary geomembrane material. If cutting is observed directly on geomembrane, the area shall be vacuum box tested.

K. No horizontal or angle seams shall be allowed on slopes steeper than 5 horizontal to 1 vertical. In corners and at other odd-shaped geometric intersections, the number of horizontal seams shall be minimized. A seam numbering system comparable and compatible with geomembrane roll numbering system shall be agreed upon at the preconstruction meeting.

L. Electric generator for the equipment shall be placed on a smooth base in such a way that no damage occurs to the geomembrane. Similarly, a smooth insulating plate or fabric shall be placed beneath the hot equipment after use.

3.02 SUBGRADE REQUIREMENTS

A. Any soil in contact with the liner must meet the following requirement:
   1. The six inches of soil immediately beneath the liner shall be inorganic, free of all rocks, stones, sticks, and debris of any kind, with no particle larger than three-eighths inch diameter. Not more than 50 percent by weight of this material shall be between one-fourth and three-eighths inch diameter. Angular, sharp material is not allowed in the subgrade, regardless of diameter. The underlying soils should be stable and relatively incompressible.

B. If native soil at the liner elevation meets subgrade requirements, no additional work is needed except for compaction.
   a. Surfaces to be lined should be excavated to the elevation of the liner and compacted to 95 percent of the standard proctor density.

C. Subgrade General Requirements:

1. The subgrade must be graded or rolled to provide a smooth flat surface for placing the liner to within (+,-) 0.1 feet of design elevations. No abrupt changes in grade shall occur, such as vehicular ruts.
    a. Ruts force the liner to span the gap unless the liner perfectly conforms to the rut. When cover material is applied, the liner will stretch and may fail.
2. Liner must be sloped to avoid air buildup below the liner.
3. During liner placing and seaming the subgrade must be kept free of standing water. If subgrade below the liner becomes wet and unstable, it must be dried and recompacted.

3.03 GEOMEMBRANE PLACEMENT

A. Contractor shall provide Owner with written certification from the geomembrane installer verifying acceptability of the subgrade prior to the placement of the geomembrane. The receiving surface shall be maintained in an acceptable condition until completion of the geomembrane installation.

B. Liner panels should be laid out according to plans supplied by the manufacturer and no deviations will be allowed except with approval of the engineer.

C. Deploy geomembrane in a manner that does not damage supporting soil. If supporting soil is damaged, remove deployed panel and repair supporting soil.

D. Take the following precautions while installing the geomembrane:
    1. Ensure the equipment used does not damage the geomembrane by the way it is handled, by excessive heat, by leakage of hydrocarbons, or by other means.
    2. Ensure that the method used to deploy the geomembrane does not cause scratches or crimps in the geomembrane.
    3. Ensure the method used to deploy the geomembrane minimizes wrinkles.
    4. Ensure that the geomembrane is adequately loaded to prevent wind uplift.
    5. Ensure that only approved equipment is allowed on the surface of the geomembrane. The use of motorized vehicles is not permitted without approval from the Engineer.
    6. Fueling of equipment or storage of fuel containers is not allowed on the surface of the geomembrane.

E. The geomembrane shall be placed over the surfaces to be covered in such a manner as to assure minimum handling and scheduled to permit the entire geomembrane to be installed and tested within 1 construction season. Any portion of the geomembrane damaged during installation shall be removed and repaired using an additional piece of the geomembrane material as specified herein.

F. Geomembrane panels shall be laid in a longitudinal direction with a minimum overlap of 3 inches. The weld shall be placed uniformly and shall be of a type suitable for underwater use.

G. Contractor shall excavate the anchor trench for the geomembrane to the lines and grades shown on the Drawings. The trench shall use a “U” configuration. No more than the amount of trench required for the geomembrane to be anchored in 1 day shall be excavated to minimize the desiccation potential of the anchor trench soil.

H. All gravel larger than 3/4-inch shall be removed from the anchor trench walls and base.

I. The anchor trenches shall be backfilled immediately upon placement of the geomembrane. The trench shall have no sharp edges and the backfill material shall be compacted after placement of the geomembrane.

J. Geomembrane sheets shall be closely fit and sealed around inlets, outlets, and other projections through the geomembrane. All projections through the geomembrane shall be sealed and flashed with prefabricated boots. All sealing methods shall be submitted to Engineer for preapproval.

K. The geomembrane shall be installed throughout as indicated on the plans. The sheets shall be of such lengths and widths and shall be placed in such a manner as to reduce field jointing to a

minimum. Only those sheets of geomembrane material which can be anchored and/or sealed together in one day shall be unpackaged and placed in position. Contractor shall consult the manufacturer as to the minimum and maximum ambient air and geomembrane sheet temperatures for handling the geomembrane.

L. Only sandbags may be used as required to hold the geomembrane in position during installation. Sandbags shall be sufficiently close-knit to preclude fines from working through the bag. Under no circumstances shall the geomembrane be subjected to materials, sandbags, equipment, or other items being dragged across its surface nor shall workmen and others slide down slopes atop the geomembrane. All parties walking or working upon the geomembrane material shall wear soft sole shoes. No smoking shall be permitted on the exposed geomembrane material.

M. Where access or haul roads over the geomembrane are to be utilized, a minimum of 2 feet of suitable material approved by Engineer shall be placed at these locations. Other methods for protecting the geomembrane along the haul roads shall be considered by Engineer. The haul roads may be removed and the area restored to project specifications or left in place at the direction of Engineer.

N. Engineer will examine each panel for damage after placement and will determine which panels, or panel portions, will be rejected, or accepted. Damaged panels or portions that have been rejected shall be removed and replaced with acceptable panels.

3.04 FIELD SEAMS

A. All field joints shall be done by a seaming process according to the manufacturer's specifications. The lining shall be elevated to the temperature of the weld during installation. No solvents or adhesive shall be allowed.

B. Welding material shall be as recommended and supplied by the manufacturer and shall be sealed in containers and delivered to the Site. Each container shall have an indelible label bearing the brand name, manufacturer's mark number, and complete directions as to storage.

C. Contractor shall provide to Engineer manufacturer's recommended temperature range for installation activities and any recommendations for cold weather construction.

D. No welding will occur if the sheets are wet or the ambient air temperature is below 32 degrees F or above 95 degrees F.

E. Seaming shall not be performed in areas where ponded water has collected below the surface of the geomembrane.

F. Between ambient air temperatures of 32 degrees F and 50 degrees F, seaming shall be performed only if the geomembrane is preheated by either sun or a hot air device, provided there is no excessive ambient cooling resulting from high winds.

G. Contractor shall provide Engineer manufacturer's recommended temperature and speed ranges for each seaming instrument used to weld the geomembrane sheets. These range combinations will not be exceeded without written authorization from the manufacturer and Engineer.

H. Procedures used to temporarily bond adjacent geomembrane panels must not damage the geomembrane; in particular, the temperature of the hot air at the nozzle of any spot welding apparatus shall be controlled such that the geomembrane is protected at all times against potential damage.

I. Fusion welding will be used to the largest extent possible when fabricating field welds. Extrusion welding will only be allowed for detail work and patching.
   1. Shear strength is defined as follows:
      a. The seam when stressed perpendicular to the direction of the weld shall be stronger than the geomembrane panel.

b. The seam area under any condition should not fail before stretching and breaking of the geomembrane panel adjacent to the weld.
c. The shear strength shall be in accordance with the requirements provided in Article 2.02 of this Section.
d. This test shall determine if excessive damage to the geomembrane has occurred during the welding process.

2. Peel strength is defined as follows:
a. The seam when stressed in the 180 degree peel condition shall not separate at the weld along the original contact area of the 2 geomembrane panels or pieces.
b. The bond under any condition shall be stronger than the geomembrane itself, which occurs when the geomembrane adjacent to the weld stretches and tears away from the bond before the bond breaks.
c. The tensile strength shall be in accordance with the requirements provided in Article 2.02 of this Section.

J. An independent laboratory shall test representative samples of seams fabricated using the proposed welding technique to verify that they meet the requirements of Article 2.02. These results shall be provided with Shop Drawing submittal.

K. Test Welds
1. During field seaming operations, a test weld 10 feet in length for hot shoe welding and 4 feet in length for extrusion welding shall be run each morning, afternoon, change in climatic conditions, and at least once every 5 hours of seaming activities for each apparatus used that day prior to geomembrane welding.
2. Each seamer using seaming apparatus is required to complete a test weld prior to seaming. Test welds are to be run using the materials the seaming will be used for. At a minimum, one test weld per welding machine shall be made at the start of each day by each seaming technician performing welding that day. Each seamer shall make at least two test welds each full day of welding.
3. All test welds shall be visually inspected and field tested for peel and shear using an on-site tensiometer. All test coupons shall be 1 inch by 6 inches and cut from the test strip using an arbor press. The weld shall be centered in the coupon and perpendicular to the coupon sides. Five test coupons will be tested for peel and shear for each sample weld.
a. The on-site tensiometer shall be a Nelson Machine Co., Model 500 or equivalent, supplied and operated by the manufacturer's authorized representative under the supervision of Engineer. All test seams shall be logged by date, location, crew, weather conditions and welder settings.
b. The tensile strength at yield of each sheet under the temperature conditions at the time of testing will be determined by performing the shear test on three 1-inch by 6-inch coupons of the material which has reached ambient air temperature. The average of these 3 results will define the tensile strength at yield for the sheet under the current conditions.
c. For a test weld to pass, 5 out of 5 coupons for peel and shear must achieve the minimum requirements stated in Article 2.02 for the tensile strength at yield determined above. Field seaming may begin with a seaming instrument upon satisfactory completion of the peel and shear testing.

L. Extreme care shall be taken throughout the work to avoid fishmouths (bubbles, folds, or imperfect contact) in the field seams. Where fishmouths do occur, they shall be slit out far enough from the seam to dissipate them, lapped, welded together in the lapped area, and a patch placed to cover the entire affected area.

M. Any portion of the lining damaged during installation, by any cause, shall be removed or repaired by using an additional piece of geomembrane as specified hereinafter.

N. All field seams shall have strength stronger than the strength of the specified sheet strength. The field seam shall also be included in the overall warranty of the geomembrane.

3.05 PATCHING

A. Any necessary repairs to the geomembrane shall be patched with the lining material itself. The patch material shall extend a minimum of 6 inches in each direction from the damaged area. All patches shall have rounded corners with minimum radius of 3 inches. All patches shall be welded to the main sheet with the extrusion welding process. All seams shall be tested using the vacuum box method. Repairs that pass the nondestructive testing will be considered to be adequate, except that large caps may be of sufficient extent to require destructive seam sampling and testing, at the discretion of Engineer. Failed tests indicate that the repair was inadequate, and the repair shall be redone and retested until a passing result is obtained.

B. All joints, on completion of the work, shall be tightly bonded. Any geomembrane surface showing injury due to scuffing, penetration by foreign objects, or distress from rough subgrade shall, as directed by Engineer, be replaced or covered and sealed with an additional layer of geomembrane of the proper size in accordance with the patching procedures.

C. Patching and repairs to the liner should be made within 48 hours of discovery using an extrusion welding technique or another welding technique approved by the engineer. Hand held hot air welding will not be allowed for general welds, patches, or repair welds.

D. Patches should be placed as soon as possible to avoid missing them. Hand held hot air welding should be used for tacking only since it does not produce an acceptable final weld for patches or seams.

E. Patches should be made from the same material as the liner and have a continuous rounded edge with no distinct corners.

F. Patches should be rounded to avoid corners that could catch during covering and rip off.

G. Fish mouths are not allowed. A fish mouth is defined as an area in the seam where one liner panel is first folded over on itself and a second liner panel is placed and welded over this fold. Where fish mouths occur, the liner must be cut, overlapped and covered with a patch.

3.06 EXTRUSION WELDING

A. The geomembrane material shall be cleaned and prepared according to manufacturer’s procedures, a copy of which shall be given to Engineer 1 week prior to beginning seaming. Extreme care shall be taken by Contractor in the preparation of the areas to be welded.

B. All geomembrane shall be welded together by means of integration of the extrudate material with the geomembrane material. The composition of the extrudate used for the welding of seams shall be identical to the geomembrane material.

C. The welding equipment used shall be capable of continuously monitoring and controlling the temperature of the extrudate in the zone of contact where the machine is actually fusing the geomembrane material so as to ensure that changes in the environmental conditions will not affect the integrity of the weld.

D. Extrusion welding will not be allowed over frozen subgrade or at temperatures below freezing.

E. When the air temperature drops below 40 degree Fahrenheit, the Engineer may require extra test welds and destructive testing to check the integrity of the welding process.

F. One spare operable seaming device shall be maintained on-site at all times.

G. Grinding geomembrane surfaces for welding preparation shall not be performed more than 1 hour prior to seaming.

H. Installer and, if applicable, geomembrane manufacturer shall provide documentation to Engineer regarding the quality of the extrudate used in the welding apparatus. At a minimum, the extrudate shall be compatible with the base geomembrane material and shall contain the same grade and quality of polyethylene resins as used in the base material.

I. Installer shall keep records for each seamer performing extrusion weld seaming, including welding machine ID number, extrudate, and ambient temperature. This data shall be recorded at intervals as agreed upon at the preconstruction meeting.

3.07 FUSION WELDING

A. The geomembrane material shall be cleaned and prepared according to manufacturer's procedures, a copy of which shall be given to Engineer 1 week prior to beginning seaming. Extreme care shall be taken by Contractor in the preparation of the areas to be welded.

B. All geomembrane seamed with this process shall be welded together by means of the bond formed when 2 heated sheets are pressed together.

C. The fusion-welding apparatus shall be an automated vehicular mounted device with variable speed control.

D. The fusion-welding apparatus shall be fitted with a double wedge shoe to produce a double seam with an enclosed air space.

E. The fusion-welding apparatus shall be capable of continually monitoring and controlling the temperature in the zone of contact where the machine is actually fusing the geomembrane material so as to ensure changes in the environmental conditions will not affect the integrity of the weld.

F. The nip-drive rollers shall be new and their spacing calibrated to result in sufficient pressure to bond the heated sheets.

G. The composition of the nip-drive rollers shall be appropriate for the type of geomembrane to be welded.

H. One spare operable seaming device shall be maintained on-site at all times.

I. For cross seams, the edge of the cross seam shall be ground to a smooth incline (top and bottom) prior to welding.

J. For cross seams, the intersection dual hot wedge seam shall be patched using the extrusion fillet process described herein.

K. Installer shall keep records for each seamer performing fusion welding, including welding machine ID number, ambient temperature, and machine operating temperatures. This data shall be recorded at intervals as agreed upon at the preconstruction meeting.

3.08 NONDESTRUCTIVE TESTING

A. Each field seam shall be nondestructively tested over its full length (on every inch of seam and patch) using one of the methods described herein. Failure of any of the nondestructive tests will require the repair of the failed section according to the procedures described herein.

B. Vacuum Testing (Extrusion Welded Seam):
   1. The equipment shall be comprised of the following:
      a. A vacuum box assembly consisting of a rigid housing, a transparent viewing window, a soft neoprene gasket attached to the bottom, port hole or valve assembly, and a vacuum gage.

b. A steel vacuum tank and pump assembly equipped with a pressure controller and pipe connections.
c. A rubber pressure/vacuum hose with fittings and connections.
d. A bucket and a wide paint brush.
e. A soapy solution.

2. The following procedures shall be followed:
   a. Clean the seams to be tested so that they are relatively free from soil or foreign objects that might prohibit a good seal from being formed between the vacuum chamber and the geomembrane.
   b. Energize the vacuum pump and reduce the tank pressure to approximately 5 psi (10 in. of hg) (35 kPa) gage.
   c. Wet a strip of geomembrane approximately twice the size of the vacuum box with the soapy solution.
   d. Place the box over the wetted area.
   e. Close the bleed valve and open the vacuum valve.
   f. Ensure that a leak tight seal is created.
   g. For a period of not less than 30 seconds, examine the geomembrane through the viewing window for the presence of soap bubbles.
   h. If no bubbles appear after 30 seconds, close the vacuum valve and open the bleed valve, move the box over the next adjoining area with a minimum 3-inch (75 mm) overlap, and repeat the process.
   i. All areas where soap bubbles appear shall be marked and repaired in accordance with “Patching” paragraph.

C. Air Pressure Testing (For Double Fusion Seam Only):
1. The following procedures are applicable to those processes that produce a double seam with an enclosed space.
2. The equipment shall be comprised of the following:
   a. An air pump (manual or motor driven) equipped with pressure gage capable of generating and sustaining a pressure between 25 and 30 psi (160 and 200 kPa).
   b. A rubber hose with fittings and connections.
   c. A sharp hollow needle, or other approved pressure feed device.
3. The following procedures shall be followed:
   a. Seal both ends of the seam to be tested.
   b. Insert needle or other approved pressure feed device into the tunnel created by the fusion weld.
   c. Energize the air pump to a pressure between 25 and 30 psi (160 and 200 kPa), close valve, and sustain pressure for approximately 5 minutes.
   d. If loss of pressure exceeds 2 psi (15 kPa), or does not stabilize, locate faulty area and repair in accordance with Article 3.04.
   e. Air pressure in the weld must be released from the end of the seam not containing the air pressure gauge to ensure the full length of the weld was tested. If after removing the pressure from the far end of the seam the pressure gauge does not indicate a release of pressure, the obstructed portion of the weld will be identified and the weld shall be tested on each side of the obstruction separately.
   f. All punctures made in the geomembrane during the process of testing shall be repaired at the Contractors expense.
   g. Remove needle or other approved pressure feed device and seal.
4. For any seam interval that fails the air pressure nondestructive test, additional nondestructive testing or visual inspection shall be used to identify, if possible, the faulty area of the seam. The faulty area shall be repaired and retested. If the faulty area cannot be identified, then the entire seam shall be repaired and retested.

D. Documentation for Vacuum and Air Pressure Testing:
1. Installer shall perform the following documentation tasks:
   a. Observe nondestructive seam testing, and examine seams for squeeze-out, foot pressure, and general appearance. Failure of these criteria will be considered as failure of the seam, and repair or reconstruction will be required.

b. Document location, date, test unit number, name of tester, and outcome of all testing.
c. Inform Engineer of any required repairs.
d. Document that appropriate repairs are made and that the repairs are retested nondestructively with passing results

3.09 DESTRUCTIVE TESTING

A. Random samples called “Destructives” will be removed from locations selected by the Engineer of the welded geomembrane by the Contractor at a frequency of 1 test per 500 linear feet of weld maximum. At least 1 set of destructive samples will be taken each day for each seaming instrument operated during that day. Destructive seam testing shall be performed within 48 hours of sampling either in an on-site or off-site testing laboratory.

B. Sampling Procedure:
1. Specimens for qualitative field testing shall be taken prior to removal of the laboratory sample.
2. Two 1-inch wide specimens (1 for shear testing and 1 for peel testing) will be prepared from the ends of the 42-inch destructive sample. These specimens will be tested using the procedures outlined by ASTM D4437. The specimens tested for shear and peel must achieve the minimum requirements set forth herein for the tensile strength.
3. The remaining 36 inches of the 42-inch long destructive sample that has satisfactorily completed the shear and peel tests as described above shall be properly tagged and cut by the installer into three parts and distributed as follows:
   a. A sample, 12 in. by 12 in., shall be given to the Installer for submittal to the testing laboratory.
   b. A sample, 12 in. by 12 in., shall be given to the Owner for record storage.
   c. A sample, 12 in. by 12 in, shall be given to the Engineer for optional laboratory testing.
4. All field samples shall be tagged with the destructive test number, date, location, seaming machine number, and time. For the peel test, also identify which geomembrane is the top and which is the bottom with respect to seams performed using fusion weld techniques.

C. Upon rejection of a destructive sample, 2 new test samples shall be removed and tested. These samples shall be taken at a minimum of 10 feet on each side of the original sample. Subsequent failure of test samples shall cause the testing to move further down the seam until the extent of the faulty seam has been determined. All faulty seam areas shall be bounded by 2 passing test samples.
1. All costs incurred for testing and retesting failed areas will be borne by Contractor.

D. Installer, in accordance with the repair procedures described in the “Patching” article, shall immediately repair all holes cut into the geomembrane resulting from destructive seam sampling. The repaired area shall be nondestructively tested in accordance with the requirements specified herein.

E. End of Seam Sampling:
1. In addition to the 36 inch sample cut for laboratory testing, an additional sample shall be cut from each end of each continuous production field seam 100 linear feet in length or longer for field testing as described below. These samples need to be only 1 inch wide and can be cut from the portion of the seam that extends into/past the anchor trench so as not to require an additional repair.

F. Field Test Methods:
1. The 1 inch wide samples (both for end of seam sampling and shear and peel testing) shall be field tested for peel and shear. Testing shall be performed using a field tensiometer or equivalent device to qualitatively determine the mode of failure. The seam will be considered passing if the failure in both peel and shear does not occur within the seam. If the samples fail the field tensiometer test, the repair procedures of the “Patching” article for the holes left by the cutout samples, and the seam reconstruction procedures for the repair of the defective seam shall be implemented.

3.10 INSPECTION

A. Contractor shall provide to Engineer a letter from the geomembrane installer that states the manufacturer's authorized representative has inspected the installation and the installation was installed in accordance with the manufacturer's specifications. An authorized representative shall be present at the Site full-time during geomembrane installation and shall certify in writing that the subgrade preparation and geomembrane installation is acceptable. Subgrade will be fully inspected prior to placement of the liner. Upon completion of inspection, the installer shall either identify any workmanship and/or materials which are believed to not be in compliance with the plans and specifications, or if subgrade is found to be adequate, issue a certification to that effect to the contractor. The contractor will forward the certification to the owner/engineer.

B. Prior to the placement of any backfill over the geomembrane (synthetic liner), a preliner inspection must be performed by the MPCA. The MPCA must be notified no less than 7 days prior to placement to schedule the inspection.

C. Every inch of seam shall be visually inspected and tested by a vacuum box or approved method. The vacuum box test shall be conducted as specified with ASTM D4437-84, 7.3. Manufacturer's authorized representative shall initiate the testing under the supervision of Engineer. Testing shall be done by Contractor installing the geomembrane.

D. Each section of geomembrane, prior to covering, must be inspected, tested and approved in writing by the manufacturer's authorized representative and submitted to Engineer for review. Written documentation shall be compiled by the Installer on the installation of each field seam. This documentation shall be provided to Engineer upon completion of the installation. The authorized representative shall certify in writing that the geomembrane was properly installed. This approval shall in no way remove Contractor's liability for installation or the manufacturer's warranty on the geomembrane.

E. The geomembrane welding is completed, Engineer will examine the geomembrane for wrinkles and determine which wrinkles shall be cut and seamed by installer. The wrinkle repair shall be provided in accordance with the equipment and procedures described herein and nondestructively tested.

F. All inspection documentation shall be submitted and approved prior to covering the geomembrane segment.

3.11 LEAK LOCATION TESTING

A. At completion of cover layer placement on the geomembrane the Contractor will perform and pay for a geomembrane leak location test.

B. The Contractor shall provide all drainage layer isolation areas required for testing. The liner must be tested and verified to the top of slopes. The Contractor shall be responsible for making any needed geomembrane repairs up to the north cell boundary.

C. Contractor shall provide a water truck and spray irrigation system and laborers to assist in applying water to the leachate granular drainage layer.

D. The repair and retesting of all leaks detected by this process will be at Contractor's expense.

E. Geomembrane Leak Location Survey
   1. The Leak Location Contractor shall have qualifications and experience in conducting the proposed survey method including having tested a minimum of 15,000,000 square feet of geomembrane within the previous three years. In addition, the leak location surveys must be supervised by a professional or technician with a minimum of three years and 1,000,000 square feet of geomembrane testing experience using the proposed leak location survey methods. The leak location supervisor must be on-site full-time during the performance of the leak location survey.

2. The leak location contractor shall submit a Leak Location Survey Work Plan to the Engineer for approval prior to commencement of the leak location survey. The Leak Location Survey Work Plan shall include:
    a. Qualifications of the proposed Leak Location Contractor to include the number of years the Leak Location Contractor has performed the proposed survey methods;
    b. Resumes of proposed on-site supervisors;
    c. Description of the proposed survey methods, and procedures;
    d. Required site preparations;
    e. Estimated duration of survey;
    f. Quality control and field calibration procedures;
    g. A list of projects demonstrating the qualifications and experience where the proposed Leak Location Contractor and leak location supervisor has met the requirements set forth herein.
    h. Sample of a final report (per ASTM D 7002 and ASTM D 7007) provided by the Leak Location Contractor following the completion of the survey.
3. The leak location survey shall be observed by the Engineer. The Contractor shall notify the Engineer a minimum of 3 days in advance prior to commencing the leak location survey.
4. The Contractor shall be aware of the leak detection activities outlined herein and shall account for these activities in the construction schedule.
5. Any required materials that need to be installed prior to placement of the geomembrane such as a bare grounding wire shall be identified in advance to the Contractor by the Leak Location Contractor and installed before geomembrane installation.
6. Site Preparation:
    a. Leak Location Contractor will identify actions required by Contractor to prepare the site for the leak location survey.
    b. Contractor shall assist the Leak Location Contractor in laying out and marking the survey area.
    c. Contractor shall ensure that the earth materials above and below the geomembrane contain sufficient moisture to conduct a leak location survey. Typically, a moisture content of the earth materials of one to two percent by weight is sufficient to conduct the survey. If the moisture content of the earth materials layer is not sufficient per the requirements of the Leak Location Contractor, then the Contractor shall add sufficient water to the earth materials as required.
    d. Contractor shall provide electrical isolation around the perimeter of the area being surveyed for leaks. Electrical isolation is achieved by leaving approximately a one-foot wide area of dry geomembrane exposed around the perimeter of the section or leaving a minimum of six-inches of bare geomembrane protruding from the back-filled anchor trench. Any other electrically conducting paths through the geomembrane such as metal pipes, battens, or concrete structures should be likewise isolated.
7. Execution:
    a. The Leak Location Contractor shall inspect the site prior to commencing the survey to ensure all site preparations are completed and the site conditions are appropriate for conducting the leak location survey.
    b. Any discrepancy in the required site preparation described in the Leak Location Survey Work Plan or site conditions shall be reported to the Contractor for corrective or appropriate action.
    c. After the earth materials are added above the geomembrane, conduct a leak location survey on the earth materials using the procedures for surveys with earth materials covering the geomembrane described in the latest version of ASTM D 7007.
    d. The Leak Location Contractor shall inform the Engineer and mark the locations of all identified or indicated leaks with markers, flags, spray paint, or written coordinates.
    e. The Contractor shall expose areas identified by the Leak Location Contractor to identify the exact location of leaks.
    f. All defects identified by the leak location survey shall be repaired at the Contractor’s expense until no further leaks can be electrically identified.
    g. Repaired areas shall be retested for leaks.

F. The leak location contractor shall provide a written report to the Engineer within 14 calendar days of completion of the leak location survey field work as described in ASTM D 7002 and ASTM D 7007 as applicable.

3.12 WATER BALANCE TESTING

A. The MPCA requires that the water balance test be conducted. The test will be conducted to the instructions provided in Attachment A.

B. Pre-Water Testing Meeting
   1. A Pre-water Testing meeting will occur prior to the test to discuss roles, responsibilities, scheduling, documentation, etc.

C. Testing Plan
   1. The party responsible for the performance of the water balance test and the data collected is required to develop a water balance test plan that must be submitted and approved by the MPCA. This plan should address the site specific details of the testing procedures, and at a minimum, address the following details:
      a. Who will conduct the water balance test (engineer, independent testing laboratory, owner)
      b. Where the prefill water will come from (river, lake, city water, onsite wells, treated effluent, etc.). The use of some water sources may require appropriation permits and time for that permitting process should be factored into the overall schedule.
      c. The depth of the water the test will be run at
      d. Where the barrels will be located and how many will be used (per pond):
      e. How the pond water elevation will be measured
      f. Where and how rainfall will be measured (it needs to be measured at the pond site, what type of recorder will be used, scale, etc.).
      g. How often the barrels will be measured
      h. How often rainfall will be measured
      i. Location of the groundwater table

      This plan shall be submitted to the MPCA and must be approved prior to the Permittee's request for a prefill inspection.

D. Prefill Inspection Requirements
   1. Preliner Inspection by the MPCA
      a. The following items need to be submitted for a preliner inspection:
         1) A copy of the soil test results (density, etc., on both subbase and dikes).
         2) The written results of the pond bottom survey
   2. Prefill inspection
      a. The permittee must submit a letter indicating that they have accepted the work necessary to conduct the prefill and complete the water balance and are requesting MPCA to conduct a prefill inspection.
      b. Included with the above letter, if not previously submitted to the MPCA, must be the following:
         1) The contractor and liner manufacturer certification that the liner was installed per the plans and specifications.
         2) The contractor and liner manufacturers' certification that the cover material was placed per the plans and specifications.
         3) The liner manufacturer's certification that the installation was in conformance with all warranty provisions and that no provisions of the warranty have been voided.
         4) A copy of all liner test results for seam strength, strength of liner material, mil thickness, etc. If electro-resistivity testing was completed those results must

      also be submitted.
         5) A copy of the liner warranty. If the final warranty is not available, a copy of the generic warranty is sufficient; submit the final warranty to the municipality.

E. Water Balance Test
   1. The water balance test will be conducted via the directions provided in Attachment A.
   2. The analysis and results must be submitted to the MPCA.

END OF SECTION

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SECTION 31 23 16

BACKFILLS
(MnDOT 2451)

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Backfill placement.

B. Related Sections:
   1. Item P-152 Excavation, Subgrade, and Embankment

C. Method of Measurement:
   1. Granular materials:
      a. Measure by compacted volume in cubic yards based on placement dimensions shown on Drawings.

D. Basis of Payment:
   1. Payment for backfills shall be at the Contract Unit Price as listed on the Bid Form. All associated Work items shall be considered incidental.

1.02 REFERENCES

A. MnDOT:
   1. 2106 - Excavation and Embankment (Compacted Volume)
   2. 2451 - Structure Excavations and Backfills
   3. 3149 - Granular Material

1.03 SEQUENCING AND SCHEDULING

A. Do not commence backfilling until soil test results are confirmed.

PART 2 PRODUCTS

2.01 MATERIALS

A. Granular Backfill: MnDOT 3149D.

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

A. Backfilling:
   1. Place Backfill in accordance with Item P-152 Excavation, Subgrade, and Embankment.
   2. Compact Backfill in accordance with Item P-152 Excavation, Subgrade, and Embankment.
   3. Do not place backfill material on frozen embankments.
   4. Do not place material that will freeze during backfill or compaction.

3.02 FIELD QUALITY CONTROL

A. Soil Tests:
   1. Soil density tests on backfill material will be taken at Owner's discretion.

3.03 PROTECTION

A. Protect prepared embankment soils from freezing.

B. Protect and maintain prepared embankment soils during dewatering operations.

END OF SECTION

Appendix B

Prevailing Wage Rates

"General Decision Number: MN20260231 05/18/2026

State: Minnesota

Construction Types: Heavy and Highway

Counties: Minnesota Counties of
Carlton, Cook, Itasca, Koochiching,
Lake, Pine and St Louis

Heavy Construction

Highway Construction

Modification Number	Publication Date
0	01/02/2026
1	05/18/2026

SAMN2024-001 11/18/2024

	Rates	Fringes
WIRING SYSTEMS INSTALLER	$ 33.44	17.82
WIRING SYSTEM TECHNICIAN	$ 44.61	20.61
UNDERGROUND AND OPEN DITCH LABORER (EIGHT FEET BELOW STARTING GRADE LEVEL)	$ 44.08	26.33
TUNNEL MINER	$ 35.63	22.02
TRUCK DRIVER: GROUP 4: BITUMINOUS DISTRIBUTOR SPRAY OPERATOR (REAR AND OILER); DUMP PERSON; GREASER; PILOT CAR DRIVER; RUBBER-TIRED, SELF-PROPELLED PACKER UNDER 8 TONS; TWO AXLE UNIT; SLURRY OPERATOR; TANK TRUCK HELPER (GAS, OIL, ROAD OIL, AND WATER); TRACTOR OPERATOR, UNDER 50 H.P.	$ 39.85	24.70
TRUCK DRIVER: GROUP 3: BITUMINOUS DISTRIBUTOR DRIVER; BITUMINOUS DISTRIBUTOR (ONE PERSON OPERATION); THREE AXLE UNITS	$ 40.13	24.70
TRUCK DRIVER: GROUP 2: FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK	$ 40.25	24.70
TRUCK DRIVER: GROUP 1: MECHANIC; TRACTOR TRAILER DRIVER; TRUCK DRIVER (HAULING MACHINERY INCLUDING OPERATION OF HAND AND POWER OPERATED WINCHES)	$ 40.88	24.70
TRAFFIC CONTROL PERSON (TEMPORARY SIGNAGE)	$ 40.81	28.08
SURVEY FIELD TECHNICIAN (OPERATE TOTAL STATION, GPS RECEIVER, LEVEL, ROD OR RANGE POLES, STEEL TAPE MEASUREMENT; MARK AND DRIVE STAKES; HAND OR POWER DIGGING FOR AND IDENTIFICATION OF MARKERS OR MONUMENTS; PERFORM AND CHECK CALCULATIONS; REVIEW AND UNDERSTAND CONSTRUCTION PLANS AND LAND SURVEY MATERIALS)	$ 42.58	26.33
SHEET METAL WORKER	$ 57.96	34.57
POWER EQUIPMENT OPERATOR: HIGHWAY/HEAVY GROUP 6: CAT, CHALLENGER, OR SIMILAR TYPE OF TRACTORS, WHEN PULLING DISK OR ROLLER; CONVEYOR; DREDGE DECK HAND; FIRE PERSON OR TANK CAR HEATER; GRAVEL SCREENING PLANT (PORTABLE NOT CRUSHING OR WASHING); GREASER (TRACTOR); LEVER PERSON; OILER (POWER SHOVEL, CRANE, TRUCK CRANE, DRAGLINE, CRUSHERS, AND MILLING MACHINES, OR OTHER SIMILAR HEAVY EQUIPMENT); POWER		

SWEEPER; SHEEP FOOT ROLLER AND ROLLERS ON GRAVEL COMPACTION, INCLUDING VIBRATING ROLLERS; TRACTOR, WHEEL TYPE, OVER 50 H.P., UNRELATED TO LANDSCAPING..$ 40.02 26.90

POWER EQUIPMENT OPERATOR: HIGHWAY/HEAVY GROUP 5: AIR COMPRESSOR, 600 CFM OR OVER; BITUMINOUS ROLLER (UNDER EIGHT TONS); CONCRETE SAW (MULTIPLE BLADE) (POWER OPERATED); FORM TRENCH DIGGER (POWER); FRONT END, SKID STEER UP TO 1C YD; GUNITE GUNALL; HYDRAULIC LOG SPLITTER; LOADER (BARBER GREENE OR SIMILAR TYPE); POST HOLE DRIVING MACHINE/POST HOLE AUGER; POWER ACTUATED AUGER AND BORING MACHINE; POWER ACTUATED JACK; PUMP; SELF-PROPELLED CHIP SPREADER (FLAHERTY OR SIMILAR); SHEEP FOOT COMPACTOR WITH BLADE . 200 H.P. AND OVER; SHOULDERING MACHINE (POWER) APSCO OR SIMILAR TYPE INCLUDING SELF-PROPELLED SAND AND CHIP SPREADER; STUMP CHIPPER AND TREE CHIPPER; TREE FARMER (MACHINE).....$ 41.36 26.90

POWER EQUIPMENT OPERATOR: HIGHWAY/HEAVY GROUP 4: AIR TRACK ROCK DRILL; AUTOMATIC ROAD MACHINE (CMI OR SIMILAR); BACKFILLER OPERATOR; CONCRETE BATCH PLANT OPERATOR; BITUMINOUS ROLLERS, RUBBER TIRED OR STEEL DRUMMED (EIGHT TONS AND OVER); BITUMINOUS SPREADER AND FINISHING MACHINES (POWER), INCLUDING PAVERS, MACRO SURFACING AND MICRO SURFACING, OR SIMILAR TYPES (OPERATOR AND SCREED PERSON); BROKK OR R.T.C. REMOTE CONTROL OR SIMILAR TYPE WITH ALL ATTACHMENTS; CAT CHALLENGER TRACTORS OR SIMILAR TYPES PULLING ROCK WAGONS, BULLDOZERS AND SCRAPERS; CHIP HARVESTER AND TREE CUTTER; CONCRETE DISTRIBUTOR AND SPREADER FINISHING MACHINE, LONGITUDINAL FLOAT, JOINT MACHINE, AND SPRAY MACHINE; CONCRETE MIXER ON JOBSITE; CONCRETE MOBIL; CRUSHING PLANT (GRAVEL AND STONE) OR GRAVEL WASHING, CRUSHING AND SCREENING PLANT; CURB MACHINE; DIRECTIONAL BORING MACHINE; DOPE MACHINE (PIPELINE); DRILL RIGS, HEAVY ROTARY OR CHURN OR CABLE DRILL; DUAL TRACTOR; ELEVATING GRADER; FORK LIFT OR STRADDLE CARRIER; FORK LIFT OR LUMBER STACKER; FRONT END, SKID STEER OVER 1 TO 5 C YD; GPS REMOTE OPERATING OF EQUIPMENT; HOIST ENGINEER (POWER); HYDRAULIC TREE PLANTER; LAUNCHER PERSON (TANKER PERSON OR PILOT LICENSE); LOCOMOTIVE; MILLING, GRINDING, PLANNING, FINE GRADE, OR TRIMMER MACHINE; MULTIPLE MACHINES, SUCH AS AIR COMPRESSORS, WELDING MACHINES, GENERATORS, PUMPS; PAVEMENT BREAKER OR TAMPING MACHINE (POWER DRIVEN) MIGHTY MITE OR SIMILAR TYPE; PICKUP SWEEPER, ONE CUBIC YARD AND OVER HOPPER CAPACITY; PIPELINE WRAPPING, CLEANING OR BENDING MACHINE; POWER PLANT ENGINEER, 100 KWH AND OVER; POWER ACTUATED HORIZONTAL BORING MACHINE, OVER SIX INCHES; PUGMILL; PUMPCRETE; RUBBER-TIRED FARM TRACTOR WITH BACKHOE INCLUDING ATTACHMENTS; SCRAPER; SELF-PROPELLED SOIL STABILIZER; SLIP FORM (POWER DRIVEN) (PAVING); TIE TAMPER AND BALLAST MACHINE; TRACTOR, BULLDOZER; TRACTOR, WHEEL TYPE, OVER 50 H.P. WITH PTO UNRELATED TO LANDSCAPING; TRENCHING MACHINE (SEWER, WATER, GAS) EXCLUDES WALK BEHIND TRENCHER; TUB GRINDER, MORBARK, OR SIMILAR TYPE; WELL POINT DISMANTLING OR INSTALLATION.....$ 44.67 26.90

POWER EQUIPMENT OPERATOR: HIGHWAY/HEAVY GROUP 3: ASPHALT BITUMINOUS STABILIZER PLANT; CABLEWAY; CONCRETE MIXER, STATIONARY PLANT; DERRICK (GUY OR STIFFLEG)(POWER)(SKIDS OR STATIONARY); DRAGLINE,

CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED)
AND/OR SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS,
UP TO THREE CUBIC YARDS MANUFACTURER.S RATED
CAPACITY INCLUDING ALL ATTACHMENTS; DREDGE OR
ENGINEERS, DREDGE (POWER) AND ENGINEER; FRONT END
LOADER, FIVE CUBIC YARDS AND OVER INCLUDING
ATTACHMENTS; LOCOMOTIVE CRANE OPERATOR; MIXER
(PAVING) CONCRETE PAVING, ROAD MOLE, INCLUDING
MUCKING OPERATIONS, CONWAY OR SIMILAR TYPE;
MECHANIC ON POWER EQUIPMENT; TRACTOR, BOOM TYPE;
TANDEM SCRAPER; TRUCK CRANE, CRAWLER CRANE; TUGBOAT
100 H.P AND OVER.....$ 45.01 26.90
POWER EQUIPMENT OPERATOR: HIGHWAY/HEAVY GROUP 2:
HELICOPTER PILOT; CONCRETE PUMP; ALL CRANES WITH
OVER 135-FOOT BOOM, EXCLUDING JIB; DRAGLINE,
CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED)
AND/OR OTHER SIMILAR EQUIPMENT WITH SHOVEL-TYPE
CONTROLS THREE CUBIC YARDS AND OVER MANUFACTURER.S
RATED CAPACITY INCLUDING ALL ATTACHMENTS; GRADER OR
MOTOR PATROL; PILE DRIVING; TUGBOAT 100 H.P. AND
OVER WHEN LICENSE REQUIRED.....$ 45.61 26.90
PLUMBER.....$ 41.02 22.03
PIPELAYER (WATER, SEWER AND GAS).....$ 46.08 26.33
PIPEFITTER/STEAMFITTER.....$ 50.64 25.78
PILEDRIVER (INCLUDING VIBRATORY DRIVER OR EXTRACTOR
FOR PILING AND SHEETING OPERATIONS).....$ 45.71 29.73
PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT ((ONE
OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR
TRAILER MOUNTED UNITS).....$ 41.29 23.48
PAINTER (INCLUDING HAND BRUSHED, HAND SPRAYED, AND
THE TAPING OF PAVEMENT MARKINGS).....$ 45.50 27.69
OFF-ROAD TRUCK.....$ 44.67 26.90
MILLWRIGHT.....$ 48.13 29.41
LINEMAN.....$ 47.71 20.31
LANDSCAPING EQUIPMENT (INCLUDES HYDRO SEEDER OR
MULCHER, SOD ROLLER, FARM TRACTOR WITH ATTACHMENT
SPECIFICALLY SEEDING, SODDING, OR PLANT, AND
TWO-FRAMED FORKLIFT (EXCLUDING FRONT, POSIT-TRACK,
AND SKID STEER LOADERS), NO EARTHWORK OR GRADING
FOR ELEVATIONS).....$ 24.00 16.96
LABORER: SKILLED (ASSISTING SKILLED CRAFT
JOURNEYMAN).....$ 42.58 26.33
LABORER: LANDSCAPE (GARDENER, SOD LAYER AND
NURSERY OPERATOR).....$ 30.04 21.16
LABORER: COMMON OR GENERAL (GENERAL LABOR WORK)....$ 42.58 26.33
IRONWORKER.....$ 41.19 35.68
HEATING AND FROST INSULATORS.....$ 45.56 20.20
GROUND PERSON.....$ 33.40 16.30
FLAG PERSON.....$ 40.81 28.08
ELECTRICIAN.....$ 49.02 34.18
CEMENT MASON.....$ 48.56 24.04
CARPET LAYER (LINOLEUM).....$ 32.13 12.85
CARPENTER.....$ 47.45 31.75
BRICKLAYER.....$ 45.69 30.93
BOOM TRUCK.....$ 47.25 26.90
BOILERMAKER.....$ 48.35 31.93
BLASTER.....$ 38.53 22.67
ASBESTOS ABATEMENT WORKER.....$ 36.13 22.45
ARTICULATED HAULER.....$ 44.67 26.90

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.65 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract from May 11, 2026, through December 31, 2026. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than """"SU"""", """"UAVG"""", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The """"SU"""" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The """"SA"""" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

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MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY PREVAILING WAGES FOR STATE FUNDED CONSTRUCTION PROJECTS

THIS NOTICE MUST BE POSTED ON THE JOBSITE IN A CONSPICUOUS PLACE

Construction Type: Highway and Heavy

Region Number: 01

Counties within region:

- CARLTON-09
- COOK-16
- ITASCA-31
- KOOCHICHING-36
- LAKE-38
- PINE-58
- ST. LOUIS-69

Effective: 2025-11-03 Revised: 2025-12-01

This project is covered by Minnesota prevailing wage statutes. Wage rates listed below are the minimum hourly rates to be paid on this project.

All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at a rate of one and one half (1 1/2) times the basic hourly rate. *Note: Overtime pay after eight (8) hours on the project must be paid even if the worker does not exceed forty (40) hours in the work week.*

Violations on MnDOT highways and road projects should be reported to:

Department of Transportation
Office of Construction
Transportation Building MS650
John Ireland Blvd
St. Paul, MN 55155
(651) 366-4209

All other prevailing wage violations and questions should be sent to:

Department of Labor and Industry
Prevailing Wage Section
443 Lafayette Road N
St Paul, MN 55155
(651) 284-5091
DLI.PrevWage@state.mn.us

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
LABORERS (101 - 112) (SPECIAL CRAFTS 701 - 730)					
101	LABORER, COMMON (GENERAL LABOR WORK)	2025-11-03	42.58	26.33	68.91
102	LABORER, SKILLED (ASSISTING SKILLED CRAFT JOURNEYMAN)	2025-11-03	42.58	26.33	68.91
103	LABORER, LANDSCAPING (GARDENER, SOD LAYER AND	2025-11-03	31.66	22.78	54.44

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
	NURSERY OPERATOR)				
104	FLAG PERSON	2025-11-03	42.58	26.33	68.91
105	WATCH PERSON	2025-11-03	30.58	21.77	52.35
106	BLASTER	2025-11-03	38.53	22.67	61.20
107	PIPELAYER (WATER, SEWER AND GAS)	2025-11-03	46.08	26.33	72.41
108	TUNNEL MINER	2025-11-03	35.63	22.02	57.65
109	UNDERGROUND AND OPEN DITCH LABORER (EIGHT FEET BELOW STARTING GRADE LEVEL)	2025-11-03	44.08	26.33	70.41
110	SURVEY FIELD TECHNICIAN (OPERATE TOTAL STATION, GPS RECEIVER, LEVEL, ROD OR RANGE POLES, STEEL TAPE MEASUREMENT; MARK AND DRIVE STAKES; HAND OR POWER DIGGING FOR AND IDENTIFICATION OF MARKERS OR MONUMENTS; PERFORM AND CHECK CALCULATIONS; REVIEW AND UNDERSTAND CONSTRUCTION PLANS AND LAND SURVEY MATERIALS). THIS CLASSIFICATION DOES NOT APPLY TO THE WORK PERFORMED ON A PREVAILING WAGE PROJECT BY A LAND SURVEYOR WHO IS LICENSED PURSUANT TO MINNESOTA STATUTES, SECTIONS 326.02 TO 326.15.	2025-11-03	42.58	26.33	68.91
111	TRAFFIC CONTROL PERSON (TEMPORARY SIGNAGE)	2025-11-03	40.81	28.08	68.89
112	QUALITY CONTROL TESTER (FIELD AND COVERED OFF-SITE FACILITIES; TESTING OF AGGREGATE, ASPHALT, AND CONCRETE MATERIALS); LIMITED TO MN DOT HIGHWAY AND HEAVY CONSTRUCTION PROJECTS WHERE THE MN DOT HAS RETAINED QUALITY ASSURANCE PROFESSIONALS TO REVIEW AND INTERPRET THE RESULTS OF QUALITY CONTROL TESTERS. SERVICES PROVIDED BY THE CONTRACTOR.	2025-11-03	31.00	11.55	42.55

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
SPECIAL EQUIPMENT (201 - 204)					
201	ARTICULATED HAULER	2025-11-03	46.25	29.40	75.65
		2026-05-04	47.68	31.00	78.68
202	BOOM TRUCK	2025-11-03	48.96	29.40	78.36
203	LANDSCAPING EQUIPMENT, INCLUDES HYDRO SEEDER OR MULCHER, SOD ROLLER, FARM TRACTOR WITH ATTACHMENT SPECIFICALLY SEEDING, SODDING, OR PLANT, AND TWO-FRAMED FORKLIFT (EXCLUDING FRONT, POSIT-TRACK, AND SKID STEER LOADERS), NO EARTHWORK OR GRADING FOR ELEVATIONS	2025-11-03	41.37	29.40	70.77
		2026-05-04	42.60	31.00	73.60
204	OFF-ROAD TRUCK	2025-11-03	46.25	29.40	75.65
		2026-05-04	47.68	31.00	78.68
205	PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT (ONE OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR TRAILER MOUNTED UNITS.	2025-11-03	41.29	23.48	64.77
HIGHWAY/HEAVY POWER EQUIPMENT OPERATOR					
GROUP 2		2025-11-03	47.24	29.40	76.64
		2026-05-04	48.71	31.00	79.71
302	HELICOPTER PILOT (HIGHWAY AND HEAVY ONLY)				
303	CONCRETE PUMP (HIGHWAY AND HEAVY ONLY)				
304	ALL CRANES WITH OVER 135-FOOT BOOM, EXCLUDING JIB (HIGHWAY AND HEAVY ONLY)				
305	DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR OTHER SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS THREE CUBIC YARDS AND OVER MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS. (HIGHWAY AND HEAVY ONLY)				
306	GRADER OR MOTOR PATROL				
307	PILE DRIVING (HIGHWAY AND HEAVY ONLY)				
308	TUGBOAT 100 H.P. AND OVER WHEN LICENSE REQUIRED (HIGHWAY AND HEAVY ONLY)				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
GROUP 3		2025-11-03	46.61	29.40	76.01
		2026-05-04	48.05	31.00	79.05
309	ASPHALT BITUMINOUS STABILIZER PLANT				
310	CABLEWAY				
311	CONCRETE MIXER, STATIONARY PLANT (HIGHWAY AND HEAVY ONLY)				
312	DERRICK (GUY OR STIFFLEG)(POWER)(SKIDS OR STATIONARY) (HIGHWAY AND HEAVY ONLY)				
313	DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS, UP TO THREE CUBIC YARDS MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS (HIGHWAY AND HEAVY ONLY)				
314	DREDGE OR ENGINEERS, DREDGE (POWER) AND ENGINEER				
315	FRONT END LOADER, FIVE CUBIC YARDS AND OVER INCLUDING ATTACHMENTS. (HIGHWAY AND HEAVY ONLY)				
316	LOCOMOTIVE CRANE OPERATOR				
317	MIXER (PAVING) CONCRETE PAVING, ROAD MOLE, INCLUDING MUCKING OPERATIONS, CONWAY OR SIMILAR TYPE				
318	MECHANIC . WELDER ON POWER EQUIPMENT (HIGHWAY AND HEAVY ONLY)				
319	TRACTOR . BOOM TYPE (HIGHWAY AND HEAVY ONLY)				
320	TANDEM SCRAPER				
321	TRUCK CRANE . CRAWLER CRANE (HIGHWAY AND HEAVY ONLY)				
322	TUGBOAT 100 H.P AND OVER (HIGHWAY AND HEAVY ONLY)				
GROUP 4		2025-11-03	46.25	29.40	75.65
		2026-05-04	47.68	31.00	78.68
323	AIR TRACK ROCK DRILL				
324	AUTOMATIC ROAD MACHINE (CMI OR SIMILAR) (HIGHWAY AND HEAVY ONLY)				
325	BACKFILLER OPERATOR				
326	CONCRETE BATCH PLANT OPERATOR (HIGHWAY AND HEAVY ONLY)				
327	BITUMINOUS ROLLERS, RUBBER TIRED OR STEEL DRUMMED (EIGHT TONS AND OVER)				
328	BITUMINOUS SPREADER AND FINISHING MACHINES (POWER), INCLUDING PAVERS, MACRO SURFACING AND MICRO SURFACING, OR SIMILAR TYPES (OPERATOR AND SCREED PERSON)				
329	BROKK OR R.T.C. REMOTE CONTROL OR SIMILAR TYPE WITH ALL ATTACHMENTS				
330	CAT CHALLENGER TRACTORS OR SIMILAR TYPES PULLING ROCK WAGONS, BULLDOZERS AND SCRAPERS				
331	CHIP HARVESTER AND TREE CUTTER				
332	CONCRETE DISTRIBUTOR AND SPREADER FINISHING MACHINE, LONGITUDINAL FLOAT, JOINT MACHINE, AND SPRAY MACHINE				
333	CONCRETE MIXER ON JOBSITE (HIGHWAY AND HEAVY ONLY)				
334	CONCRETE MOBIL (HIGHWAY AND HEAVY ONLY)				
335	CRUSHING PLANT (GRAVEL AND STONE) OR GRAVEL WASHING, CRUSHING AND SCREENING PLANT				
336	CURB MACHINE				
337	DIRECTIONAL BORING MACHINE				
338	DOPE MACHINE (PIPELINE)				
339	DRILL RIGS, HEAVY ROTARY OR CHURN OR CABLE DRILL (HIGHWAY AND HEAVY ONLY)				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
340	DUAL TRACTOR				
341	ELEVATING GRADER				
342	FORK LIFT OR STRADDLE CARRIER (HIGHWAY AND HEAVY ONLY)				
343	FORK LIFT OR LUMBER STACKER (HIGHWAY AND HEAVY ONLY)				
344	FRONT END, SKID STEER OVER 1 TO 5 C YD				
345	GPS REMOTE OPERATING OF EQUIPMENT				
346	HOIST ENGINEER (POWER) (HIGHWAY AND HEAVY ONLY)				
347	HYDRAULIC TREE PLANTER				
348	LAUNCHER PERSON (TANKER PERSON OR PILOT LICENSE)				
349	LOCOMOTIVE (HIGHWAY AND HEAVY ONLY)				
350	MILLING, GRINDING, PLANNING, FINE GRADE, OR TRIMMER MACHINE				
351	MULTIPLE MACHINES, SUCH AS AIR COMPRESSORS, WELDING MACHINES, GENERATORS, PUMPS (HIGHWAY AND HEAVY ONLY)				
352	PAVEMENT BREAKER OR TAMPING MACHINE (POWER DRIVEN) MIGHTY MITE OR SIMILAR TYPE				
353	PICKUP SWEEPER, ONE CUBIC YARD AND OVER HOPPER CAPACITY(HIGHWAY AND HEAVY ONLY)				
354	PIPELINE WRAPPING, CLEANING OR BENDING MACHINE				
355	POWER PLANT ENGINEER, 100 KWH AND OVER (HIGHWAY AND HEAVY ONLY)				
356	POWER ACTUATED HORIZONTAL BORING MACHINE, OVER SIX INCHES				
357	PUGMILL				
358	PUMPCRETE (HIGHWAY AND HEAVY ONLY)				
359	RUBBER-TIRED FARM TRACTOR WITH BACKHOE INCLUDING ATTACHMENTS (HIGHWAY AND HEAVY ONLY)				
360	SCRAPER				
361	SELF-PROPELLED SOIL STABILIZER				
362	SLIP FORM (POWER DRIVEN) (PAVING)				
363	TIE TAMPER AND BALLAST MACHINE				
364	TRACTOR, BULLDOZER (HIGHWAY AND HEAVY ONLY)				
365	TRACTOR, WHEEL TYPE, OVER 50 H.P. WITH PTO UNRELATED TO LANDSCAPING (HIGHWAY AND HEAVY ONLY)				
366	TRENCHING MACHINE (SEWER, WATER, GAS) EXCLUDES WALK BEHIND TRENCHER (HIGHWAY AND HEAVY ONLY)				
367	TUB GRINDER, MORBARK, OR SIMILAR TYPE				
368	WELL POINT DISMANTLING OR INSTALLATION (HIGHWAY AND HEAVY ONLY)				
GROUP 5		2025-11-03	42.77	29.40	72.17
		2026-05-04	44.06	31.00	75.06
369	AIR COMPRESSOR, 600 CFM OR OVER (HIGHWAY AND HEAVY ONLY)				
370	BITUMINOUS ROLLER (UNDER EIGHT TONS)				
371	CONCRETE SAW (MULTIPLE BLADE) (POWER OPERATED)				
372	FORM TRENCH DIGGER (POWER)				
373	FRONT END, SKID STEER UP TO 1C YD				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
374	GUNITE GUNALL (HIGHWAY AND HEAVY ONLY)				
375	HYDRAULIC LOG SPLITTER				
376	LOADER (BARBER GREENE OR SIMILAR TYPE)				
377	POST HOLE DRIVING MACHINE/POST HOLE AUGER				
378	POWER ACTUATED AUGER AND BORING MACHINE				
379	POWER ACTUATED JACK				
380	PUMP (HIGHWAY AND HEAVY ONLY)				
381	SELF-PROPELLED CHIP SPREADER (FLAHERTY OR SIMILAR)				
382	SHEEP FOOT COMPACTOR WITH BLADE . 200 H.P. AND OVER				
383	SHOULDERING MACHINE (POWER) APSCO OR SIMILAR TYPE INCLUDING SELF-PROPELLED SAND AND CHIP SPREADER				
384	STUMP CHIPPER AND TREE CHIPPER				
385	TREE FARMER (MACHINE)				
GROUP 6		2025-11-03	41.37	29.40	70.77
		2026-05-04	42.60	31.00	73.60
387	CAT, CHALLENGER, OR SIMILAR TYPE OF TRACTORS, WHEN PULLING DISK OR ROLLER				
388	CONVEYOR (HIGHWAY AND HEAVY ONLY)				
389	DREDGE DECK HAND				
390	FIRE PERSON OR TANK CAR HEATER (HIGHWAY AND HEAVY ONLY)				
391	GRAVEL SCREENING PLANT (PORTABLE NOT CRUSHING OR WASHING)				
392	GREASER (TRACTOR) (HIGHWAY AND HEAVY ONLY)				
393	LEVER PERSON				
394	OILER (POWER SHOVEL, CRANE, TRUCK CRANE, DRAGLINE, CRUSHERS, AND MILLING MACHINES, OR OTHER SIMILAR HEAVY EQUIPMENT) (HIGHWAY AND HEAVY ONLY)				
395	POWER SWEEPER				
396	SHEEP FOOT ROLLER AND ROLLERS ON GRAVEL COMPACTION, INCLUDING VIBRATING ROLLERS				
397	TRACTOR, WHEEL TYPE, OVER 50 H.P., UNRELATED TO LANDSCAPING				
TRUCK DRIVERS					
GROUP 1		2025-11-03	40.88	24.70	65.58
		2026-05-01	42.80	25.40	68.20
601	MECHANIC . WELDER				
602	TRACTOR TRAILER DRIVER				
603	TRUCK DRIVER (HAULING MACHINERY INCLUDING OPERATION OF HAND AND POWER OPERATED WINCHES)				
GROUP 2		2025-11-03	40.25	24.70	64.95
		2026-05-01	42.15	25.40	67.55
604	FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
GROUP 3		2025-11-03	40.13	24.70	64.83
		2026-05-01	42.02	25.40	67.42
605	BITUMINOUS DISTRIBUTOR DRIVER				
606	BITUMINOUS DISTRIBUTOR (ONE PERSON OPERATION)				
607	THREE AXLE UNITS				
GROUP 4		2025-11-03	39.85	24.70	64.55
		2026-05-01	41.73	25.40	67.13
608	BITUMINOUS DISTRIBUTOR SPRAY OPERATOR (REAR AND OILER)				
609	DUMP PERSON				
610	GREASER				
611	PILOT CAR DRIVER				
612	RUBBER-TIRED, SELF-PROPELLED PACKER UNDER 8 TONS				
613	TWO AXLE UNIT				
614	SLURRY OPERATOR				
615	TANK TRUCK HELPER (GAS, OIL, ROAD OIL, AND WATER)				
616	TRACTOR OPERATOR, UNDER 50 H.P.				
SPECIAL CRAFTS					
701	HEATING AND FROST INSULATORS	2025-11-03	45.56	20.20	65.76
702	BOILERMAKERS	2025-11-03	48.35	31.93	80.28
703	BRICKLAYERS	2025-11-03	45.69	30.93	76.62
704	CARPENTERS	2025-11-03	46.82	32.87	79.69
		2026-05-01	50.01	32.87	82.88
705	CARPET LAYERS (LINOLEUM)	2025-11-03	32.13	12.85	44.98
706	CEMENT MASONS	2025-11-03	47.26	25.38	72.64
707	ELECTRICIANS	2025-11-03	47.46	33.33	80.79
711	GROUND PERSON	2025-11-03	33.40	16.30	49.70
712	IRONWORKERS	2025-11-03	42.89	37.78	80.67
		2026-05-03	46.79	37.78	84.57

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
713	LINEMAN	2025-11-03	47.71	20.31	68.02
714	MILLWRIGHT	2025-11-03	45.13	32.44	77.57
		2026-05-01	48.23	32.44	80.67
715	PAINTERS (INCLUDING HAND BRUSHED, HAND SPRAYED, AND THE TAPING OF PAVEMENT MARKINGS)	2025-11-03	48.00	29.09	77.09
		2026-05-04	50.50	29.09	79.59
716	PILEDRIVER (INCLUDING VIBRATORY DRIVER OR EXTRACTOR FOR PILING AND SHEETING OPERATIONS)	2025-11-03	47.71	31.98	79.69
		2026-05-01	50.90	31.98	82.88
717	PIPEFITTERS . STEAMFITTERS	2025-11-03	50.82	29.33	80.15
		2026-05-01	54.57	29.33	83.90
719	PLUMBERS	2025-11-03	50.82	29.33	80.15
		2026-05-01	54.57	29.33	83.90
721	SHEET METAL WORKERS	2025-11-03	57.96	34.57	92.53
723	TERRAZZO WORKERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
724	TILE SETTERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
725	TILE FINISHERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
727	WIRING SYSTEM TECHNICIAN	2025-11-03	51.07	24.02	75.09
		2026-07-01	54.44	24.02	78.46
728	WIRING SYSTEMS INSTALLER	2025-11-03	35.78	18.73	54.51
729	ASBESTOS ABATEMENT WORKER	2025-11-03	36.13	22.45	58.58
730	SIGN ERECTOR	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			

LABOR CODE AND CLASS	EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE

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STATEMENT OF ESTIMATED QUANTITIES

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITIY			FINAL QUANITTY		
				AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL	AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL
SCHEDULE A - TAXIWAY A RECONSTRUCTION, PHASE 7 (BASE BID)									
1	40-05	MAINTENANCE & RESTORATION OF HAUL ROADS	LS	1	0	1			
2	40-08	RESTORATION OF BATCH PLANT AND CONTRACTOR STORAGE AREAS	LS	1	0	1			
3	50-07	CONSTRUCTION LAYOUT & STAKING	LS	1	0	1			
4	60-05	FIELD OFFICE	LS	1	0	1			
5	70-08	TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING	LS	1	0	1			
6	70-10	ORANGE CONSTRUCTION FENCE	LF	1643	0	1,643			
7	02 41 35	REMOVE PAVEMENT MARKING BY WATER BLASTING	SF	1095	0	1,095			
8	02 60 10	OFF-SITE DISPOSAL OF PFAS-CONTAMINATED SOIL	TN	0	8,500	8,500			
9	02 60 10	PREPARATORY PAVEMENT TEST PIT EXCAVATION AND BACKFILL	EA	0	5	5			
10	02 60 10	PREPARATORY GRASS AREA TEST PIT EXCAVATION AND BACKFILL	EA	0	25	25			
11	31 23 16	GRANULAR BACKFILL (CV)	CY	0	5,000	5,000			
12	32 12 16	PLANT-MIXED ASPHALT PAVEMENT	TON	4376	2,730	7,106			
13	C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1	0	1			
14	C-102	ROCK CONSTRUCTION ENTRANCE (INCLUDES MAINTENANCE AND REMOVAL)	EA	3	0	3			
15	C-102	SILT FENCE, TYPE PREASSEMBLED (INCLUDES MAINTENANCE AND REMOVAL)	LF	11880	0	11,880			
16	C-102	FILTER LOG, TYPE WOOD FIBER BIOROLL (INCLUDES MAINTENANCE AND REMOVAL)	LF	2682	0	2,682			
17	C-102	FLOATING SILT CURTAIN	LF	200	0	200			
18	C-102	INLET PROTECTION, TYPE B (INCLUDES MAINTENANCE AND REMOVAL)	EA	8	0	8			
19	C-102	EROSION CONTROL BLANKET CATEGORY 20	SY	3800	0	3,800			
20	C-105	MOBILIZATION	LS	1	0	1			
21	D-701	REINFORCED CONCRETE PIPE (RCP), 12" CLASS V	LF	164	0	164			
22	D-701	REINFORCED CONCRETE PIPE (RCP), 15" CLASS III	LF	86	0	86			
23	D-701	REINFORCED CONCRETE PIPE (RCP), 24" CLASS III	LF	271	0	271			
24	D-701	REINFORCED CONCRETE PIPE (RCP), 54" CLASS III	LF	701	0	701			
25	D-701	RCP FLARED END SECTION, 12" CLASS V	EA	3	0	3			
26	D-701	RCP FLARED END SECTION, 15" CLASS III	EA	4	0	4			
27	D-701	RCP FLARED END SECTION, 18" CLASS III	EA	1	0	1			
28	D-705	DRAIN TILE (6" PERFORATED SDR35 PVC PIPE, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	5042	0	5,042			
29	D-705	DRAIN TILE (6" SOLID SDR35 PVC PIPE, INCLUDING TRENCH, BACKFILL)	LF	528	0	528			
30	D-705	DRAIN TILE (4" PERFORATED SDR26 PVC PIPE, INCLUDING UNDERDRAIN GRAVEL BLANKET, FABRIC)	LF	580	0	580			
31	D-705	DRAIN TILE (6" PERFORATED SDR26 PVC PIPE, INCLUDING UNDERDRAIN GRAVEL BLANKET, FABRIC)	LF	1100	0	1,100			
32	D-705	DRAIN TILE (10" SOLID SDR26 PVC PIPE, INCLUDING TRENCH, BACKFILL)	LF	100	0	100			
33	D-705	DRAIN TILE CLEAN OUT, 6" PVC	EA	7	0	7			
34	D-705	DRAIN TILE CLEAN OUT, 10" PVC	EA	7	0	7			
35	D-751	DRAIN TILE ACCESS/INSPECTION PIT (27" STRUCTURE)	EA	13	0	13			
36	D-751	DRAIN TILE ACCESS/INSPECTION PIT (48" STRUCTURE)	EA	1	0	1			
37	D-751	DRAIN TILE OUTLET STRUCTURE (MNDOT 3131C)	EA	2	0	2			
38	D-751	MANHOLE / CATCH BASIN 4' DIA.	EA	2	0	2			
39	D-751	MANHOLE / CATCH BASIN 7' DIA.	EA	3	0	3			
40	D-751	MANHOLE / CATCH BASIN 8' DIA.	EA	1	0	1			
41	L-108-5.1	NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	16650	0	16,650			
42	L-108-5.2	NO. 6 AWG, SOLID, BARE COUNTERPOISE WIRE, INSTALLED IN TRENCH, ABOVE THE DUCT BANK OR CONDUIT, INCLUDING CONNECTIONS/TERMINATIONS, GROUND RODS AND GROUND CONNECTORS	LF	7100	0	7,100			
43	L-108-5.3	2-#8 AWG AND 1-#8 GND, XHHW, INSTALLED IN TRENCH OR CONDUIT	LF	1350	0	1,350			
44	L-108-5.4	1/C #4 5KV UNSHIELDED XLP MV-90 CABLE, INSTALLED IN DUCT BANK OR CONDUIT (NON-AIP ELIGIBLE MNANG ITEM)	LF	0	3,300	3,300			
45	L-108-5.5	CABLE USED FOR TEMPORARY JUMPERS	LS	1	0	1			
46	L-108-5.6	1/C #4 COPPER GND, INSTALLED IN DUCT BANK OR CONDUIT (NON-AIP ELIGIBLE MNANG ITEM)	LF	0	1,100	1,100			
47	L-110-5.1	NON-ENCASED ELECTRICAL CONDUIT, 1-WAY 2-INCH, PVC SCHEDULE 40	LF	5100	0	5,100			
48	L-110-5.3	CONCRETE ENCASED ELECTRICAL CONDUIT, 4-WAY 2-INCH, PVC SCHEDULE 40	LF	1100	0	1,100			
49	L-110-5.4	DRAIN LINE CONNECTION TO STORM STRUCTURE	EA	6	0	6			
50	L-110-5.5	CONCRETE ENCASED ELECTRICAL CONDUIT, 1 CONDUIT OF 4-WAY 2-INCH, PVC SCHEDULE 40 (NON-AIP ELIGIBLE MNANG ITEM)	LF	0	900	900			
51	L-110-5.6	CONCRETE ENCASED ELECTRICAL CONDUIT, 3 CONDUITS OF 4-WAY 2-INCH, PVC SCHEDULE 40	LF	900	0	900			
52	L-110-5.7	NON-ENCASED ELECTRICAL CONDUIT, 1-WAY 2-INCH, PVC SCHEDULE 40 (NON-AIP ELIGIBLE MNANG ITEM)	LF	50	0	50			
53	L-125-5.1	REMOVAL OF EXISTING AIRFIELD ELECTRICAL	LS	1	0	1			
54	L-125-5.2	L-861T(L) MEDIUM INTENSITY TAXIWAY EDGE LIGHT (WITHOUT ARCTIC KIT), BLUE LENS INSTALLED ON NEW L-867-B GALVANIZED BASE CAN (INCLUDES FIXTURE, TRANSFORMER, AND BASE CAN)	EA	31	0	31			
55	L-125-5.3	L-862T(L) MEDIUM INTENSITY SEMI-FLUSH TAXIWAY EDGE LIGHT (WITHOUT ARCTIC KIT), BLUE LENS INSTALLED ON NEW L-868-B GALVANIZED BASE CAN (INCLUDES FIXTURE, TRANSFORMER AND BASE CAN,)	EA	2	0	2			
56	L-125-5.6	PRECAST AIRCRAFT-RATED ELECTRICAL HANDHOLE	EA	4	0	4			
57	L-125-5.7	PRECAST AIRCRAFT-RATED ELECTRICAL HANDHOLE (NON-AIP ELIGIBLE MNANG ITEM)	EA	0	2	2			
58	L-125-5.8	REMOVE EXISTING RUNWAY LIGHT FIXTURE, BASE CAN, CABLE, CONDUIT AND ISOLATION TRANSFORMER, AND RETURN LIGHT FIXTURE TO OWNER	EA	2	0	2			
59	L-125-5.9	L-862 RUNWAY LIGHT FIXTURE (WITHOUT ARCTIC KIT), WHITE/WHITE LENS INSTALLED ON NEW L-867B GALVANIZED BASE CAN (INCLUDES FIXTURE, TRANSFORMER, AND BASE CAN)	EA	2	0	2			
60	L-125-5.11	AIRFIELD SIGN PANEL REPLACEMENTS	EA	8	0	8			
61	L-125-5.12	REMOVE AND REINSTALL EXISTING L-858(L) GUIDANCE SIGN, SIZE 2, INCLUDING FOUNDATION, ISOLATION TRANSFORMER, WIRE, BASE CAN, AND CONDUIT	EA	1	0	1			
62	P-101	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	932	0	932			
63	P-101	REMOVE BITUMINOUS PAVEMENT (FULL DEPTH)	SY	23448	0	23,448			
64	P-101	MILL BITUMINOUS PAVEMENT (VARIABLE DEPTH)	SY	438	0	438			
65	P-101	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	420	0	420			
66	P-101	REMOVE CONCRETE PAVEMENT (FULL DEPTH)	SY	5928	0	5,928			
67	P-101	REMOVE STORM PIPE	LF	905	0	905			
68	P-101	REMOVE STORM STRUCTURE	EA	9	0	9			
69	P-101	REMOVE DRAIN TILE CLEANOUT	EA	15	0	15			
70	P-101	REMOVE DRAIN TILE	LF	4831	0	4,831			
71	P-101	REMOVE AND REINSTALL RIPRAP	CY	375	0	375			
72	P-101	REMOVE AND RESET FLARED END SECTION	EA	1	0	1			
73	P-151	CLEARING AND GRUBBING (AT EXPANDED CONTRACTOR STORAGE AREA)	ACRE	0.45	0	0.45			
74	P-152	COMMON EXCAVATION (EV)	CY	33350	43,250	76,600			
75	P-152	UNCLASSIFIED OVER-EXCAVATION (EV) (INCLUDES REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL WITH SUITABLE MATERIAL (P-154) AS DIRECTED BY ENGINEER, AND INCLUDES SUBGRADE PROOF ROLLING)	CY	1000	0	1,000			
76	P-152	MUCK EXCAVATION (EV) (INCLUDES REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL WITH SUITABLE MATERIAL (ON-SITE BORROW) AS DIRECTED BY ENGINEER, AND INCLUDES SUBGRADE PROOF ROLLING)	CY	300	23,200	23,500			
77	P-152	SUBGRADE PREPARATION (INCLUDES SUBGRADE PROOF ROLLING)	SY	26884	11,744	38,628			
78	P-152	ROCK EXCAVATION	CY	100	0	100			
79	P-152	STORMWATER POND DREDGING	CY	1500	0	1,500			
80	P-152	COMMON EXCAVATION (EV) (SOUTHEAST POND)	CY	3600	0	3,600			

SEH Project	DLH 186683
Drawn By	LN
Designed By	JRN
Checked By	AVE

Rev.#	Plan Revision Issue Description	Date

Rev.#	Sheet Revision Issue Description	Date
1	ADDENDUM NO. 1	05-26-2026
2	ADDENDUM NO. 2	06-02-2026

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF STATE.

JARROD R NELSON, PE

DATE 05-08-26 LICENSE NO. 26794

TAXIWAY A RECONSTRUCTION - PHASE 7

DULUTH, MINNESOTA

STATEMENT OF ESTIMATED QUANTITIES

G5.03

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81	02 66 12	SYNTHETIC LINER (GEOMEMBRANE CONTAINMENT) (SOUTHEAST POND)	SF	16550	0	16,550				2
82	P-154	SELECT GRANULAR BORROW / SUBBASE COURSE (CV)	CY	12252	5,232	17,484				
83	P-154	GEOTEXTILE FABRIC, TYPE 7	SY	26170	11,744	37,914				2
84	P-154	GEOGRID	SY	9000	8,250	17,250				
85	P-209	CRUSHED AGGREGATE BASE COURSE (CV)	CY	4824	2,048	6,872				
86	P-401	ASPHALT SURFACE COURSE	TON	50	0	50				
87	P-403	ASPHALT MIXTURE SURFACE COURSE	TON	1179	253	1,432				
88	P-403	ASPHALT MIXTURE BASE COURSE	TON	1179	253	1,432				
89	P-501	CEMENT CONCRETE PAVEMENT, 13"	SY	14815	9,464	24,278				
90	P-501	CEMENT CONCRETE PAVEMENT, REINFORCED 13"	SY	747	0	747				
91	P-603	EMULSIFIED ASPHALT TACK COAT	GAL	1313	585	1,898				
92	P-604	COMPRESSION JOINT SEALS FOR CONCRETE PAVEMENTS	LF	12836	15,412	28,248				
93	P-605	JOINT SEALING FILLER	LF	4514	0	4,514				
94	P-620	REMOVE RUNWAY & TAXIWAY PAVEMENT MARKING USING BLACK PAINT	SF	406	0	406				
95	P-620	RUNWAY & TAXIWAY PAVEMENT MARKING (PERMANENT RATE)	SF	16448	0	16,448				
96	P-620	RUNWAY & TAXIWAY PAVEMENT MARKING (TEMPORARY RATE)	SF	17026	0	17,026				
97	P-620	REFLECTIVE MEDIA	LB	706	0	706				
98	T-901	SEEDING (INCLUDING FERTILIZER)	ACRE	16.00	0	16.00				2
99	T-901	SEEDING, MIX WET MEADOW NE 34-372 (INCLUDING FERTILIZER)	ACRE	0.10	0	0.10				
100	T-905	SELECT TOPSOIL BORROW (IMPORT) (CV)	CY	200	0	200				
101	T-905	FILTER MEDIA (CV)	CY	975	0	975				2
102	T-908	HYDROMULCHING	ACRE	24.00	0	24.00				

SEQ NOTES

GENERAL: TEMPORARY SANITARY FACILITIES, WATER FOR DUST CONTROL, AND TEMPORARY WATER SUPPLY FOR CONSTRUCTION OPERATIONS ARE CONSIDERED INCIDENTAL TO OTHER ITEMS OF PROJECT WORK.

GENERAL: BYPASS PUMPING OF STORMWATER FOR STORM SEWER CONSTRUCTION AND STORMWATER POND IMPROVEMENTS IS CONSIDERED INCIDENTAL TO THOSE RESPECTIVE PORTIONS OF PROJECT CONSTRUCTION. DUE TO VARIOUS SITE CONSTRAINTS, THE CONTRACTOR WILL BE REQUIRED TO BYPASS PUMP STORMWATER AROUND THE SOUTHEAST POND SITE TO THE LOW-LYING AREA ON THE EAST END OF THE POND SITE. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT TO THE ENGINEER A BYPASS PLAN THAT WILL ADDRESS HOW THEY WILL COMPLETE THE WORK IN ACCORDANCE WITH THE NPDES PERMIT REQUIREMENTS. 2

40-05: PAID FOR BASED ON PERCENT COMPLETE.

40-08: RESTORATION OF EXPANDED CONTRACTOR STORAGE/STOCKPILE AREA WILL INCLUDE GRADING, TURF ESTABLISHMENT, SOIL RIPPING/SCARIFICATION TO A DEPTH OF 6-INCHES, AND ANY OTHER MEASURES REQUIRED TO RETURN THE AREA TO PRE-CONSTRUCTION CONDITIONS OR ESTABLISHMENT OF GRASS, AS APPROVED BY ENGINEER. PAID FOR BASED ON PERCENT COMPLETE.

50-07: PAID FOR BASED ON PERCENT COMPLETE.

60-05: PAID ON A MONTHLY BASIS (LS*MONTHS WORKED/TOTAL ANTICIPATED MONTHS OF WORK).

70-08: INCLUDES ALL TRAFFIC CONTROL SIGNAGE, BARRICADES, TEMPORARY FENCING, TRAFFIC CONTROL DEVICES, AND ALL ITEMS PERTAINING TO SECURITY, AND PHASING. PAID FOR BASED ON PERCENT COMPLETE.

C-100: PAID FOR BASED ON PERCENT COMPLETE.

C-105: MOBILIZATION SHALL BE LIMITED TO 10-PERCENT OF THE TOTAL PROJECT COST.

D-701: CONNECTIONS TO EXISTING STORM SEWER PIPE, STRUCTURES, DRAIN TILE, INSPECTION PITS, AND CLEANOUTS ARE ALL INCIDENTAL TO THESE PAY ITEMS.

D-705: CONNECTIONS TO EXISTING STORM SEWER PIPE, STRUCTURES, DRAIN TILE, INSPECTION PITS, AND CLEANOUTS ARE ALL INCIDENTAL TO THESE PAY ITEMS. ALL ITEMS REQUIRED FOR DRAIN TILE (TRENCHING, FILTER MATERIAL, FABRIC, CONNECTIONS, BACKFILLING, AND ASSOCIATED COMPACTION) ARE INCIDENTAL TO ITEM.

D-751: CONNECTIONS TO EXISTING STORM SEWER PIPE, STRUCTURES, DRAIN TILE, INSPECTION PITS, AND CLEANOUTS ARE ALL INCIDENTAL TO THESE PAY ITEMS.

L-108, L-110, L-125: NO PRICE ADJUSTMENT WILL BE MADE BASED ON PERCENTAGE OF QUANTITY USED. THE ENGINEER WILL PROVIDE A NOTICE TO PROCEED SPECIFICALLY FOR WIRE & CABLE ITEMS PRIOR TO ORDERING TO ENSURE THE CORRECT AMOUNT IS OBTAINED..

P-101 REMOVE BITUMINOUS PAVEMENT ITEM: WORK INCLUDES REMOVAL OF BITUMINOUS PAVEMENT, REGARDLESS OF ACTUAL PAVEMENT THICKNESS ENCOUNTERED. SEE APPENDIX A - GEOTECHNICAL REPORT FOR BORING LOGS REFLECTING EXISTING PAVEMENT THICKNESS.

P-101: REMOVE CONCRETE PAVEMENT ITEM: WORK INCLUDES REMOVAL OF CONCRETE PAVEMENT REGARDLESS OF ACTUAL PAVEMENT THICKNESS ENCOUNTERED. SEE APPENDIX A - GEOTECHNICAL REPORT FOR BORING LOGS REFLECTING EXISTING PAVEMENT THICKNESS.

P-101 PIPE REMOVAL (ALL): REQUIRED PIPE/STRUCTURE BULKHEADS ARE INCIDENTAL TO PIPE REMOVAL.

P-152: SEE EARTHWORK SUMMARY ON SHEET G6.00.

P-152 UNCLASSIFIED OVER-EXCAVATION (EV): SEE EARTHWORK SUMMARY ON SHEET G6.00. ITEM INCLUDES MATERIAL EXCAVATED BELOW THE TYPICAL SECTION, AS DIRECTED BY ENGINEER. EXCAVATED MATERIAL TO BECOME PROPERTY OF CONTRACTOR, REPLACEMENT OF EXCAVATED MATERIAL WITH SUITABLE GRANULAR MATERIAL WILL BE INCIDENTAL TO THE UNCLASSIFIED OVER EXCAVATION.

P-152 MUCK EXCAVATION (EV): ON-SITE BORROW SHALL BE USED FOR REPLACEMENT PRIOR TO THE IMPORT OF OFF-SITE BORROW, IF NEEDED. COORDINATE WITH ENGINEER. SEE EARTHWORK SUMMARY ON SHEET G6.00. 2

P-152: ALL ON-SITE STRIPPING, SALVAGING, STOCKPILING, REPLACING AND SPREADING QUANTITY WILL BE PAID FOR UNDER COMMON EXCAVATION PRIOR TO THE PLACEMENT OF TOPSOIL BORROW (OBTAINED OFF-SITE) BY CONTRACTOR, IF NEEDED.

P-154 GEOGRID: MATERIAL SHALL BE TENSAR INTERAX NX650 GEOGRID, OR APPROVED EQUAL. 2

P-209: CONTRACTOR MAY SUBSTITUTE P-219 FOR P-209 WITH NO ADJUSTMENT TO UNIT PRICE.

STATEMENT OF ESTIMATED QUANTITIES

LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITIY			FINAL QUANITTY		
				AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL	AIP ELIGIBLE FUNDING	AIP INELIGIBLE FUNDING	TOTAL
SCHEDULE B - TAXIWAY A RECONSTRUCTION, PHASE 7 (ALTERNATE BID)									
103	50-07	CONSTRUCTION LAYOUT & STAKING	LS	1	0	1			
104	60-05	FIELD OFFICE	LS	1	0	1			
105	70-08	TRAFFIC PROVISIONS/AIRPORT SECURITY & DEVICES/PHASING	LS	1	0	1			
106	02 41 35	REMOVE PAVEMENT MARKING BY WATER BLASTING	SF	509	0	509			
107	02 60 10	PREPARATORY PAVEMENT TEST PIT EXCAVATION AND BACKFILL	EA	0	10	10			
108	02 60 10	PREPARATORY GRASS AREA TEST PIT EXCAVATION AND BACKFILL	EA	0	14	14			
109	32 12 16	PLANT-MIXED ASPHALT PAVEMENT	TON	1950	1,086	3,036			
110	C-102	SILT FENCE, TYPE PREASSEMBLED (INCLUDES MAINTENANCE AND REMOVAL)	LF	4982	0	4,982			
111	C-102	INLET PROTECTION, TYPE B (INCLUDES MAINTENANCE AND REMOVAL)	EA	1	0	1			
112	C-105	MOBILIZATION	LS	1	0	1			
113	D-705	DRAIN TILE (6" PERFORATED SDR35 PVC PIPE, INCLUDING TRENCH, BACKFILL, FABRIC)	LF	1920	0	1,920			
114	D-705	DRAIN TILE (6" SOLID SDR35 PVC PIPE, INCLUDING TRENCH, BACKFILL)	LF	195	0	195			
115	D-751	DRAIN TILE ACCESS/INSPECTION PIT (27" STRUCTURE)	EA	9	0	9			
116	D-751	DRAIN TILE OUTLET STRUCTURE (MNDOT 3131C)	EA	1	0	1			
117	L-108-5.1	NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN DUCT BANK OR CONDUIT	LF	7350	0	7,350			
118	L-108-5.2	NO. 6 AWG, SOLID, BARE COUNTERPOISE WIRE, INSTALLED IN TRENCH, ABOVE THE DUCT BANK OR CONDUIT, INCLUDING CONNECTIONS/TERMINATIONS, GROUND RODS AND GROUND CONNECTORS	LF	3720	0	3,720			
119	L-110-5.1	NON-ENCASED ELECTRICAL CONDUIT, 1-WAY 2-INCH, PVC SCHEDULE 40	LF	3000	0	3,000			
120	L-110-5.2	CONCRETE ENCASED ELECTRICAL CONDUIT, 2-WAY 2-INCH, PVC SCHEDULE 40	LF	170	0	170			
121	L-110-5.3	CONCRETE ENCASED ELECTRICAL CONDUIT, 4-WAY 4-INCH, PVC SCHEDULE 40	LF	550	0	550			
122	L-110-5.4	DRAIN LINE CONNECTION TO STORM STRUCTURE	EA	2	0	2			
123	L-125-5.3	L-861T(L) MEDIUM INTENSITY TAXIWAY EDGE LIGHT (WITHOUT ARCTIC KIT), BLUE LENS INSTALLED ON EXISTING L-867-B GALVANIZED BASE CAN (INCLUDES FIXTURE AND TRANSFORMER,)	EA	36	0	36			
124	L-125-5.4	L-858(L) GUIDANCE SIGN, SIZE 2, INCLUDING FOUNDATION, ISOLATION TRANSFORMER, WIRE, BASE CAN, AND CONDUIT	EA	4	0	4			
125	L-125-5.5	L-829 4KW CONSTANT CURRENT REGULATOR	EA	2	0	2			
126	L-125-5.6	PRECAST AIRCRAFT-RATED ELECTRICAL HANDHOLE	EA	2	0	2			
127	L-125-5.8	REMOVE EXISTING RUNWAY LIGHT FIXTURE, BASE CAN, CABLE, CONDUIT AND ISOLATION TRANSFORMER, AND RETURN LIGHT FIXTURE TO OWNER	EA	1	0	1			
128	L-125-5.9	L-862 RUNWAY LIGHT FIXTURE (WITHOUT ARCTIC KIT), WHITE/YELLOW LENS INSTALLED ON NEW L-867B GALVANIZED BASE CAN (INCLUDES FIXTURE, TRANSFORMER, AND BASE CAN)	EA	1	0	1			
129	L-125-5.10	L-867-B GALVANIZED BASE CAN	EA	2	0	2			
130	P-101	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	72	0	72			
131	P-101	REMOVE BITUMINOUS PAVEMENT (FULL DEPTH)	SY	8808	0	8,808			
132	P-101	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	472	0	472			
133	P-101	REMOVE CONCRETE PAVEMENT (FULL DEPTH)	SY	12251	0	12,251			
134	P-101	REMOVE STORM STRUCTURE	EA	7	0	7			
135	P-101	REMOVE DRAIN TILE CLEANOUT	EA	6	0	6			
136	P-101	REMOVE DRAIN TILE	LF	2144	0	2,144			
137	P-152	COMMON EXCAVATION (EV)	CY	10000	3,750	13,750			
138	P-152	UNCLASSIFIED OVER EXCAVATION (EV) (INCLUDES REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL WITH SUITABLE MATERIAL (P-154) AS DIRECTED BY ENGINEER, AND ALSO INCLUDES SUBGRADE PROOF ROLLING)	CY	250	0	250			
139	P-152	MUCK EXCAVATION (EV) (INCLUDES REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL WITH SUITABLE MATERIAL (ON-SITE BORROW) AS DIRECTED BY ENGINEER, AND INCLUDES SUBGRADE PROOF ROLLING)	CY	100	0	100			
140	P-152	SUBGRADE PREPARATION (INCLUDES SUBGRADE PROOF ROLLING)	SY	12007	5,720	17,727			
141	P-152	ROCK EXCAVATION	CY	50	0	50			
142	P-154	SELECT GRANULAR BORROW / SUBBASE COURSE (CV)	CY	5764	2,679	8,442			
143	P-154	GEOTEXTILE FABRIC, TYPE 7	SY	12007	5,720	17,727			
144	P-154	GEOGRID	SY	1250	550	1,800			
145	P-209	CRUSHED AGGREGATE BASE COURSE (CV)	CY	2159	1,030	3,189			
146	P-403	ASPHALT MIXTURE SURFACE COURSE	TON	518	218	736			
147	P-403	ASPHALT MIXTURE BASE COURSE	TON	518	218	736			
148	P-501	CEMENT CONCRETE PAVEMENT, 13"	SY	6542	3,767	10,309			
149	P-501	CEMENT CONCRETE PAVEMENT, REINFORCED 13"	SY	887	0	887			
150	P-603	EMULSIFIED ASPHALT TACK COAT	GAL	564	284	848			
151	P-604	COMPRESSION JOINT SEALS FOR CONCRETE PAVEMENTS	LF	8295	4,377	12,672			
152	P-605	JOINT SEALING FILLER	LF	2180	0	2,180			
153	P-620	RUNWAY & TAXIWAY PAVEMENT MARKING (PERMANENT RATE)	SF	10577	0	10,577			
154	P-620	RUNWAY & TAXIWAY PAVEMENT MARKING (TEMPORARY RATE)	SF	10866	0	10,866			
155	P-620	REFLECTIVE MEDIA	LB	508	0	508			
156	T-901	SEEDING (INCLUDING FERTILIZER)	ACRE	7.00	0	7.00			
157	T-905	SELECT TOPSOIL BORROW (IMPORT) (CV)	CY	300	0	300			
158	T-908	HYDROMULCHING	ACRE	7.00	0	7.00			

SEQ NOTES

GENERAL: TEMPORARY SANITARY FACILITIES, WATER FOR DUST CONTROL, AND TEMPORARY WATER SUPPLY FOR CONSTRUCTION OPERATIONS ARE CONSIDERED INCIDENTAL TO OTHER ITEMS OF PROJECT WORK.

50-07: PAID FOR BASED ON PERCENT COMPLETE.

60-05: PAID ON A MONTHLY BASIS (LS*MONTHS WORKED/TOTAL ANTICIPATED MONTHS OF WORK).

70-08: INCLUDES ALL TRAFFIC CONTROL SIGNAGE, BARRICADES, TEMPORARY FENCING, TRAFFIC CONTROL DEVICES, AND ALL ITEMS PERTAINING TO SECURITY, AND PHASING. PAID FOR BASED ON PERCENT COMPLETE.

C-105: MOBILIZATION SHALL BE LIMITED TO 10-PERCENT OF THE TOTAL PROJECT COST.

D-705: CONNECTIONS TO EXISTING STORM SEWER PIPE, STRUCTURES, DRAIN TILE, INSPECTION PITS, AND CLEANOUTS ARE ALL INCIDENTAL TO THESE PAY ITEMS. ALL ITEMS REQUIRED FOR DRAIN TILE (TRENCHING, FILTER MATERIAL, FABRIC, CONNECTIONS, BACKFILLING, AND ASSOCIATED COMPACTION) ARE INCIDENTAL TO ITEM.

D-751: CONNECTIONS TO EXISTING STORM SEWER PIPE, STRUCTURES, DRAIN TILE, INSPECTION PITS, AND CLEANOUTS ARE ALL INCIDENTAL TO THESE PAY ITEMS.

L-108, L-110, L-125: NO PRICE ADJUSTMENT WILL BE MADE BASED ON PERCENTAGE OF QUANTITY USED. THE ENGINEER WILL PROVIDE A NOTICE TO PROCEED SPECIFICALLY FOR WIRE & CABLE ITEMS PRIOR TO ORDERING TO ENSURE THE CORRECT AMOUNT IS OBTAINED.

P-101 REMOVE BITUMINOUS PAVEMENT ITEM: WORK INCLUDES REMOVAL OF BITUMINOUS PAVEMENT, REGARDLESS OF ACTUAL PAVEMENT THICKNESS ENCOUNTERED. SEE APPENDIX A - GEOTECHNICAL REPORT FOR BORING LOGS REFLECTING EXISTING PAVEMENT THICKNESS.

P-101: REMOVE CONCRETE PAVEMENT ITEM: WORK INCLUDES REMOVAL OF CONCRETE PAVEMENT REGARDLESS OF ACTUAL PAVEMENT THICKNESS ENCOUNTERED. SEE APPENDIX A - GEOTECHNICAL REPORT FOR BORING LOGS REFLECTING EXISTING PAVEMENT THICKNESS.

P-101 PIPE REMOVAL (ALL): REQUIRED PIPE/STRUCTURE BULKHEADS ARE INCIDENTAL TO PIPE REMOVAL.

P-152: SEE EARTHWORK SUMMARY ON SHEET G6.01.

P-152 UNCLASSIFIED OVER-EXCAVATION (EV): SEE EARTHWORK SUMMARY ON SHEET G6.01. ITEM INCLUDES MATERIAL EXCAVATED BELOW THE TYPICAL SECTION, AS DIRECTED BY ENGINEER. EXCAVATED MATERIAL TO BECOME PROPERTY OF CONTRACTOR, REPLACEMENT OF EXCAVATED MATERIAL WITH SUITABLE GRANULAR MATERIAL WILL BE INCIDENTAL TO THE UNCLASSIFIED OVER EXCAVATION.

P-152 MUCK EXCAVATION (EV): ON-SITE BORROW SHALL BE USED FOR REPLACEMENT PRIOR TO THE IMPORT OF OFF-SITE BORROW, IF NEEDED. COORDINATE WITH ENGINEER. SEE EARTHWORK SUMMARY ON SHEET G6.01.

P-152: ALL ON-SITE STRIPPING, SALVAGING, STOCKPILING, REPLACING AND SPREADING QUANTITY WILL BE PAID FOR UNDER COMMON EXCAVATION PRIOR TO THE PLACEMENT OF TOPSOIL BORROW (OBTAINED OFF-SITE) BY CONTRACTOR, IF NEEDED.

P-154 GEOGRID: MATERIAL SHALL BE TENSAR INTERAX NX650 GEOGRID, OR APPROVED EQUAL.

P-209: CONTRACTOR MAY SUBSTITUTE P-219 FOR P-209 WITH NO ADJUSTMENT TO UNIT PRICE.

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SEH Project	DLH 186683
Drawn By	LN
Designed By	JRN
Checked By	AVE

Rev.#	Plan Revision Issue Description	Date

Rev.#	Sheet Revision Issue Description	Date
1	ADDENDUM NO. 1	05-26-2026
2	ADDENDUM NO. 2	06-02-2026

SEH

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF STATE.

JARROD R NELSON, PE

DATE 05-08-26 LICENSE NO. 26794

TAXIWAY A RECONSTRUCTION - PHASE 7

DULUTH, MINNESOTA

STATEMENT OF ESTIMATED QUANTITIES

G5.05

EARTHWORK SUMMARY (BASE BID)
(ELIGIBLE FOR AIP FUNDING)

- TOTAL EXCAVATION (ELIGIBLE) 34,750 CY (EV)
  - COMMON EXCAVATION MATERIAL 33,350 CY (EV)
    - TOPSOIL (STRIPPING) (TO BE STOCKPILED ON SITE FOR FUTURE PLACEMENT) 8,000 CY (EV)
    - GENERAL EXCAVATED MATERIAL 8,500 CY (EV)
    - SUBGRADE EXCAVATION 16,850 CY (EV)
  - UNCLASSIFIED OVER EXCAVATION 1,000 CY (EV)
  - MUCK EXCAVATION (INCLUDES MATL. AT HOLDING BAY) 300 CY (EV)
  - ROCK EXCAVATION 100 CY (EV)
- TOTAL EMBANKMENT (ELIGIBLE) 17,450 CY (CV) (1)
  - TOPSOIL 8,200 CY (CV)
    - TOPSOIL (SALVAGED) (FROM EXCAVATED TOPSOIL ON SITE STOCKPILE) 8,000 CY (CV)
    - TOPSOIL (NEED / IMPORT) PAY ITEM "SELECT TOPSOIL BORROW (CV)" 200 CY (CV)
  - SUITABLE EXCAVATED MATERIAL 7,850 CY (CV)
    - SUITABLE EXCAVATED MATERIAL (SUBGRADE AREAS) 150 CY (CV)
    - SUITABLE EXCAVATED MATERIAL (OUTSIDE PAVEMENT AREAS) 7,700 CY (CV)
  - ⊛ UNCLASSIFIED OVER EXCAVATION REPLACEMENT MATERIAL 1,000 CY (CV) (P-154 SELECT GRANULAR BORROW OR SUITABLE EXCAVATED MATERIAL TO REPLACE REMOVED UNCLASSIFIED OVER EXCAVATION MATERIAL)
  - ⊛ MUCK EXCAVATION REPLACEMENT MATERIAL 300 CY (CV) (31 23 16 GRANULAR BACKFILL OR SUITABLE EXCAVATED MATERIAL TO REPLACE REMOVED MUCK EXCAVATION MATERIAL)
  - ⊛ ROCK EXCAVATION REPLACEMENT MATERIAL 100 CY (CV) (P-154 SELECT GRANULAR BORROW OR SUITABLE EXCAVATED MATERIAL TO REPLACE REMOVED ROCK EXCAVATION MATERIAL)

⊛ = (IT IS ESTIMATED THAT THERE WILL BE A SUFFICIENT AMOUNT OF SUITABLE EXCAVATED MATERIAL THAT CAN BE USED FOR THIS QUANTITY. THE FIELD ENGINEER SHALL DETERMINE IF IMPORT OF P-154 SELECT GRANULAR BORROW OR 31 23 16 GRANULAR BACKFILL IS NECESSARY AT TIME OF CONSTRUCTION)

EARTHWORK SUMMARY (BASE BID)
(INELIGIBLE FOR AIP FUNDING)

- TOTAL EXCAVATION (INELIGIBLE) 66,450 CY (EV) (1)
  - COMMON EXCAVATION MATERIAL 43,250 CY (EV)
    - TOPSOIL (STRIPPING) (TO BE STOCKPILED ON SITE FOR FUTURE PLACEMENT) 0 CY (EV) (SEE NOTE 1a BELOW)
    - GENERAL EXCAVATED MATERIAL 0 CY (EV) (SEE NOTE 1a BELOW)
    - GENERAL EXCAVATION MATERIAL (OVER UNDERLYING PEAT MATERIAL AT HOLDING BAY) 37,850 CY (EV)
    - SUBGRADE EXCAVATION 5,400 CY (EV)
  - UNCLASSIFIED OVER EXCAVATION 0 CY (EV) (SEE NOTE 1a BELOW)
  - MUCK EXCAVATION (MATERIAL AT HOLDING BAY) 23,200 CY (EV)
  - ROCK EXCAVATION 0 CY (EV) (SEE NOTE 1a BELOW)
- TOTAL EMBANKMENT (INELIGIBLE) 61,450 CY (CV) (1)
  - TOPSOIL 0 CY (CV) (SEE NOTE 1a BELOW)
    - TOPSOIL (SALVAGED) (FROM EXCAVATED TOPSOIL ON SITE STOCKPILE) 0 CY (CV) (SEE NOTE 1a BELOW)
    - TOPSOIL (NEED / IMPORT) PAY ITEM "SELECT TOPSOIL BORROW (CV)" 0 CY (CV) (SEE NOTE 1a BELOW)
  - SUITABLE EXCAVATED MATERIAL 38,250 CY (CV)
    - SUITABLE EXCAVATED MATERIAL (SUBGRADE AREAS) 400 CY (CV)
    - SUITABLE EXCAVATED MATERIAL (OUTSIDE PAVEMENT AREAS) 0 CY (CV) (SEE NOTE 1a BELOW)
    - SUITABLE EXCAVATED MATERIAL (OVER UNDERLYING PEAT MATERIAL AT HOLDING BAY AREAS) 37,850 CY (CV)
  - ⊛⊛ MUCK EXCAVATION REPLACEMENT MATERIAL 23,200 CY (CV) (31 23 16 GRANULAR BACKFILL (IMPORT) AND SUITABLE EXCAVATED MATERIAL TO REPLACE REMOVED MUCK EXCAVATION MATERIAL)
    - SUITABLE EXCAVATED MATERIAL 18,200 CY (CV)
    - 31 23 16 GRANULAR BACKFILL (IMPORT) 5,000 CY (CV)

⊛⊛ = IT IS ESTIMATED THAT THE MAJORITY OF MATERIAL NEEDED FOR THIS QUANTITY WILL BE AVAILABLE FROM SUITABLE EXCAVATED MATERIAL. THE REMAINING MATERIAL NEEDED WILL BE MET BY IMPORTING 31 23 16 GRANULAR BACKFILL (ESTIMATED AMOUNT SHOWN IN THIS SUMMARY). THE FIELD ENGINEER SHALL DETERMINE THE EXACT IMPORT NEEDED AT TIME OF CONSTRUCTION. STOCKPILING OF SUITABLE EXCAVATED MATERIAL WILL BE INCLUDED IN THE COST OF COMMON EXCAVATION.

INELIGIBLE TABLE NOTES:

1a. ALL GRADING NEEDS OUTSIDE PAVEMENT AREAS REGARDLESS OF ELIGIBLE OR INELIGIBLE PAVEMENT LIMITS WOULD BE THE SAME.

EARTHWORK NOTES:

1. THE VOLUMES SHOWN IN THE SUMMARY, COMPACTED VOLUME (CV), AS THE MATERIAL LIES AFTER COMPACTION HAS BEEN APPLIED AND THE EXCAVATED VOLUME (EV), AS THE MATERIAL LIES IN IT'S NATURAL COMPACTED STATE PRIOR TO BEING EXCAVATED, **DO NOT** INCLUDE THE LOOSE VOLUME (LV) OF MATERIAL NEEDED TO MEET COMPACTION OR THE ACTUAL LOOSE VOLUME OF MATERIAL AFTER EXCAVATION. IN ORDER TO ESTIMATE THE MATERIAL NEEDED FOR AREAS OF COMPACTION AN ESTIMATED 130% WOULD NEED TO BE ADDED TO THE COMPACTED VOLUME (CV) SHOWN. IN ORDER TO CALCULATE THE EXCAVATED LOOSE VOLUME (LV) MATERIAL TO BE RE-USED OR HAULED OFF SITE A FACTOR OF 115% WOULD NEED TO BE ADD TO THE EXCAVATED VOLUME (EV) SHOWN. THE ESTIMATED PERCENTAGES OF 130% SHRINKAGE FACTOR FROM LOOSE VOLUME (LV) TO COMPACTED VOLUME (CV) AND 115% EXPANSION FACTOR FROM EXCAVATED VOLUME (EV) TO LOOSE VOLUME (LV) ARE FOR INFORMATION ONLY. QUANTITIES TO BE MEASURED BY SURVEY OR AGREED UPON BY FIELD ENGINEER.
2. EXCAVATIONS SHALL BE DEFINED AS FOLLOWS:
   "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. REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL WITH SUITABLE MATERIAL (P-154) SHALL BE INCLUDED IN THIS PAY ITEM AS DIRECTED BY THE ENGINEER.
   "GENERAL EXCAVATED MATERIAL" = ALL AREAS REQUIRING EXCAVATION TO MEET PROPOSED SUBGRADE ELEVATION OUTSIDE THE PAVEMENT LIMITS.
3. EMBANKMENT "SUITABLE EXCAVATED MATERIAL" SHALL ONLY BE USED IF MATERIAL MEETS COMPACTION SPECIFICATIONS.
4. STRIPPING, ON SITE STOCKPILING AND PLACING OF ALL TOPSOIL (INCLUDING MIXING AND PLACEMENT OF IMPORTED TOPSOIL) WILL BE PAID FOR UNDER COMMON EXCAVATION. EXCESS STOCKPILED TOPSOIL SHALL BE DISPOSED OF OFF THE AIRPORT PROPERTY. NO EXCESS STOCKPILED TOPSOIL SHALL BE WASTED ON THE AIRPORT SITE UNLESS APPROVED BY AIRPORT OPERATIONS. EXCESS STOCKPILED TOPSOIL OFF SITE DISPOSAL OR RELOCATION WITH APPROVAL FROM AIRPORT OPERATIONS SHALL BE PAID FOR UNDER COMMON EXCAVATION.
5. 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 SHALL BE SUBMITTED TO THE ENGINEER.
6. UNCLASSIFIED OVER EXCAVATION QUANTITIES ARE ESTIMATES ONLY. QUANTITIES FOR PAYMENT MUST BE JUSTIFIED FROM A TOPOGRAPHIC SURVEY FROM BEFORE & AFTER THE WORK OR AS AGREED UPON BY THE ENGINEER. THE SURVEY DATA SHALL BE SUBMITTED TO THE ENGINEER.
7. MUCK EXCAVATION AND ROCK EXCAVATION QUANTITIES ARE ESTIMATES ONLY. QUANTITIES FOR PAYMENT MUST BE JUSTIFIED FROM A TOPOGRAPHIC SURVEY FROM BEFORE & AFTER THE WORK OR AS AGREED UPON BY THE ENGINEER. THE SURVEY DATA SHALL BE SUBMITTED TO THE ENGINEER. WORK FOR THESE BID ITEMS INCLUDES REPLACEMENT WITH SUITABLE EXCAVATED MATERIAL.
8. EXCAVATION WASTE MATERIAL REMOVED FROM THE CONSTRUCTION AREA SHALL BE DISPOSED OF OFF THE AIRPORT PROPERTY. NO MATERIAL SHALL BE WASTED ON THE AIRPORT SITE UNLESS APPROVED BY AIRPORT OPERATIONS. WASTE AND DISPOSAL AREAS SHALL BE SEEDED AND RESTORED IN A SMOOTH, GRADED AND DRAINABLE CONDITION. BORROW AREAS, IF REQUIRED, SHALL BE LOCATED AS DIRECTED BY THE FIELD ENGINEER AND / OR AIRPORT OPERATIONS AND SHALL ALSO BE RESTORED IN A SMOOTH GRADED AND DRAINABLE CONDITION.
9. ELIGIBLE AND INELIGIBLE SCHEDULE CLARIFICATION. THE USE OF ELIGIBLE AND INELIGIBLE 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.

GRADING NOTES:

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE PUBLIC STREETS AND ACCESS ROUTES IN THE VICINITY OF THE JOB SITE CLEAN AND FREE OF ROCKS, SOILS AND DEBRIS. SWEEP DAILY, AND WITHIN 3 HOURS OF NOTICE BY ENGINEER.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL PROPERTY CORNERS. ANY PROPERTY CORNERS DISTURBED OR DAMAGED BY GRADING ACTIVITIES SHALL BE RESET BY A PROFESSIONAL LAND SURVEYOR LICENSED IN THE SATE OF MINNESOTA, AT THE CONTRACTOR'S EXPENSE.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING DOWNSTREAM EROSION AND SILTATION DURING ALL PHASES OF CONSTRUCTION. EROSION CONTROL MEASURE SHALL BE IN PLACE PRIOR TO BEGINNING SOIL DISTURBING ACTIVITIES.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING PROCEDURES AND REQUIREMENTS OUTLINED IN THE STORM WATER POLLUTION PREVENTION PLAN AND THE NPDES GENERAL PERMIT STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY.
14. NUMEROUS EROSION CONTROL FEATURES MAY EXIST ON THE PROJECT SITE. CONTRACTOR SHALL KEEP AS MANY OF THOSE FEATURES IN PLACE AS POSSIBLE, UNTIL THE SITE IS STABILIZED WHEN GROWTH IS FULLY REESTABLISHED.

SEH Project	DLH 186683
Drawn By	SWB
Designed By	JRN
Checked By	AVE

Plan Revision Issue: Rev.# | Description | Date

Sheet Revision Issue: Rev.# | Description | Date
1 | ADDENDUM NO. 2 | 06-02-2026

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JARROD R NELSON, PE
DATE 05-08-26 LICENSE NO. 26794

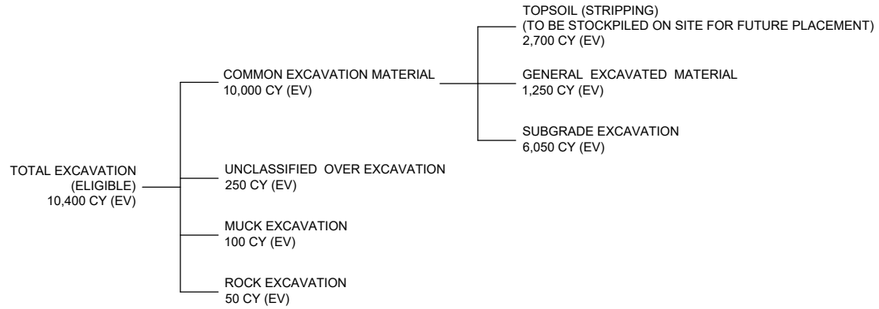
TAXIWAY A RECONSTRUCTION - PHASE 7
DULUTH, MINNESOTA

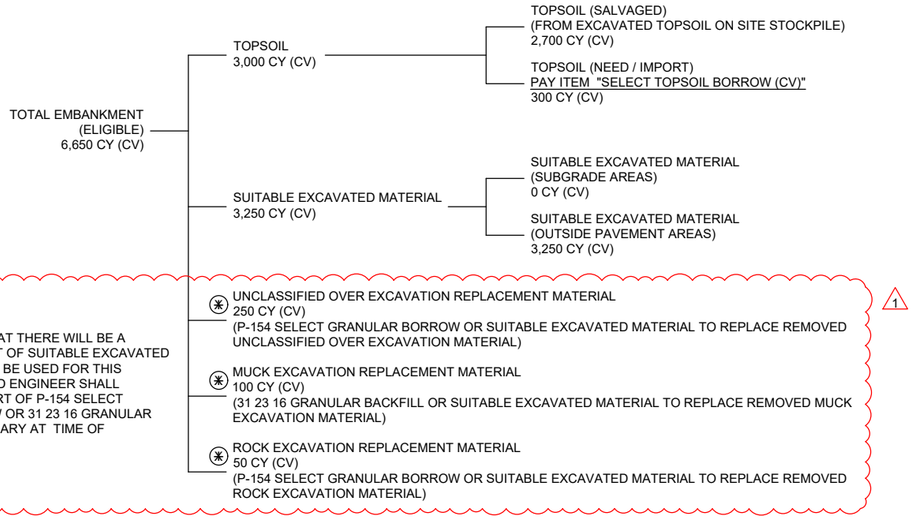
EARTHWORK SUMMARY (BASE BID)

G6.00

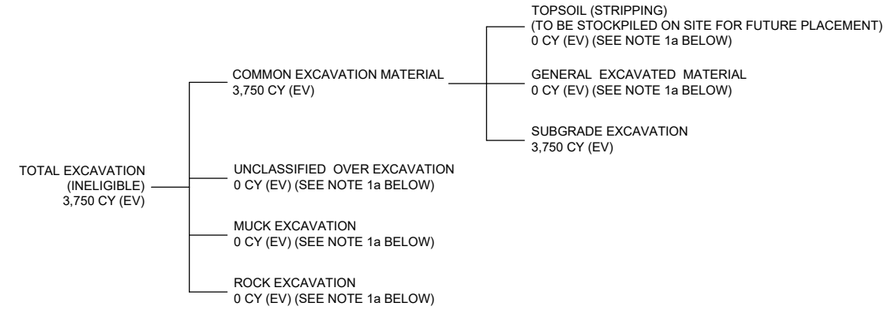
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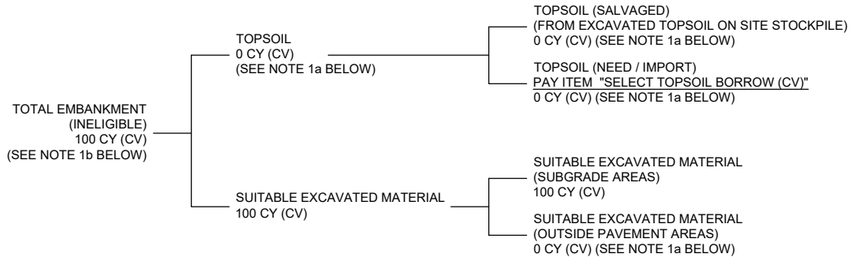
EARTHWORK SUMMARY (ALT BID)
(ELIGIBLE FOR AIP FUNDING)





EARTHWORK SUMMARY (ALT BID)
(INELIGIBLE FOR AIP FUNDING)





INELIGIBLE TABLE NOTES:

1a. ALL GRADING NEEDS OUTSIDE PAVEMENT AREAS REGARDLESS OF ELIGIBLE OR INELIGIBLE PAVEMENT LIMITS WOULD BE THE SAME.

1b. IT IS ANTICIPATED THAT THERE WILL BE NO EMBANKMENT MATERIAL NEEDED IN THE INELIGIBLE AREA.

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SEH Project	DLH 186683	Rev.#	Plan Revision Issue Description	Date	Rev.#	Sheet Revision Issue Description	Date
Drawn By	SWB				1	ADDENDUM NO. 2	06-02-2026
Designed By	JRN						
Checked By	AVE						

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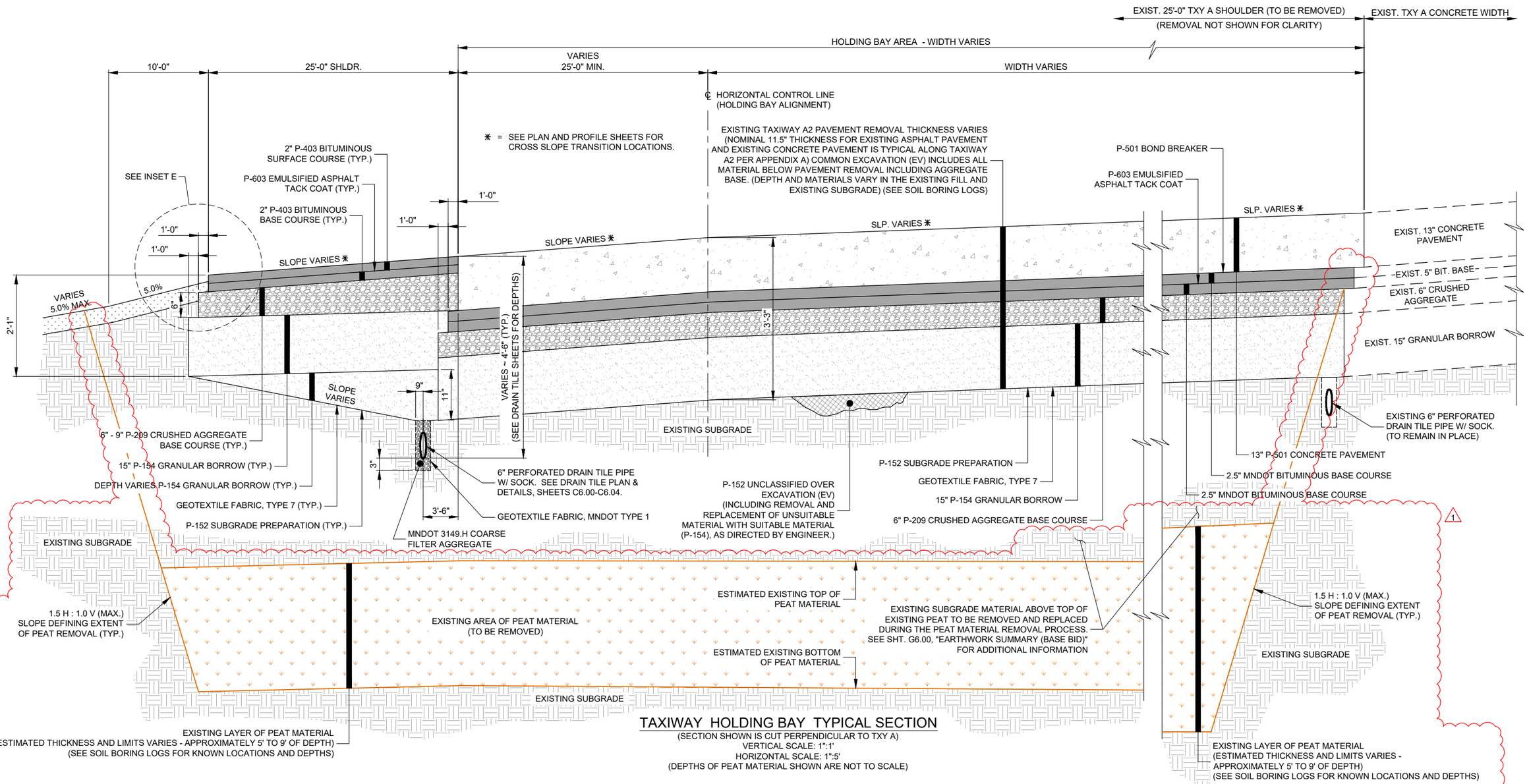
DATE 05-08-26 LICENSE NO. 26794

TAXIWAY A RECONSTRUCTION - PHASE 7

DULUTH, MINNESOTA

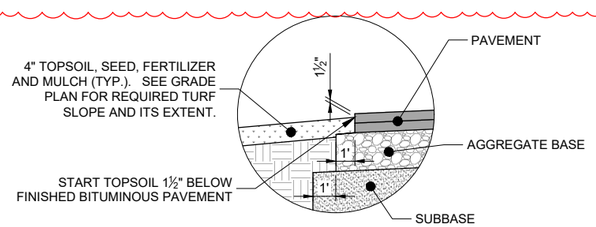
EARTHWORK SUMMARY (ALT BID)

G6.01



TAXIWAY HOLDING BAY TYPICAL SECTION

(SECTION SHOWN IS CUT PERPENDICULAR TO TXY A)
VERTICAL SCALE: 1":1'
HORIZONTAL SCALE: 1":5'
(DEPTHS OF PEAT MATERIAL SHOWN ARE NOT TO SCALE)



INSET E

PAVEMENT EDGE DETAIL
NTS

TYPICAL SECTION NOTES:

1. TYPICAL SECTIONS DRAWN TO SCALE EXCEPT WHERE THERE ARE DIMENSION BREAKS.
2. UNCLASSIFIED OVER EXCAVATION AS DIRECTED BY ENGINEER.
3. "UNCLASSIFIED OVER EXCAVATION (EV)" INCLUDES MATERIAL EXCAVATED BELOW THE TYPICAL SECTION, AS DIRECTED BY ENGINEER. EXCAVATED MATERIAL TO BECOME PROPERTY OF CONTRACTOR. REPLACEMENT OF EXCAVATED MATERIAL WITH SUITABLE GRANULAR MATERIAL WILL BE INCIDENTAL TO THE SUBGRADE EXCAVATION.
4. CONTRACTOR CAN USE FAA P-403 PAVEMENT FOR STABILIZED BASE INSTEAD OF THE SPECIFIED MNDOT BITUMINOUS MIXTURE.
5. CONTRACTOR CAN SUBSTITUTE P-219 SPECIFICATION FOR P-209 WITH NO ADDITIONAL PRICE ADJUSTMENT.
6. ALL SUBSURFACE UTILITIES NOT DESIGNATED FOR REMOVAL TO BE PROTECTED BY CONTRACTOR. ANY DAMAGED UTILITIES TO BE REPAIRED BY CONTRACTOR AT NO COST TO OWNER.
7. WHEN EXCAVATING AT THE EDGE OF EXISTING PAVEMENTS, CARE SHOULD BE TAKEN TO NOT UNDERMINE THE EXISTING PAVEMENTS. DAMAGED PAVEMENTS SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF THE CONTRACTOR.
8. SEE GEOTECHNICAL EVALUATION REPORT IN APPENDIX A FOR INDICATION OF EXISTING PAVEMENT SECTION TO BE REMOVED.
9. ALL ITEMS REQUIRED FOR DRAIN TILE (EXCAVATION, TRENCH, FILTER MATERIAL, FABRIC, CONNECTIONS, BACKFILLING, AND ASSOCIATED COMPACTION) ARE INCIDENTAL TO 6" PERFORATED PIPE INSTALLATION.
10. PIPE PERFORATIONS TO BE ORIENTED DOWNWARDS, WITH A MAXIMUM OF 3" OF COURSE FILTER AGGREGATE BENEATH THE PIPE.
11. DRAIN TILE TRENCH TO BE EXCAVATED INTO COMPACTED SUBGRADE. GEOTEXTILE FABRIC TO BE PLACED ALONG SUBGRADE INTERFACE AND AROUND TRENCH, COMPLETELY ENCLOSING THE PIPE, WITH SUFFICIENT OVERLAP TO PREVENT SUBBASE CONTAMINATION OF THE FILTER AGGREGATE.
12. SEE DRAIN TILE PLAN FOR EXACT DEPTHS AND GRADES OF THE PERFORATED UNDERDRAIN PIPES.
13. ~~SEE CROSS SECTION SHEETS FOR EXACT CROSS SECTION GRADES AT A GIVEN STATION.~~ 1
14. THE HORIZONTAL EXTENTS, DEPTH AND THICKNESS OF PEAT MATERIAL BENEATH THE PROPOSED HOLDING BAY FACILITY ARE ANTICIPATED TO BE VARIABLE ACROSS THE SITE. SEE GEOTECHNICAL EVALUATION REPORT IN APPENDIX A FOR DESIGNATIONS OF PEAT MATERIAL OBSERVED IN SOIL BORING LOGS.
15. IN COORDINATION WITH THE FIELD ENGINEER, THE CONTRACTOR SHALL CONFIRM THE ACTUAL LIMITS OF UNDERLYING PEAT MATERIAL DURING CONSTRUCTION. THE EXCAVATION OF BOTH PEAT MATERIAL AND THE SUBGRADE MATERIAL POSITIONED OVER THE UNDERLYING PEAT MATERIAL SHALL BE BACKFILLED WITH GRANULAR MATERIAL. IT IS ESTIMATED THAT THE MAJORITY OF MATERIAL NEEDED FOR BACKFILL WILL BE AVAILABLE FROM SUITABLE EXCAVATED MATERIAL. THE REMAINING MATERIAL TO BE USED AS BACKFILL WILL BE 31 23 16 GRANULAR BACKFILL.

SEH Project	DLH 186683
Drawn By	SWB
Designed By	JRN
Checked By	AVE

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Jarrod R Nelson

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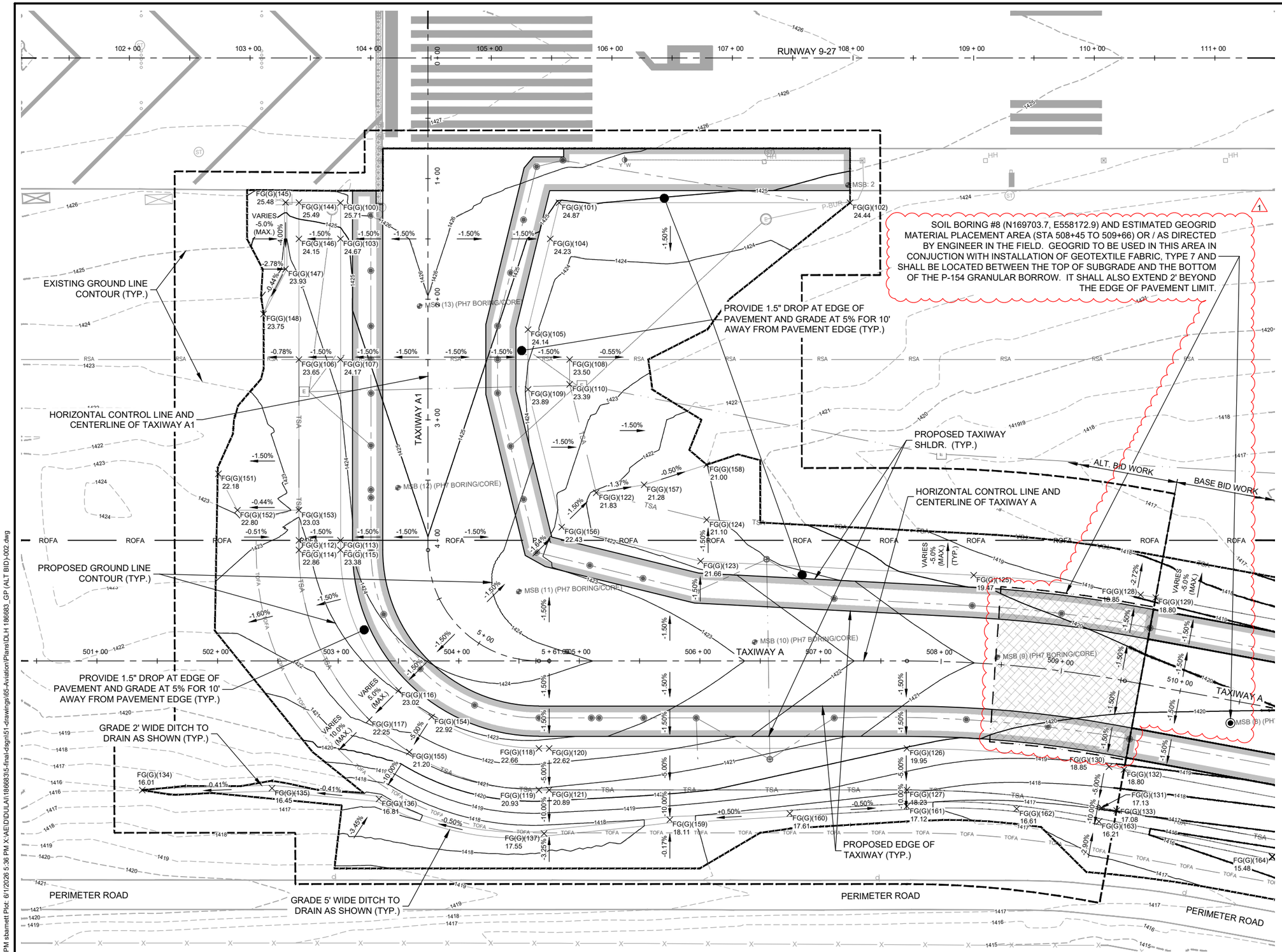
TAXIWAY A RECONSTRUCTION - PHASE 7

DULUTH, MINNESOTA

TYPICAL SECTION TXY HOLDING BAY

C1.01

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LEGEND

- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- PROPOSED GRADING LIMIT
- PROPOSED CONSTRUCTION LIMIT
- P-BUR — EXISTING BURIED POWER
- COM — COM — EXISTING BURIED PHONE
- PROPOSED STORM PIPE
- CB — PROPOSED STORM CATCH BASIN
- ST — PROPOSED STORM MANHOLE
- EXISTING PAVEMENT EDGE
- STM — EXISTING STORM PIPE
- FM — EXISTING SANITARY PIPE
- EXISTING STORM CATCH BASIN
- ST — EXISTING STORM MANHOLE
- EXISTING TAXIWAY LIGHT
- EXISTING RUNWAY LIGHT
- EXISTING BORING
- E — EXISTING ELECTRICAL MANHOLE
- EXISTING LIGHTED SIGN
- EXISTING INSPECTION PIT

NOTES:

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

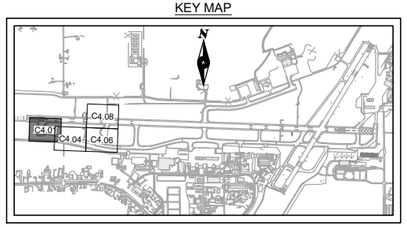
GEOMETRIC CONTROL NOTES:

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

N

0 40' 80'

KEY MAP



SEH Project	DLH 186683	Rev.#	Plan Revision Issue Description	Date	Rev.#	Sheet Revision Issue Description	Date	TAXIWAY A RECONSTRUCTION - PHASE 7	C4.01
Drawn By	SWB				1	ADDENDUM NO. 2	06-02-2026	DULUTH, MINNESOTA	GRADING PLAN (ALT BID)
Designed By	JRN								
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JARROD R NELSON, PE

DATE 05-08-26 LICENSE NO. 26794

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EXISTING GROUND LINE CONTOUR (TYP.)

1 SOIL BORING #8 (N169703.7, E558172.9), SOIL BORING #7 (N169697.0, E558376.3) AND ESTIMATED GEOGRID MATERIAL PLACEMENT AREA (STA 509+66 TO 513+50) OR / AS DIRECTED BY ENGINEER IN THE FIELD. GEOGRID TO BE USED IN THIS AREA IN CONJUCTION WITH INSTALLATION OF GEOTEXTILE FABRIC, TYPE 7 AND SHALL BE LOCATED BETWEEN THE TOP OF SUBGRADE AND THE BOTTOM OF THE P-154 GRANULAR BORROW. IT SHALL ALSO EXTEND 2' BEYOND THE EDGE OF PAVEMENT LIMIT.

GRADE 2' WIDE DITCH TO DRAIN AS SHOWN (TYP.)

PROPOSED TAXIWAY SHLDR. (TYP.)

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

HORIZONTAL CONTROL LINE AND CENTERLINE OF TAXIWAY A

TAXIWAY A

AIRFIELD MAINT. RD.

PERIMETER ROAD

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

PROPOSED EDGE OF TAXIWAY (TYP.)

PROPOSED GROUND LINE CONTOUR (TYP.)

GRADE 5' WIDE DITCH TO DRAIN AS SHOWN (TYP.)

TRANSITION GRADING TO MATCH EXISTING (TYP.)

1 SOIL BORING #5 (N169573.8, E558758.7) AND ESTIMATED GEOGRID MATERIAL PLACEMENT AREA (STA 515+50 TO 518+45) OR / AS DIRECTED BY ENGINEER IN THE FIELD. GEOGRID TO BE USED IN THIS AREA IN CONJUCTION WITH INSTALLATION OF GEOTEXTILE FABRIC, TYPE 7 AND SHALL BE LOCATED BETWEEN THE TOP OF SUBGRADE AND THE BOTTOM OF THE P-154 GRANULAR BORROW. IT SHALL ALSO EXTEND 2' BEYOND THE EDGE OF PAVEMENT LIMIT.

LEGEND

- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- PROPOSED GRADING LIMIT
- PROPOSED CONSTRUCTION LIMIT
- P-BUR — EXISTING BURIED POWER
- COM — EXISTING BURIED PHONE
- PROPOSED STORM PIPE
- C8 — PROPOSED STORM CATCH BASIN
- ST — PROPOSED STORM MANHOLE
- EXISTING PAVEMENT EDGE
- STM — EXISTING STORM PIPE
- FM — EXISTING SANITARY PIPE
- EXISTING STORM CATCH BASIN
- ST — EXISTING STORM MANHOLE
- EXISTING TAXIWAY LIGHT
- EXISTING RUNWAY LIGHT
- EXISTING BORING
- E — EXISTING ELECTRICAL MANHOLE
- EXISTING LIGHTED SIGN
- EXISTING INSPECTION PIT
- EXISTING VARIABLE ASPHALT MILLING / 2" BIT. OVERLAY AREA

NOTES:

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

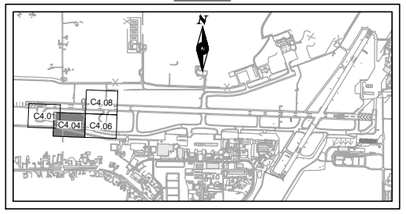
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2. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS FOR TIE IN OF PROPOSED PAVEMENT TO EXISTING PAVEMENT.

N

0 40' 80'

KEY MAP



SEH Project	DLH 186683
Drawn By	SWB
Designed By	JRN
Checked By	AVE

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TAXIWAY A RECONSTRUCTION - PHASE 7

DULUTH, MINNESOTA

GRADING PLAN

C4.04

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GRADE DRAINAGE SWALE FLOW TO EXISTING CATCH BASIN (TYP.)

GRADE 2' WIDE DITCH TO DRAIN AS SHOWN (TYP.)

EXISTING GROUND LINE CONTOUR (TYP.)

PROPOSED HOLDING SHLDR. BAY (TYP.)

PROPOSED EDGE OF HOLDING BAY (TYP.)

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

EDGE OF PROPOSED TAXIWAY (TYP.)

EXIST. TAXIWAY A2

MATCH EXISTING DRAINAGE SWALE FLOW LINE THAT DRAINS TO EXISTING CATCH BASIN (TYP.)

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

PROPOSED GROUND LINE CONTOUR (TYP.)

HORIZONTAL CONTROL LINE AND CENTERLINE OF TAXIWAY A

EDGE OF EXISTING TAXIWAY CONCRETE (TYP.)

GRADE 5' WIDE DITCH TO DRAIN AS SHOWN (TYP.)

TRANSITION GRADING TO MATCH EXISTING (TYP.)

SOIL BORING #2 (N169624.9, E559538.7) AND SOIL BORING #20 - PHASE 6 (N 169438.6, E559548.2) APPROXIMATE AREA OF SUBGRADE PEAT MATERIAL REMOVAL AND REPLACEMENT WITH SUITABLE BACKFILL MATERIALS. SEE SHEET G6.00 EARTHWORK SUMMARY (BASE BID) AND SHEET C1.01 TYPICAL SECTION TXY HOLDING BAY FOR SUPPORTING INFORMATION REGARDING SUBGRADE PEAT MATERIAL REMOVAL AND REPLACEMENT WITH SUITABLE BACKFILL MATERIALS.

TAXIWAY A

PERIMETER ROAD

MSB (1) (PH7 SOIL BORING)

MSB (2) (PH7 SOIL BORING)

MSB (3) (PH7 BORING/CORE)

MSB: C/SB 13

MSB: C/SB 14

MSB: 18

MSB: 19

MSB: 20

MSB: 21

LEGEND

- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- PROPOSED GRADING LIMIT
- PROPOSED CONSTRUCTION LIMIT
- EXISTING BURIED POWER
- EXISTING BURIED PHONE
- PROPOSED STORM PIPE
- PROPOSED STORM CATCH BASIN
- PROPOSED STORM MANHOLE
- EXISTING PAVEMENT EDGE
- EXISTING STORM PIPE
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- EXISTING TAXIWAY LIGHT
- EXISTING RUNWAY LIGHT
- EXISTING BORING
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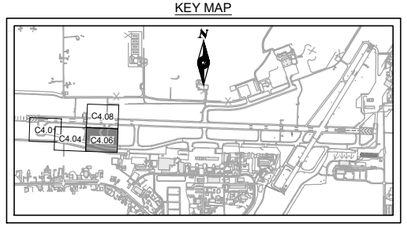
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N

0 40' 80'

KEY MAP



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TAXIWAY A RECONSTRUCTION - PHASE 7

DULUTH, MINNESOTA

GRADING PLAN

C4.06

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STORM WATER POND LEGEND

- FILTER TOPSOIL BORROW
- EXISTING RIPRAP TO BE REMOVED AND RESET AS NOTED
- EXISTING STORM PIPE REMOVAL
- ORANGE CONSTRUCTION FENCE
- FILTER LOG, TYPE WOOD FIBER BIOROLL
- BASIN BOUNDARY GRADING LIMITS
- PROPOSED BASIN PROJECT LIMITS
- 6" PERFORATED PVC BASIN DRAINTILE
- 10" NON- PERFORATED PVC BASIN DRAINTILE OUTLET PIPE
- 4" PERFORATED CORRUGATED DRAIN PIPE
- SYNTHETIC POND LINER
- DRAINTILE CLEANOUT (CO)
- GAS VENT (G)

EARTHWORK SUMMARY (SE STORM WATER POND)

TOTAL COMMON EXCAVATION 3,600 CY (EV)
- TOPSOIL (STRIPPING) (TO BE STOCKPILED ON SITE FOR FUTURE PLACEMENT) 850 CY (EV)
- GENERAL EXCAVATED MATERIAL 2,750 CY (EV)

TOTAL EMBANKMENT 1,550 CY (CV)
- TOPSOIL (SALVAGED) (FROM EXCAVATED TOPSOIL ON SITE STOCKPILE) 850 CY (CV)
- SUITABLE EXCAVATED MATERIAL 700 CY (CV)

REMOVE APPROX. 86 L.F. OF EXIST. 30" RCP, (1) FLARED END SECTION AND EXIST. RIPRAP (RESET EXISTING FES / RIPRAP AT LOCATION SHOWN)

PROPOSED BASIN BOUNDARY / GRADING LIMITS

REMOVE AND REPLACE EXISTING RIPRAP

PROPOSED WEIR (BOTTOM EL. 1375.0)

POND OVERFLOW OUTLET PIPE 42 LF 12" RCP @ 0.5% (WITH 2 FLARED END SECTIONS, LENGTH INCLUDES END SECTIONS)

12" RCP OUTLET N=168368.46 E=568648.57 INV. EL. 1373.89

12" RCP INLET N=168339.86 E=568617.81 INV. EL. 1374.10

CLEANOUT (TYP.) (14 TOTAL)

4" INV. 1368.14

10" NON-PERFORATED PVC BASIN DRAINTILE. SLOPE PIPE @ 0.16% AND MATCH INVERTS SHOWN

1

AREA FOR REMOVAL OF EXISTING RIPRAP MATERIAL, RESTORING EXISTING GRADE TO EAST, AND PLACEMENT OF DESIGNATED SEED MIX WET MEADOW NE 34-372, FOR AREA ADJACENT TO EASTERLY EXISTING WETLANDS.

675 LF ORANGE CONSTRUCTION FENCE

4" PERFORATED CORRUGATED OUTLET DRAIN PIPE (SPA. 5' FROM 10" BASIN DRAINTILE) SLOPE PIPES @ 0.15% AND MATCH INVERTS SHOWN (SEE DETAIL SHT. C4.12)

POND DRAINTILE OUTLET PIPE 140 LF 12" RCP @ 0.43% (WITH 1 FLARED END SECTION, LENGTH INCLUDES END SECTIONS)

12" RCP OUTLET N=168193.88 E=568754.89 INV. EL. 1367.4 (FIELD ADJUST AS REQD. TO MATCH EXIST. CONDITIONS)

NEW EXIST. 30" RCP PIPE OUTLET (RELOCATED FLARED END SECTION) N=168308.99 E=568390.59 INV. EL. 1374.9

EXISTING TREES SHALL BE PROTECTED FROM CONSTRUCTION OPERATIONS

GAS VENT (TYP.) (6 TOTAL)

SYNTHETIC POND LINER (SEE DETAIL SHT. C4.12)

6" PERFORATED PVC BASIN DRAINTILE (SPA. @ 10' O.C.) (TYP.) PIPE SLOPES TO MATCH INVERTS SHOWN AND 10" PVC SLOPE ELEVATIONS (0.15% MIN.) (SEE DETAIL SHT. C4.12)

4" PERFORATED CORRUGATED DRAIN PIPE (SPA. 5' FROM 6" BASIN DRAINTILE) (TYP. AS SHOWN) SLOPE PIPES @ 0.15% AND MATCH INVERTS SHOWN (SEE DETAIL SHT. C4.12)

STORM WATER POND MANHOLE N=168244.42 E=568624.33 RIM EL. 1375.00 DEPTH = 7.50' 10" PVC DT INV. 1368.83 (W) 4" PERF. DT INV. 1368.00 (NW) 12" RCP INV. 1368.00 (E)

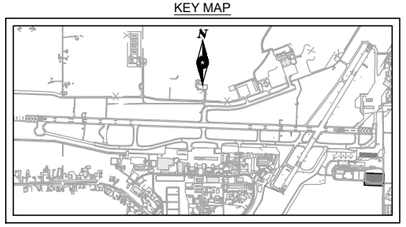
PROPOSED BASIN PROJECT LIMITS

GRINDEN DR.

HAINES RD.

2 + 78.33

KEY MAP



N

0 20' 40'

NOTES:

1) EXISTING POND FACILITY (SEE EXISTING POND CONTOURS IN BACKGROUND) IS BEING IMPROVED AND EXPANDED TO BETTER FACILITATE AIRPORT DRAINAGE AND RESPECT ADJACENT DESIGNATED WETLAND AND FLOODWAY AREAS. ORANGE CONSTRUCTION FENCE SHALL BE INSTALLED ALONG EASTERN AND NORTHERN BOUNDARIES OF THE POND SITE PRIOR TO CONSTRUCTION OPERATIONS TO MINIMIZE IMPACTS TO ADJACENT WETLAND AND FLOODWAY AREAS.

2) SEE SHEET C4.13 FOR SOUTHEAST POND EARTHWORK SUMMARY NOTES.

1 3) BYPASS PUMPING OF STORMWATER FOR STORM SEWER CONSTRUCTION AND STORMWATER POND IMPROVEMENTS IS CONSIDERED INCIDENTAL TO THOSE RESPECTIVE PORTIONS OF PROJECT CONSTRUCTION. DUE TO VARIOUS SITE CONSTRAINTS, THE CONTRACTOR WILL BE REQUIRED TO BYPASS PUMP STORMWATER AROUND THE SOUTHEAST POND SITE TO THE LOW-LYING AREA ON THE EAST END OF THE POND SITE. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT TO THE ENGINEER A BYPASS PLAN THAT WILL ADDRESS HOW THEY WILL COMPLETE THE WORK IN ACCORDANCE WITH THE NPDES PERMIT REQUIREMENTS.

SEH Project	DLH 186683
Drawn By	SWB
Designed By	JRN
Checked By	AVE

Rev.#	Plan Revision Issue Description	Date

Rev.#	Sheet Revision Issue Description	Date
1	ADDENDUM NO. 2	06-02-2026

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF STATE.

Jarrod R Nelson

JARROD R NELSON, PE

DATE 05-08-26 LICENSE NO. 26794

TAXIWAY A RECONSTRUCTION - PHASE 7

DULUTH, MINNESOTA

EXISTING SOUTHEAST STORM WATER POND EXPANSION & IMPROVEMENTS

C4.11

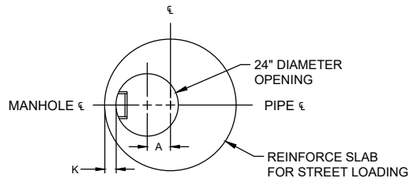
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STORM SEWER - STRUCTURE SCHEDULE

Structure Name	Reference Alignment	Structure Station	Structure Offset [ft.]	Structure Northing [ft.]	Structure Easting [ft.]	Insertion Rim Elevation [ft.]	Sump Elevation [ft.]	Rim To Sump Height [ft.]	Invert Elevation 1 (Pipe In)	Invert Elevation 2 (Pipe In)	Invert Elevation 1 (Pipe Out)	Inner Structure Diameter [ft.]	Casting
XCB-2	TXY A CL Algn	522+04.03	133.53	169340.8990	559278.8570	1409.52	1401.48	8.04			1401.48	Estimated 6' x 6' Existing	Utilize Existing
MH-1	TXY A CL Algn	521+88.44	50.00	169425.8206	559281.7070	1418.73	1400.33	18.40	1401.33		1401.33	7	R-3492 (Solid)
MH-2	TXY A CL Algn	521+59.58	-104.60	169582.9985	559286.9819	1416.48	1400.04	16.44	1401.04		1401.04	7	R-3492 (Solid)
CB-1	TXY A CL Algn	521+15.13	-342.72	169825.1040	559295.1070	1411.46	1399.60	11.86	1400.60	1405.10	1400.60	8	R-3492 (Grate)
MH-3	TXY A CL Algn	520+79.59	-556.68	170041.6850	559306.7066	1417.10	1399.21	17.89	1400.21			7	R-3492 (Solid)
CB-2	TXY A CL Algn	523+77.97	-410.61	169834.5085	559566.4174	1412.56	1407.50	5.06			1408.50	4	R-3492 (Grate)
MH-SE Pond	TXY A CL Algn	616+10.58	1116.04	168244.4166	568624.3336	1375.00	1367.50	7.50	1368.00	1368.83	1368.00	4	R-3492 (Solid)

STORM SEWER - PIPE SCHEDULE

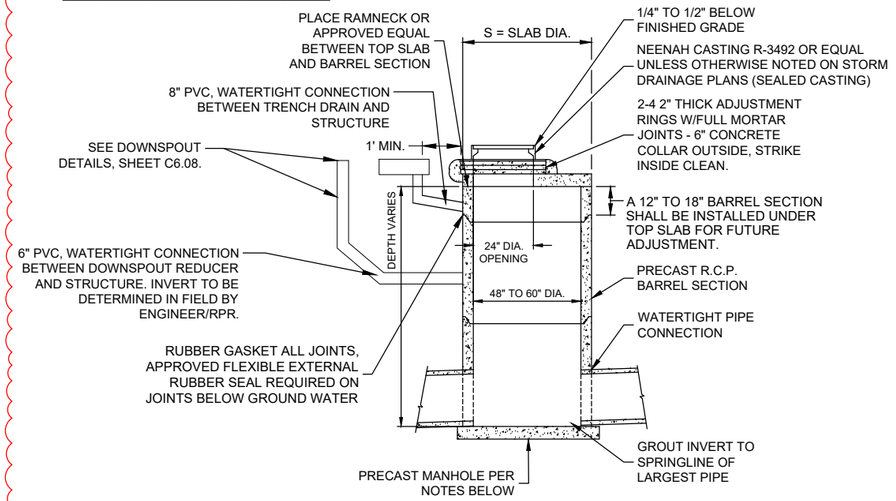
Pipe Name	Description	Start Structure	End Structure	Pipe Slope [%]	Start Invert Elevation [ft.]	End Invert Elevation [ft.]	3D Length Center to Center [ft.]	Pipe Pay Length [ft.]	Notes
Pipe - (1)	54" RCP	XCB-2	MH-1	-0.18%	1401.48	1401.33	84.97	85	
Pipe - (2)	54" RCP	MH-1	MH-2	-0.18%	1401.33	1401.04	157.27	157	
Pipe - (3)	54" RCP	MH-2	CB-1	-0.18%	1401.04	1400.60	242.24	242	
Pipe - (4)	54" RCP	CB-1	MH-3	-0.18%	1400.60	1400.21	216.89	217	
Pipe - (10)	24" RCP	CB-2	CB-1	-1.25%	1408.50	1405.10	271.49	271	
Pipe - (5A)	15" RCP			-0.30%	1412.60	1412.44	55.00	43	Pipe pay length does not include length of flared end sections (2 @ 6 ft.).
Pipe - (5B)	15" RCP			-0.30%	1412.60	1412.44	55.00	43	Pipe pay length does not include length of flared end sections (2 @ 6 ft.).
Pipe - (6) STRM POND	12" RCP			-0.50%	1374.10	1373.89	42.00	30	Pipe pay length does not include length of flared end sections (2 @ 6 ft.).
Pipe - (7) STRM POND	12" RCP	MH-SE Pond		-0.43%	1368.00	1367.39	140.00	134	Pipe pay length does not include length of flared end section (1 @ 6 ft.).



COVER SLAB

DIMENSION CHART

	MANHOLE TYPE				
	B	C	D	E	F
DIA.	48"	60"	72"	84"	96"
A	9.5"	15.5"	21.5"	27.5"	34.5"
S	58"	72"	86"	100"	114"
K	7.5"	8.5"	9.5"	10.5"	10.5"

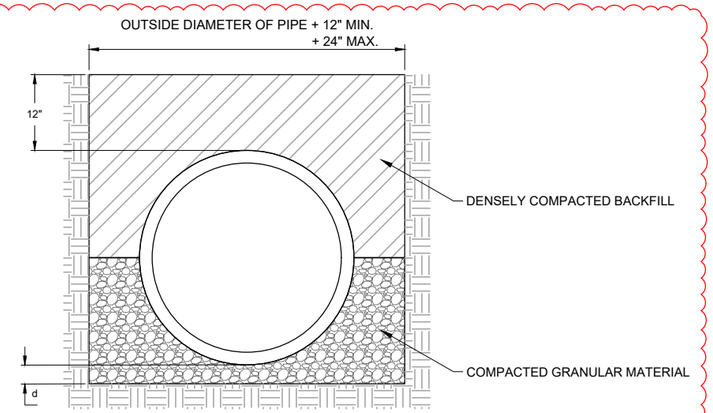


CATCH BASIN / MANHOLE
(24" DIA. OPENING)

NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING PIPES, INLETS, MANHOLE INVERTS AND ALL OTHER ELEVATIONS FOR TIE IN TO PROPOSED CONDITIONS.
2. STRUCTURES SHALL BE PRECAST CONCRETE CONFORMING TO REQUIREMENTS OF ITEM D-701, AC 150/5320-5D AND ASTM C 858; STANDARD SPECIFICATION FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES.
3. STRUCTURES AND CASTING FRAMES SHALL MEET ALL REQUIRED AIRPORT AIRCRAFT DESIGN LOADS.
4. SHOP DRAWINGS SUBMITTALS SHALL BE FURNISHED WITH SEALED ENGINEERING CALCULATIONS BY AN ENGINEER LICENSED TO PRACTICE IN THE STATE OF MINNESOTA.
5. SEE STORM SEWER PLANS FOR ADDITIONAL INFORMATION AND DETAILS.
6. WATERTIGHT CONNECTIONS BETWEEN TRENCH DRAIN TO PVC AND PVC TO STORM SEWER STRUCTURE SHALL BE PER MANUFACTURERS RECOMMENDATIONS AND APPROVED BY RPR.

1



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

LEGEND

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

NOTES:

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

CLASS B TRENCH BEDDING FOR REINFORCED CONCRETE PIPE

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SEH Project	DLH 186683
Drawn By	SWB
Designed By	JRN
Checked By	AVE

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JARROD R NELSON, PE
DATE 05-08-26 LICENSE NO. 26794

TAXIWAY A RECONSTRUCTION - PHASE 7
DULUTH, MINNESOTA

STORM SEWER SCHEDULE & DETAILS

C5.04