ADDENDUM No. 1

for

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

at the Manchester – Boston Regional Airport

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

Date: **March 31, 2022**

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

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

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

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

The attached sheets contain information or clarifications requested or discussed.

Receipt of Addendum No. 1 to the REQUEST FOR PROPOSALS for **Rehabilitate Runway 17-35**
at the MANCHESTER-BOSTON REGIONAL AIRPORT is hereby acknowledged.

COMPANY NAME:_____

SIGNED BY:_____

NAME AND TITLE PRINTED:_____

TELEPHONE: _____ FAX: _____

GENERAL

In general, this addendum is accomplishing the following:

1. Revises the bid opening date as stated.
2. Answers to questions to date.
3. The Runway 35 Service Road is added to the project as Volume 4 plan set as well as three new specifications are provided. Volume 4 work is designated as Additive Alternate #6.
4. The phasing drawings are updated for the addition of Phase 4.
5. Miscellaneous updates are made to clarify other items and notes.

Addendum No. 2 is planned to be issued soon. Addendum No. 2 will update the Bid Proposal form for the addition of Additive Alternate #6 and other changes to the project documents.

QUESTIONS/CLARIFICATIONS

Addendum Item No.1 -

Q1: What are the night working hours for the PH 5 grooving? Can't seem to find the exact hours in the P&S?
A1: Night work hours for Phases 4, 5 and 6 are 7:00 PM to 7:00 AM.

Q2: Will the FAA / City of Manchester consider offering items to cover Fuel and Asphalt Escalation on this project? With the volatile market we are currently in, predicting out where costs will be a year from now is leaving quite a bit of risk on the contractor's plate.
A2: No. FAA Order 5100.38D, Table C-2, Table Item #40 lists "Price Escalation Increases" as a prohibited cost for construction.

Q3: Pending submittal / lead times, would it be possible for the contractor to begin phase 7/8 for the retaining wall work fall of 2022? How does this affect the total job duration of 99 days, as it currently states that this work is concurrent with phase 3?
A3: Yes. Additional time for the retaining wall has been added. Revised phasing plans are provided.

Q4: With the volitivity of the energy market Brox Industries respectfully asks the FAA to consider an escalation clause for Liquid Asphalt and Diesel fuel. This is common practice on State jobs with both State and Federal funds. At the prebid we were explained the milling and paving portion were for the 2023 season. This is difficult to forecast that far out
A4: An escalation clause is not included. FAA Order 5100.38D, Table C-2, Table Item #40 lists "Price Escalation Increases" as a prohibited cost for construction.

Q5: During the prebid a question was asked about starting the repairs to the retaining wall in 2022 if a contract is executed with the low bidder. Has any additional thought been given to this request??
A5: Yes. Revised phasing plans are provided.

Q6: Just wondering if I could have a copy of the pre-bid sign-in?
A6: See attached Pre-bid Sign-in.

Q7:Would the Airport consider including a fuel adjustment allowance? The price of fuel has been fluctuat ing wildly lately. It would likely save MHT in the long run to take the risk off the contractors.
A7: *No. See above replay regarding the escalation clause as a prohibited cost.*

Q8:Would the Airport consider including an asphalt adjustment allowance? The price of asphalt has been fluctuating wildly lately. It would likely save MHT in the long run to take the risk off the contractors.
A8: *No. See above replay regarding the escalation clause as a prohibited cost.*

Q9: There is another large project bidding at the Airport on 4/6. Could this bid date be moved?
A9: Bid date is moved to April 19 @ 2:30PM for the addition of the Runway 35 Service Road.

PROJECT MANUAL

Addendum Item No.2 -
Advertisement for Bids:
REMOVE and REPLACE the first sentence of the sixth paragraph with the following:
"Bids will be publicly opened and read aloud on **April 19, 2022, at 2:30 pm** at the Airport administrative offices boardroom located on the third floor of the Airport terminal at One Airport Road, Manchester, NH."

Addendum Item No.3 -
Information for Bidders, 1.01 RECEIPT AND OPENING BIDS
REMOVE and REPLACE the second sentence of paragraph 1.01 with the following:
"Bids will be received by the Manchester-Boston Regional Airport Administration Office at One Airport Road Manchester, NH until **2:30 pm on April 19, 2022,** and then at said office publicly opened and read aloud."

Addendum Item No.4 -
Information for Bidders, 1.03 PREPARATION OF BID & METHOD OF AWARD
REMOVE and REPLACE the third paragraph with the following:
"The Contract will be awarded to the Contractor with the lowest qualified total bid for the Base Bid plus Additive Alternates No. 1 through **No. 6**.

If such bids exceed the available funding, the Contract will be awarded to the Contractor with the lowest qualified bid for the Base Bid plus Additive Alternates No. 1 through No. 5."

Addendum Item No.5 -
Information for Bidders, 1.08 TIME OF COMPLETION AND LIQUIDATED DAMAGES
REMOVE and REPLACE the 2nd paragraph with the following:
"The second Notice to Proceed will be for the construction. The bidder must agree to commence work on a date to be specified in the following written Notice to Proceed of the Owner and to fully complete the project within the calendar days as specified on Drawing No. G-100. Bidder must agree to pay to the Owner as liquidated damages the sum of two thousand dollars ($2,000.00) for each and every calendar day the work remains incomplete beyond the above specified time."

Addendum Item No.6 -
Bid Proposal:
A revised bid proposal will be issued in the next addendum to account for the new Additive Alternate #6 Runway 35 Service Road work as well as updates to quantities for the Base Bid and Additive Alternates #1 through #5.

Addendum Item No.7 -
Technical Specifications:
REMOVE and REPLACE the Technical Specifications table of contents with the attached Table of Contents Technical Specifications.

Addendum Item No.8 -
Technical Specifications:
ADD the Geotechnical Report from SW Cole for the Runway 35 Service Road to the Project Manual Appendices.

Addendum Item No.9 -
Technical Specifications:
ADD the below technical specifications.

1. M-003 Stream Alteration and Permit Conditions
2. P-154 Subbase Course
3. F-163 Wildlife Deterrent Fence Skirt

DRAWINGS

Addendum Item No.10 -
REMOVE and REPLACE the below drawings.

1. T-001 PROJECT TITLE SHEET
2. G-002 INDEX OF DRAWINGS, GENERAL PROJECT ABBREVIATIONS AND LEGEND
3. G-003 PROJECT GENERAL NOTES
4. G-004 CONSTRUCTION ACCESS PLAN AND NOTES
5. G-100 GENERAL CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES
6. G-105 PHASES 7 & 8 CONSTRUCTION SAFETY PHASING PLAN AND NOTES
7. G-106 PHASE 9 CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES
8. G-203 CONSTRUCTION SAFETY AND PHASING DETAILS - 3

Addendum Item No.11 -
ADD the following drawings:

1. G-107 PHASE 10 CONSTRUCTION SAFETY AND PHASING PLAN & NOTES
2. VOLUME 4 RECONTRUCT AND REHABILITATE A PORTION OF THE SERVICE ROAD

Addendum Item No.12 -
DRAWING NO. G-101. REVISE "Phase 1 Notes", Note 3 as follows:
"THIS PHASE MUST BE COMPLETED PRIOR TO THE START OF PHASE 2. PHASE 2 STARTS IMMEDIATELY AFTER THIS PHASE. THIS PHASE MUST RUN INDEPENDENTLY WITH ALL OTHER CONSTRUCTION PHASES."

Addendum Item No.13 -
DRAWING NO. G-202. ADD Note 3 to Detail 2 as follows:
"3. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM G-004-1."

Addendum Item No.14 -
DRAWING NOs. C-101 to C-110. REMOVE AND REPLACE "Existing Conditions Notes", Note 2, 1st sentence as follows:
"2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES (SEE UTILITY LOCATING ALLOWANCE ITEM FOR PAYMENT), INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE RPR OF HIS OPERATIONAL PLANS."

Addendum Item No.15 -
DRAWING NOs. C-101 to C-110. ADD Note 7 as follows:
"7. PAVEMENT CORE DATA IS PROVIDED IN THE PROJECT MANUAL APPENDICES."

Addendum Item No.16 -
DRAWING NOs. C-201 to C-208. REMOVE AND REPLACE "Civil Site Preparation Notes", Note 5, 1st sentence as follows:
"5. THE CONTRACTOR SHALL FLUSH/CLEAN OUT EXISTING UNDERDRAINS ON BOTH SIDES AND FOR THE FULL LENGTH OF RUNWAY 17-35 AND WITHIN THE PROJECT LIMITS FOR RUNWAY 6-24 (SEE PAY ITEM M-006-1)."

END OF ADDENDUM #1

Manchester·Boston
REGIONAL AIRPORT

MEETING ATTENDEES

DATE: **March 17, 2022**

MEETING: **Rehabilitation of Runway 17/35 Pre-Bid Meeting**

NAME	COMPANY	PHONE NUMBER	E-MAIL ADDRESS
John Gorham	Jacobs	603 545 2959	john.gorham@jacobs.com
Jonathan Hickey	Jacobs	774 313 6409	jonathan.hickey@jacobs.com
John Schofield	Sargent	207-951-3577	jschofield@sargent.us
R. Sampson	Indus	617-855-7002	rick.sampson@[illegible].com
Norman Saucier	Brox Ind	978-815-2969	nsaucier@broxindustries.com
Kevin Gazim	Brox	978-427-7367	kgazim@broxindustries.com
Bethany Huckins	Pike Industries	603-527-5725	bhuckins@pikeindustries.com
Jody Pelletier	Pike Industries	603-52175186	JPelletier@pikeindustries.com

TABLE OF CONTENTS - TECHNICAL SPECIFICATIONS

G-001	Special Work Requirements (Includes CSPP and SPCD)
G-002	Record Documents
G-003	Gate Guard Allowance
G-004	Maintenance and Protection of Traffic
G-005	Engineer Field Office
C-100	Contractor Quality Control Program (CQCP)
C-102	Temporary Air and Water Pollution, Soil Erosion, and Siltation Control
C-105	Mobilization
C-110	Method of Estimating Percentage of Material Within Specification Limits (PWL)
M-001	Construction Access Modifications
M-002	Runway Standby Time
M-003	Stream Alteration and Permit Conditions
M-004	Mechanically Stabilized Earth Walls
M-005	Riprap & Geotextiles
M-006	Flush & Cleanout Underdrains
M-007	Stormwater Pollution Prevention Plan
M-008	Crack Repairs for Bituminous Pavements
P-101	Preparation/Removal of Existing Pavements
P-152	Excavation, Subgrade and Embankment
P-154	Subbase Course
P-209	Crushed Aggregate Base Course
P-401	Asphalt Mix Pavement
P-403	Asphalt Mix Pavement Surface Course
P-603	Emulsified Asphalt Tack Coat
P-605	Joint Sealants for Pavements
P-606	Adhesive Compounds, Two Component for Sealing Wires and Lights in Pavement
P-608	Emulsified Asphalt Sealcoat
P-610	Concrete for Miscellaneous Structures
P-620	Runway and Taxiway Marking
P-621	Saw-Cut Grooves
D-701	Pipe for Storm Drains and Culverts
D-751	Manholes, Catch Basins, Inlets, and Inspection Holes
D-752	Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures
L-105	Alterations, Removal, and Demolition
L-108	Underground Power Cable for Airports
L-110	Airport Underground Electrical Duct Banks and Conduits
L-115	Electrical Manholes and Junction Structures
L-125	Installation of Airport Lighting Systems
L-140	Runway Weather Information System
L-150	Modifications to FAA Approach Lighting Systems
T-901	Seeding
T-905	Topsoil
T-908	Mulching
F-162	Chain-Link Fence
F-163	Wildlife Deterrent Fence Skirt
Appendices:	
Appendix A	Existing Pavement Cores
Appendix B	Partial In-Pavement Light Base Survey
Appendix C	Reconstruct Runway 35 Service Road (Geotechnical) Report

REPORT

19-1233 S

May 19, 2020

Explorations and Geotechnical Engineering Services

Reconstruct Runway 35 End of Service Road
Manchester-Boston Regional Airport
Manchester, New Hampshire

Prepared For:
Hoyle, Tanner & Associates, Inc.
Attention: Suzanne Sheppard, PE
150 Dow Street
Manchester, NH 03101

Prepared By:
S. W. Cole Engineering, Inc.
13 Delta Drive #8
Londonderry, NH 03053
T: 603-716-2111

S.W.COLE ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing and Special Inspections*
- *GeoEnvironmental Services*
- *Test Boring Explorations*

www.swcole.com

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Scope and Purpose 1
1.2 Site and Proposed Construction 1
2.0 EXPLORATION AND TESTING 2
2.1 Explorations 2
2.3 Laboratory Testing 2
3.0 SUBSURFACE CONDITIONS 2
3.1 Soil and Bedrock 2
3.2 Groundwater 3
4.0 EVALUATION AND RECOMMENDATIONS 3
4.1 General Findings 3
4.2 Design Review and Construction Testing 3
5.0 CLOSURE 4

Appendix A Limitations
Appendix B Figures
Appendix C Exploration Logs & Key
Appendix D Laboratory Test Results

19-1233 S

May 19, 2020

Hoyle, Tanner & Associates, Inc.
Attention: Suzanne Sheppard, PE
150 Dow Street
Manchester, NH 03101

Subject: Explorations and Geotechnical Engineering Services
Reconstruct Runway 35 End of Service Road
Manchester-Boston Regional Airport
Manchester, New Hampshire

Dear Suzy:

In accordance with our Proposal, dated August 28, 2019, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to earthwork and pavement associated with the proposed construction. Our scope of services included test boring explorations, soils laboratory testing, a geotechnical analysis of the subsurface findings, and preparation of this report.

1.2 Site and Proposed Construction

We understand that the project involves reconstruction of about 6,700 linear feet of the perimeter service road on the Runway 35 end of the airport. About 2,600 linear feet of the service road is experiencing pavement distress and undermining during rain events and spring thaw, and is proposed for reconstruction. The remaining portions are in better condition and a mill and overly is conceived in these areas.

Existing site features are shown on the "Exploration Location Plan" attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Seven test borings (B-1 through B-7) were made at the site on May 5, 2020 by S. W. Cole Explorations, LLC. The exploration locations were selected and established in the field by Hoyle, Tanner & Associates, Inc. The approximate exploration locations are shown on the "Exploration Location Plan" attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C. The elevations shown on the logs were estimated based on topographic information shown on the "Exploration Location Plan".

2.3 Laboratory Testing

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Moisture content test results are noted on the logs. The results of hydrometer analyses are attached in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

Test borings B-1 through B-7 were made through the existing pavement. The test borings encountered 3 to 3 ¾ inches of asphalt pavement. The asphalt layers were bonded at test borings B-1 and B-5 through B-7. The asphalt layers were delaminated at test borings B-2 through B-4. Photos of the asphalt cores are presented in Appendix C.

Under the asphalt a soils profile generally consisting of silty gravelly sand (aggregate base) overlying silty fine sands with varying amounts of gravel and trace to some levels of clay. Test Borings B-1 through B-4 encountered refusal surfaces (probable boulder or bedrock) from 3 to 5 feet. Test Boring B-6 encountered refusal surface (probable bedrock or boulder) at 9.6 feet. Test Boring B-5 and B-7 were terminated at the target depth of 10 feet.

Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

3.2 Groundwater

Saturated soils were encountered at test borings B-5 through B-7 at depths varying from 6 to 8 feet. Groundwater likely becomes perched on the relatively impervious glacial till and bedrock encountered at the test borings. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 Frost Considerations

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- The design frost penetration depth for the Manchester, New Hampshire area is 4 feet.
- Based on samples tested, the base material contains percent passing the No. 200 sieve ranging from about 10 to 20 percent. The base material is consider slightly to moderately frost susceptible.
- Based on samples tested, the subgrade soils contains percent passing the No. 200 sieve ranging from about 15 to 33 20 percent. The subgrade soils at the site are considered moderately frost susceptible.
- Although saturated soils (interpreted to the groundwater or perched water) do not occur until depths of 6 to 8 feet, the subgrade soils are considered poorly draining and water entering the pavement section will be slow to drain into the subgrade. Without proper daylighting gravity drainage of the base section to ditches or use of underdrains, collection of water increases frost susceptibility and decreases the strength of the subgrade soils.

4.2 Construction Testing

A soils and asphalt testing program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities and pavement subgrades, as well as to provide testing of soils and asphalt construction materials.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.

Antonio J. Santiago, E.I.T.
Geotechnical Engineer

Digitally signed by Chad Michaud
DN: cn=Chad Michaud, o=S. W. Cole Engineering, Inc., ou, email=cmichaud@swcole.com, c=US
Date: 2020.05.19 17:51:37 -04'00'

STATE OF NEW HAMPSHIRE
CHAD BARTLETT MICHAUD
No.10795
LICENSED
PROFESSIONAL ENGINEER

Chad B. Michaud, P.E.
Senior Geotechnical Engineer

AJS:cbm

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Hoyle, Tanner & Associates, Inc. for specific application to the proposed Reconstruct Runway 35 End of Service Road on Manchester-Boston Regional Airport in Manchester, New Hampshire. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures

Boring Locations

Hoyle, Tanner Project #: 030089
MHT Reconstruct/Rehabilitate Service Road
May, 2020

APPENDIX C

Exploration Logs and Key

BORING LOG

CLIENT: Hoyle, Tanner & Associates, Inc.
PROJECT: Reconstruct Runway 35 End of Service Road
LOCATION: Manchester-Boston Regional Airport, Manchester, NH

BORING NO.: B-1
SHEET: 1 of 1
PROJECT NO. 19-1233
DATE START: 5/5/2020
DATE FINISH: 5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** N/A **TOTAL DEPTH (FT):** 3.0 **LOGGED BY:** Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Sam Shaw **DRILLING METHOD:** Solid Stem Auger
RIG TYPE: Truck Mounted Acker **AUGER ID/OD:** N/A / 4 1/2 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety / N/A **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:** N/A
HAMMER EFFICIENCY FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): No free-water observed.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
										3 3/4 inches Asphalt Pavement (Bonded)		
			1S		0.3-1	8/8				0.3 Dark brown, silty gravelly SAND some clay (FILL) (SM)		
			1D		1-1.5	6/3	50			1.0 Brown, SAND some gravel some silt (SW-SM)		

Auger Refusal at 3.0 feet
Probable bedrock or boulder.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Hoyle, Tanner & Associates, Inc.
PROJECT: Reconstruct Runway 35 End of Service Road
LOCATION: Manchester-Boston Regional Airport, Manchester, NH

BORING NO.: B-2
SHEET: 1 of 1
PROJECT NO. 19-1233
DATE START: 5/5/2020
DATE FINISH: 5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** N/A **TOTAL DEPTH (FT):** 3.5 **LOGGED BY:** Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Sam Shaw **DRILLING METHOD:** Solid Stem Auger
RIG TYPE: Truck Mounted Acker **AUGER ID/OD:** N/A / 4 1/2 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): No free-water observed.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
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S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1S		0.3-1	8/8		w =7.5 %		0.3 3 1/2 inches Asphalt Pavement (Delaminated)		
			1D		1-2	12/8	28-50	w =7.3 %		1.0 Dark brown, silty gravelly SAND some clay (FILL) (SM)		
										Dense, brown gravelly silty SAND trace clay (TILL) (SM)		

Auger Refusal at 3.5 feet
Probable bedrock or boulder.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Hoyle, Tanner & Associates, Inc.
PROJECT: Reconstruct Runway 35 End of Service Road
LOCATION: Manchester-Boston Regional Airport, Manchester, NH

BORING NO.: B-3
SHEET: 1 of 1
PROJECT NO. 19-1233
DATE START: 5/5/2020
DATE FINISH: 5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** N/A **TOTAL DEPTH (FT):** 5.0 **LOGGED BY:** Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Sam Shaw **DRILLING METHOD:** Solid Stem Auger
RIG TYPE: Truck Mounted Acker **AUGER ID/OD:** N/A / 4 1/2 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): No free-water observed.
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Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1S		0.3-1	8/8				3 inches Asphalt Pavement (Delaminated)		
										0.3 Dark brown, silty gravelly SAND some clay (FILL) (SM)		
			1D		1-3	24/16	12-20-28			1.0 Dense, gray silty SAND some clay some gravel (SC-SM)		
			2D		3-3.4	5/5	50/5"					
	5											

Auger Refusal at 5.0 feet
Probable bedrock or boulder.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Hoyle, Tanner & Associates, Inc.
PROJECT: Reconstruct Runway 35 End of Service Road
LOCATION: Manchester-Boston Regional Airport, Manchester, NH

BORING NO.: B-4
SHEET: 1 of 1
PROJECT NO. 19-1233
DATE START: 5/5/2020
DATE FINISH: 5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** N/A **TOTAL DEPTH (FT):** 5.0 **LOGGED BY:** Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Sam Shaw **DRILLING METHOD:** Solid Stem Auger
RIG TYPE: Truck Mounted Acker **AUGER ID/OD:** N/A / 4 1/2 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): No free-water observed.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
										0.3 3 inches Asphalt Pavement (Delaminated)		
			1S		0.3-1.5	14/14		w =10.1 %		Dark brown, SAND and GRAVEL some silt trace clay (FILL) (SM)		
			1D		1.5-3.5	24/14	13-35-32-48	w =7.2 %		1.5 Dense, gray silty SAND some clay some gravel (SC-SM)		
			2D		4-4.8	9/6	48-50/3"					
	5											

Auger Refusal at 5.0 feet
Probable bedrock or boulder.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Hoyle, Tanner & Associates, Inc.
PROJECT: Reconstruct Runway 35 End of Service Road
LOCATION: Manchester-Boston Regional Airport, Manchester, NH

BORING NO.: B-5
SHEET: 1 of 1
PROJECT NO. 19-1233
DATE START: 5/5/2020
DATE FINISH: 5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** N/A **TOTAL DEPTH (FT):** 10.0 **LOGGED BY:** Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Sam Shaw **DRILLING METHOD:** Solid Stem Auger
RIG TYPE: Truck Mounted Acker **AUGER ID/OD:** N/A / 4 1/2 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): ▽ 6 ft Soil samples saturated below 6 feet.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
										3 1/2 inches Asphalt Pavement (Bonded)		
			1S		0.3-1.5	14/14		w =6.2 %		0.3 Dark brown, gravelly SAND some silt trace clay (FILL) (SW-SM)		
			1D		1.5-3.5	24/14	20-23-40-32	w =6.9 %		1.5 Dense, brown SAND some gravel some silt (FILL) (SM)		
										3.0 Dense, brown silty SAND trace gravel trace clay (SM)		
			2D		4-6	24/16	15-23-30-20	w =9.8 %				
	5										▽	
			3D		6-8	24/12	22-24-30-28					
			4D		8-10	24/14	25-26-26-29					
	10									Bottom of Exploration at 10.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Hoyle, Tanner & Associates, Inc.
PROJECT: Reconstruct Runway 35 End of Service Road
LOCATION: Manchester-Boston Regional Airport, Manchester, NH

BORING NO.: B-6
SHEET: 1 of 1
PROJECT NO. 19-1233
DATE START: 5/5/2020
DATE FINISH: 5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** N/A **TOTAL DEPTH (FT):** 9.6 **LOGGED BY:** Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Sam Shaw **DRILLING METHOD:** Solid Stem Auger
RIG TYPE: Truck Mounted Acker **AUGER ID/OD:** N/A / 4 1/2 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): ▽ 8 ft Soil samples saturated below 8 feet.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
			1S		0.3-1.5	14/14		w =7.1 %		0.3 3 inches Asphalt Pavement (Bonded) Dark brown, gravelly SAND some silt trace clay (FILL) (SM)		
			1D		1.5-3.3	21/12	20-22-30-50/3"	w =6.7 %		1.5 Dense to Loose, brown gravelly silty SAND trace clay (FILL) (SM)		
			2D		4-4.8	9/3	6-50/3"					
	5											
			3D		6-8	24/6	2-2-6-8					
										7.0 Medium dense to dense, brown gravelly SAND some silt (SW-SM)	▽	
			4D		8-9.6	19/14	20-22-30-50/1"					

Split Spoon Refusal at 9.6 feet
Probable bedrock or boulder.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Hoyle, Tanner & Associates, Inc.
PROJECT: Reconstruct Runway 35 End of Service Road
LOCATION: Manchester-Boston Regional Airport, Manchester, NH

BORING NO.: B-7
SHEET: 1 of 1
PROJECT NO. 19-1233
DATE START: 5/5/2020
DATE FINISH: 5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** N/A **TOTAL DEPTH (FT):** 10.0 **LOGGED BY:** Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Sam Shaw **DRILLING METHOD:** Solid Stem Auger
RIG TYPE: Truck Mounted Acker **AUGER ID/OD:** N/A / 4 1/2 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): ▽ 6 ft Soil samples saturated below 6 feet.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
			1S		0.3-2	20/20		w =7 %		0.3 3 1/2 inches Asphalt Pavement (Bonded) Dark brown, gravelly silty SAND trace (FILL) (SM)		
			1D		2-4	24/14	30-18-24-20	w =6.6 %		2.0 Dense, brown silty SAND some gravel trace clay (FILL) (SM)		
			2D		4-6	24/4	8-9-12-14			3.5 Medium dense loose, brown silty SAND some gravel (SM)		
	5		3D		6-8	24/6	4-4-3-1				▽	
			4D		8-10	24/0	1-1-4-6					
	10									Bottom of Exploration at 10.0 feet		

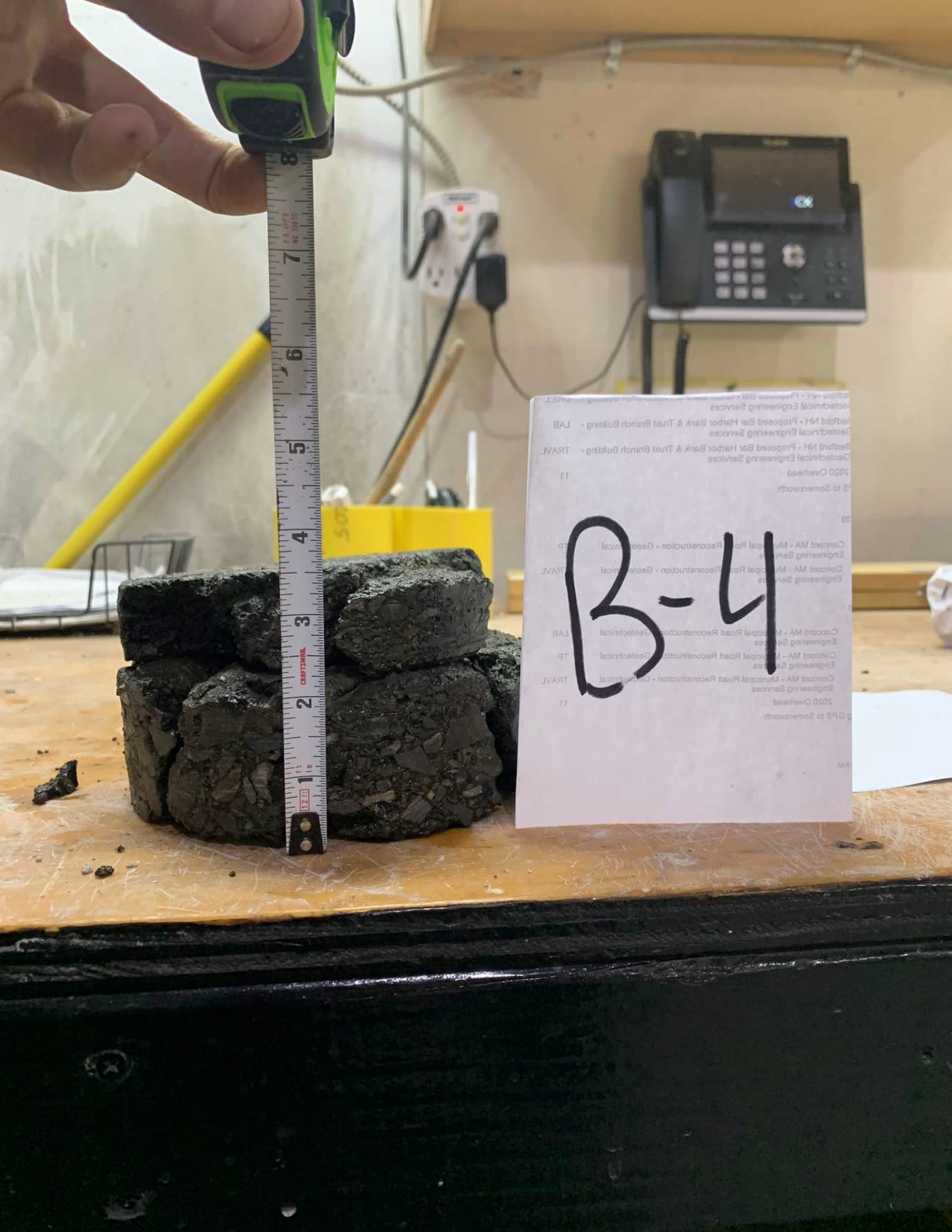
Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

B-1
B-1

B-2
CRAFTSMAN

B-3
CRAFTSMAN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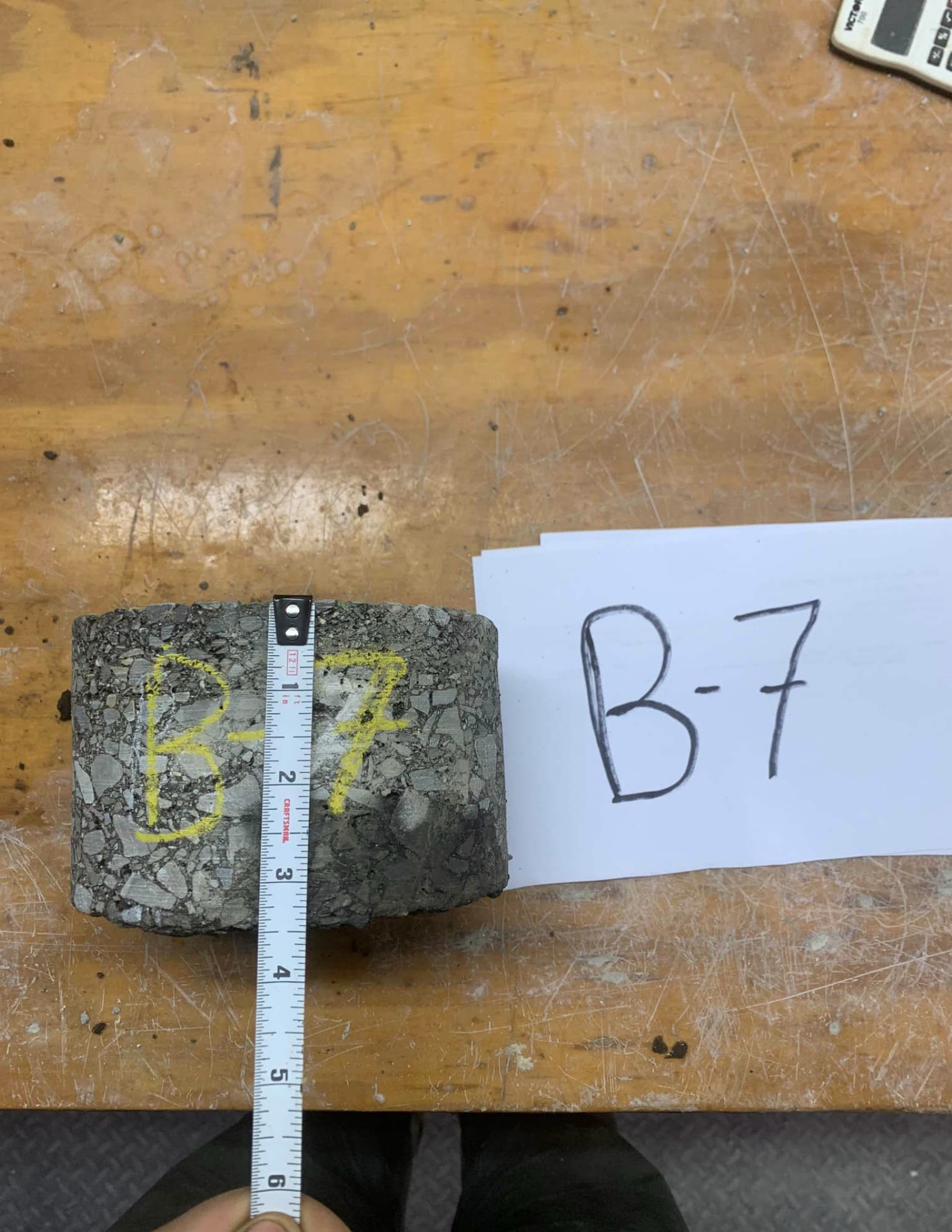
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KEY TO NOTES & SYMBOLS
Test Boring and Test Pit Explorations

Stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%
With	Undifferentiated

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to 1/2" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

APPENDIX D

Laboratory Test Results

S.W.COLE ENGINEERING, INC.

Report of Hydrometer

ASTM D422-63 (07)

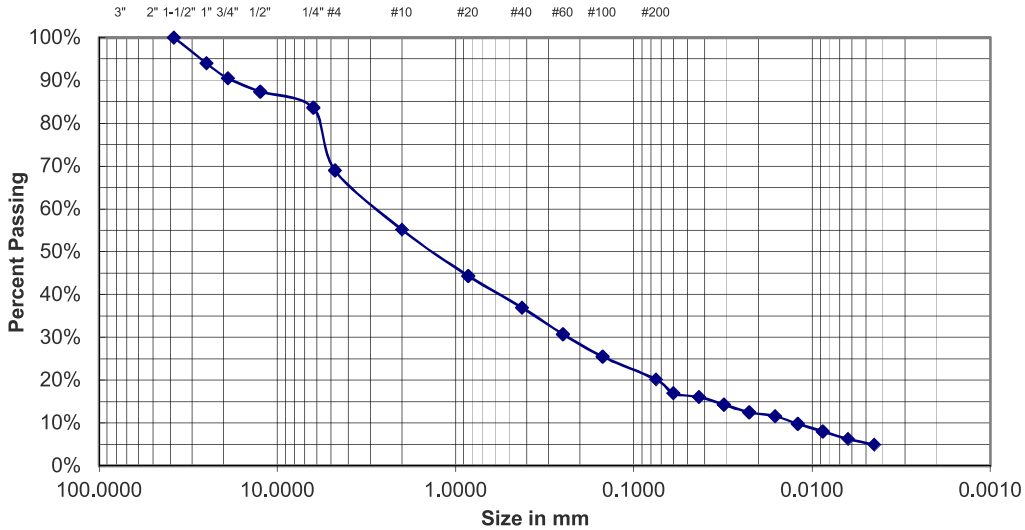
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4248M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SM	**Date Completed:**	5/7/2020
Material Source:	B-2, 1S, 0.3-1'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**100**	
1"	25	**94**	
¾"	19	**91**	
½"	12.5	**87**	
¼"	6.3	**84**	
No. 4	4.75	**69**	
No. 10	2	**55**	
No. 20	0.85	**44**	
No. 40	0.425	**37**	
No. 60	0.25	**31**	
No. 100	0.15	**26**	
No. 200	0.075	**20.2**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06016	**16.9**
0.04316	**16.1**
0.03124	**14.3**
0.03124	**14.3**
0.02259	**12.5**
0.01618	**11.6**
0.01206	**9.8**
0.00873	**8.0**
0.00629	**6.2**
0.00448	**4.9**
0.00320	**4.0**
0.00225	**2.7**
0.00133	**2.2**



Particle Distribution:

Gravel (3" - No. 4)	**31.0%**	Fines (0.074 -0.005)	**14.7%**
Sand (No. 4 - No. 200)	**48.8%**	Clay (<0.005)	**5.5%**

Comments: Moisture (%) = 7.5

Reviewed By

13 Delta Drive, Unit 8, Londonderry, NH 03053 • P: (603) 716.2111 • F: (603) 716.2112 • E: infolondonderry@swcole.com

S.W.COLE ENGINEERING, INC.

Report of Hydrometer

ASTM D422-63 (07)

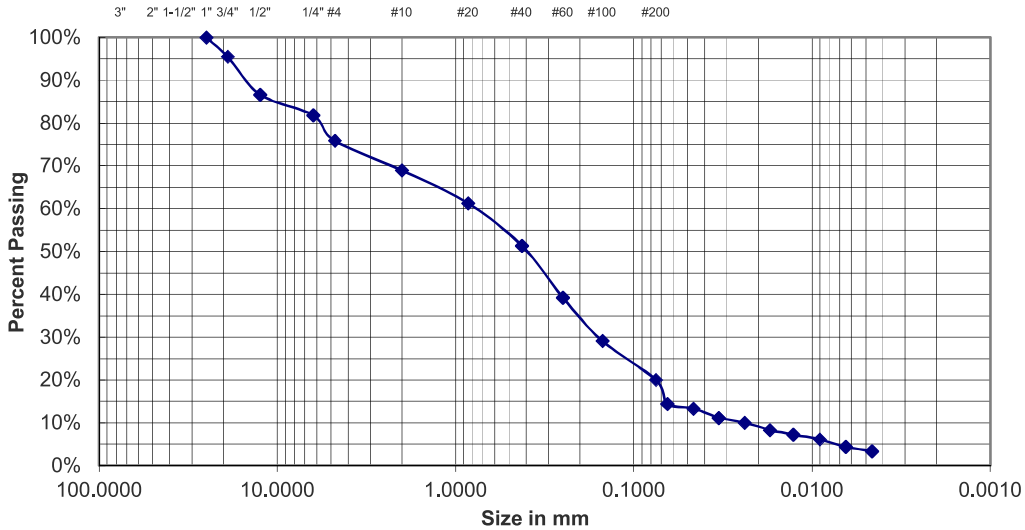
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4249M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SM	**Date Completed:**	5/7/2020
Material Source:	B-2, 1D, 1-2'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**100**	
1"	25	**100**	
¾"	19	**95**	
½"	12.5	**87**	
¼"	6.3	**82**	
No. 4	4.75	**76**	
No. 10	2	**69**	
No. 20	0.85	**61**	
No. 40	0.425	**51**	
No. 60	0.25	**39**	
No. 100	0.15	**29**	
No. 200	0.075	**20.0**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06471	**14.4**
0.04633	**13.3**
0.03343	**11.1**
0.03343	**11.1**
0.02392	**10.0**
0.01724	**8.3**
0.01273	**7.2**
0.00907	**6.1**
0.00648	**4.4**
0.00461	**3.3**
0.00326	**2.2**
0.00230	**2.2**
0.00134	**1.7**



Particle Distribution:

Gravel (3" - No. 4)	**24.2%**	Fines (0.074 -0.005)	**16.7%**
Sand (No. 4 - No. 200)	**55.8%**	Clay (<0.005)	**3.3%**

Comments: Moisture (%) = 7.3

Reviewed By

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S.W.COLE ENGINEERING, INC.

Report of Hydrometer

ASTM D422-63 (07)

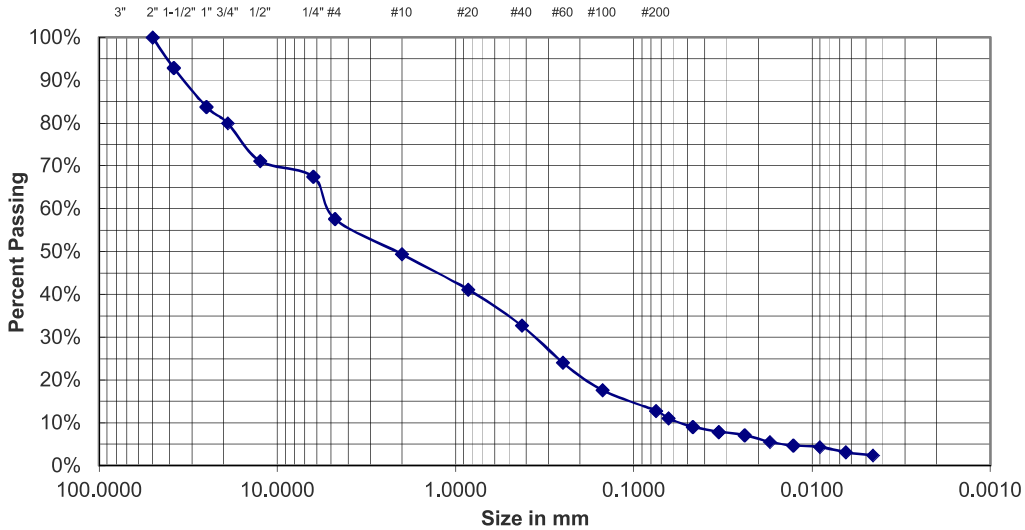
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4250M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SM	**Date Completed:**	5/7/2020
Material Source:	B-4, 1S, 0.3-1.5'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**93**	
1"	25	**84**	
¾"	19	**80**	
½"	12.5	**71**	
¼"	6.3	**68**	
No. 4	4.75	**58**	
No. 10	2	**49**	
No. 20	0.85	**41**	
No. 40	0.425	**33**	
No. 60	0.25	**24**	
No. 100	0.15	**18**	
No. 200	0.075	**12.8**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06388	**11.0**
0.04672	**9.1**
0.03343	**7.9**
0.03343	**7.9**
0.02392	**7.1**
0.01724	**5.5**
0.01273	**4.7**
0.00907	**4.3**
0.00648	**3.2**
0.00456	**2.4**
0.00326	**1.6**
0.00233	**1.2**
0.00136	**0.8**



Particle Distribution:

Gravel (3" - No. 4)	**42.4%**	Fines (0.074 -0.005)	**10.0%**
Sand (No. 4 - No. 200)	**44.8%**	Clay (<0.005)	**2.8%**

Comments: Moisture (%) = 10.1

Reviewed By

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S.W.COLE ENGINEERING, INC.

Report of Hydrometer

ASTM D422-63 (07)

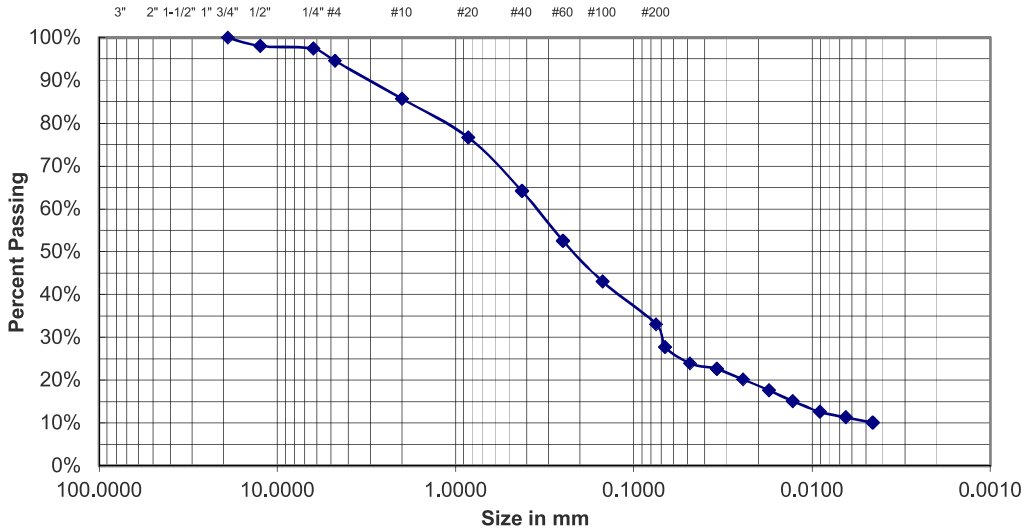
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4251M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SC-SM	**Date Completed:**	5/11/2020
Material Source:	B-4, 1D, 1.5-3.5'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**100**	
1"	25	**100**	
¾"	19	**100**	
½"	12.5	**98**	
¼"	6.3	**97**	
No. 4	4.75	**95**	
No. 10	2	**86**	
No. 20	0.85	**77**	
No. 40	0.425	**64**	
No. 60	0.25	**53**	
No. 100	0.15	**43**	
No. 200	0.075	**33.0**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06686	**27.7**
0.04842	**23.9**
0.03423	**22.7**
0.03423	**22.7**
0.02439	**20.2**
0.01745	**17.6**
0.01288	**15.1**
0.00907	**12.6**
0.00648	**11.3**
0.00458	**10.1**
0.00330	**6.3**
0.00233	**5.0**



Particle Distribution:

Gravel (3" - No. 4)	**5.5%**	Fines (0.074 -0.005)	**22.3%**
Sand (No. 4 - No. 200)	**61.5%**	Clay (<0.005)	**10.7%**

Comments: Moisture (%) = 7.2

Reviewed By

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S.W.COLE ENGINEERING, INC.

Report of Hydrometer

ASTM D422-63 (07)

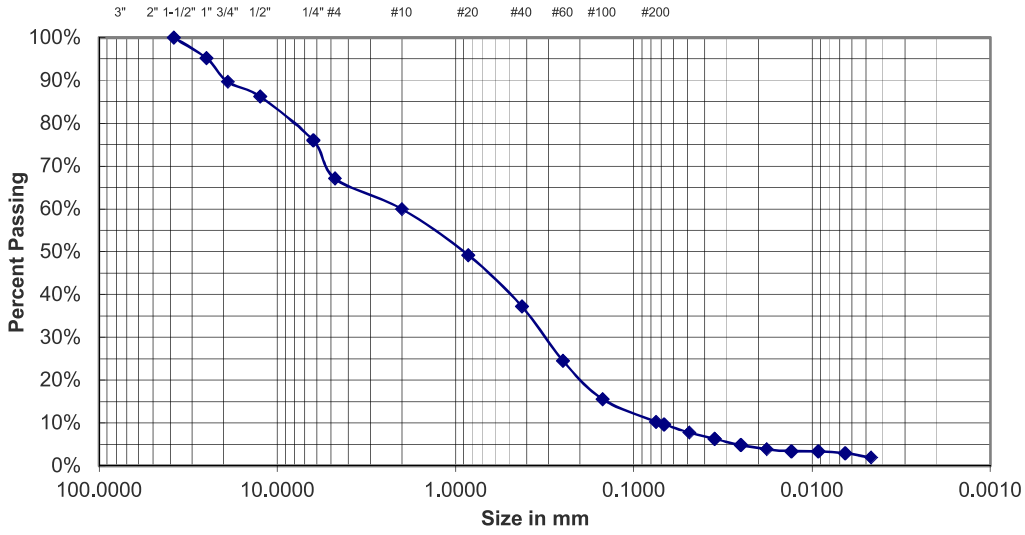
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4252M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SW-SM	**Date Completed:**	5/11/2020
Material Source:	B-5, 1S, 0.3-1.5'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**100**	
1"	25	**95**	
¾"	19	**90**	
½"	12.5	**86**	
¼"	6.3	**76**	
No. 4	4.75	**67**	
No. 10	2	**60**	
No. 20	0.85	**49**	
No. 40	0.425	**37**	
No. 60	0.25	**24**	
No. 100	0.15	**16**	
No. 200	0.075	**10.2**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06767	**9.7**
0.04879	**7.7**
0.03528	**6.3**
0.03528	**6.3**
0.02513	**4.8**
0.01796	**3.9**
0.01305	**3.4**
0.00923	**3.4**
0.00653	**2.9**
0.00466	**1.9**
0.00333	**1.5**
0.00235	**1.0**



Particle Distribution:

Gravel (3" - No. 4)	**32.9%**	Fines (0.074 -0.005)	**7.8%**
Sand (No. 4 - No. 200)	**56.9%**	Clay (<0.005)	**2.4%**

Comments: Moisture (%) = 6.2

Reviewed By

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Report of Hydrometer

ASTM D422-63 (07)

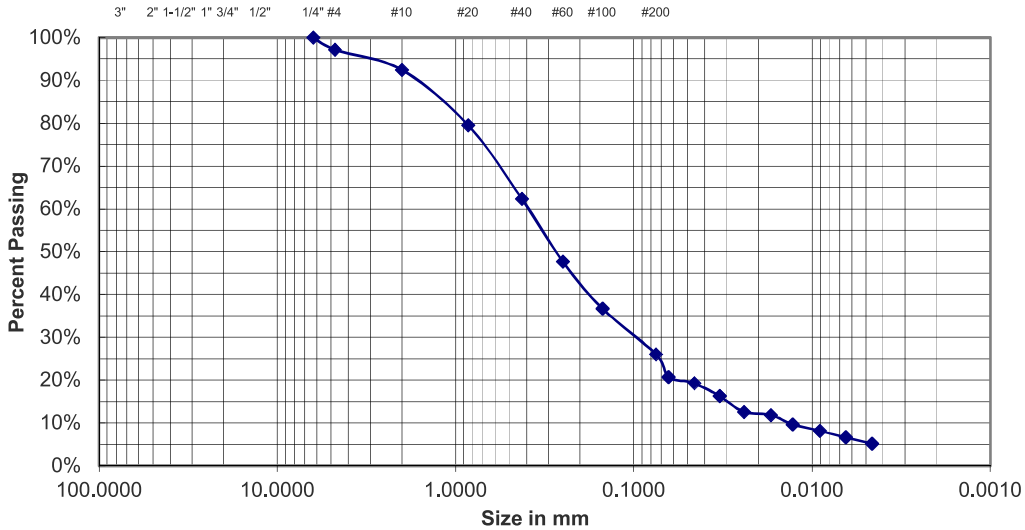
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4253M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SM	**Date Completed:**	5/11/2020
Material Source:	B-5, 1D, 1.5-3.5'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**100**	
1"	25	**100**	
¾"	19	**100**	
½"	12.5	**100**	
¼"	6.3	**100**	
No. 4	4.75	**97**	
No. 10	2	**92**	
No. 20	0.85	**80**	
No. 40	0.425	**62**	
No. 60	0.25	**48**	
No. 100	0.15	**37**	
No. 200	0.075	**26.0**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06388	**20.7**
0.04576	**19.2**
0.03303	**16.3**
0.03303	**16.3**
0.02411	**12.6**
0.01704	**11.8**
0.01288	**9.6**
0.00907	**8.1**
0.00648	**6.7**
0.00461	**5.2**
0.00330	**3.7**
0.00233	**3.0**



Particle Distribution:

Gravel (3" - No. 4)	**2.8%**	Fines (0.074 -0.005)	**20.1%**
Sand (No. 4 - No. 200)	**71.2%**	Clay (<0.005)	**5.9%**

Comments: Moistrure (%) = 6.9

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Report of Hydrometer

ASTM D422-63 (07)

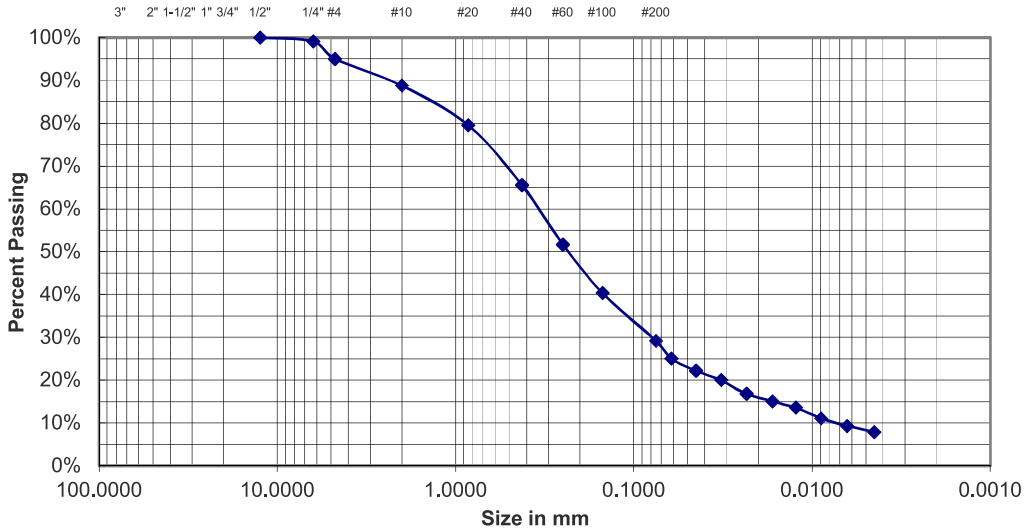
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4254M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SM	**Date Completed:**	5/12/2020
Material Source:	B-5, 2D, 4-6'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**100**	
1"	25	**100**	
¾"	19	**100**	
½"	12.5	**100**	
¼"	6.3	**99**	
No. 4	4.75	**95**	
No. 10	2	**89**	
No. 20	0.85	**80**	
No. 40	0.425	**66**	
No. 60	0.25	**52**	
No. 100	0.15	**40**	
No. 200	0.075	**29.1**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06162	**25.0**
0.04478	**22.2**
0.03235	**20.0**
0.03235	**20.0**
0.02336	**16.8**
0.01672	**15.0**
0.01235	**13.6**
0.00890	**11.1**
0.00636	**9.3**
0.00448	**7.9**
0.00320	**6.4**



Particle Distribution:

Gravel (3" - No. 4)	**5.0%**	Fines (0.074 -0.005)	**24.1%**
Sand (No. 4 - No. 200)	**65.9%**	Clay (<0.005)	**5.0%**

Comments: Moisture (%) = 9.8

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Report of Hydrometer

ASTM D422-63 (07)

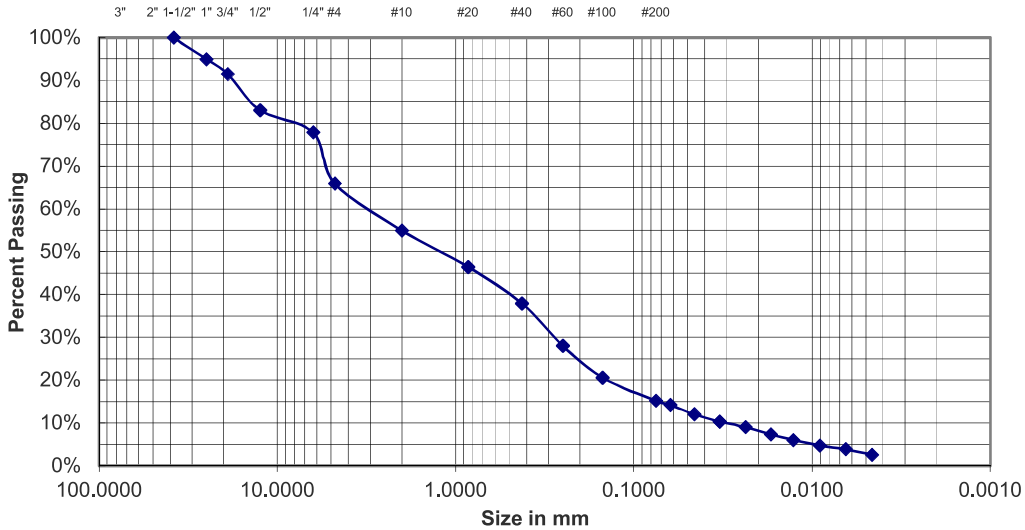
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4255M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SM	**Date Completed:**	5/12/2020
Material Source:	B-6, 1S, 0.3-1.5'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**100**	
1"	25	**95**	
¾"	19	**91**	
½"	12.5	**83**	
¼"	6.3	**78**	
No. 4	4.75	**66**	
No. 10	2	**55**	
No. 20	0.85	**46**	
No. 40	0.425	**38**	
No. 60	0.25	**28**	
No. 100	0.15	**21**	
No. 200	0.075	**15.1**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06248	**14.2**
0.04576	**12.0**
0.03303	**10.3**
0.03303	**10.3**
0.02364	**9.0**
0.01704	**7.3**
0.01273	**6.0**
0.00907	**4.7**
0.00648	**3.9**
0.00461	**2.6**
0.00326	**2.1**



Particle Distribution:

Gravel (3" - No. 4)	**34.1%**	Fines (0.074 -0.005)	**11.8%**
Sand (No. 4 - No. 200)	**50.8%**	Clay (<0.005)	**3.3%**

Comments: Moisture (%) = 7.1

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Report of Hydrometer

ASTM D422-63 (07)

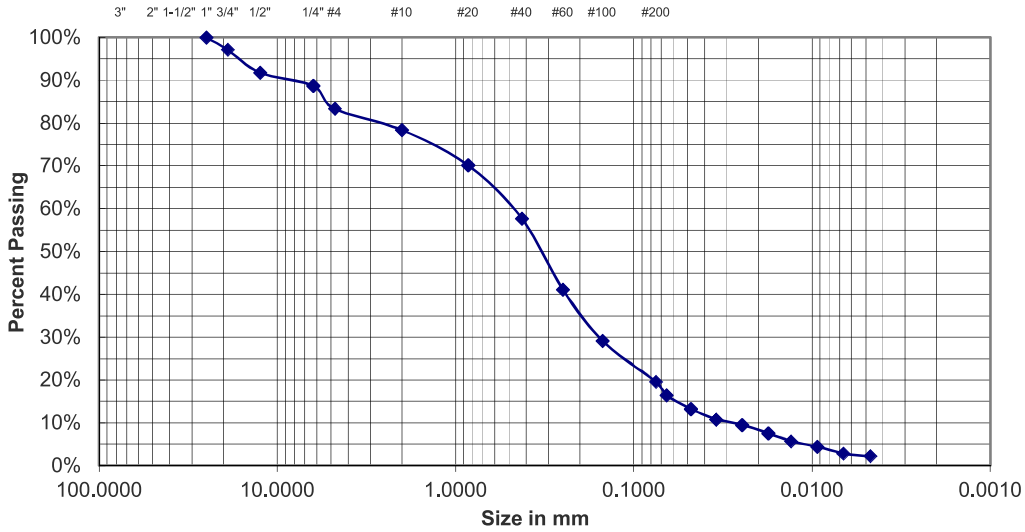
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4256M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SM	**Date Completed:**	5/14/2020
Material Source:	B-6, 1D, 1.5-3.5'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**100**	
1"	25	**100**	
¾"	19	**97**	
½"	12.5	**92**	
¼"	6.3	**89**	
No. 4	4.75	**83**	
No. 10	2	**78**	
No. 20	0.85	**70**	
No. 40	0.425	**58**	
No. 60	0.25	**41**	
No. 100	0.15	**29**	
No. 200	0.075	**19.6**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06549	**16.4**
0.04785	**13.3**
0.03450	**10.7**
0.03450	**10.7**
0.02467	**9.5**
0.01764	**7.6**
0.01312	**5.7**
0.00934	**4.4**
0.00667	**2.8**
0.00471	**2.2**



Particle Distribution:

Gravel (3" - No. 4)	**16.7%**	Fines (0.074 -0.005)	**17.1%**
Sand (No. 4 - No. 200)	**63.7%**	Clay (<0.005)	**2.5%**

Comments: Moisture (%) = 6.7

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Report of Hydrometer

ASTM D422-63 (07)

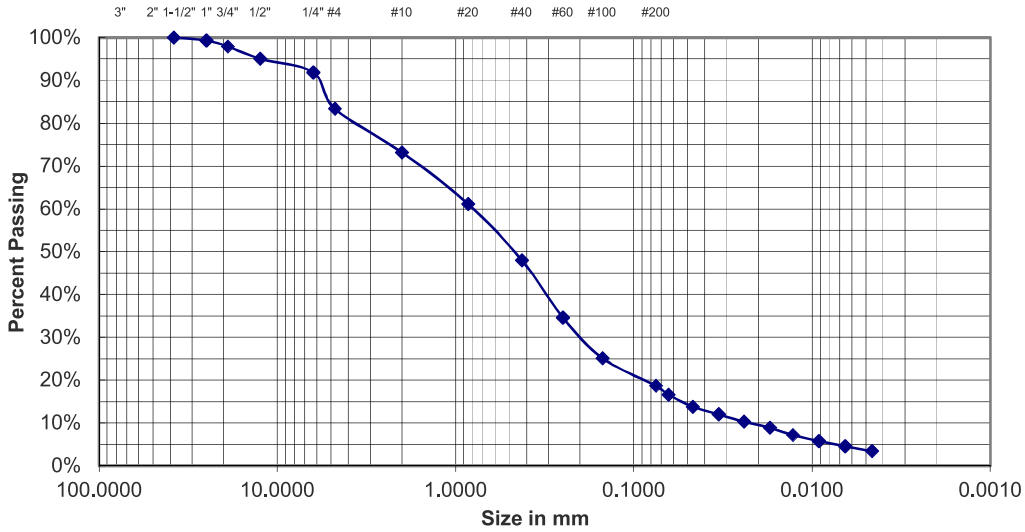
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4257M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SM	**Date Completed:**	5/12/2020
Material Source:	B-7, 1S, 0.3-2'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**100**	
1"	25	**99**	
¾"	19	**98**	
½"	12.5	**95**	
¼"	6.3	**92**	
No. 4	4.75	**83**	
No. 10	2	**73**	
No. 20	0.85	**61**	
No. 40	0.425	**48**	
No. 60	0.25	**35**	
No. 100	0.15	**25**	
No. 200	0.075	**18.6**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06388	**16.6**
0.04672	**13.7**
0.03343	**12.0**
0.03343	**12.0**
0.02411	**10.3**
0.01724	**8.9**
0.01282	**7.2**
0.00916	**5.7**
0.00653	**4.6**
0.00461	**3.4**



Particle Distribution:

Gravel (3" - No. 4)	**16.6%**	Fines (0.074 -0.005)	**14.6%**
Sand (No. 4 - No. 200)	**64.7%**	Clay (<0.005)	**4.0%**

Comments: Moisture (%) = 7.0

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Report of Hydrometer

ASTM D422-63 (07)

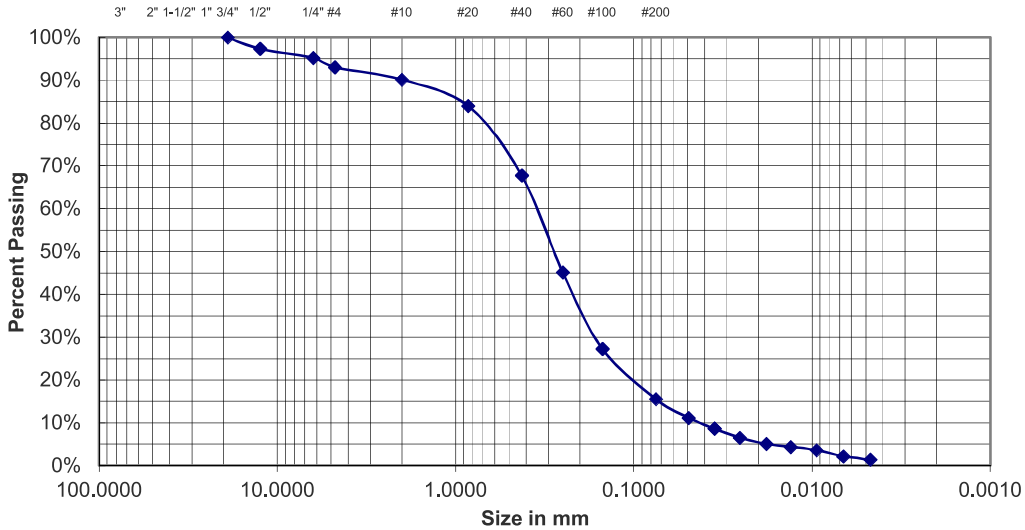
Project Name:	Reconstruct Runway 35 End of Service Road	**Project Number:**	19-1233
Project Location:	Mancheser-Boston Regional Airport	**Lab ID:**	4258M
Client:	Hoyle, Tanner & Associates, Inc.	**Date Received:**	4/30/2020
Material Description:	SM	**Date Completed:**	5/14/2020
Material Source:	B-7, 1D, 2-4'	**Tested By:**	A. Michaud

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
3"	76	**100**	
2"	50	**100**	
1½"	38.1	**100**	
1"	25	**100**	
¾"	19	**100**	
½"	12.5	**97**	
¼"	6.3	**95**	
No. 4	4.75	**93**	
No. 10	2	**90**	
No. 20	0.85	**84**	
No. 40	0.425	**68**	
No. 60	0.25	**45**	
No. 100	0.15	**27**	
No. 200	0.075	**15.5**	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.06686	**#N/A**
0.04934	**11.2**
0.03528	**8.6**
0.03528	**8.6**
0.02540	**6.5**
0.01809	**5.0**
0.01321	**4.3**
0.00944	**3.6**
0.00666	**2.2**
0.00471	**1.4**



Particle Distribution:

Gravel (3" - No. 4)	**6.9%**	Fines (0.074 -0.005)	**13.7%**
Sand (No. 4 - No. 200)	**77.5%**	Clay (<0.005)	**1.8%**

Comments: Moisture (%) = 6.6

Reviewed By

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See Soil Analysis below **or** See attached Geo-Technical Report (choose one)

SOIL ANALYSIS

TEST BORING	DEPTH OF SAMPLE	GRADATION (% PASSING)												LL	PI	USC
		3"	2"	1"	3/4"	1/2"	3/8"	No. 4	No. 10	No. 40	No. 100	No. 200	% FINER THAN 0.02 mm[1]			
B-2	0.3-1.0'	100	100	94	91	87		69	55	37	25	20.2	12.0			SM
B-2	1-2'	100	100	100	95	87		76	69	51	29	20.0	9.0			SM
B-4	0.3-1.5'	100	100	84	80	71		58	49	33	18	12.8	6.7			SM
B-4	1.5-3.5'	100	100	100	100	98		95	86	64	43	33.0	18.5			SC-SM
B-5	0.3-1.5	100	100	95	90	86		67	60	37	16	10.2	4.2			SW-SM
B-5	1.5-3.5'	100	100	100	100	100		97	92	62	37	26.0	12.1			SM
B-5	4-6'	100	100	100	100	100		95	89	66	40	29.1	15.9			SM
B-6	0.3-1.5'	100	100	95	91	83		66	55	38	21	15.1	8.1			SM
B-6	1.5-3.5'	100	100	100	97	92		83	78	58	29	19.6	8.2			SM
B-7	0.3-2'	100	100	99	98	95		83	73	48	25	18.6	9.5			SM
B-7	2-4'	100	100	100	100	97		93	90	68	27	15.5	5.4			SM

[1]Note: "Percent finer than 0.02 mm" applies only when material is used above frost line

SUBGRADE CHARACTERISTICS

AVERAGE FROST PENETRATION	SUBSURFACE DRAINAGE	FROST DESIGN METHOD (choose one)
DEPTH (in) 48	Yes No	CP LSP RSS NONE X

COMMENTS (Attach sketch showing location of borings)
TEST BORING EXPLORATION RESULTS

SUBMITTED BY	TITLE	DATE
Chad B. Michaud, P.E.	Sen Geotech Eng.	5/19/2020
APPROVED BY	TITLE	DATE
APPROVED BY	FAA ENGINEER	DATE

Item M-003 Stream Alteration and Permit Conditions

DESCRIPTION

003-1.1 This item shall consist of all stream alterations as described on the contract plans and within this specification item.

Refer to Appendix A of this item for New Hampshire Department of Environmental Services (NHDES) project specific conditions. A copy of the permit and the Rare Turtle pamphlet shall be posted in a secure manner in a prominent place at the site.

The Engineer will be responsible for all monitoring as detailed in items 18, 19 and 20 of the permit.

The Contractor shall be responsible for following project-specific condition items 1-17 and general condition items 1-10 listed in the permit.

MATERIALS

003-2.1 Stream Bed Native Materials. Stream simulation materials must be consistent with the bed materials identified in the reference reach, and shall be well-mixed with cobbles, gravels and fines that are washed in during installation to prevent subsurface stream flow. Stream bed materials shall not include angular riprap unless specifically identified on the approved plan and approved by the NHDES Wetlands Bureau.

003-2.2 Mulch. Mulch used within the area being restored shall be natural straw or equivalent non-toxic, non-seed-bearing organic material.

003-2.3 Rip Rap. Rip rap shall be NHDOT Class I and Class VII as shown on the contract drawings.

003-2.4 Wetland Seed Mix. Refer to Dwg. ER1.2 for wetland seed mix.

CONSTRUCTION METHODS

003-3.1 Stream Bed Native Materials. See Item T-905-1.

003-3.2 Dewatering. Refer to notes on Dwg. WI1.1 and in the permit conditions.

003-3.3 Invasive Species. Any excavate that isn't reused on site should be assumed to include invasive species seed and must be handled per the NHDOT Best Management Practices for the Control of Invasive and Noxious Plant Species (2018). There shall be no separate payment made for handline of invasive species, rather this shall be considered incidental to the unclassified excavation item.

003-3.4 Rip Rap. Rip rap shall adhere to NHDOT specification Section 583.

003-3.5 Wetland Seed Mix. See methods on the contract plans and in Item T-901 Seeding.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

003-4.1 Stream Bed Native Material. Payment will be made at the contract unit price per square yard for native stream bed material obtained on site, measured in its original position and stripped or excavated. This price shall be full compensation for furnishing all materials and for all preparation,

placing and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

003-4.2 Rip Rap Class I. Payment will be made at the contract unit price per square yard for Class I rip rap. This price shall be full compensation for furnishing all materials and for all preparation, placing and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

003-4.3 Rip Rap Class VII. Payment will be made at the contract unit price per square yard for Class VII rip rap. This price shall be full compensation for furnishing all materials and for all preparation, placing and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

03-4.4 Water Diversion. Payment will be made at the lump sum contract unit price for water diversion. This price shall be full compensation for furnishing all materials and for all preparation, placing and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item in accordance with the contract plans, NHDOT permit conditions, and these specifications.

Payment will be made under:

Item M-003-1	Stream Bed Native Material	per square yard
Item M-003-2	Rip Rap Class I	per square yard
Item M-003-3	Rip Rap Class VII	per square yard
Item M-003-4	Water Diversion	per lump sum

END OF ITEM M-003

APPENDIX A

Wetlands And Non-Site Specific Permit 2021-03352

Seeking Reports of Rare Turtles Pamphlet

Item P-154 Subbase Course

DESCRIPTION

154-1.1 This item shall consist of a subbase course composed of granular materials constructed on a prepared subgrade or underlying course in accordance with these specifications, and in conformity with the dimensions and typical cross-section shown on the plans.

MATERIALS

154-2.1 Materials. The subbase material shall consist of hard durable particles or fragments of granular aggregates. The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with proper blending. The materials from these sources shall meet the requirements for gradation, quality, and consistency. The material shall be free from vegetative matter, excessive amounts of clay, and other objectionable substances; uniformly blended; and be capable of being compacted into a dense, stable subbase.

The subbase material shall exhibit a California Bearing Ratio (CBR) value of at least 20 when tested in accordance with ASTM D1883. The subbase material shall meet the gradation specified in the table below.

Subbase Gradation Requirements

Sieve designation	Percentage by weight passing sieves	Contractor's Final Gradation	Job Control Grading Band Tolerances[1] (Percent)
	Subbase Aggregate		
3 inch (75 mm)	100		0
1 1/2 inch (37.5 mm)			0
3/4 inch (19.0 mm)	70-100		±10
No. 10 (2.00 mm)	20-100		±10
No. 40 (425 µm)	5-60		±5
No. 200 (75 µm)	0-10		±5

[1]The "Job Control Grading Band Tolerances" shall be applied to "Contractor's Final Gradation" to establish the job control grading band.

The portion of the material passing the No. 40 (425 µm) sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than six (6) when tested in accordance with ASTM D4318.

154-2.2 Sampling and testing.

a. Aggregate base materials. Samples shall be taken by the Contractor per ASTM D75 for initial aggregate subbase requirements and gradation. Material shall meet the requirements in paragraphs 154-2.1. The Contractor shall submit to the Resident Project Representative (RPR) certified test results showing that the aggregate meets the Material requirements of this section. Tests shall be representative of the material to be used for the project.

b. Gradation requirements. The Contractor shall take at least **[** one **]** aggregate subbase sample per day in the presence of the RPR to check the final gradation. Samples shall be taken from the in-place, un-compacted material at sampling locations determined by the RPR on a random basis per ASTM D3665. Sampling shall be per ASTM D75 and tested per ASTM C136 and ASTM C117. Results shall be furnished to the RPR by the Contractor each day during construction. Material shall meet the requirements in paragraph 154-2.1.

154-2.3 Separation Geotextile. Not used.

154-2.4 Geogrid. Not used.

CONSTRUCTION METHODS

154-3.1 General. The subbase course shall be placed where designated on the plans or as directed by the RPR. The material shall be shaped and thoroughly compacted within the tolerances specified.

Granular subbases which, due to grain sizes or shapes, are not sufficiently stable to support the construction equipment without movement, shall be mechanically modified to the depth necessary to provide stability as directed by the RPR. The mechanical modification shall include the addition of a fine-grained medium to bind the particles of the subbase material sufficiently to furnish a bearing strength, so the course will not deform under construction equipment traffic.

154-3.2 Preparing underlying course. Prior to constructing the subbase course, clean the underlying course or subgrade of all foreign substances. The surface of the underlying course or subgrade shall meet specified compaction and surface tolerances in accordance with Item P-152. Correct ruts, soft yielding spots in the underlying courses, and subgrade areas having inadequate compaction and/or deviations of the surface from the specified requirements, by loosening and removing soft or unsatisfactory material, adding approved material, reshaping to line and grade, and recompacting to specified density requirements. For cohesionless underlying courses or subgrades containing sands or gravels, as defined in ASTM D2487, the surface shall be stabilized prior to placement of the overlying course by mixing the overlying course material into the underlying course, and compacting by approved methods. The stabilized material shall be considered as part of the underlying course and shall meet all requirements for the underlying course. The finished underlying course shall not be disturbed by traffic or other operations and shall be maintained in a satisfactory condition until the overlying course is placed. The underlying course shall be checked and accepted by the RPR before placing and spreading operations are started.

To protect the subgrade and to ensure proper drainage, spreading of the subbase shall begin along the centerline of the pavement on a crowned section or on the high side of pavements with a one-way slope.

154-3.3 Control Strip. The first half-day of subbase construction shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration

that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

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

154-3.4 Placement. The material shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted. The material shall not be placed when the underlying course is soft or yielding.

The material shall meet gradation and moisture requirements prior to compaction. Material may be free-draining and the minimum moisture content shall be established for placement and compaction of the material.

The material shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 mm) nor more than 12 inches (300 mm) of compacted thickness.

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

154-3.5 Compaction. The subbase material shall be compacted, adjusting moisture as necessary, to be within ±2% of optimum moisture. The field density of the compacted material shall be at least 100% of the maximum density as specified in paragraph 154-3.9a. If the specified density is not attained, the area of the lift represented by the test shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

154-3.6 Weather limitation. Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on subbase course shall not be conducted when the subgrade is wet or frozen or the subbase material contains frozen material.

154-3.7 Maintenance. No base or surface course shall be placed on the subbase until the subbase has been accepted by the RPR. The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, the Contractor shall verify that materials still meet all specification requirements before placement of additional material. Equipment may be routed over completed sections of subbase course, provided the equipment does not damage the subbase course and the equipment is routed over the full width of the completed subbase course. Any damage to the subbase course from routing equipment over the subbase course shall be repaired by the Contractor at their expense.

154-3.8 Surface tolerance. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

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

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

154-3.9 Acceptance sampling and testing. The aggregate base course shall be accepted for density and thickness on an area basis. Two test shall be made for density and thickness for each 1200 square yards. Sampling locations will be determined on a random basis per ASTM D3665.

a. Density. The RPR shall perform all density tests.

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM D698. The in-place field density shall be determined per ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test shall be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

When the material has greater than 30 percent retained on the ¾ inch (19.0 mm) sieve, use methods in ASTM D698 and the procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized particles.

b. Thickness. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material of proper gradation, and the material shall be blended and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

METHOD OF MEASUREMENT

154-4.1 Subbase course shall be measured by the number of cubic yards of subbase course material placed and compacted to specified density and plan thickness requirements in the completed course. The quantity of subbase course material shall be measured in final position based upon depth tests or cores taken as directed by the RPR, at the rate of two test per each 1200 square yards of subbase course. On individual depth measurements, thicknesses more than 1/2 inch (12 mm) in excess of that shown on the plans shall be considered as the specified thickness plus 1/2 inch (12 mm) in computing the yardage for payment. Subbase materials shall not be included in any other excavation quantities.

BASIS OF PAYMENT

154-5.1 Payment shall be made at the contract unit price per cubic yard for subbase course. This price shall be full compensation for furnishing all materials; for all preparation, hauling, and placing of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-154-5.1	Subbase Course	per cubic yard

REFERENCES

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

ASTM International (ASTM)

ASTM C117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D4759	Practice for Determining the Specification Conformance of Geosynthetics
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

American Association of State Highway and Transportation Officials (AASHTO)

M 288	Geotextile Specification for Highway Applications

END OF ITEM P-154

Item F-163 Wildlife Deterrent Fence Skirt

DESCRIPTION

163-1.1 This item shall consist of furnishing and installing chain-link fence fabric underground along an existing chain link fence or wildlife fabric fence, constructing concrete pads at existing fence gates in accordance with these specifications and the details shown on the drawings and in conformity with the lines and grades shown on the plans or established by the RPR.

MATERIALS

163-2.1 Chain link fence fabric. The fabric shall be woven with a 9-gauge galvanized steel wire in a 2-inch (50 mm) mesh and shall meet the requirements of ASTM A392, Class II. The fabric shall be 5 feet (1.5 m) wide.

163-2.2 Barbed wire. Barbed wire shall be 2-strand 12-1/2 gauge zinc-coated wire with 4-point barbs and shall conform to the requirements of ASTM A121, Class 3.

163-2.3 Wire ties and tension wires. Wire fabric ties, wire ties, and tension wire for a given type of fabric shall be the same material as the fabric type. The tension wire shall be 7-gauge coiled spring wire coated similarly to the respective wire fabric being used.

Wire fabric ties shall be hog rings of galvanized steel wire not less than 9-gauge.

All material shall conform to Federal Specification RR-F-191/4.

163-2.4 Miscellaneous fittings and hardware. Miscellaneous steel fittings and hardware for use with zinc-coated steel fabric shall be of commercial grade steel or better quality, wrought or cast as appropriate to the fitting or hardware, and sufficient in strength to provide a balanced design when used with fabric, posts, and wires of the specified quality. All steel fittings and hardware shall be protected with a zinc coating applied in conformance with ASTM A153.

163-2.5 Concrete pads at gates. Concrete shall be of a commercial grade with a minimum 28-day compressive strength of 3,000 psi (2670 kPa).

163-2.6 Marking. Each roll of fabric shall carry a tag showing the kind of base metal, kind of coating, the gauge of the wire, the length of fencing in the roll, and the name of the manufacturer. Posts, wire, and other fittings shall be identified as to manufacturer, kind of base metal, and kind of coating.

163-2.7 Weed control material. A commercially available weed control material shall be applied at the manufacturer's recommended rate.

CONSTRUCTION METHODS

163-3.1 General. The fence shall be constructed in accordance with the details on the plans and as specified here using new materials. All work shall be performed in a workmanlike manner satisfactory to the RPR. The Contractor shall layout the fence line based on the plans. The work shall progress in this manner and at the close of the working day the newly constructed fence shall be tied to the existing fence.

163-3.2 Clearing fence line. All brush, stumps, logs, and other debris which would interfere with the construction of the fence shall be removed on either side of the fence centerline before starting fencing

operations. The material removed and disposed of shall not constitute a pay item and shall be considered incidental to fence construction.

163-3.3 Installing fabric. Excavate ground to the depth required for proper installation of the fabric. Obtain RPR's approval of depth of excavation before placing the wire fabric. Place the fabric and lap splice it to existing fence fabric and tie with wire ties at 2-foot (0.6-m) spacing. Cut wire fabric around fence post footing to allow proper placement. Backfill with native soil to original grade and compact. Gate concrete pads shall be installed at each gate or as shown on the plans.

163-3.4 Weed control application. Weed control material shall be applied over an area 5 feet (1.5 m) wide, measured from the fence centerline, and over the wildlife fence. Apply weed control material as recommended by the manufacturer's instructions and in compliance with state and local regulations.

163-3.5 Electrical grounds. Electrical grounds shall be constructed **at 500 feet (150 m) intervals and as specified on the contract plans .** The ground shall be accomplished with a copper clad rod 8 feet (2.4 m) long and a minimum of 5/8 inches (16 mm) in diameter driven vertically until the top is 6 inches (150 mm) below the ground surface. A No. 6 solid copper conductor shall be clamped to the rod and to the fence in such a manner that each element of the fence is grounded. Installation of ground rods shall not constitute a pay item and shall be considered incidental to fence construction. The Contractor shall comply with FAA-STD-019, Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment, paragraph 4.2.3.8, Lightning Protection for Fences and Gates, when fencing is adjacent to FAA facilities.

163-3.6 Cleaning up. The Contractor shall remove from the vicinity of the completed work all tools, buildings, equipment, etc., used during construction. All disturbed areas shall be seeded per Item T-901.

METHOD OF MEASUREMENT

163-4.1 Chain link fence with wildlife deterrent. Chain-link fence with wildlife deterrent shall be measured for payment by the linear foot to the nearest foot. Measurement shall be along the fence from center to center of end or corner posts, excluding the length occupied by gate openings. All fencing shall comply with Item F-162 of these specifications.

163-4.1 Fence Removal. Chain-link fence removal shall be measured for payment by the linear foot to the nearest foot. Measurement shall be along the fence from center to center of end or corner posts, excluding the length occupied by gate openings. Payment shall include restoring the area, including excavation of posts and foundations, backfill and disposal of all materials. Seeding and topsoil included in this item if outside the area of unclassified excavation, otherwise seeding and topsoil will be paid for under T-901 and T-905.

BASIS OF PAYMENT

163-5.1 Chain link fence with wildlife deterrent. Payment for chain-link fence with wildlife deterrent shall be made at the contract unit price per linear foot. This price shall be full compensation for furnishing materials, all labor (including preparation, excavation, backfill, fill, and installation), equipment, tools, and incidentals necessary to complete this item.

163-5.2 Fence Removal. Payment for chain-link fence removal shall be made at the contract unit price per linear foot. This price shall be full compensation for furnishing materials, all labor (including preparation, excavation, and backfill), equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item F-163-1	Chain link Fence with Wildlife Deterrent	per linear foot
Item F-163-2	Remove Fence	per linear foot

REFERENCES

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

ASTM International (ASTM)

ASTM A121	Standard Specification for Metallic-Coated Carbon Steel Barbed Wire
ASTM A153	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A392	Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric

Federal Specifications (FED SPEC)

FED SPEC RR-F-191/4 Fencing, Wire and Post, Metal (Chain-Link Fence Accessories)

FAA Standard

FAA-STD-019	Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment

FAA Orders

5300/38	AIP Handbook

END OF ITEM F-163

MANCHESTER - BOSTON REGIONAL AIRPORT (MHT)

MANCHESTER, NEW HAMPSHIRE

CONSTRUCTION PLANS FOR

REHABILITATE RUNWAY 17-35

AIP NO. 3-33-0011-TBD-2022

CITY BID NO. FY22-805-49

VOLUME 1 : REHABILITATE RUNWAY 17-35

VOLUME 2 : REHABILITATE EXISTING MALS AND ALSF-2 LIGHTING SYSTEMS

VOLUME 3 : REHABILITATE MECHANICALLY STABILIZED EARTH RETAINING WALL AND RELATED IMPROVEMENTS

VOLUME 4 : RECONSTRUCT AND REHABILITATE A PORTION OF THE SERVICE ROAD

MANCHESTER • BOSTON REGIONAL AIRPORT

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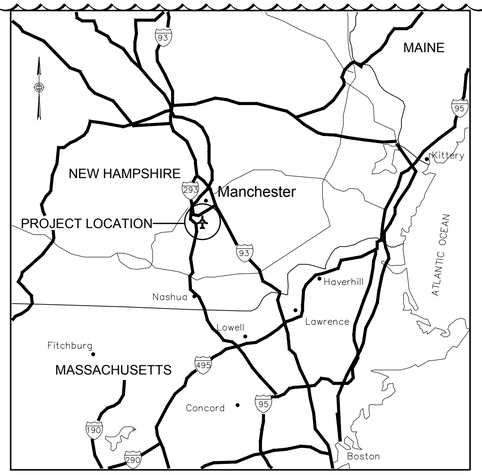
Manchester, New Hampshire 03103
www.flymanchester.com

AUTHORITY / OWNER



LOCATION MAP

Jacobs

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Bedford, NH 03110
(603) 666-7181 fax-(603) 666-7185

PROJECT DESIGNER

ISSUED FOR BID

MARCH 2022

GENERAL PROJECT ABBREVIATIONS

A	AMPERES
AC	ASPHALT CONCRETE, ACRE
ALS	APPROACH LIGHTING SYSTEM
ALT	ALTERNATE
AOA	AIRCRAFT OPERATIONS AREA
ATPB	ASPHALT TREATED PERMEABLE BASE
AVI	AUTOMATED VEHICLE IDENTIFICATION
BC	BEGINNING OF CURVE
BIT	BITUMINOUS
BM	BENCH MARK
BRL	BUILDING RESTRICTION LIMIT
BVC	BEGINNING OF VERTICAL CURVE
C	CONDUIT
CAB	CRUSHED AGGREGATE BASE
CB	CATCH BASIN
CBR	CALIFORNIA BEARING RATIO
CDF	CONTROLLED DENSITY FILL
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CIP	CAST IRON PIPE
CL, ℄	CENTERLINE
CO	CLEANOUT
CONC	CONCRETE
CONST	CONSTRUCT, CONSTRUCTION
CONT	GROUND CONTOUR
COORD	COORDINATE
CSP	CORRUGATED STEEL PIPE
CY	CUBIC YARD
DIA	DIAMETER
DWG	DRAWING
E	EAST, EASTING
EA	EACH
EC	END OF CURVE
(E)	EXISTING
EL	ELEVATION
ELEV	ELEVATION
ENG	ENGINEER, ENGINEERING
EOP	EDGE OF PAVEMENT
ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE
EV	ELECTRICAL VAULT
EVC	END OF VERTICAL CURVE
EQ	EQUAL
EX, EXIST	EXISTING
EXC	EXCAVATION
EXP JT	EXPANSION JOINT
FAA	FEDERAL AVIATION ADMINISTRATION
FAR	FEDERAL AVIATION REGULATION
FG	FINISHED GRADE
FL	FLOW LINE
FLR	FLOOR
FS	FINISHED SURFACE
GA	GENERAL AVIATION
GB	GRADE BREAK
GR	GRADE
GSE	GROUND SERVICE EQUIPMENT
HGL	HYDRAULIC GRADE LINE
HMAC	HOT MIX ASPHALT CONCRETE
HP	HIGH POINT
HOR	HORIZONTAL
HYD	HYDRAULIC
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
JB	JUNCTION BOX
JT	JOINT
L	LENGTH
LF	LINEAR FEET
LONG	LONGITUDINAL
LP	LOW POINT
LS	LUMP SUM
LT	LEFT
MALS	MEDIUM INTENSITY APPROACH LIGHT SYSTEM
MALSR	MEDIUM INTENSITY APPROACH LIGHT SYSTEM W/RAILS
MAX	MAXIMUM
MES	MITERED END SECTION
MH	MANHOLE
MIN	MINIMUM
MITL	MEDIUM INTENSITY TAXIWAY LIGHTS
MISC	MISCELLANEOUS
MON	MONUMENT
MULT	MULTIPLE
MSL	MEAN SEA LEVEL
N	NORTH, NORTHING
NIC	NOT IN CONTRACT
NO	NUMBER
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFF	OFFSET
PAPI	PRECISION APPROACH PATH INDICATOR
PB	PULL BOX
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE, PORTLAND CEMENT CONCRETE
PCCP	PORTLAND CEMENT CONCRETE PAVEMENT
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
POC	POINT OF CURVE
POT	POINT OF TANGENT
PRC	POINT OF REVERSE CURVE
PRVC	POINT OF REVERSE VERTICAL CURVE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
PSI	POUNDS PER SQUARE INCH
Q	RATE OF FLOW IN CFS
R	RADIUS
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
REF	REFERENCE
REIL	RUNWAY END IDENTIFIER LIGHTS
REINF	REINFORCED, REINFORCEMENT
RGRCP	RUBBER GASKET REINFORCED CONCRETE PIPE
RP	RADIUS POINT
RPMP	REINFORCED PLASTIC MORTAR PIPE
RPZ	RUNWAY PROTECTION ZONE
RSA	RUNWAY SAFETY AREA
RT	RIGHT
RVR	RUNWAY VISUAL RANGE
RWY, R/W	RUNWAY
S	SLOPE
SB	SUBBASE
SC	SPIRAL TO CURVE
SD	STORM DRAIN
SEC	SECTION
SF	SQUARE FEET
SHLD	SHOULDER
SPA	SPACES
SPEC	SPECIFICATIONS
SS	SANITARY SEWER
STA	STATION
STD	STANDARD
SWPPP	STORM WATER POLLUTION PREVENTION PLAN
SY	SQUARE YARD
T, TAN	TANGENT TO CURVE
TG	TOP OF GRATE ELEV
TN	TRUE NORTH
TOPO	TOPOGRAPHY
TOW	TOP OF WALL
TSA	TAXIWAY SAFETY AREA/TRANSPORTATION SECURITY ADMINISTRATION
TWY,TW	TAXIWAY
TYP	TYPICAL
VAR	VARIES, VARIABLE
VASI	VISUAL APPROACH SLOPE INDICATOR
VC	VERTICAL CURVE
VER	VERIFY
VERT	VERTICAL
VOL	VOLUME
VOR	VHF OMNIDIRECTIONAL RANGE
W/	WITH

GENERAL PROJECT LEGEND

EXISTING

- —GS—GS— GLIDE SLOPE CRITICAL AREA
- —ROFA—ROFA— RUNWAY OBJECT FREE AREA
- —OFZ—OFZ— PRECISION OBSTACLE FREE ZONE
- —RSA—RSA— RUNWAY SAFETY AREA
- —TSA—TSA— TAXIWAY SAFETY AREA
- —x—x—x— FENCE LINE
- BENCHMARK / CONTROL POINT LOCATION
- PAVEMENT CORE LOCATION

PROPOSED

- VARIABLE MILLING DEPTH (BASE BID)
- VARIABLE MILLING DEPTH (ADD ALT - 1)
- VARIABLE MILLING DEPTH (ADD ALT - 2)
- BITUMINOUS PAVEMENT RUNWAY OVERLAY LIMITS
- BITUMINOUS PAVEMENT SHOULDER/BLAST PAD OVERLAY LIMITS
- PROPOSED TOPSOIL/SEED LIMITS

INDEX OF SHEETS

PLAN NO.	SHEET	DRAWING TITLE
		GENERAL PLANS
1	T-001	PROJECT TITLE SHEET
2	G-001	VOLUME 1 COVER SHEET
3	G-002	INDEX OF DRAWINGS, GENERAL PROJECT ABREVIATIONS AND LEGEND
4	G-003	PROJECT GENERAL NOTES
5	G-004	CONSTRUCTION ACCESS PLAN AND NOTES
6	G-100	GENERAL CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES
7	G-101	PHASE 1 CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES
8	G-102	PHASE 2 CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES
9	G-103	PHASE 3 CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES
10	G-104	PHASES 4, 5, AND 6 CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES
11	G-105	PHASES 7 AND 8 CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES
12	G-106	PHASE 9 CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES
13	G-107	PHASE 10 CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES
14	G-201	CONSTRUCTION SAFETY AND PHASING DETAILS - 1
15	G-202	CONSTRUCTION SAFETY AND PHASING DETAILS - 2
16	G-203	CONSTRUCTION SAFETY AND PHASING DETAILS - 3
		CIVIL PLANS
17	C-001	CIVIL KEY PLAN
18	C-002	SURVEY CONTROL PLAN
19	C-101	EXISTING CONDITIONS AND BORING LOCATIONS - 1
20	C-102	EXISTING CONDITIONS AND BORING LOCATIONS - 2
21	C-103	EXISTING CONDITIONS AND BORING LOCATIONS - 3
22	C-104	EXISTING CONDITIONS AND BORING LOCATIONS - 4
23	C-105	EXISTING CONDITIONS AND BORING LOCATIONS - 5
24	C-106	EXISTING CONDITIONS AND BORING LOCATIONS - 6
25	C-107	EXISTING CONDITIONS AND BORING LOCATIONS - 7
26	C-108	EXISTING CONDITIONS AND BORING LOCATIONS - 8
27	C-109	EXISTING CONDITIONS AND BORING LOCATIONS - 9
28	C-110	EXISTING CONDITIONS AND BORING LOCATIONS - 10
29	C-201	CIVIL SITE PREPARATION -1
30	C-202	CIVIL SITE PREPARATION -2
31	C-203	CIVIL SITE PREPARATION -3
32	C-204	CIVIL SITE PREPARATION -4
33	C-205	CIVIL SITE PREPARATION -5
34	C-206	CIVIL SITE PREPARATION -6
35	C-207	CIVIL SITE PREPARATION -7
36	C-208	CIVIL SITE PREPARATION -8
37	C-209	CIVIL SITE PREPARATION -9
38	C-301	GEOMETRY PLAN - 1
39	C-302	GEOMETRY PLAN - 2
40	C-303	GEOMETRY PLAN - 3
41	C-304	GEOMETRY PLAN - 4
42	C-305	GEOMETRY PLAN - 5
43	C-306	GEOMETRY PLAN - 6
44	C-307	GEOMETRY PLAN - 7
45	C-308	GEOMETRY PLAN - 8
46	C-309	GEOMETRY PLAN - 9
47	C-401	RUNWAY 17-35 PROFILE - STATION 8+00 TO 27+50
48	C-402	RUNWAY 17-35 PROFILE - STATION 27+50 TO 47+50
49	C-403	RUNWAY 17-35 PROFILE - STATION 47+50 TO 67+50
50	C-404	RUNWAY 17-35 PROFILE - STATION 67+50 TO 87+50
51	C-405	RUNWAY 17-35 PROFILE - STATION 87+50 TO 104+50
52	C-501	TYPICAL SECTIONS AND PAVEMENT DETAILS - 1
53	C-502	TYPICAL SECTIONS AND PAVEMENT DETAILS - 2
54	C-601	GRADING, DRAINAGE, AND EROSION CONTROL - 1
55	C-602	GRADING, DRAINAGE, AND EROSION CONTROL - 2
56	C-603	GRADING, DRAINAGE, AND EROSION CONTROL - 3
57	C-604	GRADING, DRAINAGE, AND EROSION CONTROL - 4
58	C-605	GRADING, DRAINAGE, AND EROSION CONTROL - 5
59	C-606	GRADING, DRAINAGE, AND EROSION CONTROL - 6
60	C-607	GRADING, DRAINAGE, AND EROSION CONTROL - 7
61	C-608	GRADING, DRAINAGE, AND EROSION CONTROL - 8
62	C-609	GRADING, DRAINAGE, AND EROSION CONTROL - 9
63	C-610	GRADING, DRAINAGE, AND EROSION CONTROL - 10
64	C-620	DRAINAGE DETAILS
65	C-621	EROSION CONTROL GENERAL NOTES AND DETAILS
66	C-701	PAVEMENT MARKINGS - 1
67	C-702	PAVEMENT MARKINGS - 2
68	C-703	PAVEMENT MARKINGS - 3
69	C-704	PAVEMENT MARKINGS - 4
70	C-705	PAVEMENT MARKINGS - 5
71	C-706	PAVEMENT MARKINGS - 6
72	C-707	PAVEMENT MARKINGS - 7
73	C-708	PAVEMENT MARKINGS - 8
74	C-710	TEMPORARY RUNWAY MARKING LAYOUT
75	C-711	PAVEMENT MARKING DETAILS - 1
76	C-712	PAVEMENT MARKING DETAILS - 2
77	C-713	RUNWAY MARKING REMOVAL PLAN - 1
78	C-714	RUNWAY MARKING REMOVAL PLAN - 2
79	C-801	PAVEMENT GROOVING PLAN AND DETAILS
80	C-901	RUNWAY 17-35 CROSS SECTIONS - STATION 10+00 TO 60+00
81	C-902	RUNWAY 17-35 CROSS SECTIONS - STATION 70+00 TO 102+50

INDEX OF SHEETS

PLAN NO.	SHEET	DRAWING TITLE
		ELECTRICAL PLANS
82	E-001	ELECTRICAL KEY PLAN
83	E-101	ELECTRICAL SITE PREPARATION - 1
84	E-102	ELECTRICAL SITE PREPARATION - 2
85	E-103	ELECTRICAL SITE PREPARATION - 3
86	E-104	ELECTRICAL SITE PREPARATION - 4
87	E-105	ELECTRICAL SITE PREPARATION - 5
88	E-106	ELECTRICAL SITE PREPARATION - 6
89	E-107	ELECTRICAL SITE PREPARATION - 7
90	E-108	ELECTRICAL SITE PREPARATION - 8
91	E-109	ELECTRICAL SITE PREPARATION - 9
92	E-201	ELECTRICAL PLAN - 1
93	E-202	ELECTRICAL PLAN - 2
94	E-203	ELECTRICAL PLAN - 3
95	E-204	ELECTRICAL PLAN - 4
96	E-205	ELECTRICAL PLAN - 5
97	E-206	ELECTRICAL PLAN - 6
98	E-207	ELECTRICAL PLAN - 7
99	E-208	ELECTRICAL PLAN - 8
100	E-209	ELECTRICAL PLAN - 9
101	E-301	17-35 C/L CIRCUIT PLAN - 1
102	E-302	17-35 C/L CIRCUIT PLAN - 2
103	E-303	17-35 C/L CIRCUIT PLAN - 3
104	E-304	17-35 EDGE SOUTH CIRCUIT PLAN - 1
105	E-305	17-35 EDGE SOUTH CIRCUIT PLAN - 2
106	E-306	17-35 EDGE NORTH CIRCUIT PLAN - 1
107	E-307	17-35 EDGE NORTH CIRCUIT PLAN - 2
108	E-308	17 TDZ CIRCUIT PLAN - 1
109	E-309	17 TDZ CIRCUIT PLAN - 2
110	E-310	35 TDZ CIRCUIT PLAN - 1
111	E-311	35 TDZ CIRCUIT PLAN - 2
112	E-401	ELECTRICAL DETAILS - 1
113	E-402	ELECTRICAL DETAILS - 2
114	E-403	ELECTRICAL DETAILS - 3
115	E-404	ELECTRICAL DETAILS - 4
116	E-405	ELECTRICAL DETAILS - 5
117	E-406	ELECTRICAL DETAILS - 6
118	E-407	ELECTRICAL DETAILS - 7
119	E-408	ELECTRICAL DETAILS - 8
120	E-501	RUNWAY 17-35 CENTERLINE LIGHT FIXTURE SCHEDULE
121	E-502	RUNWAY 17-35 EDGE LIGHT FIXTURE SCHEDULE
122	E-503	RUNWAY 17 TDZ LIGHT FIXTURE SCHEDULE
123	E-504	RUNWAY 35 TDZ LIGHT FIXTURE SCHEDULE
124	E-505	GUIDANCE SIGN SCHEDULE
125	E-601	AIRFIELD LIGHTING VAULT PLAN
126	E-602	AIRFIELD LIGHTING VAULT DETAILS
127	E-701	TEMPORARY ELECTRICAL OVERALL & PARTIAL PLANS
128	E-702	TEMPORARY ELECTRICAL PLAN PHASE 1A
129	E-703	TEMPORARY ELECTRICAL DETAILS

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MANCHESTER • BOSTON REGIONAL AIRPORT

REHABILITATE RUNWAY 17-35

INDEX OF DRAWINGS, GENERAL PROJECT ABBREVIATIONS AND LEGEND

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY
1	3/30/2022	ADDENDUM — 1	DJA

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Jacobs - \\mhtfil01\job\2021\E2X89205 - MHT RW 17-35\700 CADD\G002_Index of Drawings.dwg [G-002] March 29, 2022 - 9:44am [damorelli]

PROJECT GENERAL NOTES:

THESE NOTES ARE INTENDED TO HIGHLIGHT THE REQUIREMENTS SET FORTH IN THE PROJECT SPECIFICATIONS. IN ALL CASES REQUIREMENTS OF THE PROJECT SPECIFICATIONS SHALL GOVERN.

WEEKLY AND DAILY SCHEDULES REQUIRED

1. THIS PROJECT IS LOCATED ADJACENT TO ACTIVE TAXIWAYS AND RUNWAYS, THEREFORE ALL CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED IN A MANNER ACCEPTABLE TO THE RESIDENT PROJECT REPRESENTATIVE (RPR), AIRPORT OPERATIONS AND THE FEDERAL AVIATION ADMINISTRATION (FAA) TO PROVIDE ACCEPTABLE LEVELS OF SAFETY FOR ALL AIRPORT OPERATIONS. PERIODIC MEETINGS WILL BE HELD TO COORDINATE THE ACTIVITIES OF THIS CONTRACT WITH OTHER AIRPORT OPERATIONS.

2. THE CONTRACTOR SHALL PREPARE AND SUBMIT A WEEKLY SCHEDULE OF OPERATIONS FOR THE FOLLOWING WORK WEEK. THE SCHEDULE SHALL BE GIVEN TO THE RPR AT THE END OF THE WORK WEEK PRECEDING THE WORK WEEK COVERED BY THE SCHEDULE. THE WEEKLY SCHEDULES ARE SUBJECT TO APPROVAL OF THE RPR. THE CONTRACTOR SHALL UPDATE THE RPR PRIOR TO THE START OF WORK EACH DAY OF CONSTRUCTION ACTIVITIES FOR THE NEXT 24 HOUR PERIOD.

3. THE CONTRACTOR SHALL SUBMIT A SAFETY PHASING PLAN UPON NOTIFICATION OF AWARD. THE CONTRACTOR'S SAFETY PLAN SHALL BE IN CONFORMANCE WITH THE CONSTRUCTION SAFETY AND PHASING PLAN INCLUDED IN THE PROJECT MANUAL. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN THIS MANUAL.

ENVIRONMENTAL PROTECTION

1. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS CONTROLLING POLLUTION OF THE ENVIRONMENT. THE CONTRACTOR SHALL IMPLEMENT ALL EROSION CONTROL MEASURES IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL EROSION CONTROL MEASURES AT NO EXTRA COST WHEN INSTRUCTED BY THE RPR AND COMPLYING WITH EPA 2022 CONSTRUCTION GENERAL PERMIT, IF APPLICABLE, DURING CONSTRUCTION.

2. HAUL ROUTES AND ROADS USED BY THE CONTRACTOR FOR ACCESS OR HAULING SHALL BE KEPT CLEAN AND ACCESSIBLE TO ALL OTHER AIRPORT TRAFFIC FOR THE ENTIRE DURATION OF THE PROJECT. HAUL TRUCKS AND DUMP TRUCKS MUST USE LOAD COVERS AND MUST BE LOADED BY THE CONTRACTOR SUCH THAT NO SPILLAGE OCCURS DURING TRANSIT ON THE STATE, MUNICIPAL, OR AIRPORT ROADWAYS, RUNWAYS, TAXIWAYS, AND APRONS. NO SEPARATE PAYMENT SHALL BE MADE FOR KEEPING THE HAUL ROUTES AND ROADS CLEAR AND ACCESSIBLE.

3. THE CONTRACTOR SHALL CONTROL DUST AND DEBRIS FROM HIS OPERATION TO A LEVEL ACCEPTABLE TO THE RPR AND HAVE ON THE PROJECT SITE AT ALL TIMES TWO VACUUM SWEEPERS, WATERING TRUCKS, AND OTHER EQUIPMENT NECESSARY TO CONTROL DUST AT ALL TIMES. ALL METHODS FOR CONTROLLING DUST SHALL BE SUBJECT TO THE RPR APPROVAL. DUST CONTROL SHALL BE STRICTLY MONITORED DUE TO ITS IMPACT ON AIRCRAFT SAFETY. FAILURE TO PROPERLY CONTROL DUST OR RESPOND TO ANY REQUEST TO DO SO WILL RESULT IN CONSTRUCTION ACTIVITIES BEING STOPPED.

CONTRACTOR'S MATERIAL STAGING AREA

1. THE CONTRACTOR SHALL USE THE AREA SHOWN ON THE PLANS FOR THE MATERIAL AND EQUIPMENT STAGING AREA. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL IMPROVEMENT OF THE DESIGNATED AREA, THAT IS NECESSARY FOR THE UTILIZATION OF THE AREA. THE CONTRACTOR SHALL BE PREPARED TO CONDUCT WEEKLY CLEANING OF THE STAGING AREA. THE CONTRACTOR SHALL CONTROL DUST IN THE STAGING AREA. THE CONTRACTOR IS RESPONSIBLE FOR RESTORING TO ORIGINAL CONDITION ANY AREAS USED FOR THE CONTRACTOR'S OPERATION AND CONTROLLING DUST AT NO ADDITIONAL COST TO THE OWNER. THERE WILL BE NO SEPARATE PAYMENT FOR THIS WORK. ALL WORK NECESSARY TO USE THE STAGING AREA SHALL BE DEEMED INCIDENTAL TO THE OVERALL PROJECT COST.

2. THE CONTRACTOR, WITH THE APPROVAL OF THE RPR AND AIRPORT OPERATIONS, SHALL ESTABLISH THE EXACT LIMITS OF THE CONTRACTOR'S STAGING AREAS AT THE LOCATIONS DESIGNATED ON THE CONTRACT DRAWINGS FOR MATERIAL STOCKPILING. ALL REQUIRED UTILITIES FOR THE CONTRACTOR'S STAGING AREA SHALL BE ARRANGED AND PROMPTLY PAID FOR BY THE CONTRACTOR DIRECTLY WITH THE APPROPRIATE UTILITY AGENCY. UTILITY ARRANGEMENTS SHALL BE SUBJECT TO THE APPROVAL OF THE RPR. NO SEPARATE PAYMENT SHALL BE MADE FOR ANY ITEM REQUIRED FOR THE CONTRACTOR TO ENCLOSE AND SET UP HIS OPERATIONAL AREAS. ADDITIONALLY, THE CONTRACTOR SHALL RESTORE THE SITES TO THE ORIGINAL CONDITIONS UPON COMPLETION OF THE CONTRACT WORK, TO THE SATISFACTION OF THE RPR AND AIRPORT OPERATIONS, AT NO ADDITIONAL COST TO THE OWNER.

3. ALL MATERIALS AND EQUIPMENT SHALL BE STORED AND PARKED, WHEN NOT IN USE, AT THE CONTRACTOR'S STORAGE AREAS SHOWN ON THE PLANS. TEMPORARY STOCKPILES SHALL BE CONTAINED WITH PERIMETER CONTROLS AND SEEDED, AS NEEDED. REFER TO DETAIL 5 ON SHEET C-621 FOR ADDITIONAL INFORMATION.

4. STOCKPILED MATERIAL SHALL BE CONSTRAINED IN A MANNER TO PREVENT ITS MOVEMENT BY WIND, JET BLAST, OR PROPELLER WASH.

5. THE MAXIMUM ALLOWABLE HEIGHT OF CONSTRUCTION EQUIPMENT IN STAGING AREA IS 20' ABOVE GROUND SURFACE. THE CONTRACTOR SHALL OBTAIN PERMISSION FROM THE RPR FOR ANY EQUIPMENT THAT WILL EXCEED 20' IN HEIGHT AND IMPACT THE F.A.R. PART 77 SURFACE.

HAUL ROADS

1. THE CONTRACTOR'S ACCESS ROUTE TO THE PROJECT SITES LOCATED AT THE AIRPORT IS AS SHOWN ON SHEET G-004 CONSTRUCTION ACCESS PLAN AND NOTES.

2. ALL PAVED HAUL ROADS OR ACCESS ROADS SHALL BE KEPT CLEAN AT ALL TIMES TO PREVENT THE ACCUMULATION OF DIRT AND MUD AND THE GENERATION OF DUST BY VACUUMING, WASHING, WATERING OR OTHER METHODS DIRECTED BY THE AIRPORT OPERATIONS.

3. UNPAVED HAUL ROADS, IF ANY, SHALL BE MAINTAINED BY BLADING AND FILLING WHEN DIRECTED BY THE RPR. DUST SHALL BE CONTROLLED AT ALL TIMES.

4. ALL HAUL ROADS DISTURBED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR BETTER BEFORE THE CONTRACT WILL BE CONSIDERED COMPLETE. ALL RESTORATION AND DUST CONTROL ON HAUL ROADS SHALL BE AT THE CONTRACTOR'S EXPENSE AND ARE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT COST.

FLAGGERS

1. THE USE OF AIRFIELD FLAGGERS WILL NOT BE REQUIRED ON THIS PROJECT. THE OWNER WILL PROVIDE ESCORTS ACROSS ACTIVE AIRPORT PAVEMENTS. CONTRACTOR RESPONSIBLE FOR PROVIDING ANY FLAGGERS REQUIRED FOR ENTERING OR EXITING ON PUBLIC ROADWAYS. NO ADDITIONAL PAYMENT WILL BE MADE FOR FLAGGERS RATHER IT SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT COST.

RADIO CONTROL

1. THE CONTRACTOR SHALL HAVE TWO-WAY RADIO COMMUNICATION BETWEEN THE RADIO CONTROL VEHICLE AND HIS/HER FIELD OFFICE, SUPERINTENDENT'S VEHICLE, RPR, FLAG PERSONS, AND AIRPORT OPERATIONS ESCORT VEHICLES. NO FAA FREQUENCY WILL BE USED FOR THIS PURPOSE. THESE RADIOS SHALL BE MAINTAINED AND OPERATED AT THE CONTRACTOR'S EXPENSE.

UNDERGROUND UTILITIES, CABLES, AND EXISTING STRUCTURES

1. THE APPROXIMATE LOCATIONS OF KNOWN UTILITIES AND UNDERGROUND CABLES ARE SHOWN ON THE DRAWINGS. PRIOR TO COMMENCEMENT OF ANY EXCAVATION THE CONTRACTOR SHALL COORDINATE ALL WORK ON AND IN THE VICINITY OF THE UNDERGROUND UTILITIES AND CABLES WITH THE FOLLOWING AGENCIES AS APPROPRIATE.

   1.1. DIG SAFE: 811 OR (888) 344-7233
   1.2. CONSOLIDATED COMMUNICATIONS: (844) 968-7224
   1.3. COMCAST: (603) 889-6718
   1.4. NATIONAL GRID: (800) 233-5325
   1.5. EVERSOURCE: (800) 362-7764
   1.6. THE FEDERAL AVIATION ADMINISTRATION - TECH OPS: (603) 621-1762
   1.7. AIRPORT - OPERATIONS AND MAINTENANCE: (603) 624-6349
   1.8. TOWN OF LONDONDERRY - WATER AND SEWER DEPARTMENTS:(603) 624-6494

2. THE CONTRACTOR SHALL SUBMIT THE DIG SAFE REFERENCE NUMBER TO THE RPR AFTER EACH DIG SAFE REQUEST. DIG SAFE REFERENCE NUMBERS SHALL BE UPDATED EVERY 30 DAYS. THE CONTRACTOR SHALL BE AWARE OF ALL PERMITS AND THEIR ASSOCIATED EXPIRATION DATE. THE CONTRACTOR SHALL MAINTAIN ALL REQUIRED PERMITS THROUGHOUT THE CONSTRUCTION DURATION.

3. CONTRACTOR SHALL HIRE A PRIVATE UTILITY LOCATION SERVICE TO MARK OUT ANY UTILITIES NOT COVERED BY DIGSAFE.

4. WORK AROUND THE EXISTING UNDERGROUND UTILITIES SHALL BE PERFORMED IN A MANNER THAT WILL AVOID DAMAGES TO THE UTILITIES. PRIOR TO COMMENCING WITH WORK, THE CONTRACTOR SHALL ACCURATELY LOCATE OR GET THE APPROPRIATE UTILITY COMPANY TO LOCATE ABOVE AND BELOW GROUND UTILITIES WHICH MAY BE AFFECTED BY THE WORK. THE CONTRACTOR SHALL PROTECT ALL UTILITIES NOT DESIGNATED FOR REMOVAL, RELOCATION, OR REPLACEMENT IN THE COURSE OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE 72 HOURS OF ADVANCED NOTICE TO THE UTILITY OWNER, THE RPR, AND FAA PRIOR TO BEGINNING CONSTRUCTION IN THE VICINITY OF THE EXISTING UTILITY LINE.

5. PRIOR TO THE CLOSE OF WORK EACH DAY, THE CONTRACTOR SHALL VERIFY THAT ALL LIGHTING CIRCUITS IN THE WORK AREA ARE OPERATIONAL.

6. THE CONTRACTOR SHALL REPAIR AT HIS/HER OWN EXPENSE, ANY UNDERGROUND CABLES OR UTILITIES DAMAGED BY THE CONTRACTOR'S OPERATIONS INCLUDING ANY DAMAGE DONE BY DRIVING HIS/HER EQUIPMENT OVER EXISTING UNDERGROUND CABLES OR UTILITIES. THE REPAIR OF FAA CABLES SHALL BE INSPECTED AND APPROVED BY THE FAA.

7. THE CONTRACTOR SHALL PROTECT ALL NAVAIDS, EDGE LIGHTS, ELECTRICAL MANHOLES, JUNCTION CANS, DRAINAGE INLETS AND MANHOLES DURING CONSTRUCTION. ANY DAMAGE TO THE EXISTING STRUCTURES DURING CONSTRUCTION MUST BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE

8. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND DIMENSIONS IN THE FIELD PRIOR TO COMMENCING WITH ANY FABRICATION, ORDERING OF MATERIAL, OR PERFORMING WORK. THE CONTRACTOR SHALL NOTIFY THE RPR IMMEDIATELY OF ANY CONDITIONS OR DIMENSIONS THAT WOULD HAMPER THE PERFORMANCE OF THE WORK, IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS.

9. INTERRUPTION TO EXISTING AIRFIELD UTILITIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND/OR AT THE DIRECTION OF THE RPR.

MAINTENANCE OF THE CONSTRUCTION SITE

1. THE CONTRACTOR SHALL MAINTAIN THE PROJECT SITE TO PREVENT ATTRACTION OF WILDLIFE. THE CONTRACTOR SHALL KEEP ALL TRASH RECEPTACLES CLOSED AND ELIMINATE PONDING OF WATER TO ELIMINATE ATTRACTING BIRDS AND OTHER WILDLIFE.

2. THE CONTRACTOR SHALL KEEP THE CONSTRUCTION SITE FREE OF PAPER, BOXES, AND OTHER DEBRIS, WHICH COULD BE BLOWN ONTO THE RUNWAY AND TAXIWAYS.

3. ALL AIRPORT PAVEMENTS SHALL BE KEPT CLEAR AND CLEAN AT ALL TIMES. ALL ROCKS, MUD, AND OTHER DEBRIS CARRIED ONTO THE AIRPORT PAVEMENT BY THE CONTRACTOR'S EQUIPMENT MUST BE REPORTED TO THE RPR OR TO AIRPORT OPERATIONS. THE AIRPORT OPERATIONS WILL THEN CLOSE THE AFFECTED AREA TO AIR TRAFFIC AND THE CONTRACTOR WILL IMMEDIATELY SWEEP THE AREA TO THE SATISFACTION OF AIRPORT OPERATIONS OR RPR.

4. THE CONTRACTOR SHALL MAINTAIN, AT THE CONSTRUCTION SITE, THE EQUIPMENT FOR THE APPLICATION OF WATER TO CONTROL DUST WITHIN THE CONSTRUCTION SITE AND ON HAUL ROADS. THE EQUIPMENT SHALL BE EQUIPPED WITH A SHUTOFF CONTROL VALVE WHICH CAN BE OPERATED FROM THE CAB BY THE OPERATOR. THE CONTRACTOR SHALL APPLY WATER FOR DUST CONTROL AS NECESSARY TO PREVENT DUST FROM LEAVING THE CONSTRUCTION SITE AND/OR HAUL ROADS AND BEING A HAZARD TO AIRCRAFT AND THE PUBLIC. THE RPR MAY DIRECT THE IMPLEMENTATION OF DUST CONTROL. THE COST OF ALL WATER AND OTHER DUST CONTROL MEASURES WILL NOT BE PAID FOR SEPARATELY, RATHER IT SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT COST.

5. THE CONTRACTOR SHALL MAINTAIN AT THE JOB SITE AT ALL TIMES WHILE THE CONSTRUCTION UNDER THIS CONTRACT IS IN PROGRESS, A SELF-PROPELLED, SELF-CONTAINED SWEEPER WITH NOT LESS THAN A 10-FOOT BROOM WITH A 4 CUBIC YARD CAPACITY APPROVED BY THE RPR. THE SWEEPER SHALL OPERATE AS NECESSARY TO KEEP ACTIVE AIRCRAFT PAVEMENTS, ACCESS ROADS AND THE WORK AREAS CLEAN. AT THE CLOSE OF EACH WORKDAY, ALL ACTIVE AIRCRAFT PAVEMENTS AND THE AIRPORT PAVED ROADS USED OR SOILED BY THE CONTRACTOR SHALL BE SWEPT. ALL COSTS ASSOCIATED WITH THIS ITEM SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

6. THE CONTRACTOR SHALL ESTABLISH A SYSTEM OF VISUAL AIDS FOR MARKING AND DELINEATING THE LIMITS OF REQUIRED CLEARANCES ADJACENT TO ACTIVE TAXIWAYS, RUNWAYS, AND NAVIGATIONAL AIDS DURING CONSTRUCTION. THE SYSTEM SHALL BE EASILY DISTINGUISHABLE DURING BOTH DAY AND NIGHTTIME WORK. A DETAILED PLAN OF MATERIALS AND PROCEDURES THAT THE CONTRACTOR PROPOSES TO USE SHALL BE SUBMITTED TO THE RPR FOR APPROVAL PRIOR TO THE START OF ANY WORK UNDER THIS CONTRACT COMPLIANCE WITH THE APPROVED PLAN WILL BE STRICTLY ENFORCED. THIS PLAN, ALONG WITH ALL TEMPORARY VISUAL AIDS AS NOTED, SHALL BE IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5370-2G, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION, DATED 12/13/17. THE RPR MAY REQUIRE CHANGES TO THE ESTABLISHED PLAN WHENEVER IT IS NECESSARY FOR THE PROTECTION OF AIRPORT OPERATIONS. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE SPECIFICATIONS FOR FURTHER INFORMATION REGARDING RESTRICTIONS AND PENALTIES.

DISPOSAL OF SURPLUS AND UNSUITABLE MATERIALS

1. UNLESS OTHERWISE STATED, ALL SURPLUS MATERIALS AND UNSUITABLE MATERIALS INCLUDING MILLINGS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND LEGALLY DISPOSED OF OFF AIRPORT PROPERTY. NO SEPARATE MEASUREMENT AND PAYMENT WILL BE MADE FOR THE DISPOSAL, BUT RATHER THE DISPOSAL SHALL BE INCIDENTAL TO THE ITEM WHICH PRODUCED THE SURPLUS MATERIAL.

2. ALL EQUIPMENT, MANPOWER, TRAFFIC CONTROL, SIGNS, BARRICADES, GATES AND OTHER ITEMS NECESSARY FOR THE SAFE AND EFFICIENT HAULING OF EXCESS MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR AND INCIDENTAL TO THE COST OF THE ITEM WHICH GENERATED THE MATERIAL TO BE DISPOSED OF.

3. ALL SURPLUS LOAM SHALL BE TURNED OVER TO THE AIRPORT AT A STOCKPILE LOCATION ON AIRPORT PROPERTY. FINAL LOCATION ON AIRPORT PROPERTY OF STOCKPILE TO BE DETERMINED DURING CONSTRUCTION.

4. ALL TAXIWAY LIGHT FIXTURES AND SIGN FIXTURES TEMPORARILY REMOVED SHALL BE STORED AT THE AIRPORT MAINTENANCE FACILITY, TO BE REINSTALLED BY THE CONTRACTOR.

5. THE CONTRACTOR SHALL HAUL ALL EXCAVATED / DEMOLISHED MATERIALS AND MILLED ASPHALT MATERIALS OFF AIRPORT PROPERTY FOR LEGAL DISPOSAL. THE CONTRACTOR MAY STOCKPILE ONE WORK SHIFT'S WORTH OF DEMOLISHED ASPHALT MATERIALS AND EXCAVATED MATERIAL IN THE STAGING AREA AT A TIME. THE DEMOLISHED ASPHALT MATERIALS AND EXCAVATED MATERIALS MUST BE HAULED OFFSITE THE FOLLOWING DAY PRIOR TO THE NEXT WORK SHIFT COMMENCING. THERE SHALL NOT BE MORE THAN ONE WORK SHIFT'S WORTH OF DEMOLISHED ASPHALT MATERIAL AND EXCAVATED MATERIAL STOCKPILED IN THE STAGING AREA UNLESS OTHERWISE APPROVED BY THE RPR.

OPEN TRENCHES OR EXCAVATIONS

1. ALL CONSTRUCTION ACTIVITIES WITHIN OR ADJACENT TO RUNWAYS, TAXIWAYS, APRONS, PROTECTED SURFACES AND NAVIGABLE AIRSPACE SHALL COMPLY WITH CURRENT 14 CFR PART 139 AND 14 CFR PART 77 REQUIREMENTS, ADVISORY CIRCULAR A/C NO. 150/5370-2 (CURRENT VERSION) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION", AND AIRPORT OPERATIONAL REQUIREMENTS.

2. OPEN TRENCHES, EXCAVATIONS AND STOCKPILED MATERIALS SHALL BE PROMINENTLY MARKED. THESE OBSTACLES SHALL BE PROMINENTLY LIGHTED DURING HOURS OF RESTRICTED VISIBILITY AND DARKNESS.

GENERAL PROJECT COORDINATION NOTES

1. UNLESS OTHERWISE NOTED, WORK WITHIN ANY AIRPORT SAFETY AREAS SHALL REQUIRE A TAXIWAY OR RUNWAY CLOSURE UNLESS OTHERWISE NOTED IN THE PLANS. THE CONTRACTOR, THROUGH THE RPR AND AIRPORT OPERATIONS, MUST REQUEST TAXIWAY AND RUNWAY CLOSURES. THESE REQUESTS MUST BE MADE 72 HOURS IN ADVANCE AND INDICATE THE AREAS NEEDED AND A SCHEDULE OF OPERATIONS AND TIME(S) REQUIRED FOR OPERATIONS WITHIN THE AREA. ALL TAXIWAY AND RUNWAY CLOSURE REQUESTS ARE CONTINGENT ON REVIEW AND APPROVAL BY THE RPR AND AIRPORT OPERATIONS. THE AIRPORT RESERVES THE RIGHT TO SHIFT ANY APPROVED SCHEDULED CLOSURE PERIODS TO ALLEVIATE AIRCRAFT CONGESTION WHEN WEATHER CONDITIONS DICTATE.

2. THE CONTRACTOR SHALL COOPERATE WITH OTHER CONTRACTORS WORKING IN THE AREA AND AT ALL TIMES WILL COORDINATE HIS OR HER EFFORTS TO MAINTAIN THE NECESSARY CONSTRUCTION ACCESS ROUTES AND TO ASSURE THAT ALL CONTRACTS CONTINUE ON A TIMELY BASIS.

3. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS THAT ARE PERTINENT TO THIS WORK. THE CONTRACTOR SHALL HAVE THE RESPONSIBILITY TO OBTAIN AND PAY ALL COSTS ASSOCIATED WITH THE PERMITS AND LICENSES REQUIRED TO ACCOMPLISH THIS WORK.

4. OPEN FLAME WELDING OR TORCH CUTTING OPERATIONS ARE PROHIBITED UNLESS ADEQUATE FIRE SAFETY PRECAUTIONS ARE PROVIDED AND THESE OPERATIONS HAVE BEEN AUTHORIZED BY THE AIRPORT. IF THESE ACTIVITIES ARE REQUIRED, THE CONTRACTOR MUST COORDINATE WITH AIRPORT OPERATIONS IN ADVANCE SO THAT THE LIMITATIONS AND REQUIREMENTS CAN BE IDENTIFIED AS WELL AS ANY ADDITIONAL AIRPORT PROCEDURES COMPLETED.

5. THE CONTRACTOR SHALL COMPLY WITH ALL CURRENT VEHICLE OPERATIONAL ORDERS AND INSTRUCTIONS PROVIDED BY THE FAA AND ATCT. THE ORDERS AND INSTRUCTIONS ARE CONTAINED IN THE CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) IN THE PROJECT MANUAL. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE SURE ALL THE SUBCONTRACTORS, SUPPLIERS, VENDORS, ETC. RECEIVE AND COMPLY WITH THE REQUIREMENTS IN THESE PUBLICATIONS.

6. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL SUBMIT TO THE RPR A NAME AND PHONE NUMBER OF TWO INDIVIDUALS WHO WILL BE AVAILABLE ON A 24 HOUR CALL BASIS FOR EMERGENCY BARRICADE AND BARRICADE LIGHTING MAINTENANCE. THESE INDIVIDUALS SHALL PROVIDE MAINTENANCE AND REPAIR OF TEMPORARY ELECTRICAL SYSTEMS AND WIRING.

GENERAL PROJECT SECURITY NOTES

1. ALL PERSONS ENTERING THE SECURITY IDENTIFICATION DISPLAY AREA (SIDA) ARE REQUIRED TO DISPLAY AN IDENTIFICATION BADGE ISSUED BY THE AIRPORT OR TO BE ESCORTED AT ALL TIMES BY AN APPROVED ESCORT DISPLAYING AN AIRPORT-ISSUED IDENTIFICATION BADGE. THE SIDA IS DEFINES AS ALL AREA INSIDE THE AIRPORT SECURITY FENCE.

2. VEHICLES ENTERING THE AOA ARE SUBJECT TO SEARCH AND INSPECTION PRIOR TO ENTERING. THE PROCEDURES WILL BE OUTLINED BY THE RPR AND AIRPORT OPERATIONS, AND CONTRACTORS ARE EXPECTED TO FAMILIARIZE THEMSELVES WITH AND COMPLY WITH THESE PROCEDURES.

3. VEHICLES ENTERING THE SIDA MUST DISPLAY ALL NECESSARY IDENTIFICATION AS OUTLINED IN FAA AC 150/537-2G OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION. ONLY PERSONS HOLDING A VALID SIDA DRIVER'S BADGE MAY DRIVE UNDER ESCORT WITHIN THE SIDA.

4. CONTRACTOR PERSONNEL MUST OBTAIN SECURITY BADGES FROM THE AIRPORT SECURITY OFFICE IN ORDER TO PERFORM THE WORK. THE CONTRACTOR WILL BE REQUIRED TO BADGE ALL EMPLOYEES EXPECTED TO WORK MORE THAN ONE DAY AT THE PROJECT SITE UNLESS OTHERWISE APPROVED BY THE AIRPORT. ONE (1) BADGED EMPLOYEE MAY ESCORT UP TO FIVE (5) UN-BADGED EMPLOYEES THAT WILL BE ON-SITE FOR ONE DAY OR LESS. ESCORTED EMPLOYEES MUST REMAIN IN CLOSE PROXIMITY TO THE BADGED EMPLOYEE AND CANNOT BE LEFT UNATTENDED ON THE AIRFIELD.

5. BEFORE RECEIVING A BADGE, EMPLOYEES MUST SUBMIT THEIR FINGER PRINTS AND COMPLETE A BADGE APPLICATION FORM. A CRIMINAL BACKGROUND CHECK WILL BE CONDUCTED FOR EACH APPLICANT. AFTER APPROVAL, THE APPLICANT MUST COMPLETE A COMPUTER-BASED TRAINING FOR SUBJECTS INCLUDING AIRPORT SECURITY AND AIRSIDE DRIVING REQUIREMENTS. THE BASIC TRAINING MODULES TAKE APPROXIMATELY 2 HOURS. UPON COMPLETION, A PHOTO IDENTIFICATION BADGE WILL BE ISSUED. THE BADGE MUST BE WORN ABOVE THE WAIST WHILE ON AIRPORT PROPERTY.

BASE BID, ADDITIVE ALTERNATE AND OPTION DESCRIPTION

THE PROJECT BID INCLUDES A BASE BID, 5 ALTERNATES AND AN OPTION. REFER TO THE BIDDING PROPOSAL FOR THE QUANTITIES ASSOCIATED WITH EACH. THE BELOW IS A SUMMARY OF THE BASE BID, ALTERNATE AND OPTION.

1. BASE BID (RUNWAY):
   a. REFER TO PLAN VOLUMES 1 AND 2.REFER TO PHASES 1 THROUGH 7 FOR THE PHASING.
   b. REHABILITATE THE PAVEMENTS 9,250-FOOT-LONG RUNWAY BY 150 FEET WIDE.
   c. REHABILITATE ALL RUNWAY AND SHOULDER PAVEMENTS WITHIN THE RUNWAY-RUNWAY INTERSECTION.
   d. FAA IN-PAVEMENT APPROACH LIGHT UPGRADES WITHIN THE 9,250-FOOT-LONG RUNWAY.
   e. AIRPORT LIGHTING & SIGNAGE REPLACEMENTS & RELATED AIRFIELD ELECTRICAL.
   f. RWIS UPGRADES AND SENSOR INSTALLATION.
   g. REHABILITATE THE SOUTH TAXIWAY A RETAINING WALL AND DETENTION POND IMPROVEMENTS SHOWN IN PHASE 7 OF THE PHASING PLANS.
2. ALTERNATE #1 (RUNWAY SHOULDERS):
   a. REFER TO PLAN VOLUMES 1 AND 2.
   b. REFER TO PHASES 1 THROUGH 6 FOR THE PHASING.
   c. REHABILITATE THE RUNWAY PAVEMENT SHOULDERS 9,250-FOOT-LONG BY 25 FEET WIDE ON BOTH SIDES.
   d. FAA IN-PAVEMENT APPROACH LIGHT UPGRADES WITHIN THE SHOULDER PAVEMENT.
3. ALTERNATE #2 (RUNWAY BLAST PADS):
   a. REFER TO PLAN VOLUMES 1 AND 2.
   b. REFER TO PHASES 1 THROUGH 6 FOR THE PHASING.
   c. REHABILITATE THE RUNWAY PAVEMENT BLAST PADS 200 FEET BY 200 FEET ON BOTH ENDS.
   d. FAA IN-PAVEMENT APPROACH LIGHT UPGRADES WITHIN THE BLAST PAD PAVEMENT.
4. ALTERNATE #3 (REHABILITATE THE TAXIWAY A RETAINING WALL)
   a. REFER TO VOLUME III OF THE PLANS.
   b. REFER TO PHASE 8 FOR THE PHASING.
   c. INSTALLS DRAINAGE BEHIND THE EXISTING WALL AND ENLARGES THE DOWNSTREAM OPEN CHANNEL CONVEYANCES.
5. ALTERNATE #4 (RWIS RPU UPGRADES NOT IN THE BASE BID)
   a. REFER TO VOLUME 1 OF THE PLANS
   b. REFER TO REFER TO PHASE 3 FOR THE PHASING.
   c. UPGRADES RUNWAY WEATHER INFORMATION SYSTEM (RWIS) RPU COMPONENTS FOR RUNWAY 6-24, TAXIWAY M AND TERMINAL RPUS.
6. ALTERNATE #5 (ELECTRICAL MANHOLE DRAINAGE)
   a. REFER TO VOLUME 1 OF THE PLANS.
   b. REFER TO PHASE 9 OF THE PHASING PLANS.
   c. INSTALLS DRAINAGE OUTLETS IN CERTAIN EXISTING ELECTRICAL MANHOLES TO THE EXISTING DRAINAGE NETWORK.
7. ALTERNATE #6 (RECONSTRUCT AND REHABILITATE SERVICE ROAD)
   a. REFER TO VOLUME 4 OF THE PLANS.
   b. REFER TO PHASE 10 OF THE PHASING PLANS.
   c. INSTALLS STORM DRAINAGE IMPROVEMENTS, REHABILITATES A PORTION OF THE EXISTING SERVICE ROAD AND INSTALLS NEW AIRPORT SECURITY FENCING.
8. OPTION
   a. IN LIEU OF ALTERNATES #1 AND #2, THE SHOULDERS AND BLAST PADS ARE SEALCOATED.
   b. WORK WILL OCCUR AS SHOWN DURING PHASE 1 THROUGH 6.

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DRAWN BY:	DJA
CHECKED BY:	JAM
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MANCHESTER • BOSTON REGIONAL AIRPORT

REHABILITATE RUNWAY 17-35

PROJECT GENERAL NOTES

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY
1	3/30/2022	ADDENDUM – 1	DJA

PROJ. NO.: E2X89205

JE FILE:

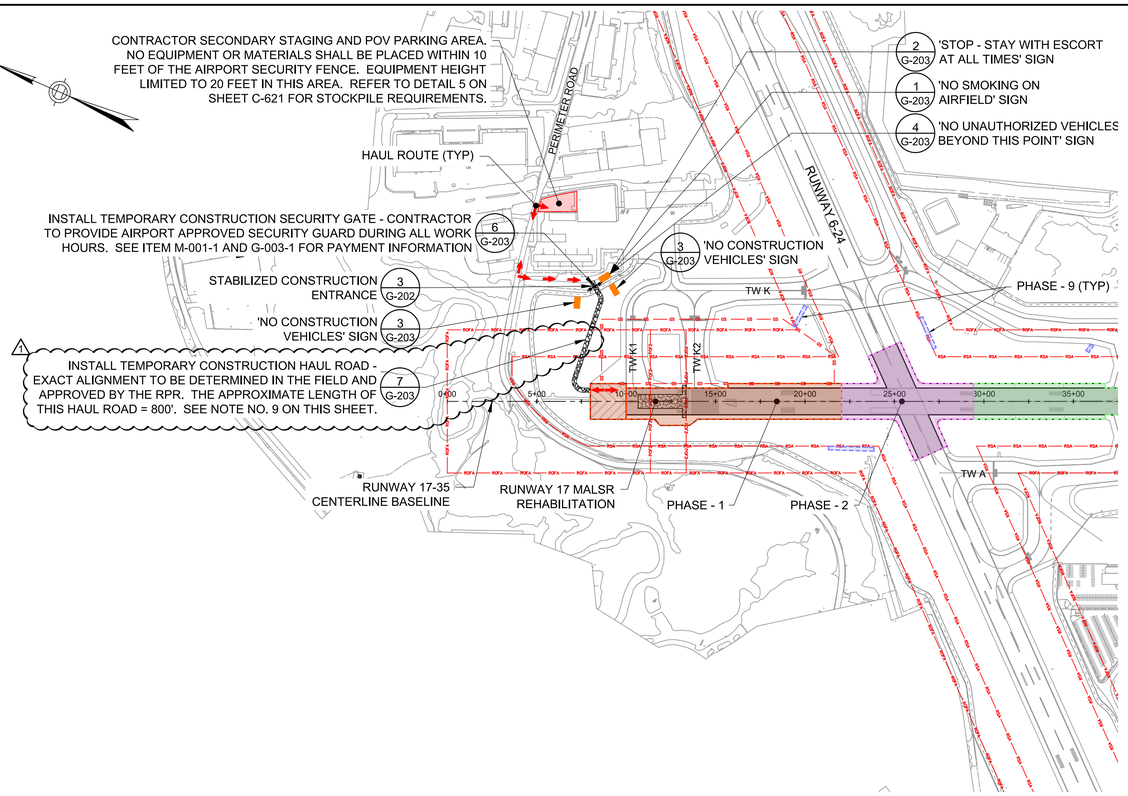
DRAWING NO.

G-003

REV

ISSUED FOR BID - NOT FOR CONSTRUCTION

Jacobs - \\nhtfil01\job\2021\E2X89205 - MHT RW 17-35\700 CADD\G003_General Notes.dwg [G-003] March 30, 2022 - 10:08am [damorelli]



RUNWAY 17 END - CONSTRUCTION ACCESS PLAN - (FOR PHASES 1, 2, AND 9)

GENERAL CONSTRUCTION ACCESS NOTES

1. THE CONTRACTOR MUST ACCESS THE WORK SITES AS SHOWN ON THIS CONSTRUCTION ACCESS DRAWING. THE PRIMARY ACCESS GATE FOR EACH PHASE MUST BE APPROVED BY AIRPORT OPERATIONS PRIOR TO THE START OF EACH PHASE. ESCORTING TO THE CONSTRUCTION SITES WILL BE REQUIRED FOR ALL PHASES OF CONSTRUCTION AND SHALL BE PROVIDED BY THE AIRPORT OPERATIONS. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ALL MATERIAL SUPPLIERS AND SUBCONTRACTORS OF ALL THE SECURITY AND ACCESS REQUIREMENTS.

2. THE CONTRACTOR SHALL COMPLY WITH ALL AIRPORT SECURITY REQUIREMENTS AS DIRECTED BY AIRPORT OPERATIONS AND IN THE SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY NECESSARY PROVISIONS TO ACCESS THE WORK AREA AND FOR PROVIDING GATE SECURITY AT ALL TIMES. GATE SECURITY SHALL BE PROVIDED BY AN AIRPORT APPROVED SECURITY GUARD AND/OR SECURITY SERVICE COMPANY. REFER TO ALLOWANCE PAY ITEM. THIS APPROVED SECURITY GATE GUARD MUST PROPERLY IDENTIFY, REGULATE , AND DIRECT ALL CONSTRUCTION VEHICLES ENTERING THE AIR OPERATIONS AREA (AOA) OF THE AIRPORT. ALL VEHICLES MUST BE INSPECTED PRIOR TO ENTERING THE AOA. TEMPORARY CONSTRUCTION BADGES WILL BE ISSUED TO INDIVIDUALS THAT DO NOT HAVE AN AIRPORT SECURITY BADGE. INDIVIDUALS ENTERING THE AOA MUST BE IN A VEHICLE. WALKING THROUGH A VEHICLE GATE IS NOT PERMITTED.

3. PARKING OF PERSONAL VEHICLES (POV) AT THE WORK SITE WILL NOT BE PERMITTED. LOCATION FOR THE PARKING OF VEHICLES SHALL BE AS DESIGNATED ON THE CONSTRUCTION ACCESS PLAN. THE CONTRACTOR SHALL PROVIDE ADEQUATE AND SAFE TRANSPORTATION FROM THE AREA WHERE PERSONAL VEHICLES ARE PARKED AND THE WORK SITE. EMPLOYEES AND DRIVERS OF WORK VEHICLES WILL BE INSTRUCTED AS TO THE PROPER ACCESS ROADS. IN NO CASE WILL VEHICLES OR EQUIPMENT OPERATE ON PAVEMENT INTENDED FOR AIRCRAFT USE UNLESS APPROVED BY AIRPORT OPERATIONS. THE CONTRACTOR SHALL INSTRUCT MATERIAL SUPPLIERS, SUB-CONTRACTORS AND ALL PERSONS UNDER THEIR CONTROL AS TO THE PROCEDURES TO BE FOLLOWED WHEN DELIVERING MATERIALS AND/OR OPERATING ON THE AIRFIELD.

4. THE CONTRACTOR'S PERSONNEL AND VEHICLES WILL NOT HAVE ACCESS TO THE ENTIRE AIRPORT, BUT SHALL BE LIMITED TO THE SPECIFIED WORK AND STAGING AREAS. ALL SECURITY ARRANGEMENTS SHALL BE SUBJECT TO THE APPROVAL OF THE AIRPORT. CONTRACTOR VEHICLES MUST BE READILY IDENTIFIABLE WITH COMPANY NAME AND LOGO ON BOTH SIDES OF VEHICLE. ALL CONTRACTOR'S MOTORIZED VEHICLES OPERATING IN THE AOA SHALL BE EQUIPPED WITH AN AMBER FLASHING LIGHT AND/OR A THREE FOOT SQUARE FLAG CONSISTING OF INTERNATIONAL ORANGE AND WHITE SQUARES (SEE DETAIL ON THE SAFETY DETAILS DRAWINGS) DISPLAYED IN FULL VIEW ABOVE THE VEHICLE.

5. THE CONTRACTOR SHALL FOLLOW THE AIRPORT OPERATIONS CONSTRUCTION TRAFFIC REQUIREMENTS AS THEY PERTAIN TO THE OPERATIONS AND ROUTES TAKEN BY EQUIPMENT TRAVELING ON AIRPORT PROPERTY. ANY AND ALL SIGNS, LIGHTS, SIGNALS, MARKINGS, OR TRAFFIC CONTROL TO ENSURE THAT PERSONNEL AND EQUIPMENT CAN SAFELY ACCESS/EGRESS THE WORK SITE SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF THE PROJECT AT NO ADDITIONAL COST TO THE PROJECT, UNLESS SPECIFICALLY NOTED AS ELIGIBLE FOR PAYMENT.

6. ALL VEHICLES EXITING THE CONSTRUCTION WORK AREAS MUST BE CLEANED AND CLEAR FROM FOREIGN OBJECT DEBRIS (FOD) PRIOR TO LEAVING THE WORK SITE. THE CONTRACTOR SHALL FURNISH, MAINTAIN, AND OPERATE ONE VACUUM SWEEPER TRUCK WITH DEDICATED OPERATOR ON A FULL-TIME BASIS FOR THE DURATION OF THE PROJECT AND SHALL UTILIZE IT TO REMOVE PROJECT DEBRIS FROM THE ACCESS HAUL ROUTES AND WORK AREAS AS DIRECTED BY THE RPR OR AIRPORT OPERATIONS.

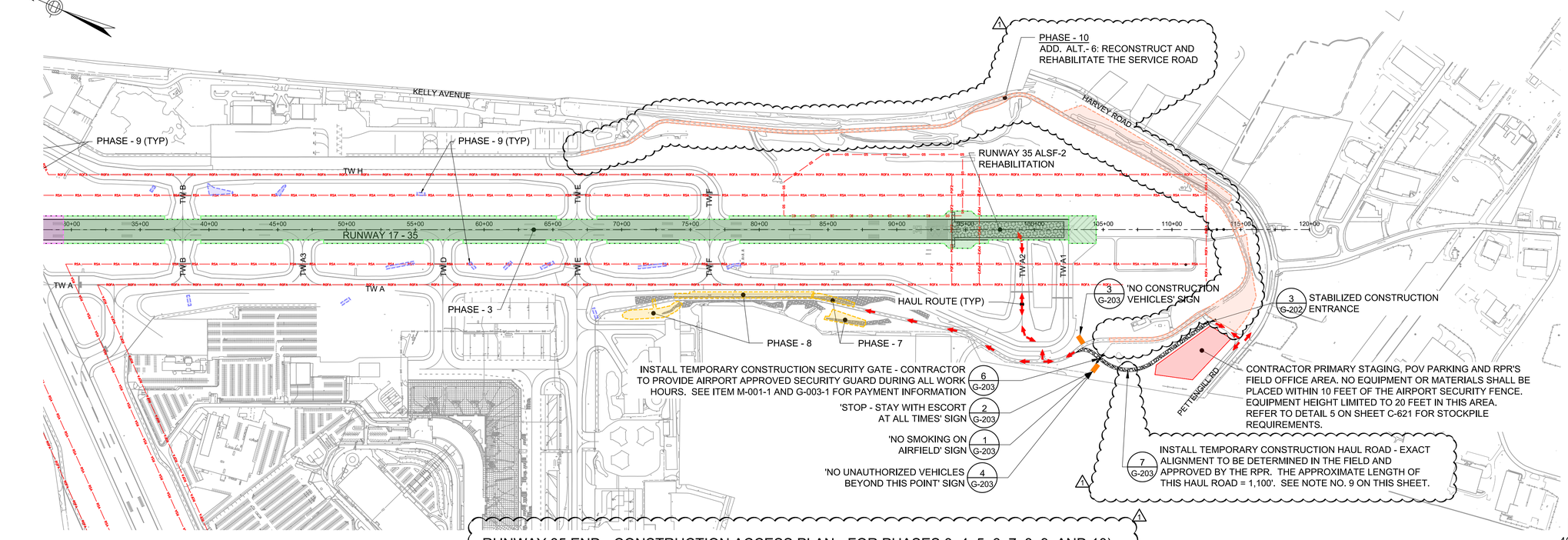
7. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO AS TO AFFORD COMPLETE UNRESTRICTED ACCESS BY EMERGENCY PERSONNEL AND EQUIPMENT AT ALL TIMES.

8. THE CONTRACTOR MUST MAINTAIN SECURITY FOR THE AIRPORT AT ALL TIMES. THE PERIMETER SECURITY FENCE MUST REMAIN CONTINUOUS AT ALL TIMES DURING CONSTRUCTION ACTIVITIES.

9. THE CONTRACTOR MUST INSTALL AND MAINTAIN A SILT FENCE ON THE DOWNGRADIENT SIDE OF THE TEMPORARY CONSTRUCTION HAUL ROAD. THE CONTRACTOR MUST INSTALL AND MAINTAIN EROSION SOCK INLET PROTECTORS AT ALL DOWNGRADIENT INLETS ADJACENT TO THE TEMPORARY CONSTRUCTION HAUL ROAD. SEE SHEET C-621 FOR CORRESPONDING DETAILS.

LEGEND

- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- PRECISION OBSTACLE FREE ZONE
- GLIDE SLOPE CRITICAL AREA
- PHASE 1 - SEE SHEET G-101
- PHASE 2 - SEE SHEET G-102
- PHASE 3 - SEE SHEET G-103
- PHASES 4, 5, AND 6 - SEE SHEET G-104
- PHASES 7 AND 8 - SEE SHEET G-105
- PHASE 9 - SEE SHEET G-106
- 1 PHASE 10 - SEE SHEET G-107
- CONSTRUCTION SIGNAGE
- CONSTRUCTION HAUL ROUTE
- CONTRACTOR STAGING AREA
- APPROACH LIGHT SYSTEM LIGHT
- TEMPORARY SECURITY GATE



RUNWAY 35 END - CONSTRUCTION ACCESS PLAN - FOR PHASES 3, 4, 5, 6, 7, 8, 9, AND 10)

HORIZONTAL SCALE
1"=400'
400 0 200 400 800

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MANCHESTER • BOSTON REGIONAL AIRPORT

REHABILITATE RUNWAY 17-35

CONSTRUCTION ACCESS PLAN AND NOTES

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY
1	3/30/2022	ADDENDUM — 1	DJA

PROJ. NO.: E2X89205

JE FILE:

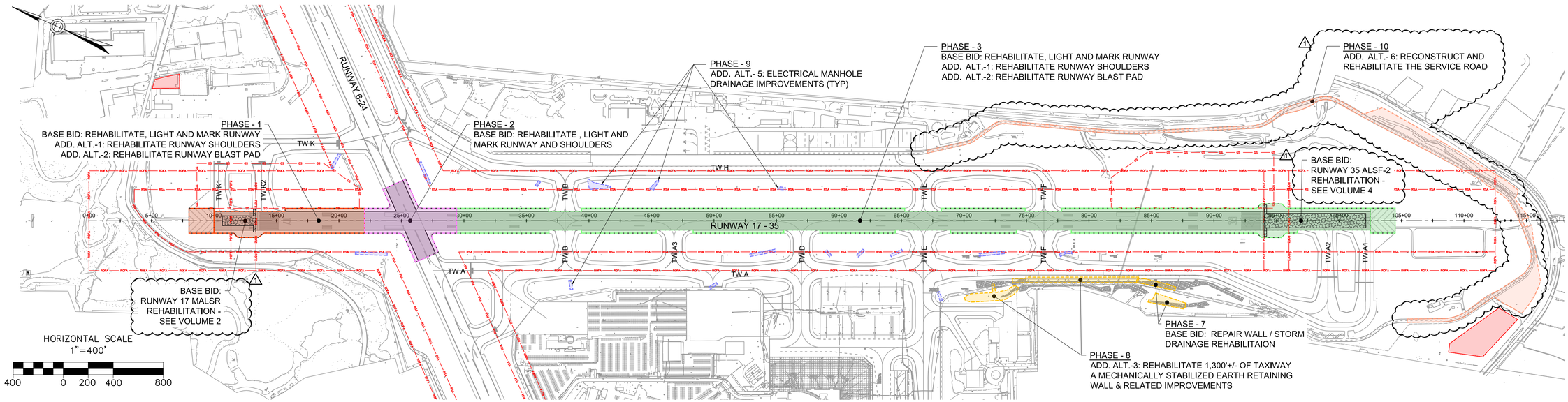
DRAWING NO.

G-004

REV

ISSUED FOR BID - NOT FOR CONSTRUCTION

Jacobs - \\mhtfil01\job\2021\E2X89205 - MHT RW 17-35\700 CADD\G004 - Construction Access Plan and Notes.dwg [G-004] March 30, 2022 - 12:26pm [damorelli]



GENERAL CONSTRUCTION SAFETY AND PHASING PLAN

RUNWAY SAFETY AREA (RSA) AND TAXIWAY OBJECT FREE AREA (TOFA) NOTES:

1. THE RUNWAY SAFETY AREA (RSA) IS A DEFINED SURFACE SURROUNDING THE RUNWAY. THE RSA WIDTH IS 500 FEET AND THE ROFA WIDTH IS 800 FEET, CENTERED ON THE RUNWAY CENTERLINE. THE RSA EXTENDS BEYOND THE END OF THE RUNWAY. WORK WITHIN THE RSA SHALL BE COMPLETED WHEN THE RUNWAY IS CLOSED.
2. THE TAXIWAY OBJECT FREE AREA (TOFA) IS A DEFINED SURFACE SURROUNDING THE TAXIWAY. THE TOFA WIDTH IS 259 FEET, CENTERED ON THE TAXIWAY CENTERLINE. WORK WITHIN THE TOFA SHALL BE COMPLETED WHEN THE TAXIWAY IS CLOSED.
3. AT THE END OF EACH WORK SHIFT, PRIOR TO ANY AIRPORT MOVEMENT AREA RE-OPENING TO AIRCRAFT, THE ROFA AND TOFA SHALL BE:
   - A. CLEARED AND GRADED AND HAVE NO RUTS, HUMPS, DEPRESSIONS, OR OTHER SURFACE VARIATIONS.
   - B. DRAINED BY GRADING OR OTHER TEMPORARY MEASURES TO PREVENT WATER ACCUMULATION.
   - C. CAPABLE, UNDER DRY CONDITIONS, OF SUPPORTING AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF) EQUIPMENT, AND THE OCCASIONAL PASSAGE OF AN AIRCRAFT WITHOUT CAUSING STRUCTURAL DAMAGE TO THE AIRCRAFT.
   - D. FREE OF OBJECTS, EXCEPT FOR OBJECTS THAT NEED TO BE IN THE TOFA DUE TO THEIR FUNCTION. IN NO CASE SHALL ANY OBJECTS EXCEED 3 INCHES ABOVE GRADE.
   - E. SHOULDER TRANSVERSE GRADES AND THE FIRST 10 FEET OUTSIDE THE SHOULDER SHALL BE A MAXIMUM OF MINUS 5%. OUTSIDE OF THE FIRST 10 FEET OF THE SHOULDER SHALL BE A MAXIMUM OF MINUS 3%. TRANSITIONS BETWEEN DIFFERENT GRADIENTS SHALL BE WARPED SMOOTHLY.
   - F. ANY STRUCTURES AND/OR DROP-OFFS IN EXCESS OF 3" SHALL BE RAMPED PRIOR TO THE END OF EACH WORK SHIFT. TEMPORARY RAMPING SHALL BE GRADED AS STATED IN NOTE E.

GENERAL CONSTRUCTION SAFETY AND PHASING NOTES:

1. THE CONTRACTOR SHALL SUBMIT TO THE OWNER AND RPR A SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) FOR APPROVAL. THE SPCD SHALL BE PREPARED IN ACCORDANCE WITH THE FAA APPROVED CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) INCLUDED IN THE CONTRACT SPECIFICATIONS. THE SPCD SHALL INCLUDE A WRITTEN METHOD OF OPERATIONS THAT DETAIL THE PRECAUTIONS PROPOSED FOR THE CONTROL OF VEHICLE TRAFFIC INCLUDING SIGNS, ESCORTS AND ANY OTHER MEASURES PROPOSED. THE CONTRACTOR SHALL FOLLOW THE APPROVED PLAN EXPLICITLY AFTER APPROVAL. THE OWNER MAY CLOSE THE WORK AT ANY TIME THE APPROVED PLAN IS VIOLATED SO AS NOT TO ENDANGER THE AIRPORT OR AIRCRAFT OPERATIONS. SUCH A CLOSURE SHALL NOT BE CONSIDERED A VALID REASON FOR EXTENDING THE CONTRACT TIME OR ANY CLAIM FOR EXTRAS BY THE CONTRACTOR. REFER TO ADVISORY CIRCULAR A/C NO. 150/5370-2G "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION" FOR AIRFIELD CONSTRUCTION SAFETY REQUIREMENTS.
2. NO CONSTRUCTION MAY OCCUR WITHIN THE RUNWAY SAFETY AREA (RSA) AND TAXIWAY SAFETY AREA (TSA) WHILE RUNWAY 17-35, RUNWAY 6-24, AND TAXIWAYS ARE OPEN FOR AIRCRAFT OPERATIONS.
3. AT THE END OF EACH WORK PERIOD, THE TAXIWAYS WILL BE OPENED TO AIRCRAFT TRAFFIC UNLESS OTHERWISE NOTED IN THE PLANS.
4. THE CONTRACTOR SHALL ENSURE ADEQUATE TIME FOR THE ASPHALT MAT TO COOL AS STATED IN THIS PARAGRAPH TO ACCEPT AIRCRAFT TRAFFIC UPON OPENING. THE POTENTIAL FOR AIRCRAFT TRAFFIC TO CAUSE RUTTING OF THE NEWLY PLACED MAT IS A FUNCTION OF THE STABILITY OF THE MIX, WHICH VARIES WITH MAT SURFACE TEMPERATURE, MAT THICKNESS, AND ASPHALT CONTENT. AIRCRAFT TRAFFIC SHOULD NOT BE ALLOWED ON NEWLY PLACED MAT UNTIL IT COOLS TO 140 DEGREES F.
5. THE CONTRACTOR SHALL INSTALL ALL EROSION CONTROL MEASURES PRIOR TO THE START OF ANY CONSTRUCTION.
6. THE CONTRACTOR SHALL COMPLETE ALL WORK ASSOCIATED WITH EACH PHASE WITHIN THE CALENDAR DAYS PROVIDED FOR EACH PHASE. THE CONTRACT DURATION IS CONTINGENT ON THE START OF THE WORK. THE CONTRACTOR MAY START WORK IN 2022 FOR PHASES 7,8, AND 10. IF THE CONTRACTOR ELECTS TO START WORK IN 2022 THE CONTRACT DURATION WILL BE 161 CALENDAR DAYS WITH AN ANTICIPATED NOTICE TO PROCEED IN SEPTEMBER 2022. WORK THAT STARTS IN 2022 WILL HAVE AN ANTICIPATED WORK STOPPAGE IN LATE FALL 2022 WITH A WORK RESTART IN APRIL 2023. IF THE CONTRACTOR ELECTS TO COMPLETE ALL CONSTRUCTION PHASES IN 2023 THE CONTRACT DURATION SHALL BE 99 CALENDAR DAYS WITH AN ANTICIPATED NOTICE TO PROCEED IN APRIL 2023.
7. THE CONTRACTOR MUST SUBMIT A PAVING PLAN FOR APPROVAL BY THE RPR PRIOR TO BEGINNING ANY PAVING OPERATIONS.
8. THE CONTRACTOR MUST PLACE LOW PROFILE BARRICADES AND REQUIRED CONSTRUCTION SIGNS PRIOR TO EACH PHASE. MAINTAIN AND REMOVE THEM AT THE END OF EACH PHASE ACCORDINGLY UNLESS OTHERWISE NOTED.
9. THE CONTRACTOR MUST INSTALL 'CONSTRUCTION AHEAD' SIGNS AT THE LOCATIONS SHOWN ON THE PHASING PLANS PRIOR TO ANY CONSTRUCTION ACTIVITIES. REFER TO THE G-200 SERIES FOR ALL CONSTRUCTION SAFETY DETAILS FOR 'CONSTRUCTION AHEAD' SIGN DETAIL. ALL CONSTRUCTION SIGNS SHALL BE INCIDENTAL TO G-004-1 MAINTENANCE AND PROTECTION OF TRAFFIC.
10. AFTER EACH CONSTRUCTION PHASE, A PRE-OPENING INSPECTION IS REQUIRED AND WILL BE PERFORMED WITH THE CONTRACTOR, AIRPORT OPERATIONS, AND THE RPR. THIS INSPECTION IS TO ENSURE THAT ALL FAA STANDARDS ARE MET BEFORE THE RE-OPENING OF ANY RUNWAY, TAXIWAY, AND MOVEMENT AREA. ALL AREAS MUST BE CLEAR OF FOREIGN OBJECT DEBRIS (FOD). THE CONTRACTOR SHALL FOLLOW STANDARDS IN FAA AC 150/5370-2G, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION AND FAA AC 150/5370-13A, OFF-PEAK CONSTRUCTION OF AIRORT PAVEMENTS USING HOT-MIX ASPHALT. REFER TO RSA AND TOFA NOTES FOR REOPENING REQUIREMENTS.
11. THE CONTRACTOR SHALL APPLY THE PERMANENT PAVEMENT MARKINGS THIRTY DAYS AFTER THE COMPLETION OF THE PAVEMENT CONSTRUCTION. THE PAVEMENT SURFACE MUST BE PREPARED PRIOR TO PAVEMENT MARKING APPLICATION AS STATED IN THE P-620 SPECIFICATION. THE TEMPORARY PAVEMENT MARKINGS SHALL BE APPLIED IN ONE 50% APPLICATION COAT. THE PERMANENT PAVEMENT MARKINGS APPLICATION WILL USE A 100% APPLICATION RATE. THE TWO APPLICATIONS OF PAINT WILL BE PAID FOR ONCE UNDER THE ASSOCIATED PAY ITEMS.
12. THE CONTRACTOR MUST MAINTAIN SECURITY FOR THE AIRPORT AT ALL TIMES. THE PERIMETER SECURITY FENCE MUST REMAIN CONTINUOUS AT ALL TIMES DURING CONSTRUCTION ACTIVITIES.

LEGEND

- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- POFZ — PRECISION OBSTACLE FREE ZONE
- GS — GLIDE SLOPE CRITICAL AREA
- CONTRACTOR STAGING AREA
- APPROACH LIGHT SYSTEM LIGHTS
- PHASE 1 - SEE SHEET G-101
- PHASE 2 - SEE SHEET G-102
- PHASE 3 - SEE SHEET G-103
- PHASES 4, 5, AND 6 - SEE SHEET G-104
- PHASES 7 AND 8 - SEE SHEET G-105
- PHASE 9 - SEE SHEET G-106
- PHASE 10 - SEE SHEET G-107

PHASE	GENERAL PHASE CONSTRCUTION DESCRIPTION	DURATION CALENDAR DAYS	RUNWAY IMPACTS				CONSTRUCTION SCHEDULE - MONTHS								
			RUNWAY 17 - 35		RUNWAY 6 - 24		2022			2023					
			STATUS	ILS	STATUS	ILS	1	2	WINTER	1	2	3	4	5	6
1	RUNWAY 17 END REHABILITATION / RUNWAY 17 MALSR REHABILITATION	14	CLOSED	OFF	OPEN	ON			WINTER WORK STOPAGE				RUNWAY PAVEMENT CURING TIME WORK STOPAGE		
2	RUNWAY:RUNWAY INTERSECTION REHABILITATION	7	TEMPORARY RUNWAY	OFF	CLOSED	OFF									
3	REMAINING RUNWAY REHABILITATION / RUNWAY 35 ALSF-2 REHABILITATION	62	CLOSED	OFF	OPEN	ON									
4	TEMPORARY PAVEMENT MARKING OPERATIONS	3 NIGHT WORK	CLOSED	OFF	OPEN	ON									
RUNWAY 17-35 RE-OPENED / RUNWAY FLIGHT CHECK															
5	RUNWAY GROOVING OPERATIONS	10 NIGHT WORK	CLOSED DURING THE WORK SHIFT	OFF	OPEN	ON									
6	FINAL PAVEMENT MARKING OPERATIONS	3 NIGHT WORK	CLOSED DURING THE WORK SHIFT	OFF	OPEN	ON									
7	BASE BID REATINING WALL REHABILITAION WORK	21	CLOSED DURING PHASES 3 AND 4	OFF DURING PHASE 3 AND 4	OPEN	ON	FLOAT				FLOAT				
8	ADD. ALT.-3 RETAINING WALL REHABILITATION / DRAINAGE IMPROVEMENTS	65	CLOSED DURING PHASES 3 AND 4	OFF DURING PHASE 3 AND 4	OPEN	ON	FLOAT				FLOAT				
9	ADD. ALT.-5 EMH DRAINAGE IMPROVEMENTS	62	CLOSED	OFF	OPEN	ON									
10	RECONSTRUCT AND REHABILITATE A PORTION OF THE SERVICE ROAD	21	CLOSED DURING PHASES 3 AND 4	OFF DURING PHASE 3 AND 4	OPEN	ON	FLOAT			WORK RESTRICTED BY PERMIT-SEE G-107				FLOAT	

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MANCHESTER • BOSTON REGIONAL AIRPORT
REHABILITATE RUNWAY 17-35

GENERAL CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES

REVISIONS

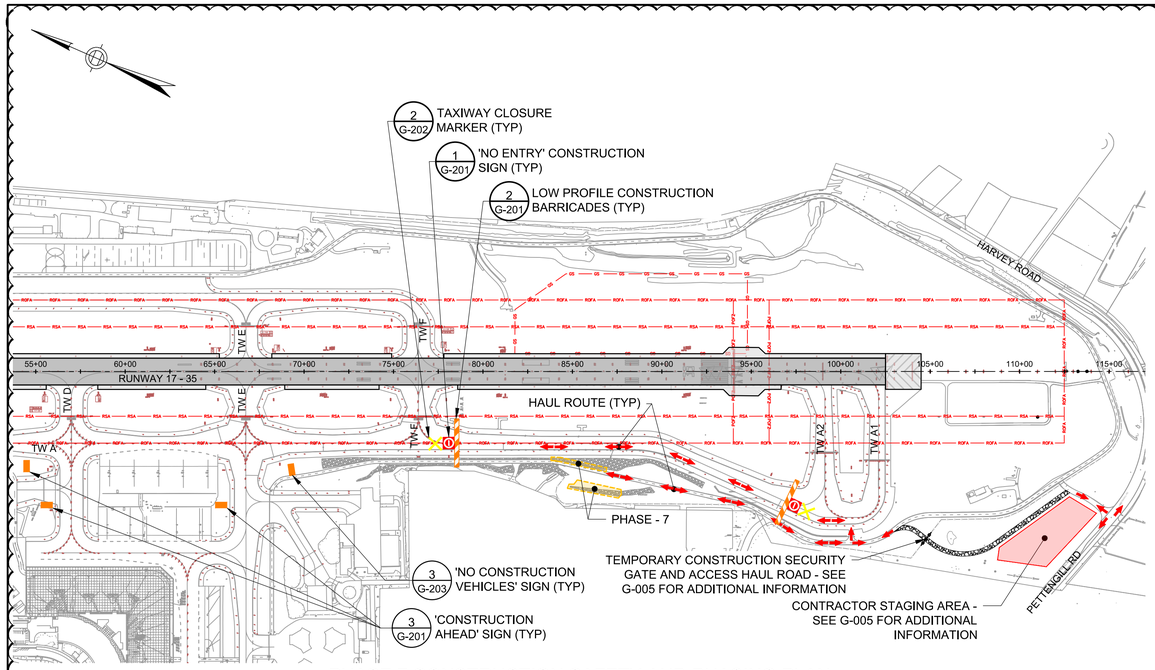
REV. NO.	DATE	DESCRIPTION	BY
1	3/30/2022	ADDENDUM — 1	DJA

PROJ. NO.: E2X89205
JE FILE:

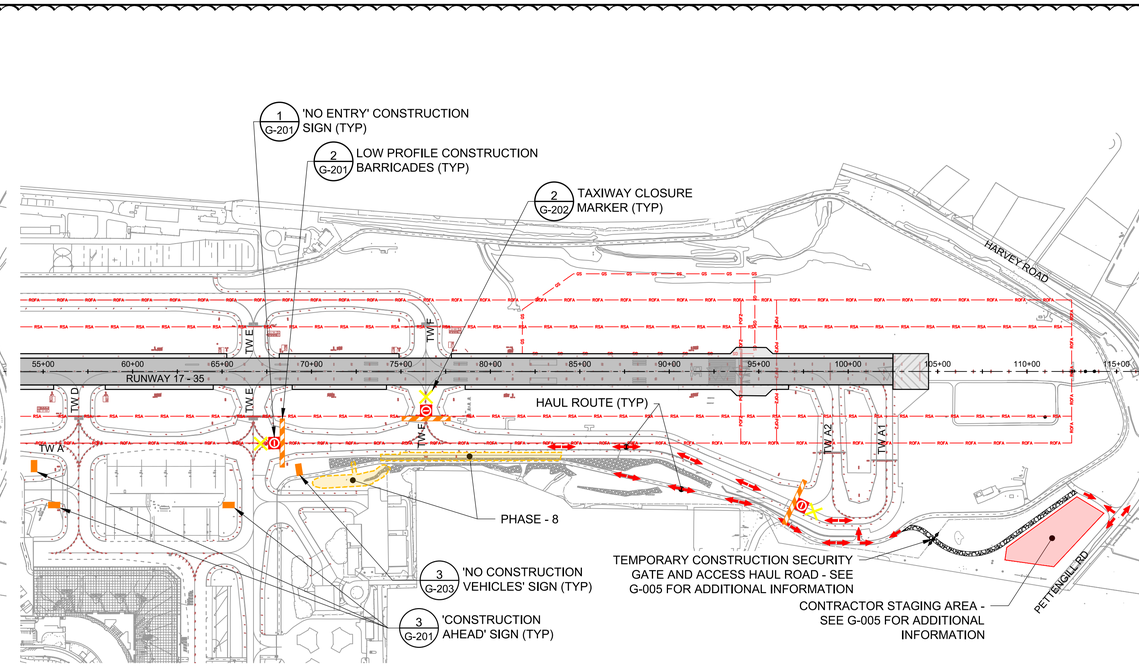
DRAWING NO.
G-100
REV

ISSUED FOR BID - NOT FOR CONSTRUCTION

Jacobs - \\mhtfil01\job\2021\E2X89205 - MHT RW 17-35\700 CADD\G100 - General Safety and Phasing Plan and Notes.dwg [G-100] March 30, 2022 - 12:04pm [jdamorelli]



PHASE 7 CONSTRUCTION SAFETY AND PHASING PLAN



PHASE 8 CONSTRUCTION SAFETY AND PHASING PLAN

HORIZONTAL SCALE
1"=400'
400 0 200 400 800

PHASE 7 (BASE BID WALL/RIP-RAP REHABILITATION) NOTES:

SCHEDULE

1. THE CONTRACTOR MUST COMPLETE ALL WORK ASSOCIATED WITH THIS CONSTRUCTION PHASE WITHIN **21** CONSECUTIVE CALENDAR DAYS.
2. THIS PHASE MAY START IN THE FALL OF 2022. THIS PHASE MAY NOT RUN CONCURRENTLY WITH THE FUTURE RECONSTRUCTION OF TAXIWAY K. TAXIWAY K CONSTRUCTION IS BY OTHERS AND IS ANTICIPATED TO BE COMPLETED IN AUGUST 2022. THIS PHASE MAY NOT RUN CONCURRENTLY WITH PHASE 1 AND 2 OF THIS PROJECT.
4. THE CONTRACTOR MUST COORDINATE ALL ASSOCIATED WORK WITHIN THE AIRPORT PROPERTY LIMITS WITH THE AIRPORT. THE CONTRACTOR MUST COORDINATE WITH THE AIRPORT OPERATIONS DURING HAULING ACTIVITIES.

IMPACTS TO OPERATIONS

1. WORK WITHIN THE TOFA WILL REQUIRE MOVEMENT AREA CLOSURES. MOVEMENT AREA CLOSURES:
   - TAXIWAY A CLOSED FROM TAXIWAY F TO TAXIWAY A2
2. WORK OUTSIDE OF THE TOFA DO NOT REQUIRE THE MOVEMENT AREA CLOSURES.

GENERAL NOTES

1. SEE SHEET G-100 FOR GENERAL SAFETY AND PHASING NOTES.
2. A 'NO ENTRY' SIGN MUST BE INSTALLED ON THE LOW PROFILE BARRICADES AT THE PAVEMENT LIMITS FOR THE CONSTRUCTION PHASE. REFER TO THE G-200 SERIES OF DRAWINGS FOR 'NO ENTRY' SIGN DETAIL AND INSTALLATION REQUIREMENTS.
3. WHILE THE CONSTRUCTION AREA IS CLOSED FOR THIS PHASE, THE BARRICADES AND 'NO ENTRY' SIGN MUST REMAIN IN POSITION IN THE PROPER LOCATION AT ALL TIMES DURING THE WORK SHIFT.
4. REFER TO RSA AND TOFA NOTES ON SHEET G-100 FOR THE MOVEMENT AREA REOPENING REQUIREMENTS.
5. ALL CONSTRUCTION BARRICADES, CONSTRUCTION SIGNS, AND LIGHTED RUNWAY CLOSURE MARKERS SHALL BE INCIDENTAL TO G-004-1 MAINTENANCE AND PROTECTION OF TRAFFIC.
6. THE CONTRACTOR MUST BLANK OUT EXISTING GUIDANCE SIGNS DURING THIS PHASE. REFER TO DRAWING E-710 FOR THE SIGNS TO BE BLANKED OUT AND THE REQUIREMENTS FOR THIS WORK.
7. FOR ADDITIONAL INFORMATION ON THE WORK ASSOCIATED WITH THIS PHASE REFER TO VOLUME 3 OF THIS PROJECT.

MAJOR WORK ITEMS

1. MAJOR WORK ELEMENTS IN THIS PHASE INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
   A. INSTALLATION OF BARRICADES, 'NO ENTRY' SIGNS, AND TAXIWAY CLOSURE MARKERS AS SHOWN ON THIS SHEET
   B. RIP-RAP REHABILITATION OPERATIONS
   C. EXISTING MECHANICALLY STABILIZED EARTH WALL REPAIRS

LEGEND

- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- PRECISION OBSTACLE FREE ZONE
- GLIDE SLOPE CRITICAL AREA
- PHASE 1 - SEE SHEET G-101
- PHASE 2 - SEE SHEET G-102
- PHASE 3 - SEE SHEET G-103
- PHASES 4, 5, AND 6 - SEE SHEET G-104
- PHASES 7 AND 8 - SEE SHEET G-105
- PHASE 9 - SEE SHEET G-106
- APPROACH LIGHT SYSTEM LIGHTS
- CONSTRUCTION SIGNAGE
- CONSTRUCTION HAUL ROUTE
- CONTRACTOR STAGING AREA
- TEMPORARY SECURITY GATE
- 'NO ENTRY' SIGN
- LOW PROFILE CONSTRUCTION BARRICADES
- LIGHTED RUNWAY CLOSURE MARKER
- TAXIWAY CLOSURE MARKER
- TEMPORARY RUNWAY END LIGHTS

PHASE 8 (ADD. ALT.-3 WALL REHABILITATION / DRAINAGE IMPROVEMENTS NOTES:

SCHEDULE

1. THE CONTRACTOR MUST COMPLETE ALL WORK ASSOCIATED WITH THIS CONSTRUCTION PHASE WITHIN **65** CONSECUTIVE CALENDAR DAYS.
2. THIS PHASE MAY START IN THE FALL OF 2022. THIS PHASE MAY NOT RUN CONCURRENTLY WITH THE FUTURE RECONSTRUCTION OF TAXIWAY K. TAXIWAY K CONSTRUCTION IS BY OTHERS AND IS ANTICIPATED TO BE COMPLETED IN AUGUST 2022. THIS PHASE MAY NOT RUN CONCURRENTLY WITH PHASE 1 AND 2 OF THIS PROJECT.
4. THE CONTRACTOR MUST COORDINATE ALL ASSOCIATED WORK WITHIN THE AIRPORT PROPERTY LIMITS WITH THE AIRPORT. THE CONTRACTOR MUST COORDINATE WITH THE AIRPORT OPERATIONS DURING HAULING ACTIVITIES.

IMPACTS TO OPERATIONS

1. WORK WITHIN THE TOFA WILL REQUIRE MOVEMENT AREA CLOSURES. MOVEMENT AREA CLOSURES:
   - TAXIWAY A CLOSED FROM TAXIWAY E TO TAXIWAY A2
   - TAXIWAY F CLOSED FROM TAXIWAY A TO RUNWAY 17-35
2. WORK OUTSIDE OF THE TOFA DO NOT REQUIRE THE MOVEMENT AREA CLOSURES.

GENERAL NOTES

1. SEE SHEET G-100 FOR GENERAL SAFETY AND PHASING NOTES.
2. A 'NO ENTRY' SIGN MUST BE INSTALLED ON THE LOW PROFILE BARRICADES AT THE PAVEMENT LIMITS FOR THE CONSTRUCTION PHASE. REFER TO THE G-200 SERIES OF DRAWINGS FOR 'NO ENTRY' SIGN DETAIL AND INSTALLATION REQUIREMENTS.
3. WHILE THE CONSTRUCTION AREA IS CLOSED FOR THIS PHASE, THE BARRICADES AND 'NO ENTRY' SIGN MUST REMAIN IN POSITION IN THE PROPER LOCATION AT ALL TIMES DURING THE WORK SHIFT.
4. REFER TO RSA AND TOFA NOTES ON SHEET G-100 FOR THE MOVEMENT AREA REOPENING REQUIREMENTS.
5. ALL CONSTRUCTION BARRICADES, CONSTRUCTION SIGNS, AND LIGHTED RUNWAY CLOSURE MARKERS SHALL BE INCIDENTAL TO G-004-1 MAINTENANCE AND PROTECTION OF TRAFFIC
6. THE CONTRACTOR MUST BLANK OUT EXISTING GUIDANCE SIGNS DURING THIS PHASE. REFER TO DRAWING E-710 FOR THE SIGNS TO BE BLANKED OUT AND THE REQUIREMENTS FOR THIS WORK.
7. FOR ADDITIONAL INFORMATION ON THE WORK ASSOCIATED WITH THIS PHASE REFER TO VOLUME 3 OF THIS PROJECT.

MAJOR WORK ITEMS

1. MAJOR WORK ELEMENTS IN THIS PHASE INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
   A. INSTALLATION OF BARRICADES, 'NO ENTRY' SIGNS, AND TAXIWAY CLOSURE MARKERS AS SHOWN ON THIS SHEET
   B. STORM DRAINAGE IMPROVEMENTS
   C. EXISTING MECHANICALLY STABILIZED EARTH WALL REPAIRS

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MANCHESTER • BOSTON REGIONAL AIRPORT

REHABILITATE RUNWAY 17-35

PHASES 7 AND 8 CONSTRUCTION SAFETY AND PHASING PLAN & NOTES

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY
1	3/30/2022	ADDENDUM – 1	DJA

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JE FILE:

DRAWING NO.

G-105

REV

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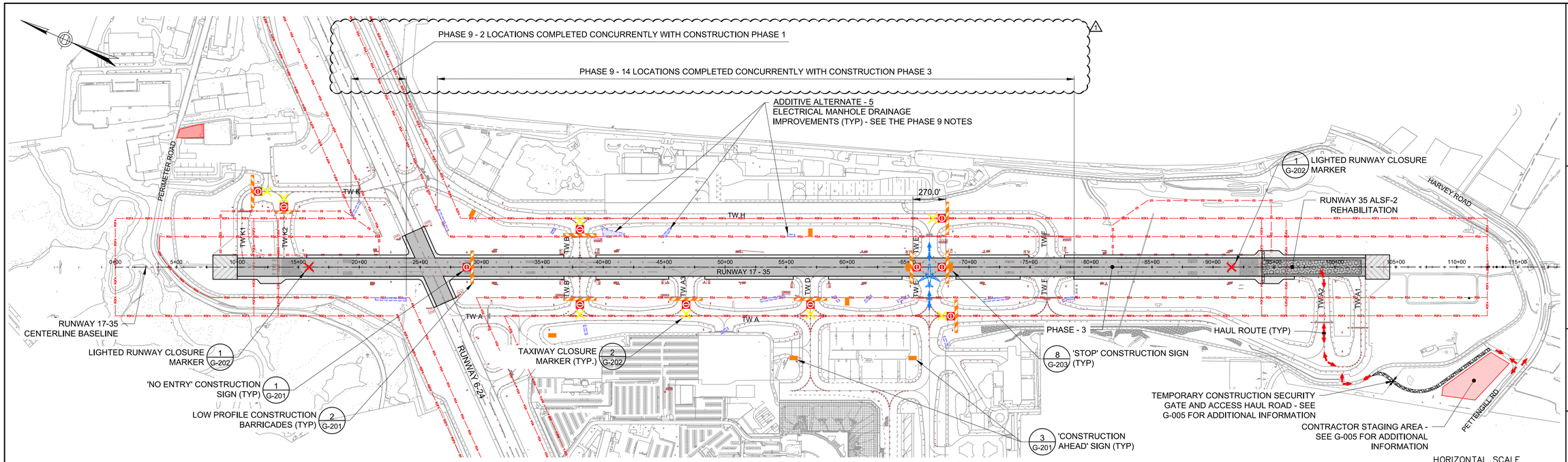
Jacobs - \\mhtfil01\job\2021\E2X89205 - MHT RW 17-35\700 CADD\G105 - Phases 7-8 CSPP.dwg [G-105] March 30, 2022 - 11:17am [damorelli]



PHASE 9 CONSTRUCTION SAFETY AND PHASING PLAN

LEGEND

- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- PRECISION OBSTACLE FREE ZONE
- GLIDE SLOPE CRITICAL AREA
- PHASE 1 - SEE SHEET G-101
- PHASE 2 - SEE SHEET G-102
- PHASE 3 - SEE SHEET G-103
- PHASES 4, 5, AND 6 - SEE SHEET G-104
- PHASES 7 AND 8 - SEE SHEET G-105
- PHASE 9 - SEE SHEET G-106
- APPROACH LIGHT SYSTEM LIGHTS
- CONSTRUCTION SIGNAGE
- CONSTRUCTION HAUL ROUTE
- CONTRACTOR STAGING AREA
- TEMPORARY SECURITY GATE
- 'NO ENTRY' SIGN
- LOW PROFILE CONSTRUCTION BARRICADES
- LIGHTED RUNWAY CLOSURE MARKER
- TAXIWAY CLOSURE MARKER
- TEMPORARY STAKE MOUNTED RUNWAY END LIGHTS
- TAXI ROUTE

PHASE 9 NOTES:

SCHEDULE

1. THE CONTRACTOR MUST COMPLETE ALL WORK ASSOCIATED WITH THIS CONSTRUCTION PHASE WITHIN **62** CONSECUTIVE CALENDAR DAYS.
2. THERE ARE 16 LOCATIONS THAT HAVE PHASE 9 ASSOCIATED WORK. WORK AT THESE LOCATIONS WILL BE CONDUCTED DURING TWO OTHER PROJECT PHASES AS FOLLOWS:
   - 2.1. TWO (2) LOCATIONS MUST RUN CONCURRENTLY WITH PHASE 1 OF CONSTRUCTION - SEE PHASE 9 CONSTRUCTION PHASING PLAN ABOVE.
   - 2.2. FOURTEEN (14) LOCATIONS MUST RUN CONCURRENTLY WITH PHASE 3 OF CONSTRUCTION - SEE PHASE 9 CONSTRUCTION PHASING PLAN ABOVE.
3. THE CONTRACTOR MUST COORDINATE ALL ASSOCIATED WORK WITHIN THE AIRPORT PROPERTY LIMITS WITH THE AIRPORT. THE CONTRACTOR MUST COORDINATE WITH AIRPORT OPERATIONS DURING HAULING ACTIVITIES.
4. DURING THIS PHASE THE CONSTRUCTION SAFETY AND PHASING SET-UP FOR PHASE 3 OF CONSTRUCTION WILL BE IN PLACE FOR THE RUNWAY WORK. DURING THE WEEKLY CONSTRUCTION MEETING THE CONTRACTOR MUST PROVIDE A WEEKLY SCHEDULE THAT OUTLINES THE SPECIFIC ELECTRICAL MANHOLES THAT ARE INTENDED TO BE WORKED ON FOR THE FOLLOWING WEEK. DURING THE WEEKLY PROJECT MEETING THE EXACT ACCESS TO THE WORK AREAS WILL BE DISCUSSED SO THAT THE PROPER ESCORTING REQUIREMENTS CAN BE IDENTIFIED AND ESTABLISHED.
5. ANY WORK THAT IS INSIDE THE TOFA OF AN ACTIVE TAXIWAY WILL REQUIRE A MOVEMENT AREA CLOSURE FOR THAT WORK.
6. BARRICADES MUST BE PLACED AROUND EACH ACTIVE WORK AREA. THE EXACT POSITIONS OF THE BARRICADES MUST BE REVIEWED AND APPROVED BY THE RPR.
7. REFER TO THE 600 SERIES OF DRAWINGS FOR THE ELECTRICAL MANHOLE DRAINAGE IMPROVEMENTS.

IMPACTS TO OPERATIONS

1. MOVEMENT AREA CLOSURES:
   - RUNWAY 17-35 CLOSED
   - TAXIWAY A CLOSED FROM TAXIWAY E TO RUNWAY 35 END
   - TAXIWAY A1 AND A2 CLOSED
   - TAXIWAY F CLOSED
   - TAXIWAY H CLOSED FROM TAXIWAY E TO RUNWAY 17-35
   - TAXIWAY D CLOSED FROM TAXIWAY A TO RUNWAY 17-35
   - TAXIWAY A3 CLOSED FROM TAXIWAY A TO RUNWAY 17-35
   - TAXIWAY E CLOSED (DURING SUB-PHASE 3 B)
   - TAXIWAY B CLOSED (DURING SUB-PHASE 3 A)
   - TAXIWAYS K1 AND K2 CLOSED

GENERAL NOTES

1. SEE SHEET G-100 FOR GENERAL SAFETY AND PHASING NOTES.
2. A 'NO ENTRY' SIGN MUST BE INSTALLED ON THE LOW PROFILE BARRICADES AT THE PAVEMENT LIMITS FOR THE CONSTRUCTION PHASE. REFER TO THE G-200 SERIES OF DRAWINGS FOR 'NO ENTRY' SIGN DETAIL AND INSTALLATION REQUIREMENTS.
3. WHILE THE CONSTRUCTION AREA IS CLOSED FOR THIS PHASE, THE BARRICADES AND 'NO ENTRY' SIGN MUST REMAIN IN POSITION IN THE PROPER LOCATION AT ALL TIMES 24 HOURS A DAY.
4. REFER TO RSA AND TOFA NOTES ON SHEET G-100 FOR THE MOVEMENT AREA REOPENING REQUIREMENTS.
5. ALL CONSTRUCTION BARRICADES, CONSTRUCTION SIGNS, AND LIGHTED RUNWAY CLOSURE MARKERS SHALL BE INCIDENTAL TO G-004-1 MAINTENANCE AND PROTECTION OF TRAFFIC.
6. THE CONTRACTOR MUST BLANK OUT EXISTING GUIDANCE SIGNS DURING THIS PHASE. REFER TO DRAWING E-710 FOR THE SIGNS TO BE BLANKED OUT AND THE REQUIREMENTS FOR THIS WORK.

MAJOR WORK ITEMS

1. MAJOR WORK ELEMENTS IN THIS PHASE INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
   - A. INSTALLATION OF BARRICADES,'NO ENTRY' SIGNS, AND TAXIWAY CLOSURE MARKERS AS SHOWN ON THIS SHEET
   - B. INSTALL REQUIRED SEDIMENT AND EROSION CONTROL MEASURES
   - C. CONDUCT THE ELECTRICAL MANHOLE DRAINAGE IMPROVEMENTS
   - D. TOPSOIL AND SEED DISTURBED AREAS

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APPROVED:	JWG

MANCHESTER • BOSTON REGIONAL AIRPORT

REHABILITATE RUNWAY 17-35

PHASE 9 CONSTRUCTION SAFETY AND PHASING PLAN AND NOTES

REVISIONS

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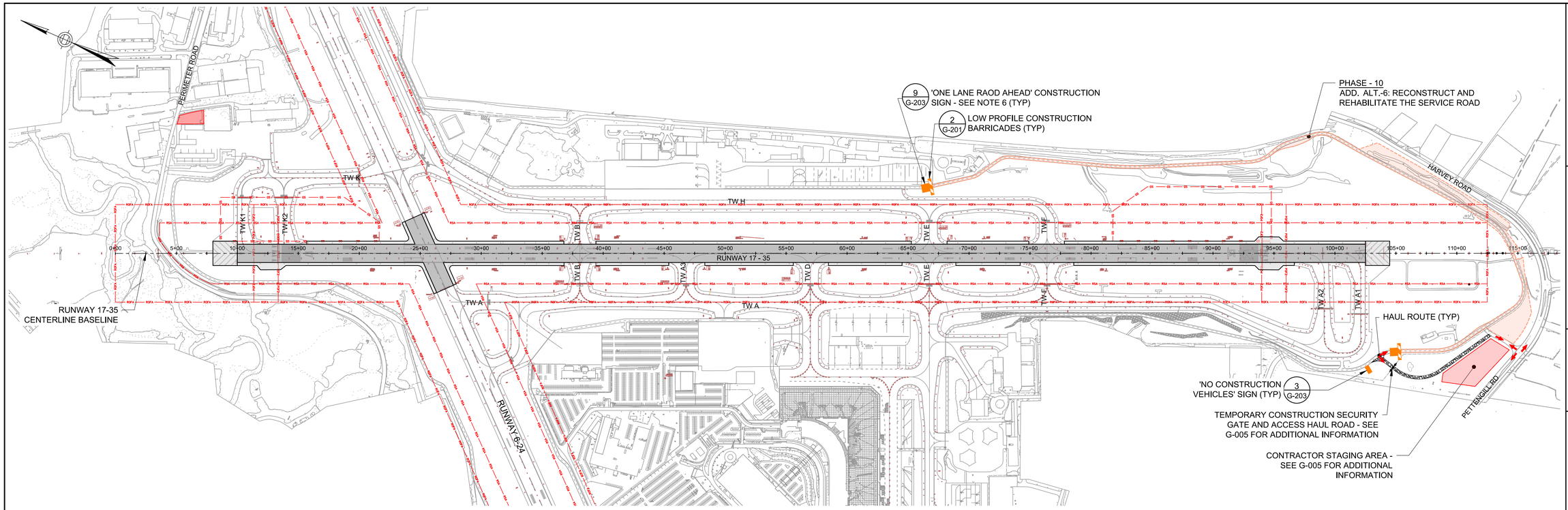

PHASE 10 CONSTRUCTION SAFETY AND PHASING PLAN

HORIZONTAL SCALE
1"=400'
400 0 200 400 800

LEGEND

- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- PRECISION OBSTACLE FREE ZONE
- GLIDE SLOPE CRITICAL AREA
- PHASE 1 - SEE SHEET G-101
- PHASE 2 - SEE SHEET G-102
- PHASE 3 - SEE SHEET G-103
- PHASES 4, 5, AND 6 - SEE SHEET G-104
- PHASES 7 AND 8 - SEE SHEET G-105
- PHASE 9 - SEE SHEET G-106
- PHASE 10 - SEE SHEET G-107
- APPROACH LIGHT SYSTEM LIGHTS
- CONSTRUCTION SIGNAGE
- CONSTRUCTION HAUL ROUTE
- CONTRACTOR STAGING AREA
- TEMPORARY SECURITY GATE
- 'NO ENTRY' SIGN
- LOW PROFILE CONSTRUCTION BARRICADES
- LIGHTED RUNWAY CLOSURE MARKER
- TAXIWAY CLOSURE MARKER
- TEMPORARY RUNWAY END LIGHTS

PHASE 10 (ADDITIVE ALTERNATE - 6: RECONSTRUCT AND REHABILITATE THE SERVICE ROAD) NOTES:

SCHEDULE

1. THE CONTRACTOR MUST COMPLETE ALL WORK ASSOCIATED WITH THIS CONSTRUCTION PHASE WITHIN **21** CONSECUTIVE CALENDAR DAYS.
2. THIS PHASE MAY START IN THE FALL OF 2022. THIS PHASE MAY NOT RUN CONCURRENTLY WITH THE FUTURE RECONSTRUCTION OF TAXIWAY K. TAXIWAY K CONSTRUCTION IS BY OTHERS AND IS ANTICIPATED TO BE COMPLETED IN AUGUST 2022. THIS PHASE MAY NOT RUN FROM MAY 1ST THROUGH JULY 31ST - SEE NOTE 3 FOR ADDITIONAL INFORMATION. THIS PHASE MAY NOT RUN CONCURRENTLY WITH PHASE 1 AND 2 OF THIS PROJECT.
3. PER THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT (NHF&G) AND RULE ENV-WT 311.06(g), TO MINIMIZE IMPACTS TO GRASSLAND BIRDS, NO WORK, INCLUDING STAGING MATERIALS OR DRIVING, IN GRASSY AREAS SHALL OCCUR DURING THE BREEDING SEASON FROM MAY 1ST THROUGH JULY 31ST.
4. THE CONTRACTOR MUST COORDINATE ALL ASSOCIATED WORK WITHIN THE AIRPORT PROPERTY LIMITS WITH THE AIRPORT. THE CONTRACTOR MUST COORDINATE WITH THE AIRPORT OPERATIONS DURING HAULING ACTIVITIES.

IMPACTS TO OPERATIONS

1. WORK WITHIN THE ROFA IS REQUIRED FOR THIS CONSTRUCTION PHASE. CONTRACTOR MUST MEET THE SPECIFICATIONS OF FAA ADVISORY CIRCULAR 150/5370-2G - OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION FOR ALL WORK WITHIN THE ROFA.
2. ALL CONSTRUCTION PERSONNEL, EQUIPMENT, VEHICLES, AND MATERIALS MUST BE REMOVED FROM THE ROFA WHEN NOT IN USE.
3. NO MATERIAL STOCKPILING IS PERMITTED WITHIN THE ROFA.

GENERAL NOTES

1. SEE SHEET G-100 FOR GENERAL SAFETY AND PHASING NOTES.
2. LOW PROFILE BARRICADES AND A 'NO ENTRY' SIGN MUST BE INSTALLED AT THE LIMITS OF WORK OF THE EXISTING AIRPORT SERVICE ROADWAY. REFER TO THE G-200 SERIES OF DRAWINGS FOR 'NO ENTRY' SIGN DETAIL AND INSTALLATION REQUIREMENTS.
3. WHILE THE CONSTRUCTION AREA IS CLOSED FOR THIS PHASE, THE BARRICADES AND 'NO ENTRY' SIGN MUST REMAIN IN POSITION IN THE PROPER LOCATION AT ALL TIMES DURING THIS CONSTRUCTION PHASE.
4. ALL CONSTRUCTION BARRICADES, CONSTRUCTION SIGNS, AND LIGHTED RUNWAY CLOSURE MARKERS SHALL BE INCIDENTAL TO G-004-1 MAINTENANCE AND PROTECTION OF TRAFFIC.
5. FOR ADDITIONAL INFORMATION ON THE WORK ASSOCIATED WITH THIS PHASE REFER TO VOLUME 4 OF THIS PROJECT.
6. TO MAINTAIN AIRPORT OPERATIONS DURING CONSTRUCTION THE CONTRACTOR MUST KEEP A MINIMUM 10-FOOT WIDE ACCESS ALONG THE SERVICE ROAD AT ALL TIMES. THIS ACCESS MUST BE SMOOTH COMPACTED GRAVEL. THE CONTRACTOR MUST PROVIDE A SAFE TRAVEL LANE ADJACENT TO ANY ACTIVE CONSTRUCTION. WHEN NECESSARY THE CONTRACTOR MUST IDENTIFY THE SAFE TRAVEL LANE BY THE PLACEMENT OF TRAFFIC CONES. PROVIDE ONE LANE ROAD SIGNAGE AT EACH END OF THE ROAD. MAINTAIN EACH END OF THE ROAD WITHIN LINE OF SIGHT OF EACH OTHER DURING NON-WORKING HOURS FOR VEHICLES TO NEGOTIATE THE ENTRY ON TO THE SERVICE ROAD. DURING WORKING HOURS THE AIRPORT ESCORTS WILL NOTIFY THE CONTRACTOR OF VEHICLE MOVEMENTS AND CONTROL MOVEMENTS ON THE ONE-LANE ROAD.

MAJOR WORK ITEMS

1. MAJOR WORK ELEMENTS IN THIS PHASE INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
   - A. INSTALLATION OF BARRICADES AND CONSTRUCTION SIGNS
   - B. INSTALL TEMPORARY EROSION CONTROL MEASURES
   - C. INSTALL WATER DIVERSION STRUCTURES
   - D. EXCAVATE AND CONSTRUCT NEW UNNAMED STREAM AND ASSOCIATED STORM DRAINAGE STRUCTURES
   - E. REHABILITATE AND MARK A PORTION OF THE EXISTING AIRPORT SERVICE ROAD
   - F. INSTALL LOAM, SEED, AND REQUIRED EROSION CONTROL MATTING
   - G. INSTALL NEW AIRPORT SECURITY FENCING WITH WILDLIFE DETERRENT

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MANCHESTER • BOSTON REGIONAL AIRPORT
REHABILITATE RUNWAY 17-35

PHASE 10 CONSTRUCTION SAFETY AND PHASING PLAN & NOTES

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY
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JE FILE:

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G-107
REV 1

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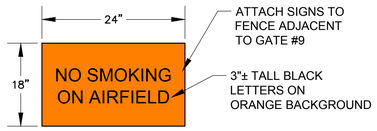
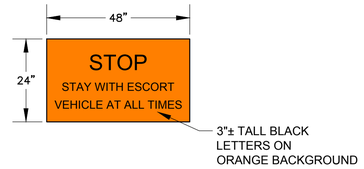


CONSTRUCTION SIGN GENERAL NOTES:

1. CONTRACTOR TO FURNISH, INSTALL, SECURE AND MAINTAIN SIGNS.
2. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM G-004-1.

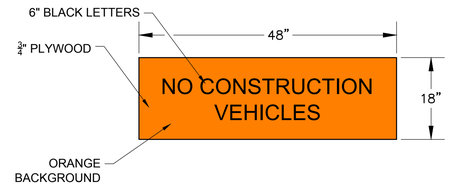
1 NO SMOKING SIGN DETAIL
N.T.S.



CONSTRUCTION SIGN GENERAL NOTES:

1. CONTRACTOR TO FURNISH, INSTALL, SECURE AND MAINTAIN SIGNS.
2. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM G-004-1.

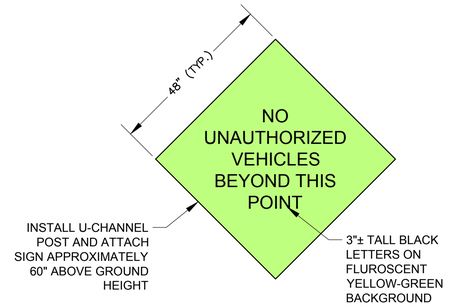
2 TEMPORARY HAUL ROAD STOP SIGN DETAIL
N.T.S.



CONSTRUCTION SIGN GENERAL NOTES:

1. CONTRACTOR TO FURNISH, INSTALL, SECURE AND MAINTAIN SIGNS.
2. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM G-004-1.

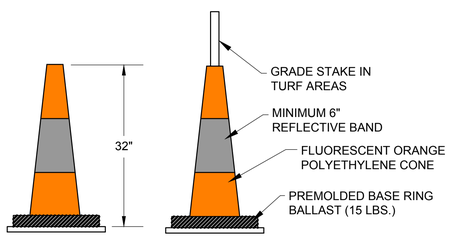
3 NO CONSTRUCTION VEHICLES SIGN DETAIL
N.T.S.



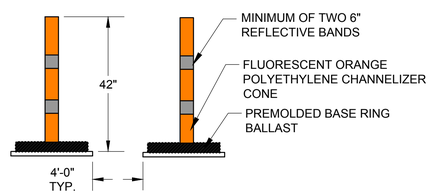
CONSTRUCTION SIGN GENERAL NOTES:

1. CONTRACTOR TO FURNISH, INSTALL, SECURE AND MAINTAIN SIGNS.
2. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM G-004-1.

4 ENTRANCE SIGN DETAIL
N.T.S.



SAFETY CONE (FOR TURF AREAS)

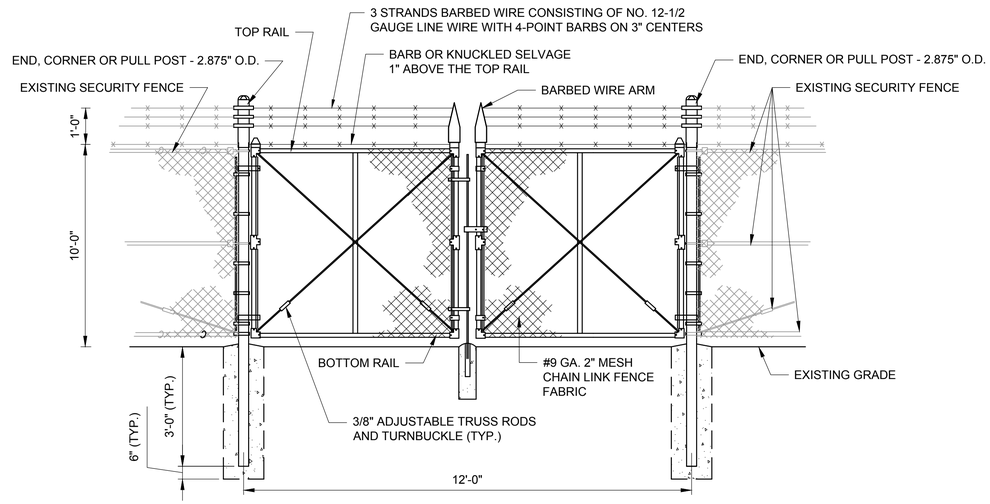


CHANNELIZER CONE (FOR PAVED AREAS)

TRAFFIC & SAFETY CONE NOTES:

1. CONTRACTOR TO SECURE AND MAINTAIN SAFETY & TRAFFIC CONES.
2. CONES & BALLAST TO BE PROVIDED BY CONTRACTOR AND WILL REMAIN PROPERTY OF THE CONTRACTOR AFTER THE PROJECT IS COMPLETED.
3. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM G-004-1.

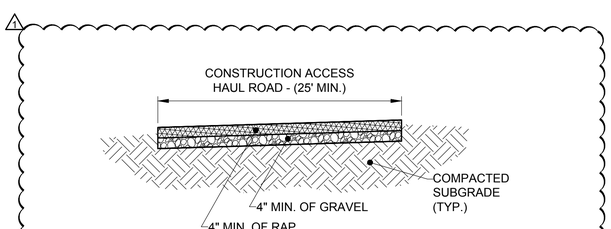
5 TRAFFIC & SAFETY CONE DETAIL
N.T.S.



GENERAL SECURITY FENCE NOTES:

1. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM M-001-1.
2. THE MAXIMUM OPENING BENEATH THE GATE IS 5 INCHES. THE MAXIMUM GAPS IN ANY PART OF THE THE FENCE GATE IS 4".

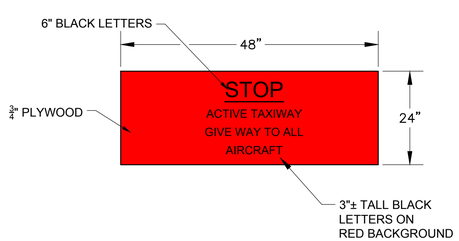
6 TEMPORARY 12' DOUBLE SWING SECURITY GATE
N.T.S.



NOTE:

1. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM M-001-1.

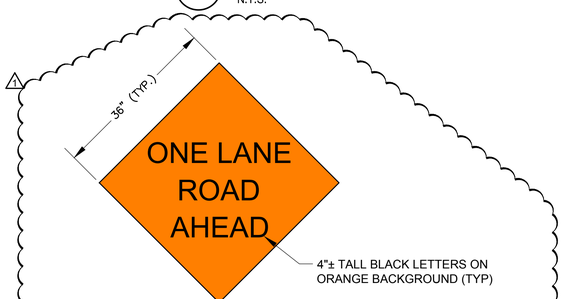
7 TEMPORARY CONSTRUCTION HAUL ROAD
N.T.S.



'STOP' SIGN GENERAL NOTES:

1. CONTRACTOR TO FURNISH, INSTALL, SECURE AND MAINTAIN SIGNS.
2. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM G-004-1
3. 'STOP' SIGNS SHALL BE MOUNTED TO THE BARRICADES IN ACCORDANCE WITH ENGINEERING BRIEF 93, GUIDANCE FOR THE ASSEMBLY AND INSTALLATION OF TEMPORARY CONSTRUCTION SIGNS.

8 'STOP' SIGN AT RUNWAY CROSSINGS SIGN DETAIL
N.T.S.



CONSTRUCTION SIGN GENERAL NOTES:

1. CONTRACTOR TO FURNISH, INSTALL, SECURE AND MAINTAIN SIGNS.
2. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM G-004-1.

9 'ONE LANE ROAD AHEAD' SIGN DETAIL
N.T.S.

GENERAL CONSTRUCTION SIGNAGE NOTES:

1. SIGN PANELS MUST BE CONSTRUCTED OF MATERIALS OF DURABILITY APPROPRIATE FOR THE LENGTH OF TIME THE SIGN IS TO BE USED MEETING THE REQUIREMENTS OF THE MANUFACTURER OF THE RETROREFLECTIVE SHEETING TO BE USED.
2. LETTERING MUST BE APPLIED BY DIRECT APPLIED CHARACTER OR SCREEN PROCESS.
3. BACKGROUND COLOR OF SIGNS MUST BE RED, MEETING THE REQUIREMENTS OF ASTM D 4956, "SPECIFICATION FOR RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL", FOR TYPE III OR TYPE IV SHEETING.
4. COST OF FURNISHING AND MAINTAINING THIS ITEM SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT COST FOR ITEM G-004-1.

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REHABILITATE RUNWAY 17-35

CONSTRUCTION SAFETY AND PHASING DETAILS – 3

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY
1	3/30/2022	ADDENDUM – 1	DJA

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MANCHESTER-BOSTON REGIONAL AIRPORT (MHT)

MANCHESTER, NEW HAMPSHIRE

CONSTRUCTION PLANS FOR

REHABILITATE RUNWAY 17-35

AIP No. 3-33-0011-XXX-2022
CITY BID NO. FY22-805-49

VOLUME 4

RECONSTUCT AND REHABILITATE A PORTION OF THE SERVICE ROAD

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Drawing Number	Sheet Title	Sheet #
G1.0	TITLE SHEET	1
G1.1	GENERAL PLAN	2
SV1.1	EXISTING CONDITIONS PLAN SHEET 1 OF 4	3
SV1.2	EXISTING CONDITIONS PLAN SHEET 2 OF 4	4
SV1.3	EXISTING CONDITIONS PLAN SHEET 3 OF 4	5
SV1.4	EXISTING CONDITIONS PLAN SHEET 4 OF 4	6
GE1.1	GEOMETRY SHEET 1 OF 4	7
GE1.2	GEOMETRY SHEET 2 OF 4	8
GE1.3	GEOMETRY SHEET 3 OF 4	9
GE1.4	GEOMETRY SHEET 4 OF 4	10
GE2.1	TYPICAL SECTIONS AND PAVEMENT DETAILS	11
GD1.1	GRADING AND DRAINAGE PLAN SHEET 1 OF 2	12
GD1.2	GRADING AND DRAINAGE PLAN SHEET 2 OF 2	13
PR1.1	PROPOSED PROFILE AND ALIGNMENT OF UNNAMED STREAM	14
WI1.1	WETLAND IMPACT PLAN SHEET 1 OF 2	15
WI1.2	WETLAND IMPACT PLAN SHEET 2 OF 2	16
W2.1	WETLAND IMPACT DETAILS	17
ER1.1	EROSION CONTROL DETAILS SHEET 1 OF 2	18
ER1.2	EROSION CONTROL DETAILS SHEET 2 OF 2	19
ER2.1	EROSION AND SEDIMENT CONTROL NOTES	20
FE1.1	FENCE DETAILS	21
XS1.1	SERVICE ROAD CROSS SECTIONS SHEET 1 OF 12	22
XS1.2	SERVICE ROAD CROSS SECTIONS SHEET 2 OF 12	23
XS1.3	SERVICE ROAD CROSS SECTIONS SHEET 3 OF 12	24
XS1.4	SERVICE ROAD CROSS SECTIONS SHEET 4 OF 12	25
XS1.5	SERVICE ROAD CROSS SECTIONS SHEET 5 OF 12	26
XS1.6	SERVICE ROAD CROSS SECTIONS SHEET 6 OF 12	27
XS1.7	SERVICE ROAD CROSS SECTIONS SHEET 7 OF 12	28
XS1.8	SERVICE ROAD CROSS SECTIONS SHEET 8 OF 12	29
XS1.9	SERVICE ROAD CROSS SECTIONS SHEET 9 OF 12	30
XS1.10	SERVICE ROAD CROSS SECTIONS SHEET 10 OF 12	31
XS1.11	SERVICE ROAD CROSS SECTIONS SHEET 11 OF 12	32
XS1.12	SERVICE ROAD CROSS SECTIONS SHEET 12 OF 12	33
B1.1	BORING LOGS	34

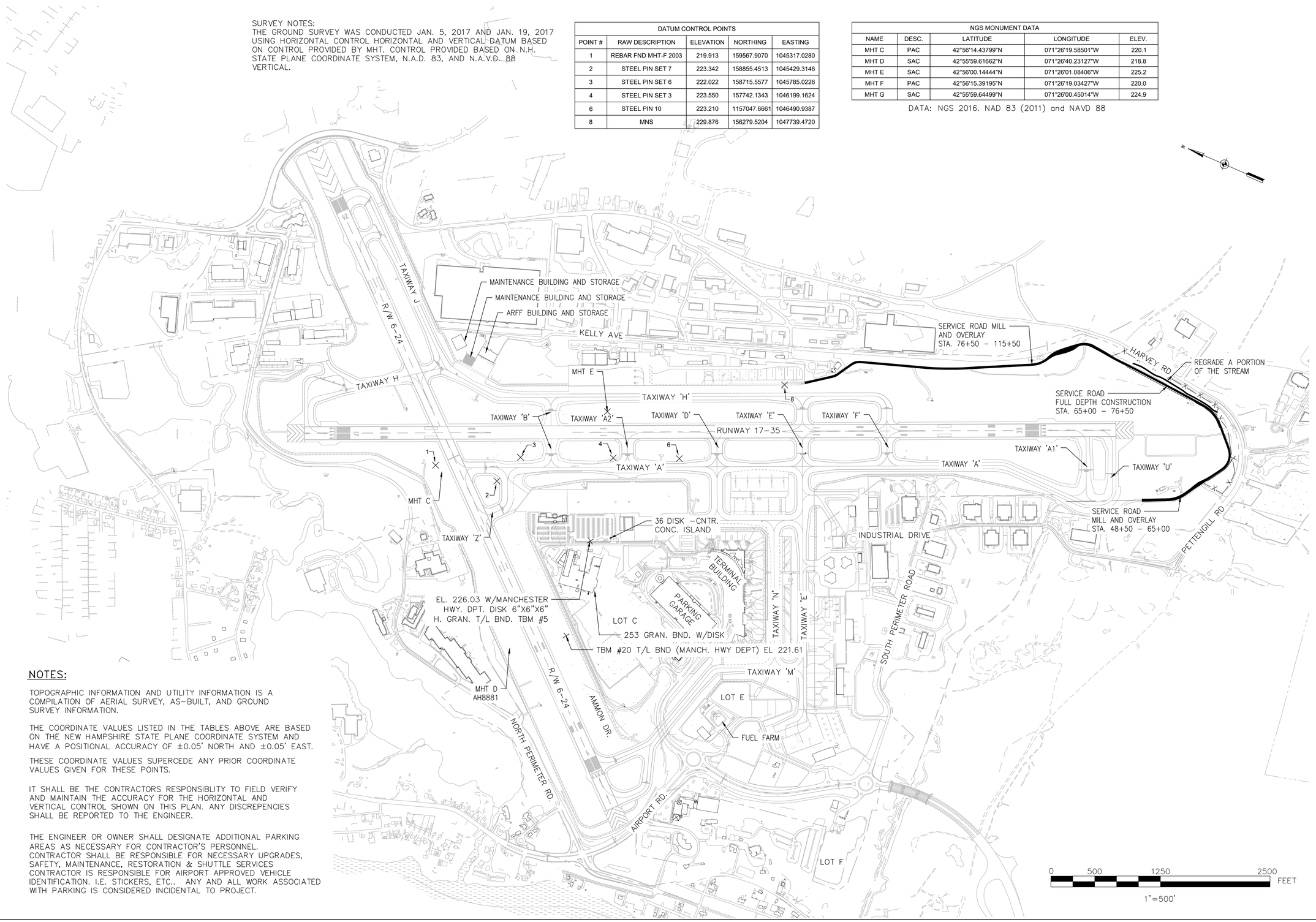
STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER

SURVEY NOTES:
THE GROUND SURVEY WAS CONDUCTED JAN. 5, 2017 AND JAN. 19, 2017 USING HORIZONTAL CONTROL HORIZONTAL AND VERTICAL DATUM BASED ON CONTROL PROVIDED BY MHT. CONTROL PROVIDED BASED ON N.H. STATE PLANE COORDINATE SYSTEM, N.A.D. 83, AND N.A.V.D. 88 VERTICAL.

DATUM CONTROL POINTS				
POINT #	RAW DESCRIPTION	ELEVATION	NORTHING	EASTING
1	REBAR FND MHT-F 2003	219.913	159567.9070	1045317.0280
2	STEEL PIN SET 7	223.342	158855.4513	1045429.3146
3	STEEL PIN SET 6	222.022	158715.5577	1045785.0226
4	STEEL PIN SET 3	223.550	157742.1343	1046199.1624
6	STEEL PIN 10	223.210	1157047.6661	1046490.9387
8	MNS	229.876	156279.5204	1047739.4720

NGS MONUMENT DATA				
NAME	DESC.	LATITUDE	LONGITUDE	ELEV.
MHT C	PAC	42°56'14.43799"N	071°26'19.58501"W	220.1
MHT D	SAC	42°55'59.61662"N	071°26'40.23127"W	218.8
MHT E	SAC	42°56'00.14444"N	071°26'01.08406"W	225.2
MHT F	PAC	42°56'15.39195"N	071°26'19.03427"W	220.0
MHT G	SAC	42°55'59.64499"N	071°26'00.45014"W	224.9

DATA: NGS 2016. NAD 83 (2011) and NAVD 88



NOTES:

TOPOGRAPHIC INFORMATION AND UTILITY INFORMATION IS A COMPILATION OF AERIAL SURVEY, AS-BUILT, AND GROUND SURVEY INFORMATION.

THE COORDINATE VALUES LISTED IN THE TABLES ABOVE ARE BASED ON THE NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM AND HAVE A POSITIONAL ACCURACY OF ±0.05' NORTH AND ±0.05' EAST.

THESE COORDINATE VALUES SUPERCEDE ANY PRIOR COORDINATE VALUES GIVEN FOR THESE POINTS.

IT SHALL BE THE CONTRACTORS RESPONSIBLITY TO FIELD VERIFY AND MAINTAIN THE ACCURACY FOR THE HORIZONTAL AND VERTICAL CONTROL SHOWN ON THIS PLAN. ANY DISCREPENCIES SHALL BE REPORTED TO THE ENGINEER.

THE ENGINEER OR OWNER SHALL DESIGNATE ADDITIONAL PARKING AREAS AS NECESSARY FOR CONTRACTOR'S PERSONNEL. CONTRACTOR SHALL BE RESPONSIBLE FOR NECESSARY UPGRADES, SAFETY, MAINTENANCE, RESTORATION & SHUTTLE SERVICES CONTRACTOR IS RESPONSIBLE FOR AIRPORT APPROVED VEHICLE IDENTIFICATION. I.E. STICKERS, ETC.. ANY AND ALL WORK ASSOCIATED WITH PARKING IS CONSIDERED INCIDENTAL TO PROJECT.

ENGINEER'S SEAL
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SUZANNE L. SHEPPARD
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3/24/2022

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CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE
Manchester-Boston REGIONAL AIRPORT

MANCHESTER-BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

GENERAL PLAN

DATE: MARCH 2022
SCALE: 1"=500'

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

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PROJ. No.: 030089.00
FILE: MHT-G101
AIP No.: 3-33-0011-XXX-2022

DRAWING NO.
G1.1

SHEET 2 OF 34
REV

MATCHLINE – SEE SHEET SV1.2

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JURISDICTIONAL WETLANDS WERE DELINEATED BY A CERTIFIED WETLAND SCIENTIST SEPARATELY FROM THE SURVEY AND CAN BE FOUND ON DWG NO WI1.1 AND WITHIN THE WETLAND REPORT.

DRAINAGE TABLE

STRUCTURE	RIM EL.	INV. IN	INV. IN	INV. OUT	SUMP EL.
CB 1	229.4'	18" RCP (N) EL. 224.6'		18" RCP (S) EL. 224.6'	EL. 221.4'
CB 2	227.5'	24" RCP (E) EL. 223.8'		24" RCP (E) EL. 223.4'	EL. 220.9'
CB 3	229.5'			15" RCP (E) EL. 224.7'	EL. 221.5'
CB 4	225.9'				EL. 200.6'±
CB 5	230.0'			15" RCP (E) EL. 225.4'	EL. 222.3'
CB 6	229.1'	12" RCP (E) EL. 224.7'		15" RCP (S) EL. 224.6'	EL. 221.2'
CB 7	228.0'	15" RCP (E) EL. 221.9'		15" RCP (E) EL. 221.9'	*
CB 8	235.5'	12" RCP (SW) EL. 230.8'		15" RCP (E) EL. 228.5'	EL. 226.2'
CB 9	230.4'	18" RCP (NW) EL. 225.7'		18" RCP (SE) EL. 225.6	EL. 224.4'
CB 10	270.0'			12" HDPE (E) EL. 265.8'	EL. 263.5'
CB 11	230.7'	24" RCP (S) EL. 222.9'		24" RCP (N) EL. 222.8'	EL. 220.3±
CB 12	247.2'	12" RCP (W) EL. 243.4		12" HDPE (NE) EL. 243.3	EL. 243.1'
CB 13	259.1'	12" HDPE (NE) EL. 255.3'	36" HDPE (S) EL. 250.4'	24" RCP (NW) EL. 245.0'	EL. 243.1'±

*COULD NOT OPEN STRUCTURE, INFORMATION MAY BE INCOMPLETE

DRAINAGE TABLE

STRUCTURE	RIM EL.	INV. IN	INV. IN	INV. OUT	SUMP EL.
DMH 1	229.6'	24" HDPE (N) EL. 222.8'		24" HDPE (S) EL. 222.6'	EL. 222.1'
DMH 2	230.7'	24" HDPE (N) EL. 223.8'		24" HDPE (S) EL. 223.7'	EL. 223.4'
DMH 3	231.9'	24" RCP (N) EL. 223.2'		24" RCP (S) EL. 223.1'	EL. 222.8'
DMH 4	232.7'	4" PVC (N) EL. 224.8'	24" RCP (W) EL. 223.3'	24" RCP (SE) EL. 223.2'	EL. 222.7'
DMH 5	253.9'	24" RCP (SE) EL. 243.0'		24" RCP (NW) EL. 242.9'	EL. 242.1'

SEWER TABLE

STRUCTURE	RIM EL.	INV. IN	INV. OUT
SMH A31	242.9'	18" CLAY (E) EL. 232.2'	18" CLAY (E) EL. 232.1'
SMH 1	248.3'	18" PVC (E) EL. 231.1'	18" PVC (N) EL. 230.9'
SMH 2	235.9'	18" PVC (S) EL. 226.0'	24" CLAY (N) EL. 225.7'
SMH 3	240.5'	24" CLAY (S) EL. 220.8'	24" CLAY (N) EL. 220.8'
SMH 4	231.4'	24" CLAY (S) EL. 216.4'	24" CLAY (N) EL. 216.2'
SMH 5	223.4'	24" CLAY (S) EL. 207.2'	24" CLAY (N) EL. 207.0'
SMH 6	223.1'	18" PVC (N) EL. 207.0'	18" PVC (S) EL. 207.0'
SMH 7	225.7'	18" PVC (N) EL. 208.3'	18" PVC (S) EL. 208.3'
SMH 8	226.5'	18" PVC (N) EL. 208.5	18" PVC (S) EL. 208.4'
SMH 9	231.7'	18" PVC (N) EL. 209.7'	18" PVC (S) EL. 209.6'
SMH 10	235.6'	18" PVC (N) EL. 211.5'	18" PVC (S) EL. 211.4'
SMH 11	230.8'	18" PVC (N) EL. 212.8'	18" PVC (S) EL. 212.7'

DRAWING NOTES

1) THIS PLAN DEPICTS FIELD EVIDENCE AS LAST OBSERVED BY PROMISED LAND SURVEY, LLC (PLS) IN SEPTEMBER OF 2019.
2) HORIZONTAL DATUM IS REFERENCED TO NH NAD83 – PER DIGITAL DRAWING RECIEVED FROM HOYLE, TANNER, ASSOC., INC. FROM AN E.C. MITCHELL SURVEY OF 2017.
3) VERTICAL DATUM IS NAVD88 – PER DIGITAL DRAWING RECIEVED FROM HOYLE, TANNER, ASSOC., INC. FROM AN E.C. MITCHELL SURVEY OF 2017.
4) UNDERGROUND UTILITIES, IF SHOWN, ARE APPROXIMATE AND ARE BASED ON OBSERVED FIELD EVIDENCE. ADDITIONAL UNDERGROUND UTILITIES MAY EXIST. CONTACT DIG SAFE (811) PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITY.
5) RIGHT OF WAY AND BOUNDARY LINE INFORMATION, IF SHOWN HEREON, IS APPROXIMATE AND IS BASED ON FIELD EVIDENCE IN CONJUNCTION WITH PLAN INFORMATION OBTAINED FROM THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. AS SUCH, THIS PLAN DOES NOT REPRESENT A BOUNDARY SURVEY.
6) BOUNDARY MONUMENTS, AS SHOWN, SHOULD NOT BE UTILIZED FOR VERTICAL CONTROL; VERTICAL CONTROL HAS BEEN ESTABLISHED/PROVIDED.
7) THE SURFACE AND FAULT LINES GENERATED/PROVIDED BY PLS REPRESENT THE SURFACE MODEL INTENDED FOR USE. THIS SURFACE TAKES INTO ACCOUNT THOSE POINTS WHICH SHOULD NOT BE UTILIZED FOR VERTICAL LOCATION AND SITE FAULT LINES. AS SUCH, ANY SURFACE GENERATED BEYOND WHAT HAS BEEN PROVIDED IS AT THE DISCRETION OF THE CREATOR AND PLS ASSUMES NO RESPONSIBILITY FOR ITS CREATION OR USAGE.
8) IF THERE APPEARS TO BE ANY DISCREPANCIES IN HORIZONTAL OR VERTICAL CONTROL IT IS THE DUTY OF THE CONTRACTOR/DESIGNER TO NOTIFY PLS IN ORDER TO DETERMINE THE BEST SOLUTION. ANY PROGRESS IN SITE WORK WITHOUT SEEKING RESOLUTION TO SAID ISSUES IS NOT THE RESPONSIBILITY OF PLS.
8) IF THERE APPEARS TO BE ANY DISCREPANCIES IN INVERT INFORMATION WITHIN DRAINAGE, SEWER, OR OTHER STRUCTURES IT IS THE DUTY OF THE CONTRACTOR/DESIGNER TO IMMEDIATELY NOTIFY PLS IN ORDER TO DETERMINE THE BEST SOLUTION. ANY PROGRESS IN OR ON SITE WORK WITHOUT SEEKING IMMEDIATE RESOLUTION TO SAID ISSUES IS NOT THE RESPONSIBILITY OF PLS.
9) DUE TO THE UNSECURED USE OF ELECTRONIC FILES AND THE INABILITY OF PLS TO ESTABLISH CONTROLS OVER THEIR USE, PLS ASSUMES NO RESPONSIBILITY FOR ANY CONSEQUENCES ARISING OUT OF THE USE OF THE DATA. IT IS THE SOLE RESPONSIBILITY OF THE RECIPIENT TO CHECK THE VALIDITY OF ALL INFORMATION CONTAINED HEREIN. IF SIGNED AND SEALED DRAWINGS ARE PROVIDED AS PART OF THIS SURVEY, THE RECIPIENT(S) SHALL AT ALL TIMES REFER TO SUCH SIGNED AND SEALED DRAWINGS DURING ALL PHASES OF THE PROJECT UNLESS OTHERWISE DIRECTED, OR UPATED DRAWINGS HAVE BEEN PROVIDED. THE RECIPIENT SHALL ASSUME ALL RISKS AND LIABILITIES RESULTING FROM THE USE OF THIS DATA, AND THE RECIPIENT AGREE(S) TO WAIVE ANY AND ALL CLAIMS AND LIABILITY AGAINST PLS AND ITS SUB CONSULTANTS RESULTING IN ANY WAY FROM THE USE OF THE ELECTRONIC FILES.
10) USE OF THIS DRAWING & INFORMATION IS TO BE CONSTRUED AS ACCEPTANCE OF THE TERMS AND CONDITIONS AS INTENDED ABOVE.

0 50 125 250 FEET

ENGINEER'S SEAL

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DESIGNED BY	DRAWN BY	CHECKED BY
JCC	RPH	SLS

CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER–BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

EXISTING CONDITIONS PLAN
SHEET 1 OF 4

DATE: MARCH 2022

SCALE: AS SHOWN

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

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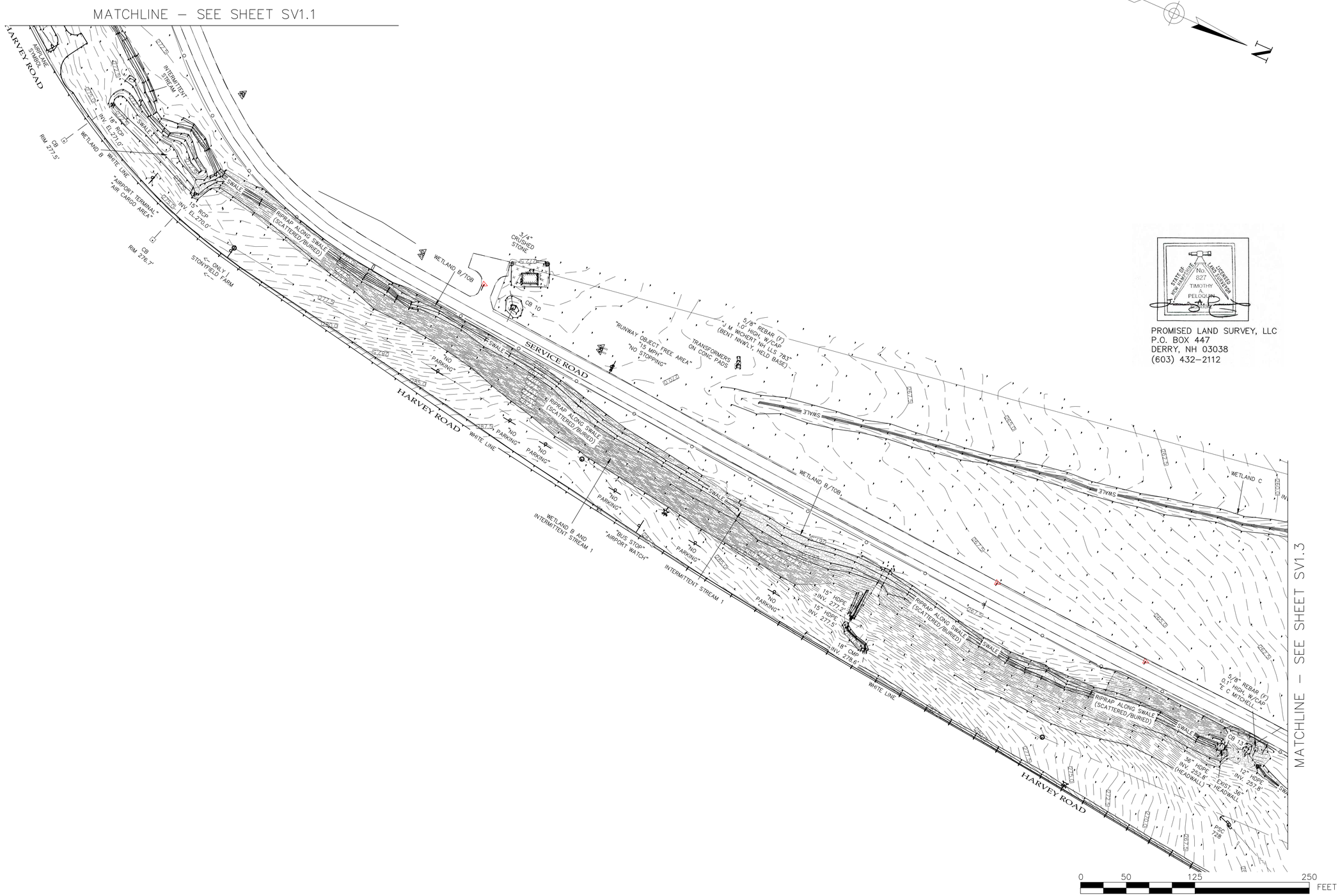
PROJ. No.: 030089.00
FILE: MHT–SV101
AIP No.: 3–33–0011–XXX–2022

DRAWING NO.
SV1.1

SHEET 3 OF 34
REV



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(603) 432–2112

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EXISTING CONDITIONS PLAN
SHEET 2 OF 4

SCALE: AS SHOWN

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SHEET 4 OF 34

REV

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0 50 125 250 FEET

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SHEET 3 OF 4

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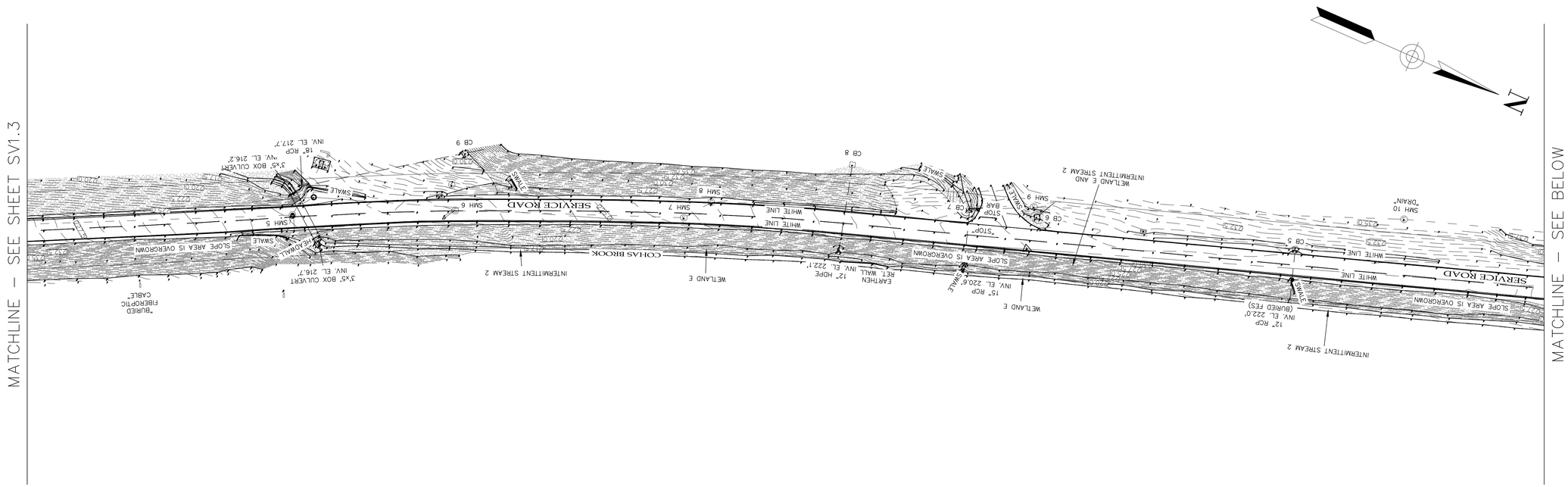
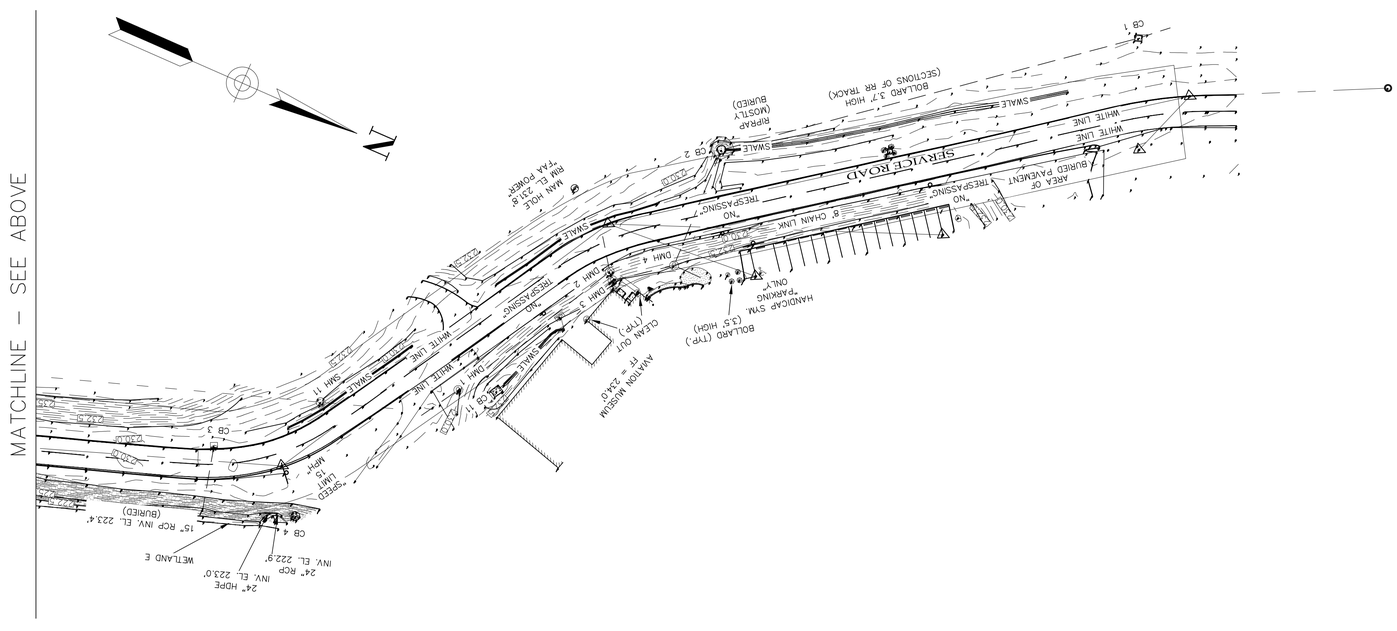
SV1.3

SHEET 5 OF 34

REV





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EXISTING CONDITIONS PLAN
SHEET 4 OF 4

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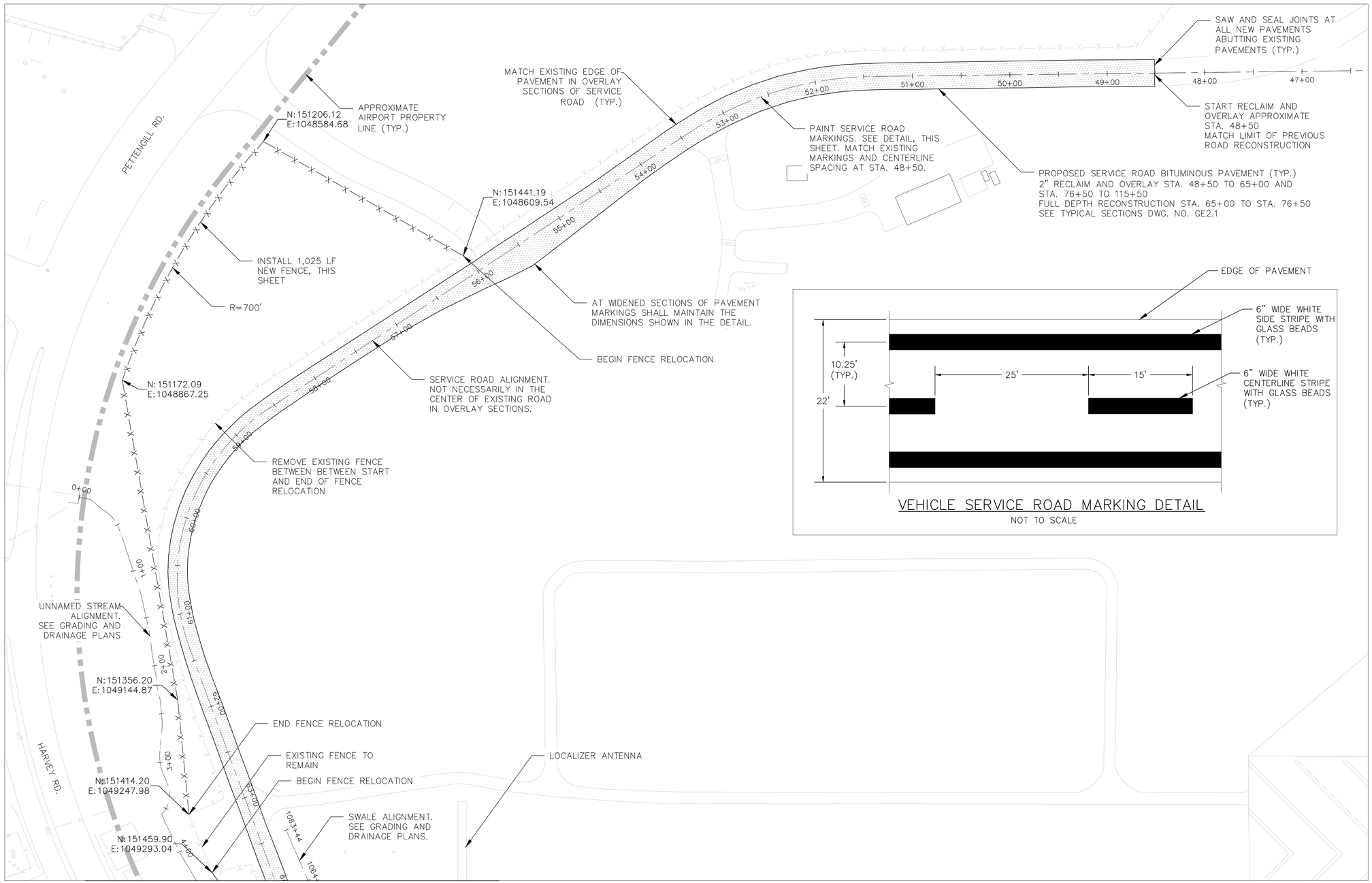
SV1.4

SHEET 6 OF 34 REV



VEHICLE SERVICE ROAD MARKING DETAIL

NOT TO SCALE

0 50 125 250 FEET

1"=50'

ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER

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GEOMETRY SHEET 1 OF 4

SCALE: AS SHOWN

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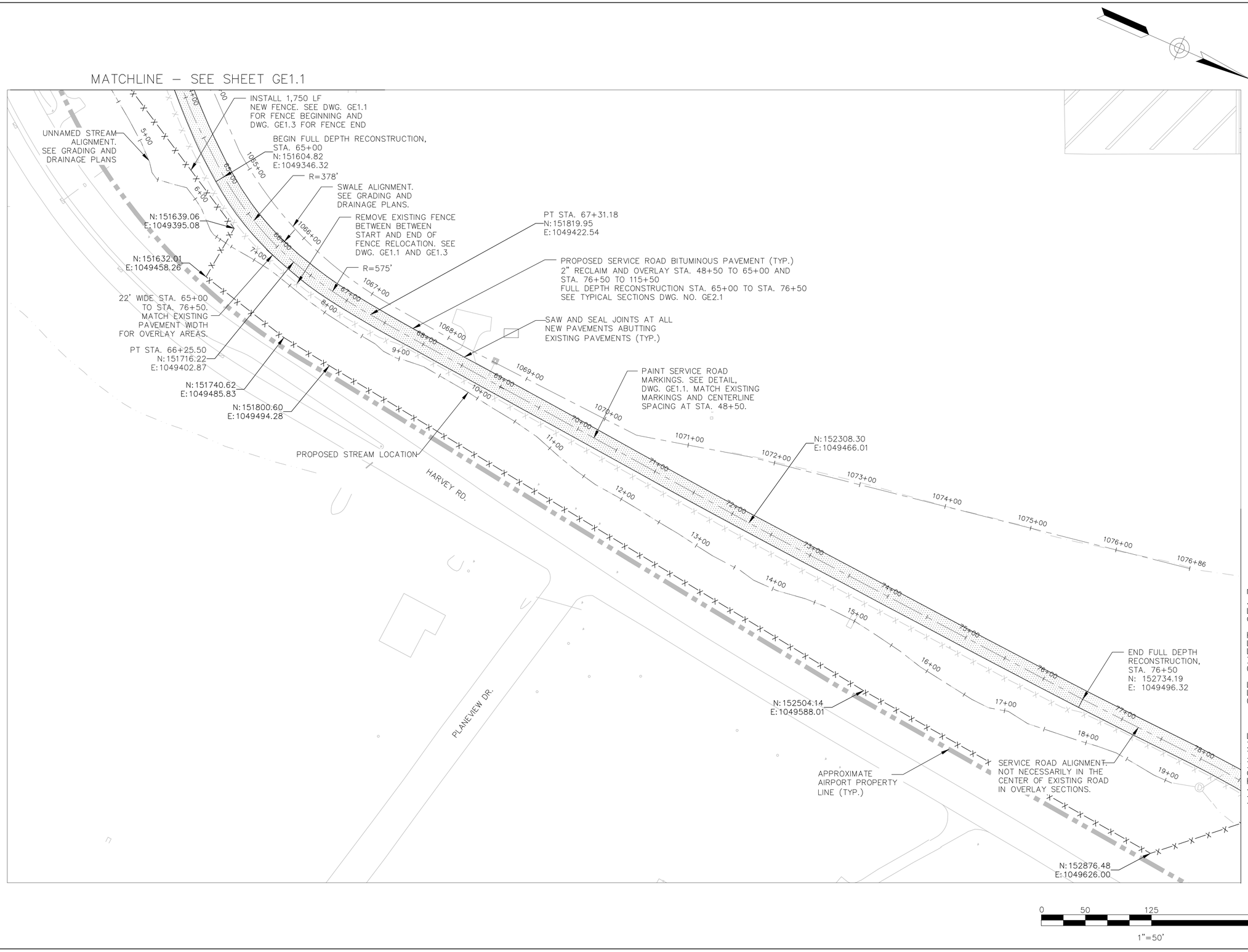
GE1.1

SHEET 7 OF 34

REV



ENGINEER'S SEAL

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SERVICE ROAD IMPROVEMENTS

GEOMETRY SHEET 2 OF 4

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AIP No.: 3-33-0011-XXX-2022

DRAWING NO.

GE1.2

SHEET 8 OF 34

REV

MATCHLINE – SEE SHEET GE1.2

N: 152984.69
E: 1049528.39

PROPOSED SERVICE ROAD BITUMINOUS PAVEMENT (TYP.)
2" RECLAIM AND OVERLAY STA. 48+50 TO 65+00 AND STA. 76+50 TO 115+50
FULL DEPTH RECONSTRUCTION STA. 65+00 TO STA. 76+50
SEE TYPICAL SECTIONS DWG. NO. GE2.1

AT WIDENED SECTIONS OF PAVEMENT MARKINGS SHALL MAINTAIN THE DIMENSIONS SHOWN IN THE DETAIL.

EXISTING FENCE TO REMAIN

END FENCE RELOCATION

SERVICE ROAD ALIGNMENT. NOT NECESSARILY IN THE CENTER OF EXISTING ROAD IN OVERLAY SECTIONS.

PAINT SERVICE ROAD MARKINGS. SEE DETAIL, DWG. GE1.1. MATCH EXISTING MARKINGS AND CENTERLINE SPACING AT STA. 48+50.

SAW AND SEAL JOINTS AT ALL NEW PAVEMENTS ABUTTING EXISTING PAVEMENTS (TYP.)

APPROXIMATE AIRPORT PROPERTY LINE (TYP.)

HARVEY RD.

79+00 80+00 81+00 82+00 83+00 84+00 85+00 86+00 87+00 88+00 89+00 90+00 91+00 92+00 93+00

MATCHLINE – SEE SHEET GE1.4

N

0 50 125 250 FEET
1"=50'

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GEOMETRY SHEET 3 OF 4

SCALE: AS SHOWN | DATE: MARCH 2022

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REV. NO.	DATE	DESCRIPTION	BY

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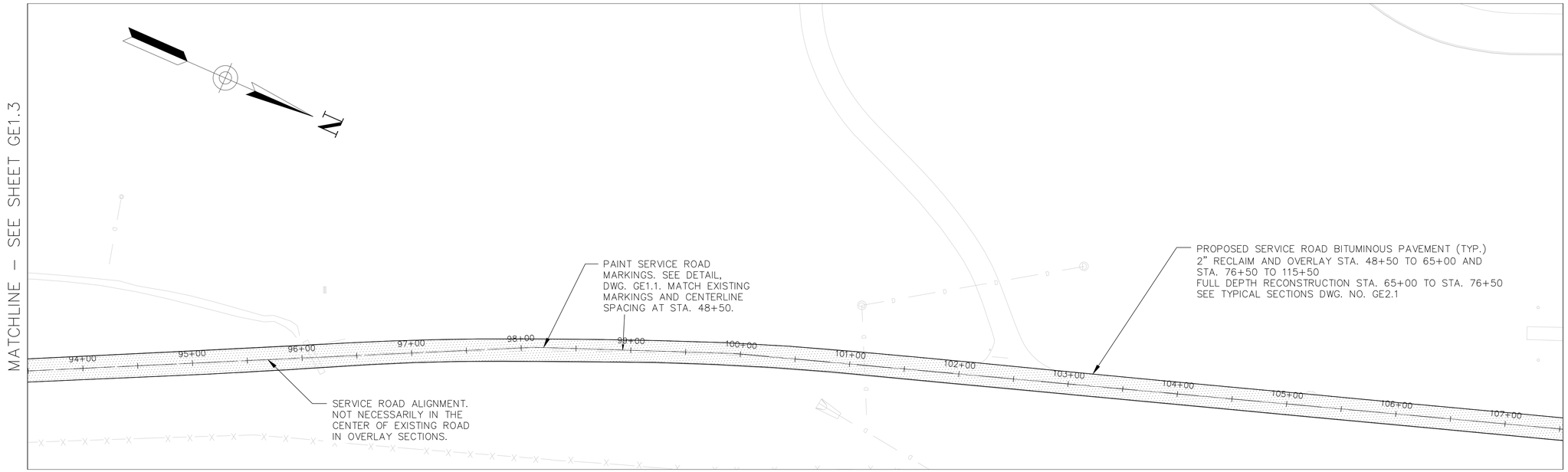
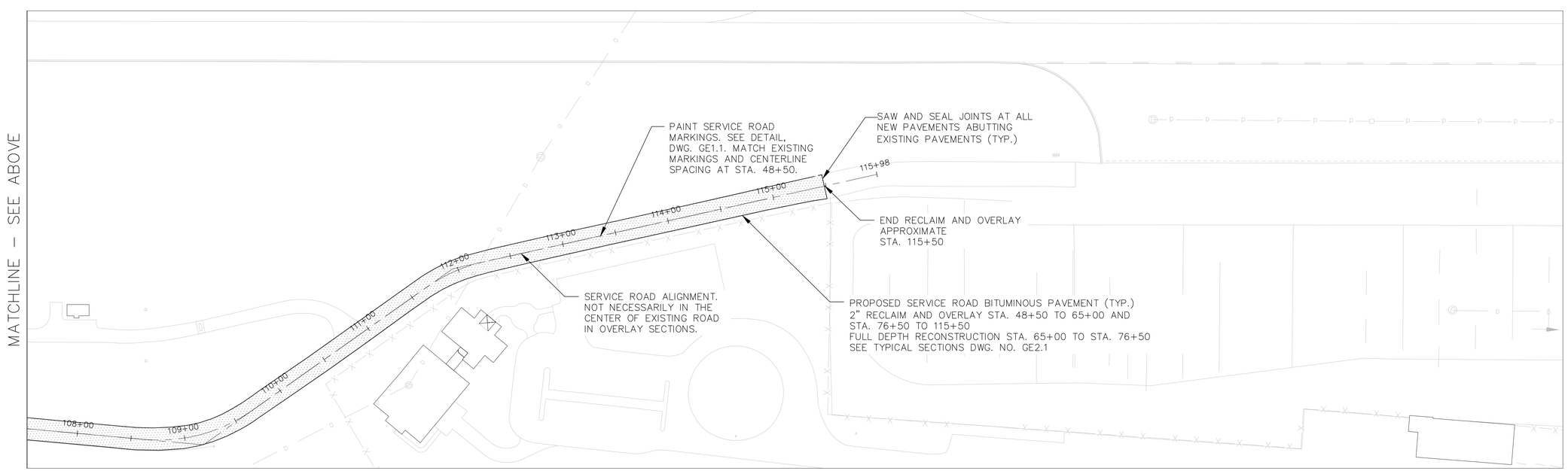
DRAWING NO.
GE1.3

SHEET 9 OF 34
REV





0 50 125 250 FEET

1"=50'

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JCC	RPH	SLS

CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER–BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

GEOMETRY SHEET 4 OF 4

SCALE: AS SHOWN

DATE: MARCH 2022

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

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PROJ. No.: 030089.00

FILE: MHT–GE101

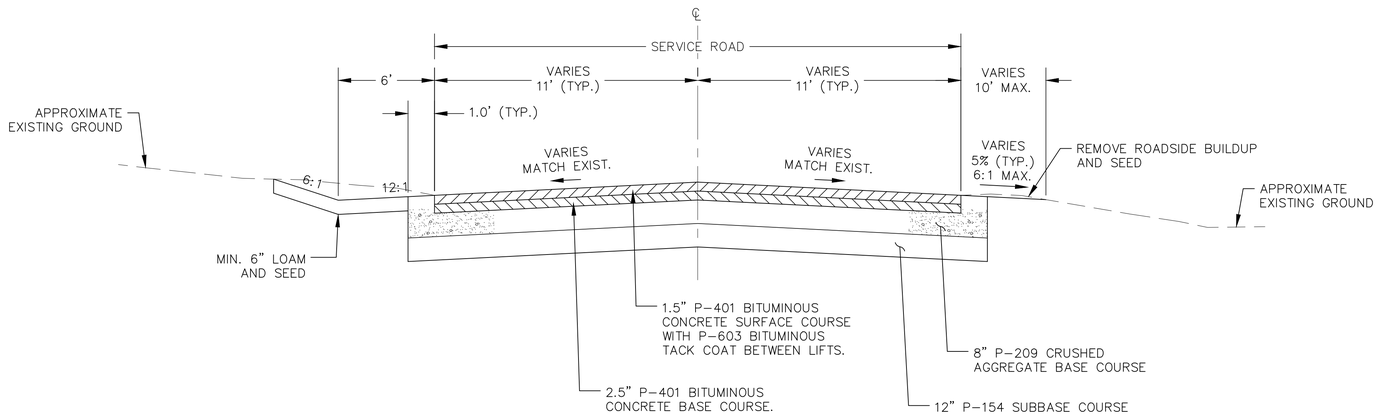
AIP No.: 3–33–0011–XXX–2022

DRAWING NO.

GE1.4

SHEET 10 OF 34

REV



TYPICAL SECTION OF SERVICE ROAD
FULL DEPTH CONSTRUCTION
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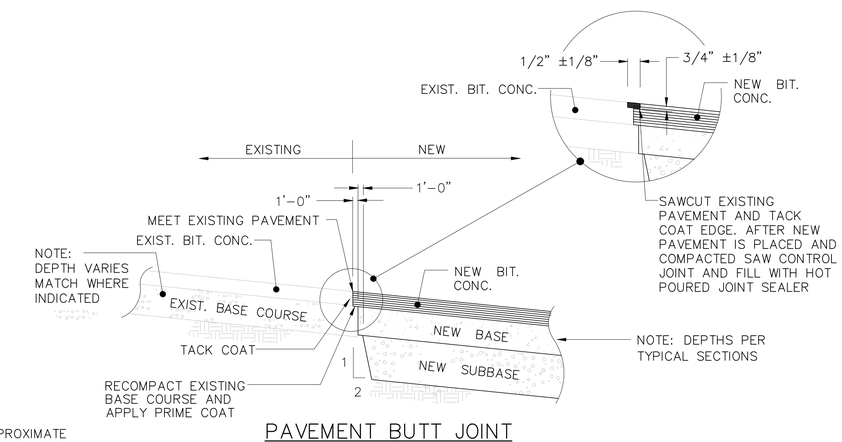
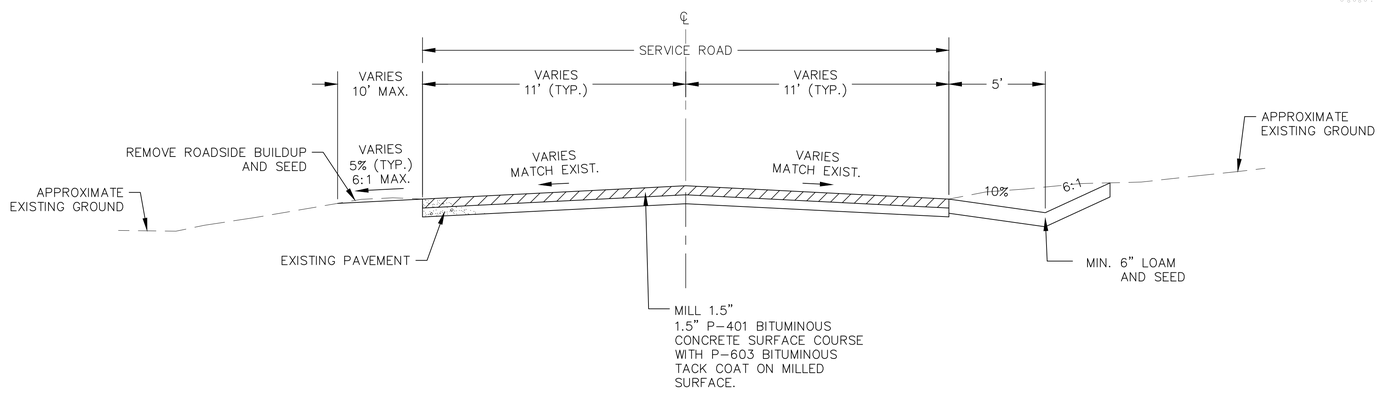
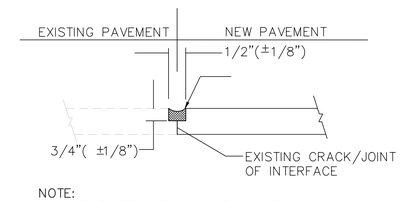


PAVEMENT BUTT JOINT
NOT TO SCALE



TYPICAL SECTION OF SERVICE ROAD
MILL AND INLAY
NOT TO SCALE



NOTE:
SAWCUT EXISTING PAVEMENT AND TACK COAT EDGE. AFTER NEW PAVEMENT IS PLACED AND COMPACTED, SAW CONTROL JOINT AND FILL WITH HOT POURED JOINT SEALER,

BITUMINOUS SAWCUT CONTROL
JOINT DETAIL
NOT TO SCALE

ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER

3/24/2022

PROJECT DESIGNER

HOYLE TANNER

150 Dow Street
Manchester, NH 03101
(603) 669-5555
www.hoyletanner.com

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CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston
REGIONAL AIRPORT

MANCHESTER-BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

TYPICAL SECTIONS
AND PAVEMENT DETAILS

DATE: MARCH 2022

SCALE: AS SHOWN

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REV. NO.	DATE	DESCRIPTION	BY

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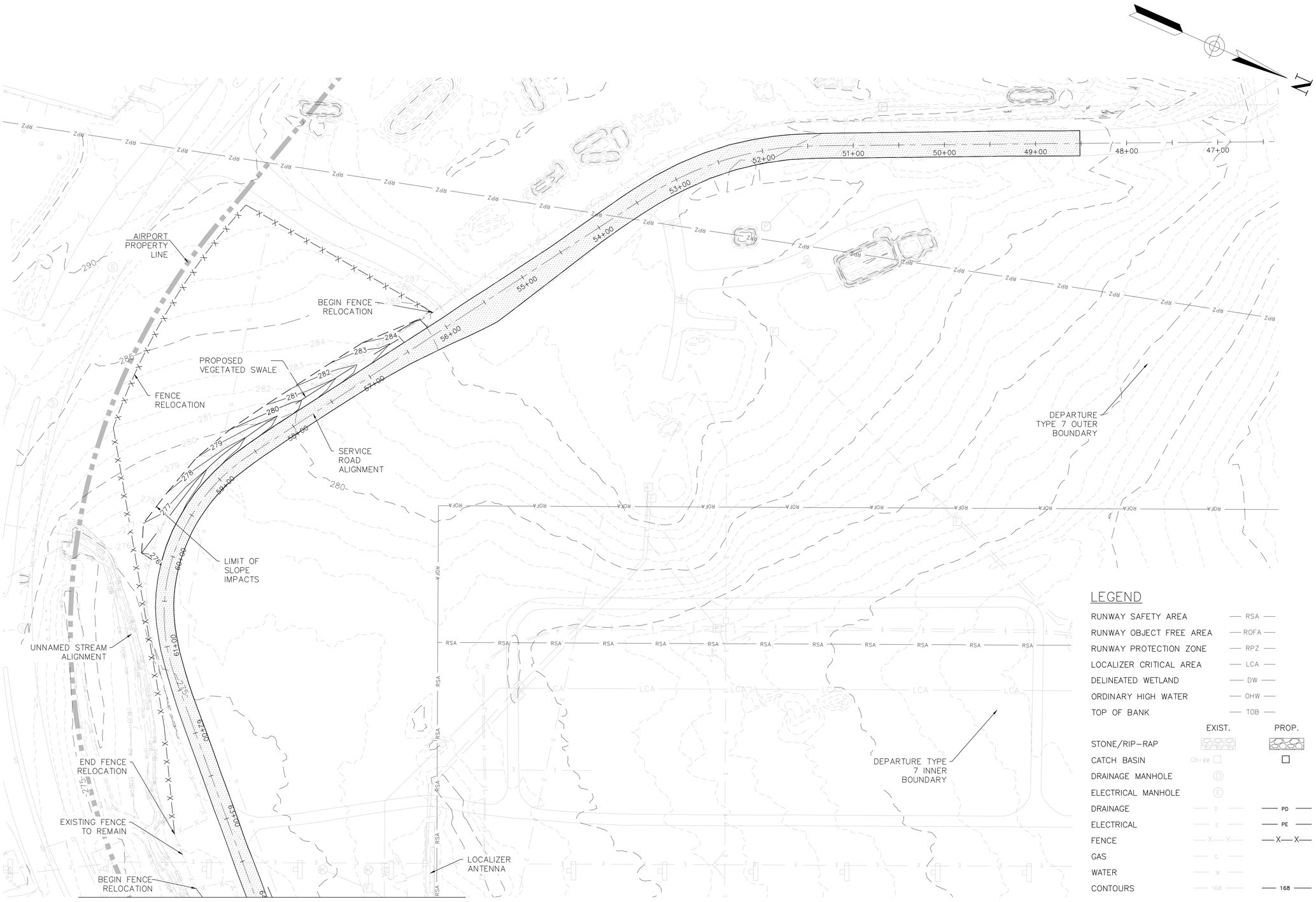
FILE: MHT-GE201
AIP No.: 3-33-0011-XXX-2022

DRAWING NO.
GE2.1

SHEET 11 OF 34

REV



LEGEND

RUNWAY SAFETY AREA	RSA
RUNWAY OBJECT FREE AREA	ROFA
RUNWAY PROTECTION ZONE	RPZ
LOCALIZER CRITICAL AREA	LCA
DELINEATED WETLAND	DW
ORDINARY HIGH WATER	OHW
TOP OF BANK	TOB

	EXIST.	PROP.
STONE/RIP-RAP		
CATCH BASIN	CB-##	
DRAINAGE MANHOLE	D	
ELECTRICAL MANHOLE	E	
DRAINAGE	D	PD
ELECTRICAL	E	PE
FENCE	X X	X X
GAS	G	
WATER	W	
CONTOURS	168	168

0 50 125 250 FEET

ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER
3/24/2022

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DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER-BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

GRADING AND DRAINAGE PLAN
SHEET 1 OF 2

DATE: MARCH 2022

SCALE: AS SHOWN

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

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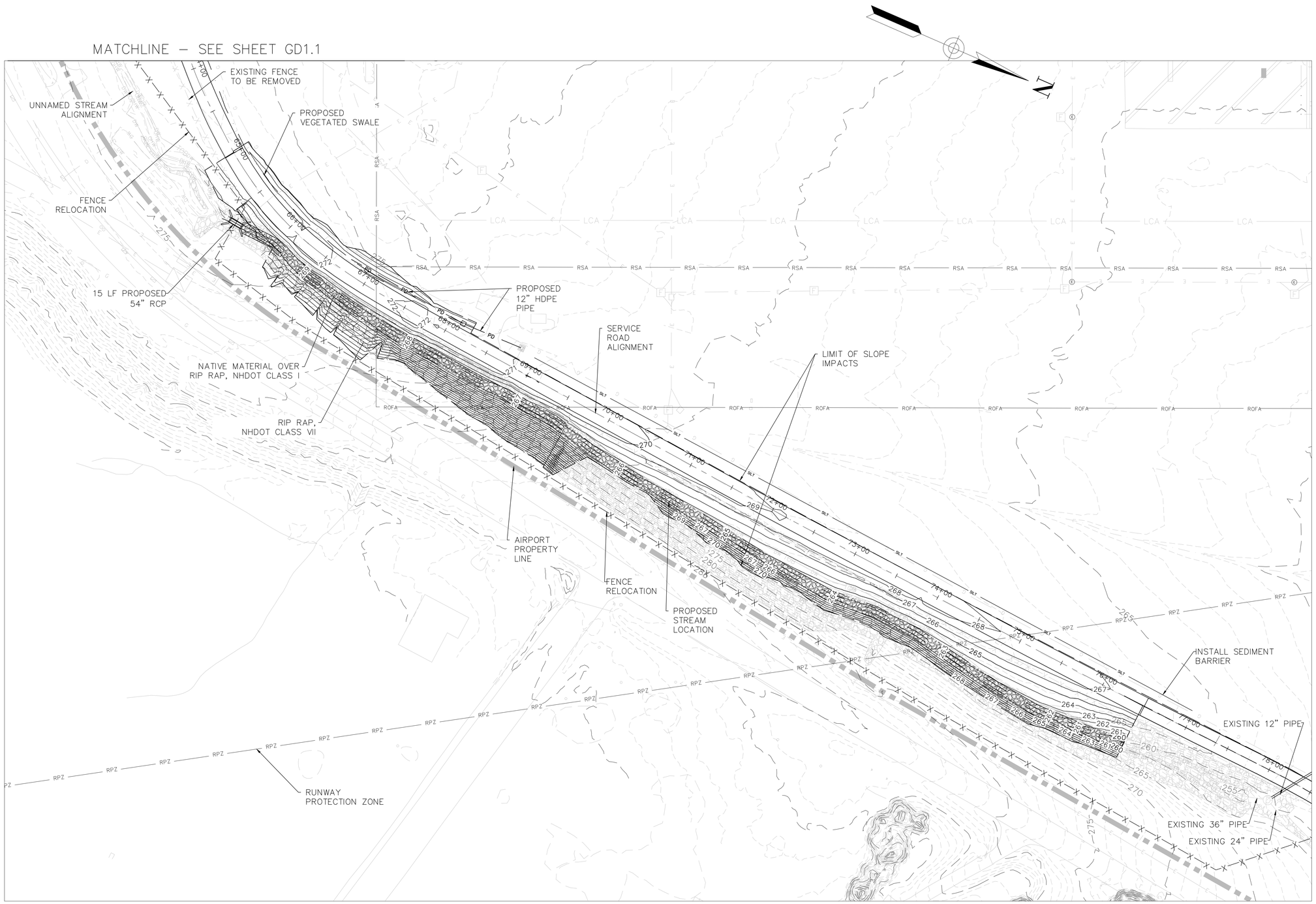
PROJ. No.: 030089.00
FILE: MHT-GD101
AIP No.: 3-33-0011-XXX-2022

DRAWING NO.
GD1.1

SHEET 12 OF 34

REV



ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER

3/24/2022

PROJECT DESIGNER

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CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER–BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

GRADING AND DRAINAGE PLAN
SHEET 2 OF 2

SCALE: AS SHOWN

DATE: MARCH 2022

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

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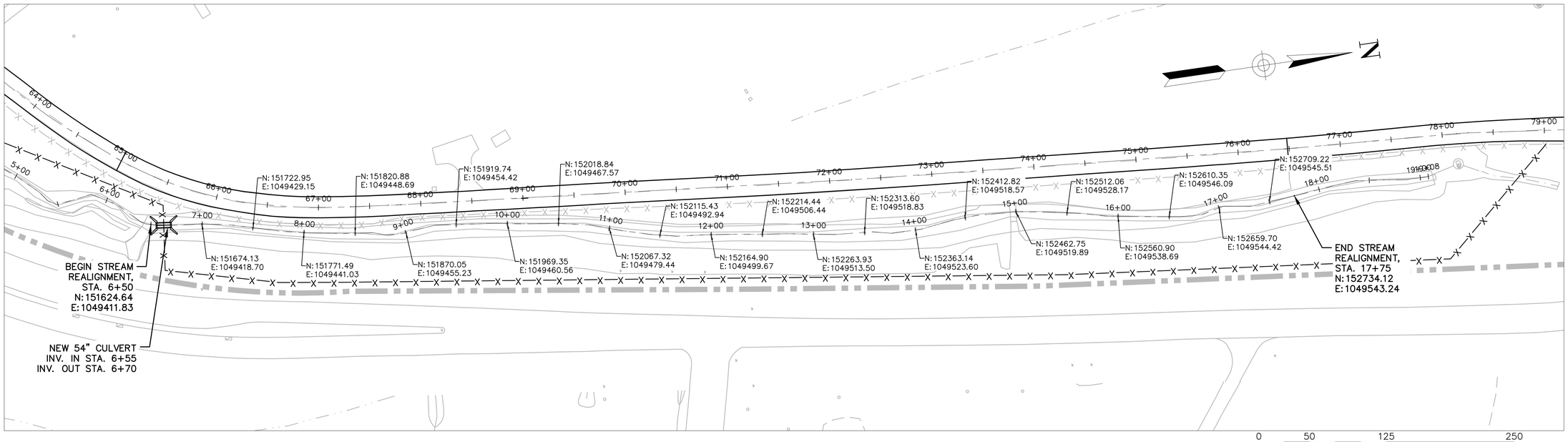
PROJ. No.: 030089.00
FILE: MHT–GD101
AIP No.: 3–33–0011–XXX–2022

DRAWING NO.

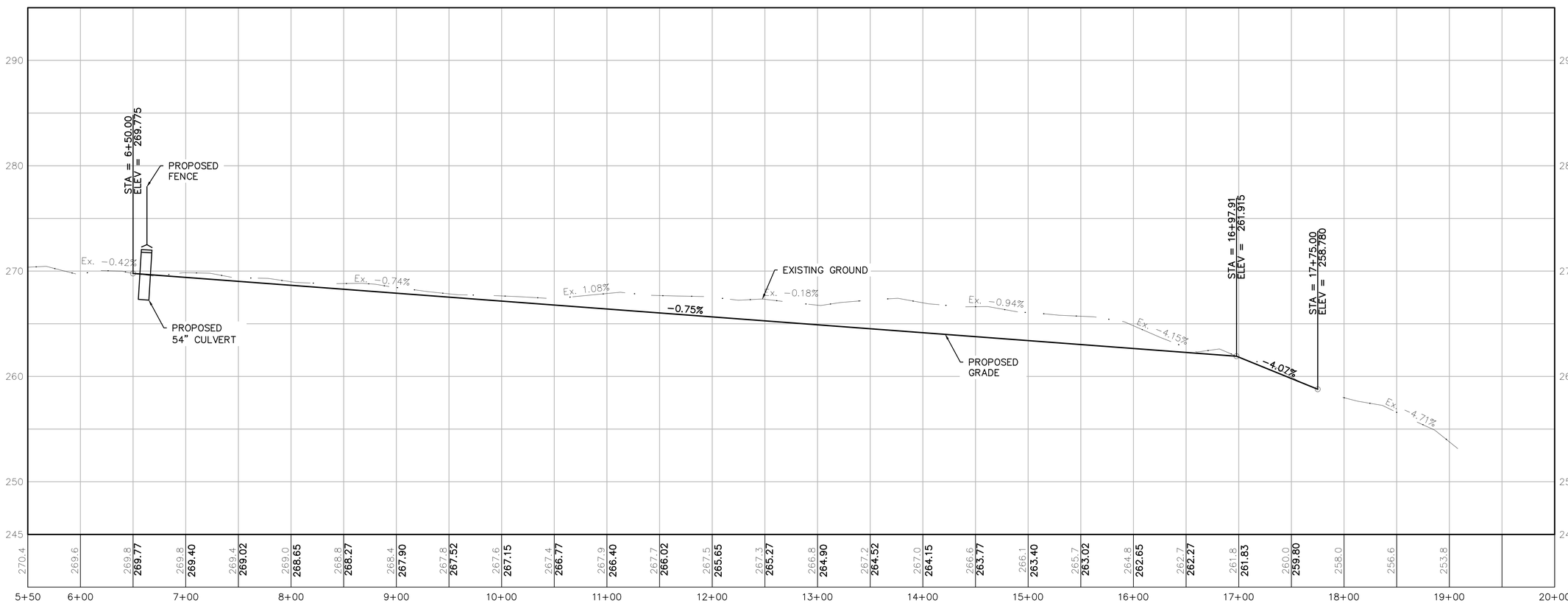
GD1.2

SHEET 13 OF 34

REV



UNNAMED STREAM ALIGNMENT



UNNAMED STREAM PROFILE

ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE SUZANNE L. SHEPPARD No. 11994 LICENSED PROFESSIONAL ENGINEER

3/29/2022

HOYLE TANNER
100 Dow Street
Manchester, NH 03101
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PROJECT DESIGNER

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CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER-BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

PROPOSED PROFILE AND ALIGNMENT OF UNNAMED STREAM

SCALE: AS SHOWN | DATE: MARCH 2022

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

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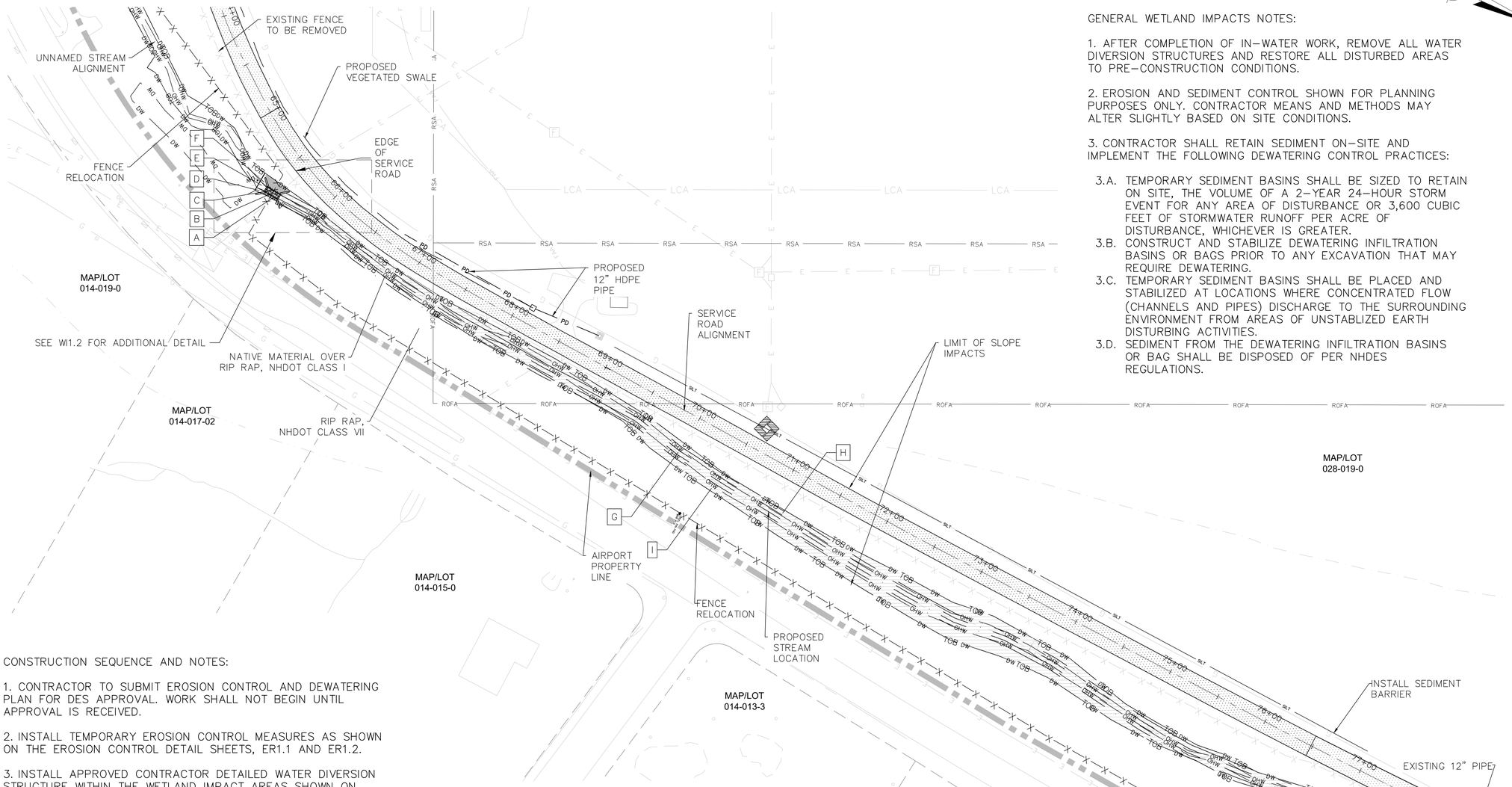
PROJ. No.: 030089.00
FILE: MHT-PR101
AIP No.: 3-33-0011-XXX-2022

DRAWING NO.

PR1.1

SHEET 14 OF 34 REV

DWG: H:\030089 MHT RW 35 Perimeter Rd\2-CADD\0-Contract\MHT-PR101.dwg Mar 29, 2022 - 5:54pm



GENERAL WETLAND IMPACTS NOTES:

1. AFTER COMPLETION OF IN–WATER WORK, REMOVE ALL WATER DIVERSION STRUCTURES AND RESTORE ALL DISTURBED AREAS TO PRE–CONSTRUCTION CONDITIONS.

2. EROSION AND SEDIMENT CONTROL SHOWN FOR PLANNING PURPOSES ONLY. CONTRACTOR MEANS AND METHODS MAY ALTER SLIGHTLY BASED ON SITE CONDITIONS.

3. CONTRACTOR SHALL RETAIN SEDIMENT ON–SITE AND IMPLEMENT THE FOLLOWING DEWATERING CONTROL PRACTICES:

- 3.A. TEMPORARY SEDIMENT BASINS SHALL BE SIZED TO RETAIN ON SITE, THE VOLUME OF A 2–YEAR 24–HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER.
- 3.B. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS OR BAGS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
- 3.C. TEMPORARY SEDIMENT BASINS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABLIZED EARTH DISTURBING ACTIVITIES.
- 3.D. SEDIMENT FROM THE DEWATERING INFILTRATION BASINS OR BAG SHALL BE DISPOSED OF PER NHDES REGULATIONS.

CONSTRUCTION SEQUENCE AND NOTES:

1. CONTRACTOR TO SUBMIT EROSION CONTROL AND DEWATERING PLAN FOR DES APPROVAL. WORK SHALL NOT BEGIN UNTIL APPROVAL IS RECEIVED.

2. INSTALL TEMPORARY EROSION CONTROL MEASURES AS SHOWN ON THE EROSION CONTROL DETAIL SHEETS, ER1.1 AND ER1.2.

3. INSTALL APPROVED CONTRACTOR DETAILED WATER DIVERSION STRUCTURE WITHIN THE WETLAND IMPACT AREAS SHOWN ON THE PLANS.

4. DREDGE AND EXCAVATE TO THE LIMITS AND ELEVATIONS AS SHOWN ON THE PLANS FOR THE UNNAMED STREAM AND CULVERT.

5. CONSTRUCT NEW UNNAMED STREAM, 54"CULVERT, WINGWALLS, AND PIPE EMBEDMENT.

6. STABILIZE THE NEW SLOPES BY LOAMING, SEEDING AND INSTALLING EROSION CONTROL MATTING.

7. REMOVE WATER DIVERSION STRUCTURE ALLOWING THE UNNAMED STREAM TO FLOW THROUGH THE CULVERT AND CONTINUE THROUGH THE REALIGNED STREAM BED.

8. FINE GRADE AND INSTALL SECURITY FENCE.

9. REMOVE TEMPORARY EROSION CONTROL MEASURES.

SEE WI1.2 FOR WETLAND IMPACT SUMMARY AND ABUTTER INFORMATION

WETLAND CLASSIFICATION	
R4SB	RIVERINE, INTERMITTENT, STREAMBED
PEM1E	PALUSTRINE, EMERGENT, PERSISTENT, SEASONALLY FLOODED/SATURATED

JENNIFER RIORDAN, CERTIFIED WETLAND SCIENTIST #269, OF GM2 ASSOCIATES, INC. OF CONCORD, NH. PERFORMED THE WETLAND MAPPING ON MAY 12, 13, & 20, 2020 ACCORDING TO THE STANDARDS OF THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012, US ARMY CORPS OF ENGINEERS.

STATE OF NEW HAMPSHIRE
Jennifer Riordan
No. 269
CERTIFIED WETLAND SCIENTIST
5/21/21

WETLAND SCIENTIST STAMP FOR WETLAND BOUNDARIES ONLY

LEGEND

TEMPORARY IMPACTS

PERMANENT IMPACTS

0 50 125 250 FEET

ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER
3/24/2022

PROJECT DESIGNER

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CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER–BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

WETLAND IMPACT PLAN
SHEET 1 OF 2

SCALE: AS SHOWN | DATE: MARCH 2022

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

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PROJ. No.: 030089.00
FILE: MHT–WI101
AIP No.: 3–33–0011–XXX–2022

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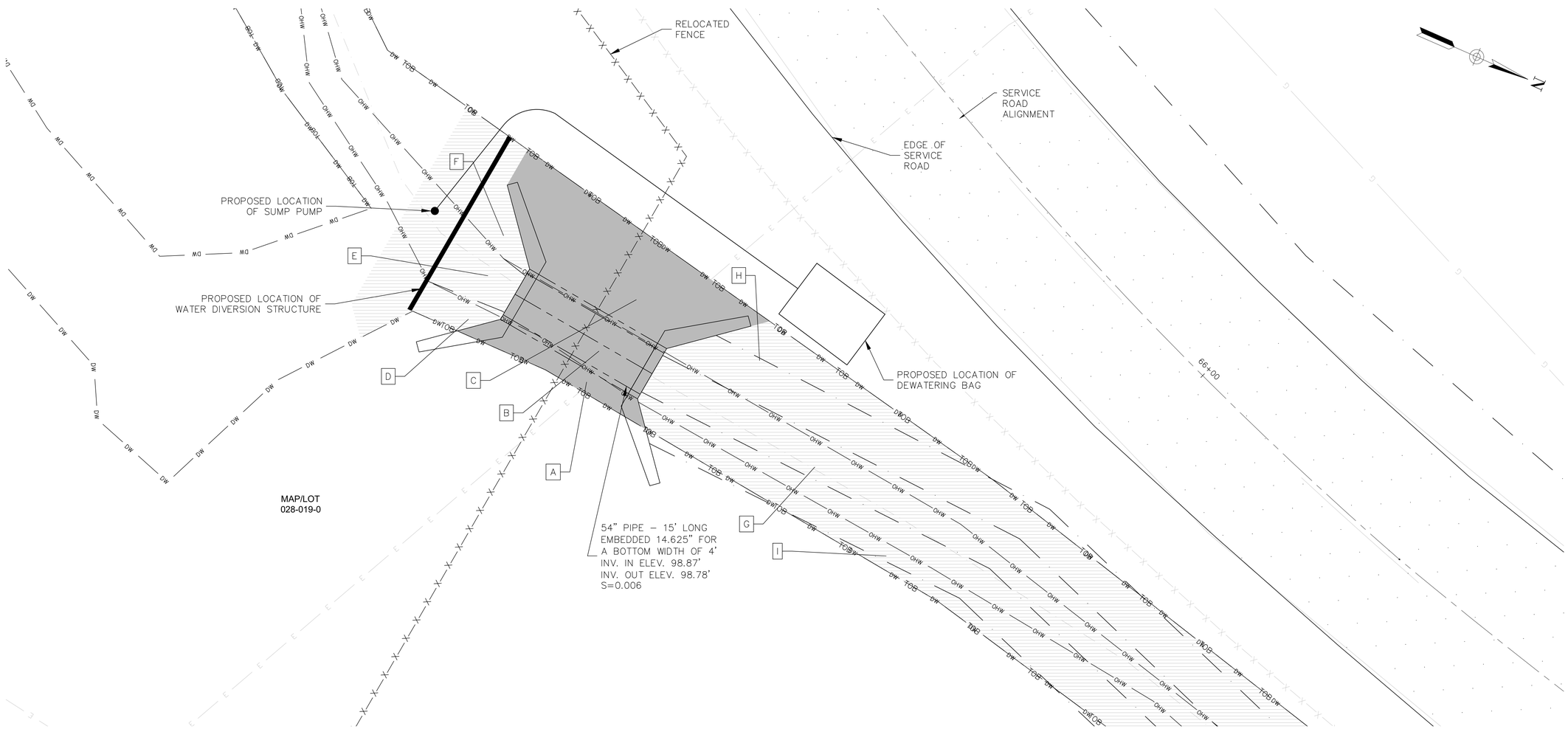
WI1.1

SHEET 15 OF 34 REV



WETLAND IMPACTS

SYMBOL	IMPACT TYPE	AREA (SF)	LENGTH (LF)
A	PERMANENT BANK OF STREAM	41	
B	PERMANENT BED OF STREAM	75	15
C	PERMANENT BANK OF STREAM	199	
D	TEMPORARY BANK OF STREAM	60	
E	TEMPORARY BED OF STREAM	76	14
F	TEMPORARY BANK OF STREAM	75	
G	TEMPORARY BED OF STREAM	7923	1125
H	TEMPORARY BANK OF STREAM	6989	
I	TEMPORARY BANK OF STREAM	7657	

SUMMARY OF IMPACTS:

TOTAL TEMPORARY IMPACTS = 22,780 SF
TOTAL PERMANENT IMPACTS = 315 SF
TOTAL LINEAR FOOT = 1,154 LF

TOTAL IMPACTS = 23,095 SF

ENVIRONMENTAL PROTECTION NOTES:

1. THIS PROJECT SHALL BE SUBJECT TO AVOIDANCE AND MINIMIZATION MEASURES TO PROTECT THE HABITAT OF THE NORTHERN LONG–EARED BAT. MEASURES APPLICABLE TO THIS PROJECT INCLUDE TIME–OF–YEAR ¦TOY) RESTRICTIONS FOR TREES > 3" DIAMETER BREAST HEIGHT (DBH). THE CONTRACTOR SHALL NOT CONDUCT ANY TREE CUTTING AND CLEARING ACTIVITIES FROM JUNE 1 THROUGH JULY 31.

2. THE PROJECT SHALL BE SUBJECT TO AVOIDANCE AND MINIMIZATION MEASURES TO PROTECT GRASSLAND BIRDS. MEASURES INCLUDE NO STAGING OR DRIVING EQUIPMENT THROUGH GRASSY AREAS DURING BIRD BREEDING FROM MAY 1 THROUGH JULY 31.

3. CONTRACTOR SHALL AVOID THE USE OF WELDED PLASTIC OR BIODEGRADABLE PLASTIC NETTING OR THREAD (E.G. POLYPROPYLENE) IN EROSION CONTROL MATTING. EROSION CONTROL MEASURES MUST BE ORGANIC AND WILDLIFE FRIENDLY. THE CONTRACTOR IS REQUIRED TO NOTIFY NEW HAMPSHIRE FISH & GAME (NHF&G) OF THE TYPE OF PRODUCT TO BE USED AT THE SITE. CONTACT BRETT FERRY, NHF&G AT Brett.Ferry@wildlife.nh.gov

4. THERE IS THE POTENTIAL TO ENCOUNTER BLANDING'S TURTLE, A STATE LISTED SPECIES WITHIN THE PROJECT AREA. IF BLANDING'S TURTLES ARE FOUND LAYING EGG IN THE WORK AREA, PLEASE CONTACT MELISSA DOPERALSKI AT 603–479–1129 OR JOSH MEGYESY AT 978–578–0802 FOR FURTHER INSTRUCTIONS. A FACT SHEET HAS BEEN PROVIDED IN THE PROJECT SPECIFICATIONS FOR IDENTIFICATION PURPOSES.

MAP/LOT	PROPERTY ADDRESS	OWNER NAME	MAILING ADDRESS	CITY	STATE	ZIP
028-019-0	27 NAVIGATOR RD	MANCHESTER AIRPORT AUTHORITY	1 AIRPORT RD, SUITE 300	MANCHESTER	NH	3103
028-019-1						
028-018-1	33 REAR INDUSTRIAL DR	CITY OF MANCHESTER	1 AIRPORT RD, SUITE 300	MANCHESTER	NH	3103
028-018-0	11 PETTENGILL RD					
014-012-0	104 HARVEY RD					
014-014-0	98 HARVEY RD					
014-013-3	1 PLANEVIEW DR					
014-015-0	90 HARVEY RD					
014-017-1	88 HARVEY RD					
014-017-2	88 HARVEY RD					
014-019-0	80 84 HARVEY RD					
014-045-1	12 PETTENFILL RD					
013-043-0	0 RR ROCKINGHAM RD	NEW HAMPSHIRE, STATE OF	PO BOX 483	CONCORD	NH	03301-0483
014-008-0	106 HARVEY RD					
028-022-29	11 RICKER AV	GLENBERVIE INC	47690 EAST ANCHOR COURT	PLYMOUTH	MI	48170
014-013-2	100 HARVEY RD	THREE MENDZELA LLC	PO BOX 6323	MANCHESTER	NH	3108

LEGEND

TEMPORARY IMPACTS

PERMANENT IMPACTS

0 5 12.5 25 FEET

ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER
3/24/2022

PROJECT DESIGNER

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DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER–BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

WETLAND IMPACT PLAN
SHEET 2 OF 2

SCALE: AS SHOWN | DATE: MARCH 2022

REVISIONS

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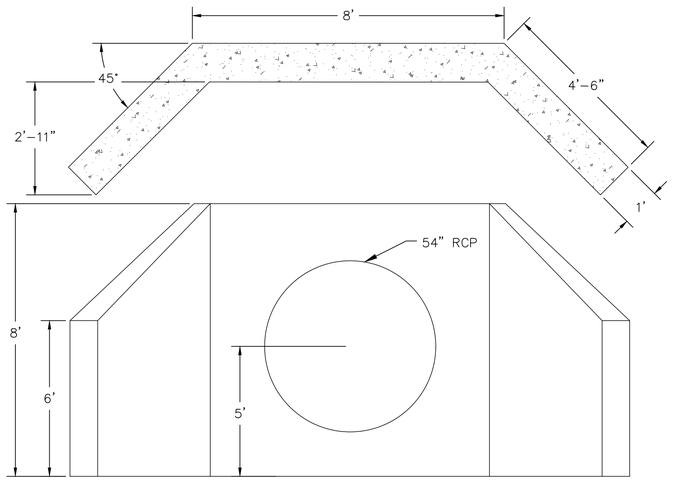
PROJ. No.: 030089.00
FILE: MHT–WI101
AIP No.: 3–33–0011–XXX–2022

DRAWING NO.
WI1.2

SHEET 16 OF 34 REV



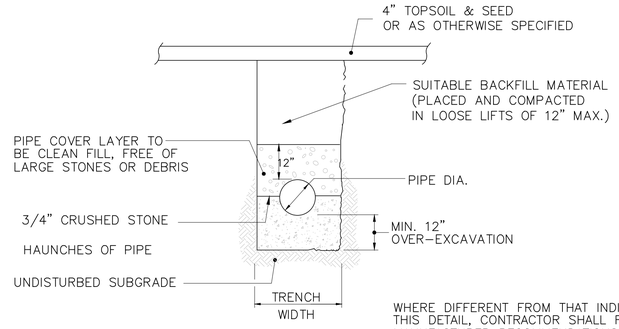
PIPE HEADWALL

NOT TO SCALE

NOTE:

ALL REINFORCED CONCRETE SHALL BE DESIGNED AND CONSTRUCTED TO SUPPORT H20 LOADING. THE CONTRACTOR IS REQUIRED TO SUPPLY SHOP DRAWINGS AND MANUFACTURERS' CERTIFICATIONS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.

WALL THICKNESS AND DIMENSIONS MAY CHANGE SLIGHTLY TO MEET STRUCTURAL AND CONTRACTIBILITY REQUIREMENTS AS DETERMINED BY THE CONTRACTOR AND MANUFACTURER. ENGINEER TO REVIEW ALL FINAL DIMENSIONS THROUGH SHOP DRAWINGS.



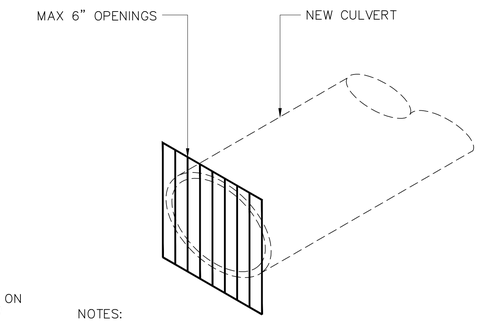
*	PIPE DIA.	TRENCH WIDTH
	UP TO 12"	36"
	12" TO 24"	I.D. PLUS 24"
	GREATER THAN 24"	2 X I.D.

WHERE DIFFERENT FROM THAT INDICATED ON THIS DETAIL, CONTRACTOR SHALL FOLLOW MANUFACTURER RECOMMENDATIONS FOR PIPE TRENCH, BEDDING, AND BACKFILL

CONTRACTOR SHALL SHORE TRENCH SIDES WHEN REQUIRED OR AS ORDERED BY THE ENGINEER

TYPICAL PIPE TRENCH DETAIL

NOT TO SCALE

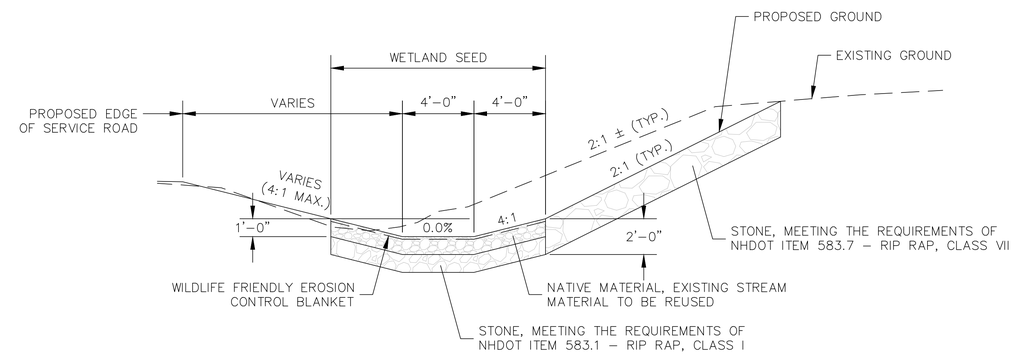


NOTES:

1. GRATE SHALL BE AS PER MANUFACTURER'S RECOMMENDATION AND SHALL BE INSTALLED SUCH THAT REMOVAL IS POSSIBLE FOR MAINTENANCE.
2. ACCESS SHALL ONLY BE POSSIBLE FOR AIRPORT PERSONNEL AND SHALL BE SECURED BY PADLOCK OR OTHER APPROVED MEANS.

GRATE DETAIL

NOT TO SCALE

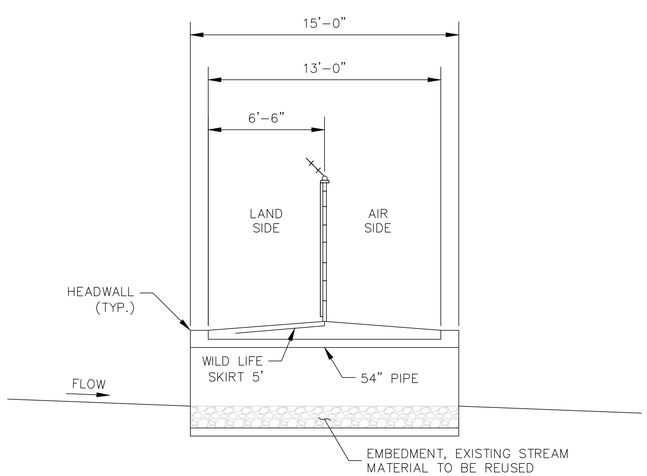


NOTE:
SEE VEGETATED SWALE DETAIL FOR ADDITIONAL INFORMATION REGARDING EROSION CONTROL BLANKET INSTALLATION.

THE INSTALLATION OF EROSION CONTROL BLANKET IS CONSIDERED INCIDENTAL TO OTHER PAY ITEMS WITHIN THIS CONTRACT.

CROSS SECTION OF STREAM

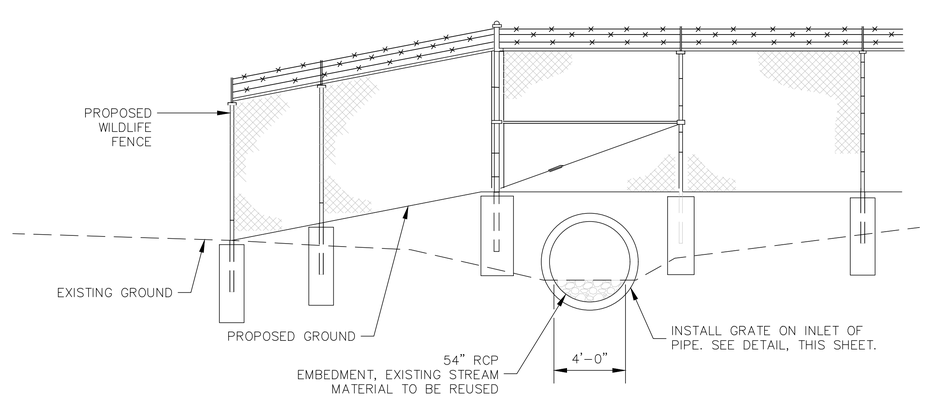
NOT TO SCALE



NOTE: SEE DRAWING PR1.1 FOR PROFILE OF UNNAMED STREAM.

PROFILE OF PIPE AND STREAM

NOT TO SCALE



CROSS SECTION OF PIPE

NOT TO SCALE

ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE
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3/24/2022

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SERVICE ROAD IMPROVEMENTS

WETLAND IMPACT DETAILS

SCALE: AS SHOWN | DATE: MARCH 2022

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PROJ. No.: 030089.00
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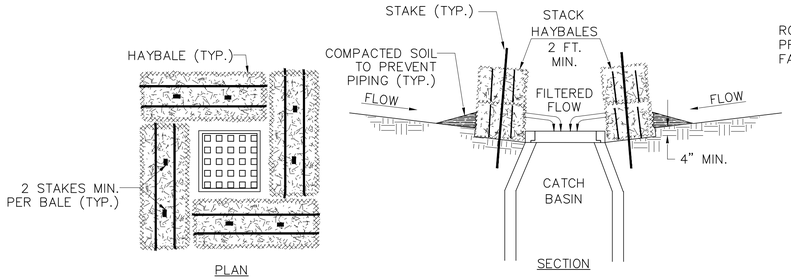
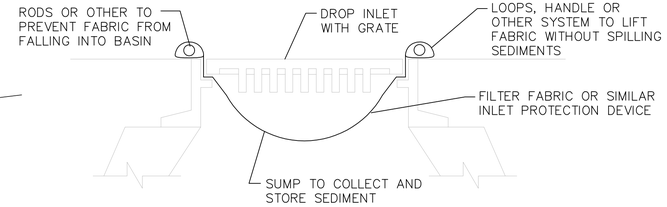
WI2.1

SHEET 17 OF 34 REV



HAY BALE INLET PROTECTION AT CATCH BASIN

NOT TO SCALE

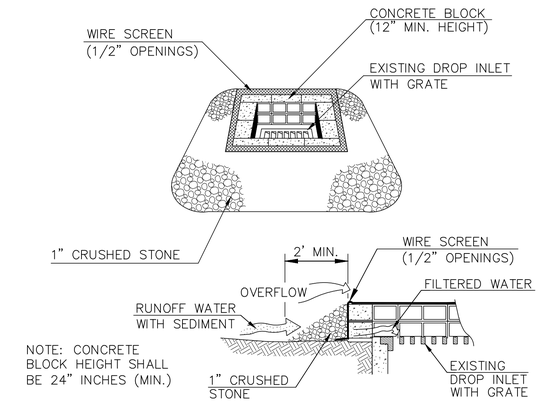


MAINTENANCE:
CONTRACTOR TO CLEAN AFTER EVERY STORM. IF THE BARRIER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER ADEQUATELY PASSES FILTERED WATER, THE SEDIMENT SHALL BE REMOVED AND THE BARRIER SHALL BE REPLACED. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

THE DEVICE SHALL BE USED FOR IN PAVEMENT CATCH BASINS LOCATED IN MILLED AREAS AND TRENCH DRAINS AND SHALL BE REMOVED WHEN THE DRAINAGE AREA HAS BEEN ADEQUATELY STABILIZED.

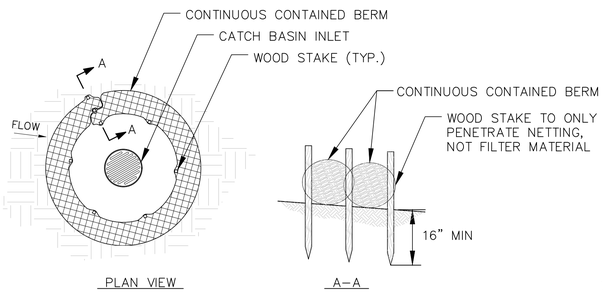
FILTER FABRIC INLET PROTECTION AT CATCH BASIN

NOT TO SCALE



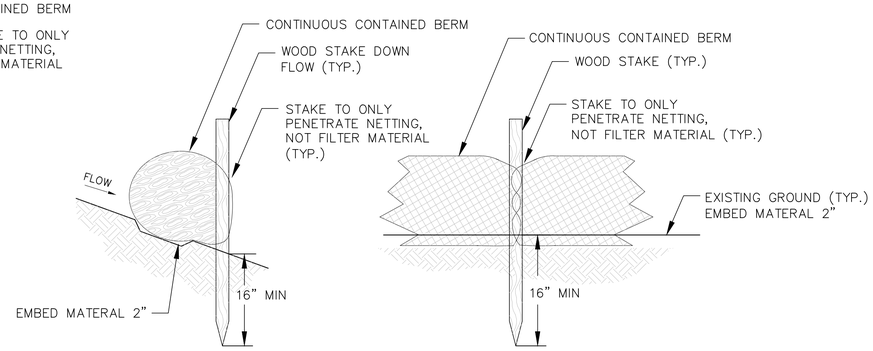
BLOCK & CRUSHED STONE INLET PROTECTION AT CATCH BASIN

NOT TO SCALE



CONTINUOUS CONTAINED BERM INLET PROTECTION AT CATCH BASIN

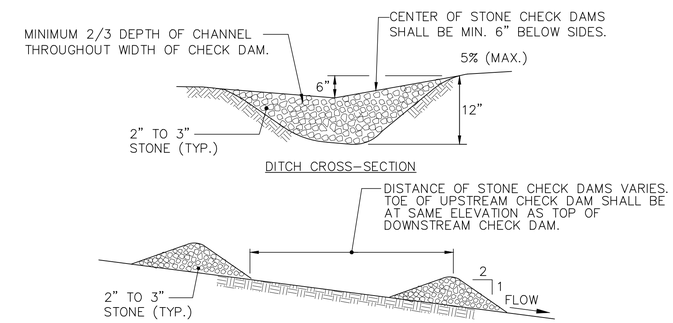
NOT TO SCALE



NOTE:
CONTINUOUS CONTAINED BERMS CONSIST OF A SYNTHETIC TUBULAR NETTING FILLED WITH EROSION CONTROL MIX OR OTHER FILTER MATERIAL AND SHALL BE INSTALLED PER MANUFACTURERS INSTRUCTION.

CONTINUOUS CONTAINED BERM SEDIMENT BARRIER DETAIL

NOT TO SCALE



STONE CHECK DAM DETAILS

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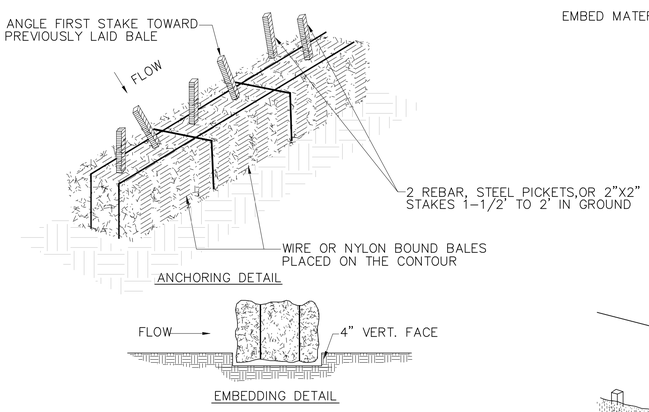
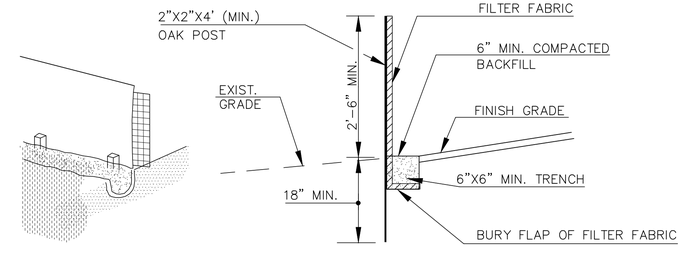


CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR REBARS DRIVEN THOUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARDS PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

HAY BALE SEDIMENT BARRIER DETAIL

NOT TO SCALE



NOTE:
1. SPACING OF WOOD FENCE POST NOT TO EXCEED 6'–0".
2. SILT FENCE SHALL BE INSTALLED BEFORE ANY EARTH REMOVAL OR EXCAVATION TAKES PLACE.
3. SILT FENCE SHALL BE INSPECTED WEEKLY OR AFTER RAIN. ANY SEDIMENT ACCUMULATED HIGHER THAN 1 FOOT ABOVE EXISTING GRADE SHALL BE REMOVED, ANY DAMAGED SECTIONS SHALL BE REPAIRED OR REPLACED.

SILT FENCE SEDIMENT BARRIER DETAIL

NOT TO SCALE

EROSION CONTROL MIX BERMS SEDIMENT BARRIER

EROSION CONTROL MIX CAN BE MANUFACTURED ON OR OFF THE PROJECT SITE. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

COMPOSITION
EROSION CONTROL MIX SHALL CONTAIN A WELL–GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. THE MIX COMPOSITION SHALL MEET THE FOLLOWING STANDARDS (SUBMITTAL REQUIRED):

- THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80 AND 100%, DRY WEIGHT BASIS.
- PARTICLE SIZE BY WEIGHT SHALL BE 100 % PASSING A 6" SCREEN AND A MINIMUM OF 70 %, MAXIMUM OF 85%, PASSING A 0.75" SCREEN.
- THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
- LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX.
- SOLUBLE SALTS CONTENT SHALL BE < 4.0 MMHOS/CM.
- THE PH SHOULD FALL BETWEEN 5.0 AND 8.0.

INSTALLATION
THE BARRIER MUST BE PLACED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BARRIER THROUGH THE GRASS BLADES OR PLANT STEMS.

ON SLOPES LESS THAN 5% OR AT THE BOTTOM OF STEEPER SLOPES (2:1) UP TO 20 FEET LONG, THE BARRIER MUST BE A MINIMUM OF 12" HIGH, AS MEASURED ON THE UPHILL SIDE OF THE BARRIER, AND A MINIMUM OF TWO FEET WIDE. ON LONGER OR STEEPER SLOPES, THE BARRIER SHOULD BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.

FROZEN GROUND, OUTCROPS OF BEDROCK AND VERY ROOTED FORESTED AREAS ARE LOCATIONS WHERE BERMS OF EROSION CONTROL MIX ARE MOST PRACTICAL AND EFFECTIVE. OTHER BMPS SHOULD BE USED AT LOW POINTS OF CONCENTRATED RUNOFF, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS, AND AT THE BOTTOM OF STEEP PERIMETER SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM (I.E., A LARGE UP GRADIENT CONTRIBUTING WATERSHED).

ENGINEER'S SEAL
STATE OF NEW HAMPSHIRE SUZANNE L. SHEPARD No. 11944 LICENSED PROFESSIONAL ENGINEER
3/24/2022

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CHECKED BY SLS
DRAWN BY RPH
DESIGNED BY JCC

CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE
Manchester-Boston REGIONAL AIRPORT

MANCHESTER–BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

EROSION CONTROL DETAILS
SHEET 1 OF 2

DATE: MARCH 2022
SCALE: NOT TO SCALE

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

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PROJ. No.: 030089.00
FILE: BDL–ER201
AIP No.: 3–33–0011–XXX–2022

DRAWING NO.
ER1.1

SHEET 18 OF 34
REV

TOPSOIL AND SEEDING

1. TOPSOIL

   SUITABLE TOPSOIL STRIPPED FROM THE SITE, FROM THE AIRPORT STOCKPILE OR FROM OFF-SITE SHALL MEET THE REQUIREMENTS OF SPECIFICATION SECTION T-905, TOPSOILING.

2. SEEDING

   USE PERMANENT SEED MIXES AND RATES BETWEEN 5/15 AND 9/30. USE TEMPORARY SEED MIXES FOR PERIODS LESS THAN 12 MONTHS. IF USING TEMPORARY SEED MIXES BETWEEN 10/01 AND 5/15, RE-SEED WITH PERMANENT SEED MIX AFTER 5/15

3. REGULAR SEED MIX

KIND OF SEED	LBS PER ACRE	MINIMUM GERMINATION %	MINIMUM PURITY %
TALL FESCUE (FESTUCA ARUNDINACEA)	72	85	96
SALTY ALKALI (PUCCINELLIA TENUIFLORA)	36	85	96
RELIANT HARD FESCUE/CREEPING RED FESCUE	12	85	96
TOTAL	120		

4. WETLAND SEED MIX
   NHDOT ITEM 644.62 SEED MIX:

KIND OF SEED	LBS PER ACRE	MINIMUM PURITY %	MINIMUM GERMINATION %
UPLAND BENTGRASS (AGROTIS PERENNAS)	2	95	85
AMERICAN MANNAGRASS (GLYCERIA GRANDIS)	2	95	85
WOOLGRASS (SCRIPUS CYPERINUS)	3	95	85
FOX SEDGE (CAREX VULPINOIDEA)	2	95	85
FRINGE SEDGE (CAREX CRINITA)	3	95	70
SOFT RUSH (JUNCUS EFFUSUS)	2	95	85
FOWL MANNAGRASS (GLYCERIA STRIATA)	2	95	85
TOTAL	16		

5. TEMPORARY SEED

KIND OF SEED	LBS PER ACRE	MINIMUM PURITY %	MINIMUM GERMINATION %
ANNUAL OR PERENNIAL RYEGRASS	40	85	80

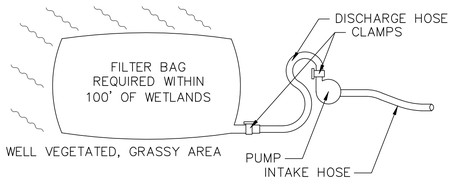
6. LIME AND FERTILIZER

   APPLY LIME AND FERTILIZER AT THE RATES SPECIFIED IN SECTION T-901, SEEDING.

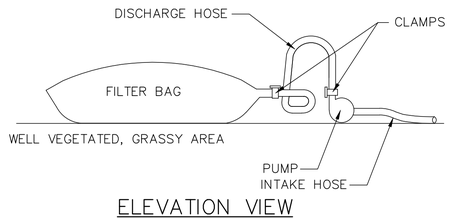
7. MULCH

   MULCH AND EROSION CONTROL MATTING SHALL BE AS SPECIFIED IN SECTION P-156 TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION AND SILTATION CONTROL.

STRAW OR HAY (ANCHORED)	70 – 90 LBS	PROTECTED AREAS
STRAW OR HAY (ANCHORED)	185 – 275 LBS	WINDY AREAS
SHREDDED OR CHOPPED	185 – 275 LBS	MODERATE TO HIGH VELOCITY
EROSION CONTROL BLANKET	AS REQUIRED	AREAS AND SLOPES STEEPER THAN 3:1



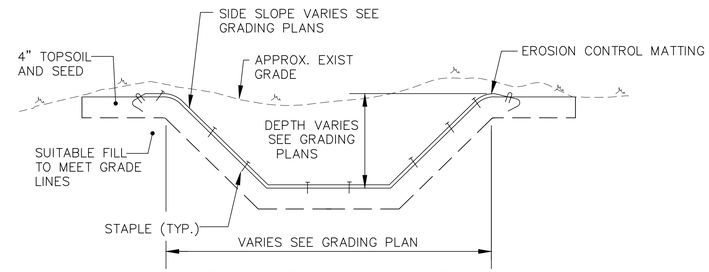
PLAN VIEW



ELEVATION VIEW

FILTER BAG DISCHARGE DETAIL

NOT TO SCALE

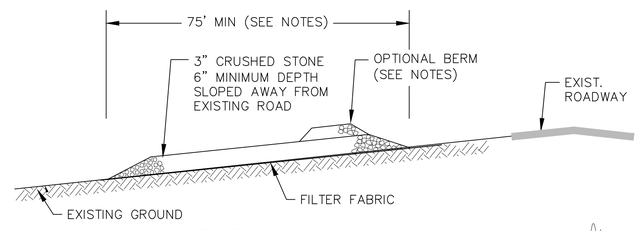


VEGETATED SWALE DETAIL

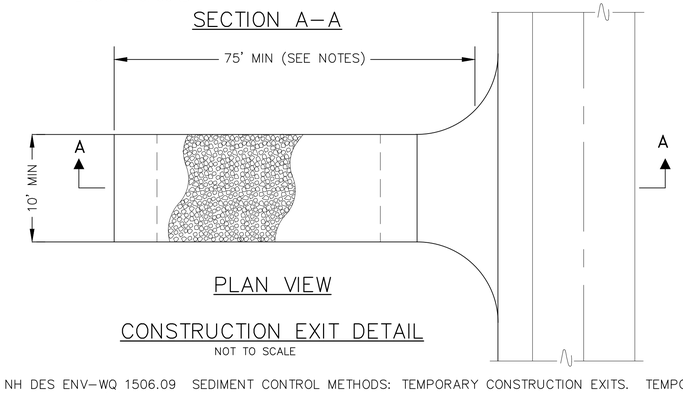
NOT TO SCALE

NOTES:

1. PRIOR TO PLACING EROSION CONTROL BLANKET, PREPARE THE SOIL BY RAKING AREA FREE OF CLODS AND LARGE STONES.
2. SEED, MULCH AND FERTILIZER SHALL BE DISTRIBUTED AS SPECIFIED OVER THE PREPARED SOIL PRIOR TO PLACING THE EROSION CONTROL BLANKET.
3. EROSION CONTROL BLANKET SHALL CONSIST OF HAY, JUTE MESH, OR OTHER AND BE APPROVED BY ENGINEER.
4. ALL SEAMS SHALL BE OVERLAPPED A MINIMUM OF 3" AND SECURE WITH STAPLES SPACED 18"–24" ON CENTER.
5. TO SECURE BLANKET TO GROUND, STAPLE PER MANUFACTURERS RECOMMENDATIONS.
6. OVERLAP EROSION CONTROL BLANKET IN DIRECTION OF FLOW ONLY.
7. WHERE SWALE SIDE SLOPES ARE FLATTER THAN 6:1 OR WHERE GRADE BREAKS ARE SUBSTANTIALLY HIGHER THAN THE SWALE BOTTOM, EROSION CONTROL BLANKET MAY BE TUCKED INTO THE SLOPE APPROXIMATELY 1' ABOVE SWALE BOTTOM. OTHERWISE, WELL-DEFINED CHANNELS SHALL BE PROTECTED TO THE TOP OF SLOPE AS SHOWN.



SECTION A–A



PLAN VIEW

CONSTRUCTION EXIT DETAIL

NOT TO SCALE

PER NH DES ENV-WQ 1506.09 SEDIMENT CONTROL METHODS: TEMPORARY CONSTRUCTION EXITS. TEMPORARY CONSTRUCTION EXIT(S), ALSO CALLED ANTI-TRACKING PADS, SHALL BE USED ONLY AS FOLLOWS:

(a) THE MINIMUM STONE USED SHALL BE 3-INCH CRUSHED STONE;
(b) THE MINIMUM LENGTH OF THE PAD SHALL BE 75 FEET, EXCEPT THAT THE MINIMUM LENGTH MAY BE REDUCED TO 50 FEET IF A 3-INCH TO 6-INCH HIGH BERM IS INSTALLED AT THE ENTRANCE OF THE PROJECT SITE;
(c) THE PAD SHALL EXTEND THE FULL WIDTH OF THE CONSTRUCTION ACCESS ROAD OR 10 FEET, WHICHEVER IS GREATER;
(d) THE PAD SHALL SLOPE AWAY FROM THE EXISTING ROADWAY;
(e) THE PAD SHALL BE AT LEAST 6 INCHES THICK;
(f) A GEOTEXTILE FILTER FABRIC SHALL BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD;
(g) THE PAD SHALL BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE SUCH THAT MUD AND SOIL PARTICLES ARE TRACKED OFF-SITE.

STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER
3/24/2022

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KJF	JLC	NEG

CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE
Manchester-Boston REGIONAL AIRPORT

MANCHESTER-BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

EROSION CONTROL DETAILS
SHEET 2 OF 2

SCALE: NOT TO SCALE
DATE: MARCH 2022

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

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AIP No.: 3-33-0011-XXX-2022

DRAWING NO.
ER1.2

SHEET 19 OF 34
REV

SITE STABILIZATION AND 5 ACRE DISTURBANCE LIMIT

1. THE NH DES (DEPARTMENT OF ENVIRONMENTAL SERVICES) AOT (ALTERATION OF TERRAIN) PERMIT AND REGULATIONS HAS A STIPULATION THAT NO MORE OF 5 ACRES OF UNSTABILIZED EARTH DISTURBANCE MAY OCCUR AT ANY GIVEN TIME ON A PROJECT. HOWEVER, IT IS PERMITTIED WHEN THE CONTRACTOR PROVIDES, AND IS REPSONSIBLE FOR PROVIDING AN "ENVIRONMENTAL MONITOR". THE FOLLOWING ARE THE CONDITIONS THAT APPLY:

   a. THE PERMITTEE SHALL EMPLOY THE SERVICES OF AN ENVIRONMENTAL MONITOR ("MONITOR"). THE MONITOR SHALL BE A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL OR A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE AND SHALL BE EMPLOYED TO INSPECT THE SITE FROM THE START OF ALTERATION OF TERRAIN ACTIVITIES UNTIL THE ALTERATION OF TERRAIN ACTIVITIES ARE COMPLETED AND THE SITE IS CONSIDERED STABLE*.

   b. DURING THIS PERIOD, THE MONITOR SHALL INSPECT THE SUBJECT SITE AT LEAST ONCE A WEEK, AND IF POSSIBLE, DURING ANY ½ INCH OR GREATER RAIN EVENT (I.E. ½ INCH OF PRECIPITATION OR MORE WITHIN A 24 HOUR PERIOD). IF UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THIS EVENT.

   c. THE INSPECTIONS SHALL BE FOR THE PURPOSES OF DETERMINING COMPLIANCE WITH THE PERMIT. THE MONITOR SHALL SUBMIT A WRITTEN REPORT TO THE DEPARTMENT WITHIN 24 HOURS OF THE INSPECTIONS. THE REPORTS SHALL DESCRIBE, AT A MINIMUM, WHETHER THE PROJECT IS BEING CONSTRUCTED IN ACCORDANCE WITH THE APPROVED SEQUENCE, SHALL IDENTIFY ANY DEVIATION FROM THE CONDITIONS OF THIS PERMIT AND THE APPROVED PLANS, AND IDENTIFY ANY OTHER NOTED DEFICIENCIES.

   d. THE MONITOR SHALL PROVIDE TECHNICAL ASSISTANCE AND RECOMMENDATIONS TO THE CONTRACTOR ON THE APPROPRIATE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROLS REQUIRED TO MEET THE REQUIREMENTS OF RSA 485–A:17 AND ALL APPLICABLE DES PERMIT CONDITIONS.

   e. WITHIN 24 HOURS OF EACH INSPECTION, THE MONITOR SHALL SUBMIT A REPORT TO DES VIA EMAIL (TO STACEY HERBOLD AT: STACEY.HERBOLD@DES.NH.GOV).

2. SHOULD THE CONTRACTOR ELECT TO DISTURB MORE THAN 5 ACRES AT ANY GIVEN TIME ON THIS PROJECT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER WELL IN ADVANCE OF THE START OF THE PROJECT AND MAKE NECESSARY ARRANGEMENTS WITH THE DES. THE CONTRACTOR IS OBLIGATED TO PROVIDE THE MONITOR AND PAY FOR ALL COSTS ASSOCIATED WITH THE MONITOR AND MONITORING WORK AS REQUIRED BY THE DES. THE COSTS INCURRED TO PROVIDE THIS SERVICE WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCIDENTAL TO THE PROJECT COSTS. THIS IN NO WAY RELIEVES THE CONTRACTOR FROM THIER OBLIGATION TO ADHERE TO ALL DES REQUIREMENTS, BEST PRACTICES FOR SITE STABILIZATION, SILTATION AND EROSION CONTROL, OR ANY OTHER REQUIREMENTS OF THIS CONTRACT.

*SITE STABILIZATION IS DEFINED BY NH DES ADMINISTRATIVE RULES:

- Env–Wq 1505.03, (WARM WEATHER), AN AREA SHALL BE CONSIDERED STABILE IF ONE OF THE FOLLOWING HAS OCCURRED:

(A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED

(B) A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED

(C) A MINIMUM OF 3 INCHES OF NON–EROSIVE MATERIAL SUCH ASS STONE OR RIPRAP HAS BEEN INSTALLED

(D) OR EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED

- Env–Wq 1505.05 (COLD WEATHER):

(A) TO ADEQUATELY PROTECT WATER QUALITY DURING COLD WEATHER AND DURING SPRING RUNOFF, THE ADDITIONAL STABILIZATION TECHNIQUES SPECIFIED IN THIS SECTION SHALL BE EMPLOYED DURING THE PERIOD FROM NOVEMBER 30 THROUGH MAY 1.

(B) THE AREA OF EXPOSED, UNSTABILIZED SOIL SHALL BE LIMITED TO ONE ACRE AND SHALL BE PROTECTED AGAINST EROSION BY THE METHODS DESCRIBED IN THIS SECTION PRIOR TO ANY THAW OR SPRING MELT EVENT. THE ALLOWABLE AREA OF EXPOSED SOIL MAY BE INCREASED IF A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY THE DEPARTMENT.

(C) ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY NOVEMBER 30, OR WHICH ARE DISTURBED AFTER NOVEMBER 30, SHALL BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE SECURED WITH ANCHORED NETTING OR TACKIFIER, OR 2 INCHES OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV–WQ 1506.05(D) THROUGH (H).

(D) ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF GREATER THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY NOVEMBER 30, OR WHICH ARE DISTURBED AFTER NOVEMBER 30, SHALL BE SEEDED AND COVERED WITH A PROPERLY INSTALLED AND ANCHORED EROSION CONTROL BLANKET OR WITH A MINIMUM 4 INCH THICKNESS OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV–WQ 1506.05(D) THROUGH (H).

(E) INSTALLATION OF ANCHORED HAY MULCH OR EROSION CONTROL MIX, MEETING THE CRITERIA OF ENV–WQ 1506.05(D) THROUGH (H), SHALL NOT OCCUR OVER SNOW OF GREATER THAN ONE INCH IN DEPTH.

(F) INSTALLATION OF EROSION CONTROL BLANKETS SHALL NOT OCCUR OVER SNOW OF GREATER THAN ONE INCH IN DEPTH OR ON FROZEN GROUND.

(G) ALL PROPOSED STABILIZATION IN ACCORDANCE WITH (C) OR (D), ABOVE, SHALL BE COMPLETED WITHIN A DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS.

(H) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY NOVEMBER 30, OR WHICH ARE DISTURBED AFTER NOVEMBER 30, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS, AS DETERMINED BY THE OWNER'S ENGINEERING CONSULTANT.

(I) AFTER NOVEMBER 30, INCOMPLETE ROAD OR PARKING AREAS WHERE ACTIVE CONSTRUCTION OF THE ROAD OR PARKING AREA HAS STOPPED FOR THE WINTER SEASON SHALL BE PROTECTED WITH A MINIMUM 3 INCH LAYER OF BASE COURSE GRAVELS MEETING THE GRADATION REQUIREMENTS OF NHDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2006, ITEM NO. 304.1 OR 304.2.

EROSION CONTROL NOTES

1. ALL EARTHWORK SHALL BE CONFINED TO THE LIMITS OF WORK AS SHOWN ON CONTRACT DRAWINGS.
2. TEMPORARY FILLS SHALL REMAIN WITHIN WETLAND IMPACT AREAS SHOWN IN THE WETLAND PERMIT. A GEOTEXTILE FABRIC SHALL BE PLACED UNDER ALL TEMPORARY FILLS TO MINIMIZE DISRUPTION TO NATIVE SOILS AND VEGETATION.
3. WATER DIVERSION WILL BE USED TO COMPLETE WORK IN THE DRY. CONTRACTOR'S MEANS AND METHODS WILL DETERMINE IF WORK IS PERFORMED IN PHASES OR SIMULTANEOUSLY.
4. CONTRACTOR SHALL RETAIN SEDIMENT ON–SITE AND CONTROL DEWATERING PRACTICES:
   4.1. TEMPORARY SEDIMENT BASINS SHALL BE SIZED TO RETAIN ON SITE, THE VOLUME OF A 2–YEAR 24–HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF ER ACRE OF DISTURBANCE, WHICHEVER IS GREATER.
   4.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS OR BAGS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
   4.3. TEMPORARY SEDIMENT BASINS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM ARES OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.
   4.4. SEDIMENT FROM DEWATERING INFILTRATION BASINS OR BAGS SHALL BE DISPOSED OF PER NHDES REGULATIONS.
5. AFTER COMPLETION OF IN–WATER WORK, CONTRACTOR SHALL REMOVE ALL WATER DIVERSION STRUCTURES AND RESTORE ALL DISTURBED AREAS TO PRE–CONSTRUCTION CONDITIONS.
6. SILT FENCES OR EROSION CONTROL MIX BERMS SHALL BE INSTALLED WHERE SHOWN ON THE PLANS, ON THE DOWNHILL SIDE OF STOCKPILES OF TOPSOIL AND OTHER SOIL MATERIALS AND IN OTHER LOCATIONS AS REQUIRED, TO PREVENT SILT AND SEDIMENTATION FROM ENTERING EXISTING DRAINAGE CHANNELS.
7. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE.
8. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT MAY NOT EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREA IS STABILIZED, UNLESS AN ENVIRONMENTAL MONITOR IS USED. (REFER TO SITE STABILIZATION NOTES, THIS DWG.)
9. ALL EROSION AND SEDIMENT CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY ½ INCH OF RAINFALL.
10. ANY DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 45 DAYS, OR TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE.
11. DUST CONTROL: ALL VEHICLE TRAFFIC AREAS AND EXPOSED SURFACES SHALL BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.
12. SLOPE STABILITY: ALL SLOPES SHALL BE INSPECTED FREQUENTLY FOR SIGNS OF FAILURE, SLIPPING, AND/OR EROSION. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.
13. CONTRACTOR EROSION CONTROL MEASURES ARE NOT LIMITED TO THOSE SHOWN ON THE PLANS. THE CONTRACTOR SHALL PERFORM ANY AND ALL ADDITIONAL MEASURES TO CONTROL EROSION.
14. SEDIMENT CONTROL AROUND CATCH BASINS SHALL BE INSTALLED WHERE INDICATED, AND PER THE DETAIL.

OVERWINTER CONSTRUCTION AND STABILIZATION

1. AT A MINIMUM: ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
2. THE CONTRACTOR SHALL COMPLY WITH THE OVERWINTER CONSTRUCTION AND STABILIZATION REQUIREMENTS IN THE MAINE EROSION CONTROL AND SEDIMENT CONTROL BMP MANUAL.
3. THE WINTER CONSTRUCTION PERIOD IS FROM NOV 1 TO APR 15.
4. USE BERMS SEEDED ACCORDING TO TOPSOILING AND SEEDING NOTE 4 FOR SEDIMENT BARRIERS.
5. APPLY TEMPORARY SEED AND MULCH AT TWICE THE NORMAL RATE ACCORDING TO TOPSOILING AND SEEDING NOTES 4 AND 5.
6. MULCH STOCKPILES OF SOIL/SUBSOIL OVER WINTER WITH HAY OR STRAW AT TWICE NORMAL RATE.
7. DO NOT PLACE PERMANENT SEED BETWEEN OCT 16 AND APR 15. PROTECT FINE GRADED AREAS WITH MULCH OR TEMPORARY SEED AND MULCH UNTIL FINAL TREATMENT.
8. CONSTRUCT AND STABILIZE STONE–LINED DITCHES AND CHANNELS BY NOV 15. CONSTRUCT AND STABILIZE GRASS–LINE DITCHES AND CHANNELS BY SEP 1. INSTALL A SOD OR STONE LINER IF DITCHES AND CHANNELS CANNOT BE STABILIZED BY THESE DATES.
9. DISTURBED SOILS WITH SLOPES LESS THAN 15% MUST BE SEEDED AND MULCHED BY SEP 15. IF NOT STABILIZED BY THIS DATE, USE TEMPORARY VEGETATION, SOD, OR MULCH.

HYDRANTS

1. CONTRACTOR MAY USE EXISTING HYDRANT FOR DUST AND MILLING.
2. HYDRANTS ARE LOCATED OUTSIDE AIRPORT SECURED AREA. CONTRACTOR MAY UTILIZE WITH WATER DISTRICT'S PERMISSION. WATER DISTRICT TO INSTALL METER AND PROPER BACKFLOW EQUIPMENT.
3. CONTRACTOR SHALL UTILIZE A WATER TRUCK TO TRANSPORT INTO PROJECT AREA.
4. CONTRACTOR TO PAY FOR WATER USE INCIDENTAL TO THE PROJECT.

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No. 11994
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3/24/2022

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MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER–BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

EROSION AND SEDIMENT CONTROL NOTES

DATE: MARCH 2022

SCALE:

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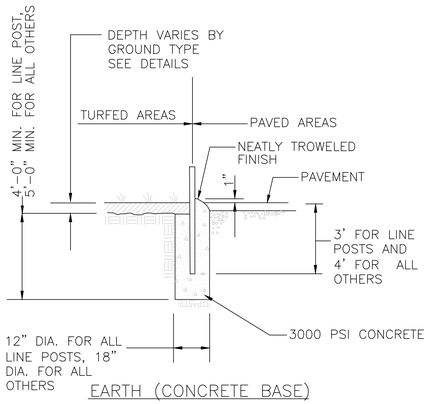

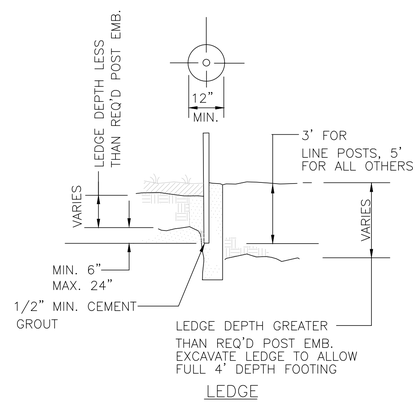

POST SETTING DETAILS

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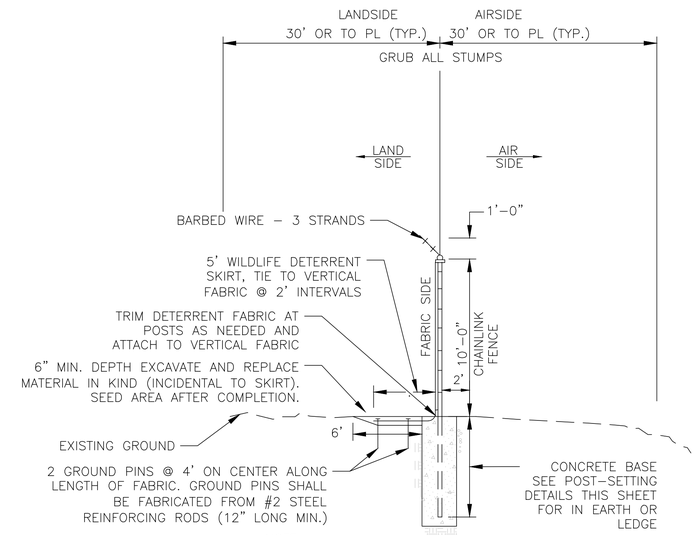


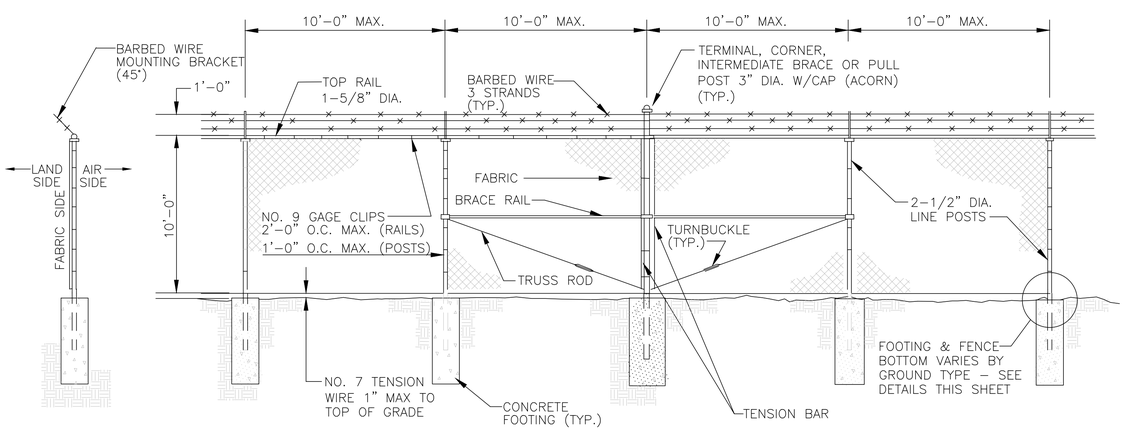
NOTE

1. FULL TENSION OF THE WILDLIFE "SKIRT" IS NOT RECOMMENDED, CONTRACTOR SHALL TENSION WILDLIFE SKIRT ENOUGH TO CONFORM WITH EXISTING TERRAIN.
2. MAINTAIN SECURITY FENCE INTEGRITY AT ALL TIMES. DO NOT LEAVE EXCAVATION UNDER FENCE FABRIC WHICH WOULD PERMIT ACCESS.
3. DEPTH OF EXCAVATION SHALL BE INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO PLACEMENT OF THE CHAIN LINK FENCE FABRIC.
4. END JOINTS BETWEEN ADJACENT SECTIONS OF WIRE FABRIC SHALL BE LAPPED 4' AND TIED WITH GALVANIZED WIRE TIES AT 2'-0" O.C. AND AT EDGES.

WILDLIFE DETERRENT FENCE

NOT TO SCALE

FENCES SHALL BE GROUNDED ON EACH SIDE OF EVERY GATE, AT POINTS 150 FEET (45.7 M) ON EACH SIDE OF HIGH-TENSION LINE CROSSINGS, AND AT 150-FOOT (47.5 M) INTERVALS ALONG THE FENCE WHERE HIGH TENSION LINES (AS DEFINED BY ANSI C2) ARE DIRECTLY OVERHEAD AND RUN PARALLEL TO THE FENCE. FENCES SHALL BE GROUND EVERY 500 FEET OF LENGTH WHEN FENCE ARE IN ISOLATED PLACES AND AT LESSER DISTANCES DEPENDING ON PROXIMITY OF FENCE TO PUBLIC ROADS, HIGHWAYS, AND BUILDINGS. THE GROUND SHALL BE ACCOMPLISHED WITH A COPPER CLAD ROD 8 FEET LONG AND A MINIMUM OF 5/8 INCH IN DIAMETER DRIVEN VERTICALLY UNTIL THE TOP IS 6 INCHES BELOW THE GROUND SURFACE. A NO. 6 SOLID COPPER CONDUCTOR SHALL BE CLAMPED TO THE ROD AND TO THE FENCE IN SUCH A MANNER THAT EACH ELEMENT OF THE FENCE IS GROUNDED.

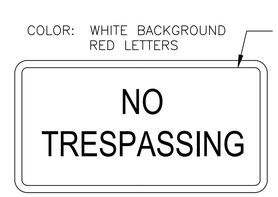


NEW 10' CHAINLINK FENCE DETAIL

NOT TO SCALE

NOTES

1. ALL CORNER AND INTERMEDIATE BRACE OR PULL POSTS POSTS SHALL HAVE TWO BRACES.
2. THE MAXIMUM SPACING BETWEEN INTERMEDIATE POSTS IS 500'

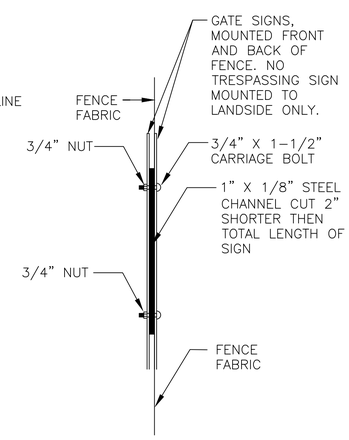


SIGN DETAIL

NOT TO SCALE

NOTE:
ALL SIGN LETTERING, FONTS, COLORS, SIZES AND GRAPHICS ARE TO BE APPROVED BY THE OWNER PRIOR TO PROCUREMENT OF SIGNS.

SIGN 'A' TO BE INSTALLED ALONG EVERY 200 FT. LENGTH OF PROPOSED FENCE.



SIGN MOUNTING DETAIL

NOT TO SCALE

ENGINEER'S SEAL

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FENCE DETAILS

SCALE: AS SHOWN

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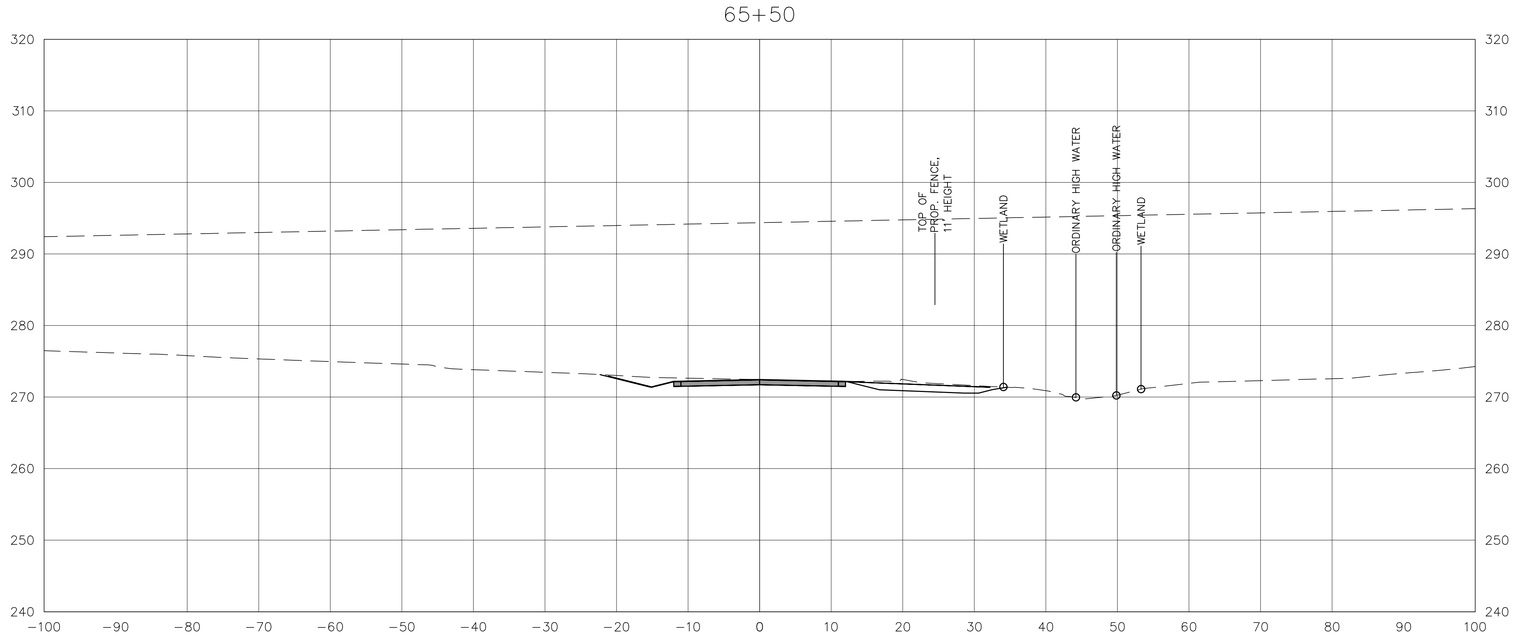

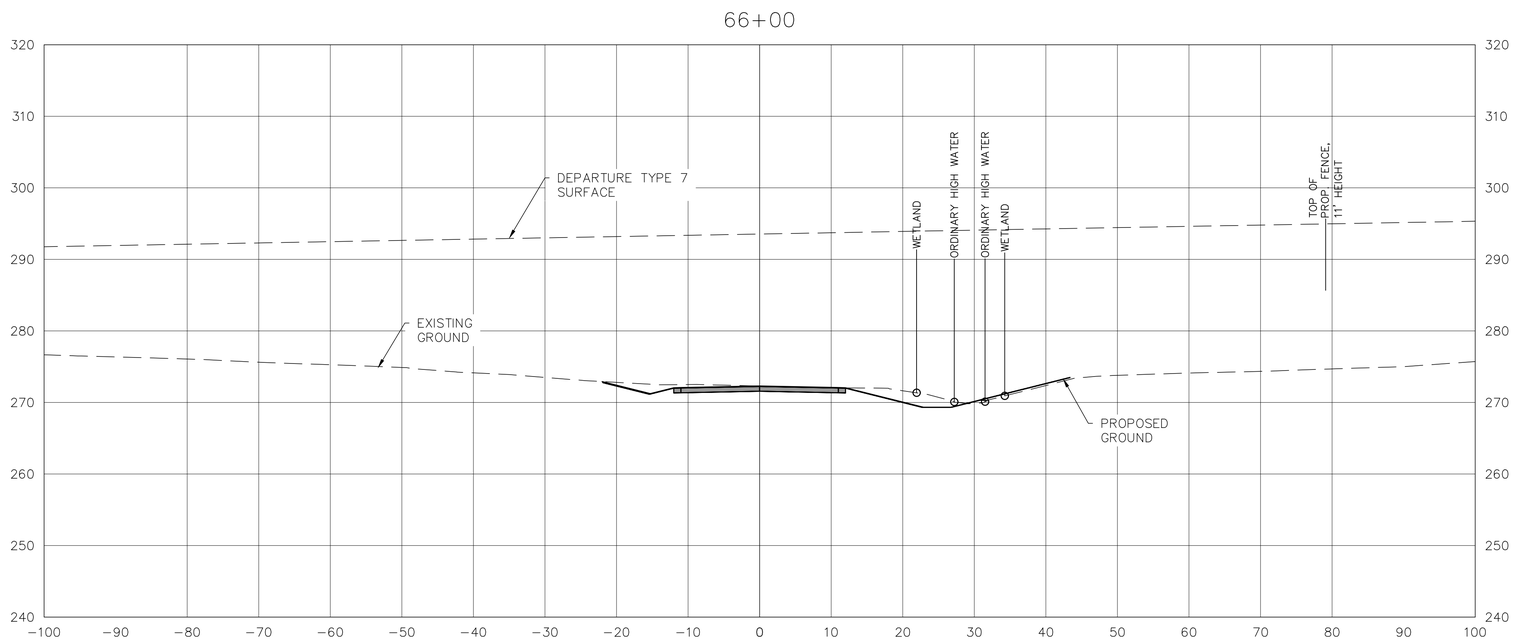

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SERVICE ROAD IMPROVEMENTS

SERVICE ROAD CROSS SECTIONS
SHEET 1 OF 12

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DATE: MARCH 2022

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SHEET 22 OF 34

REV

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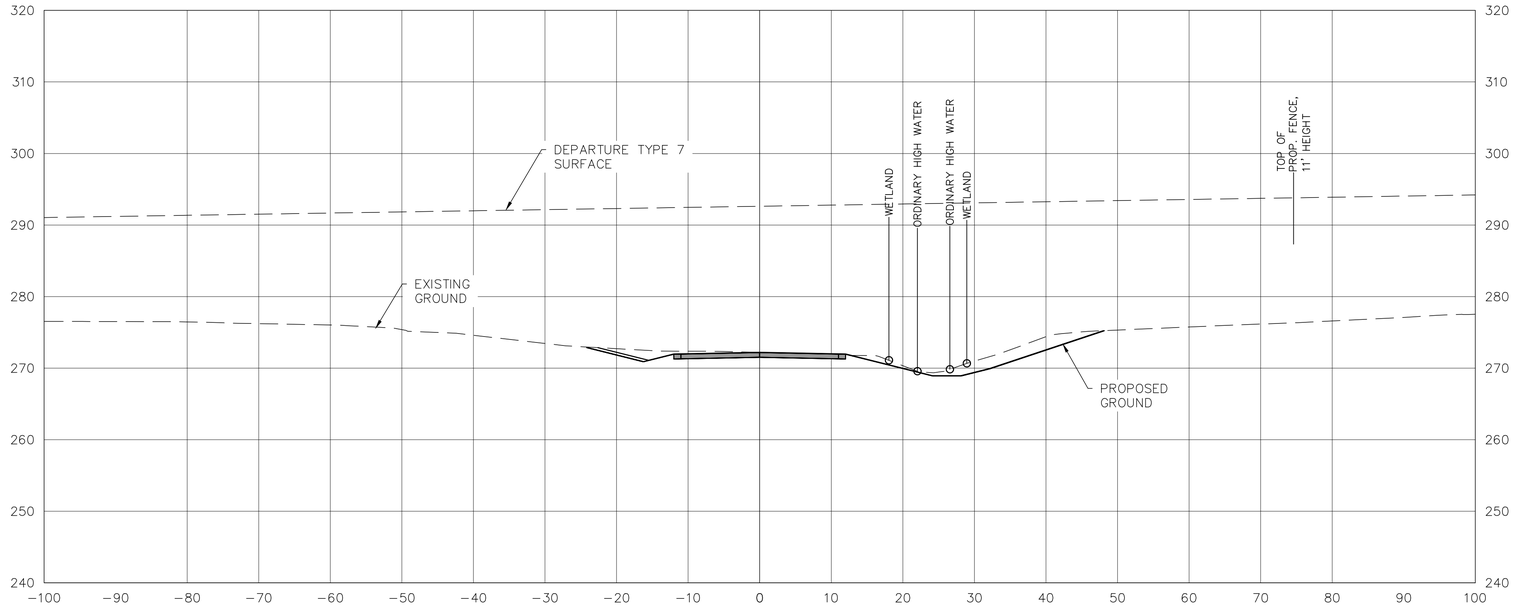

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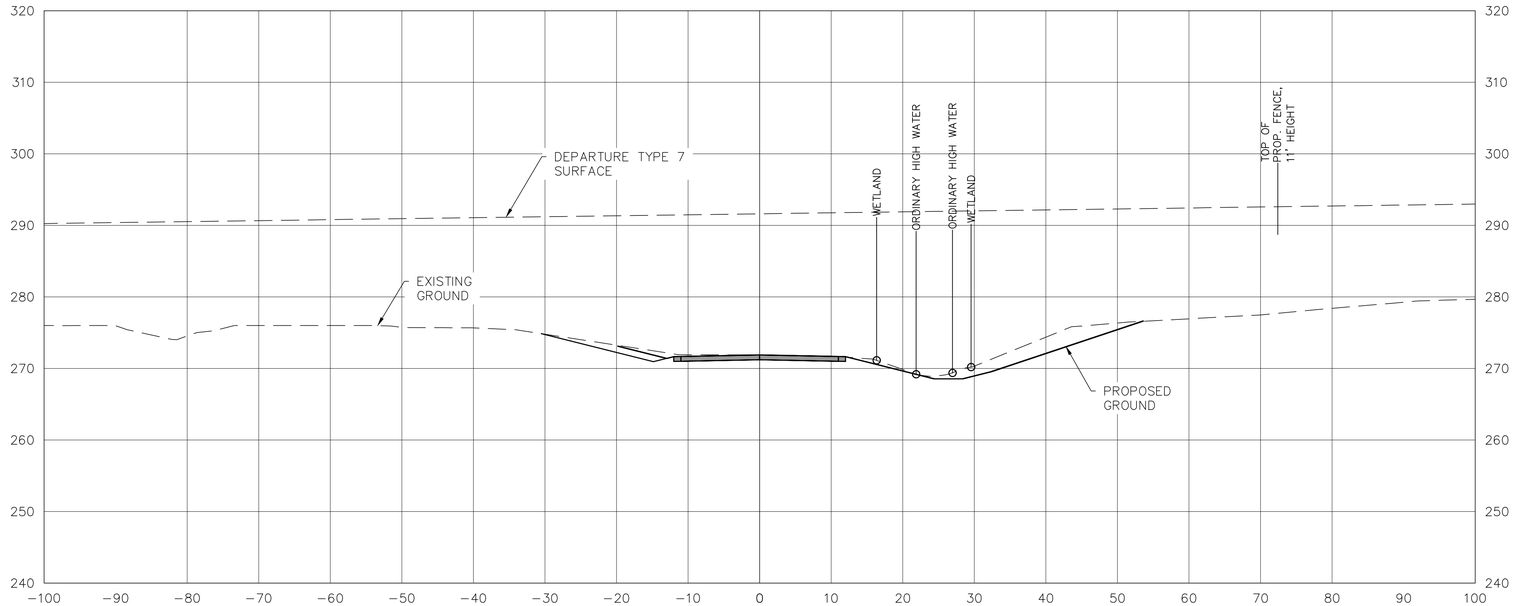

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SERVICE ROAD IMPROVEMENTS

SERVICE ROAD CROSS SECTIONS
SHEET 2 OF 12

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SHEET 23 OF 34

REV △

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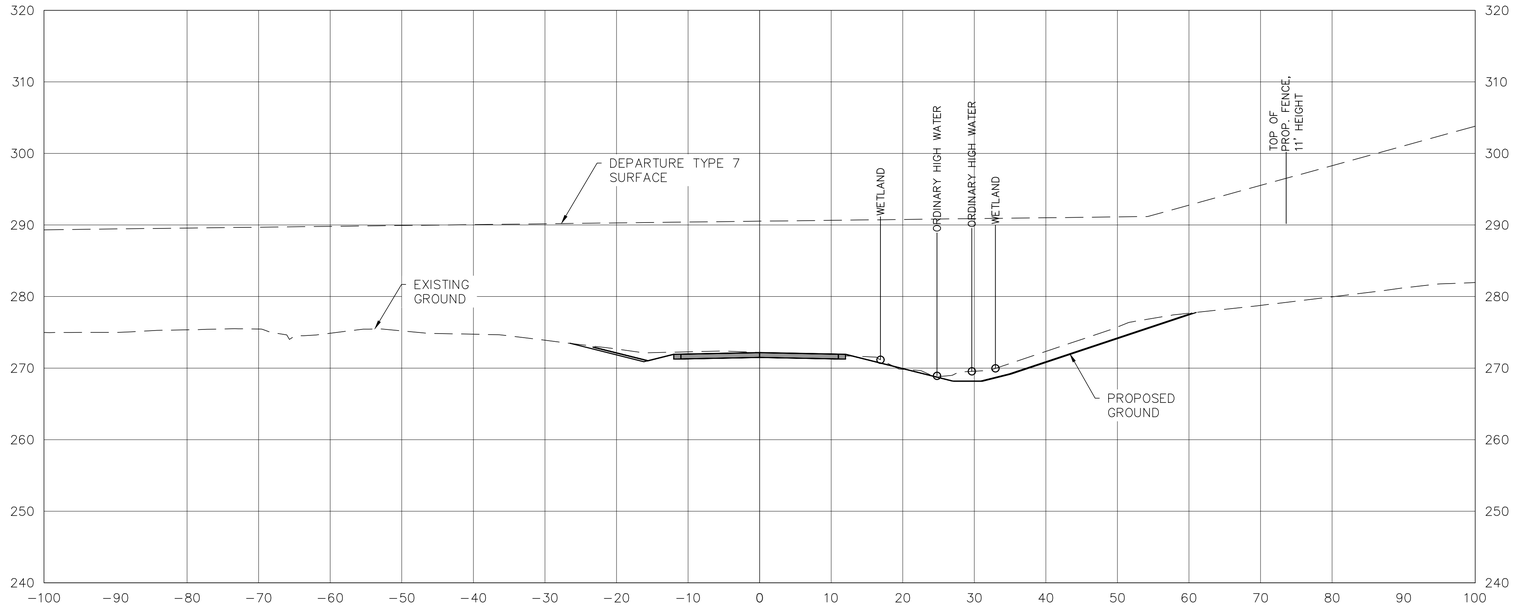

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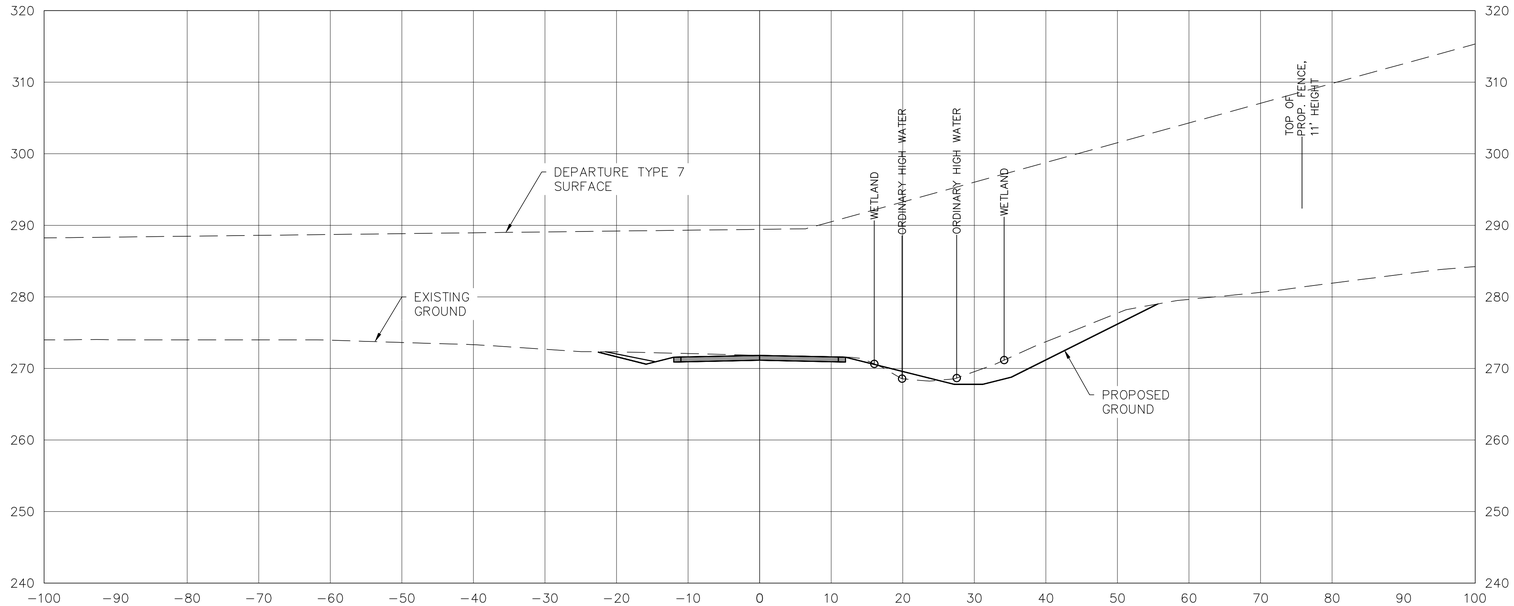

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SERVICE ROAD IMPROVEMENTS

SERVICE ROAD CROSS SECTIONS
SHEET 3 OF 12

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XS1.3

SHEET 24 OF 34

REV

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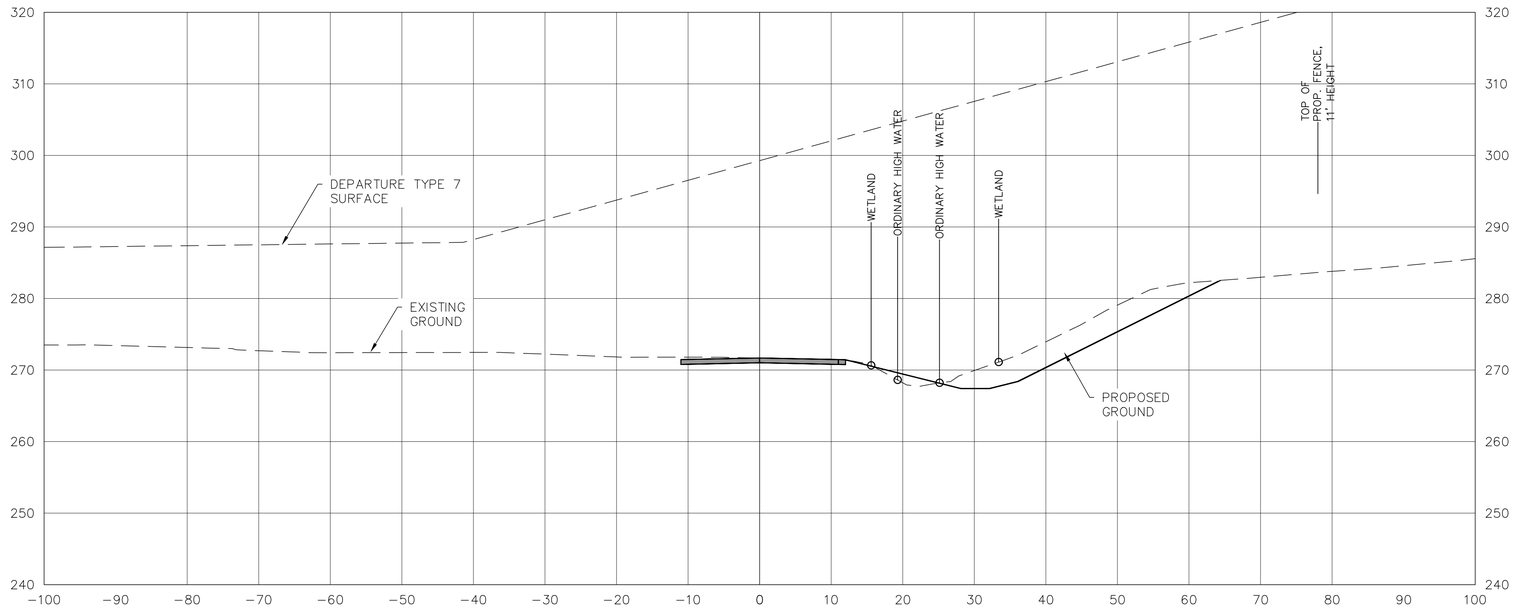

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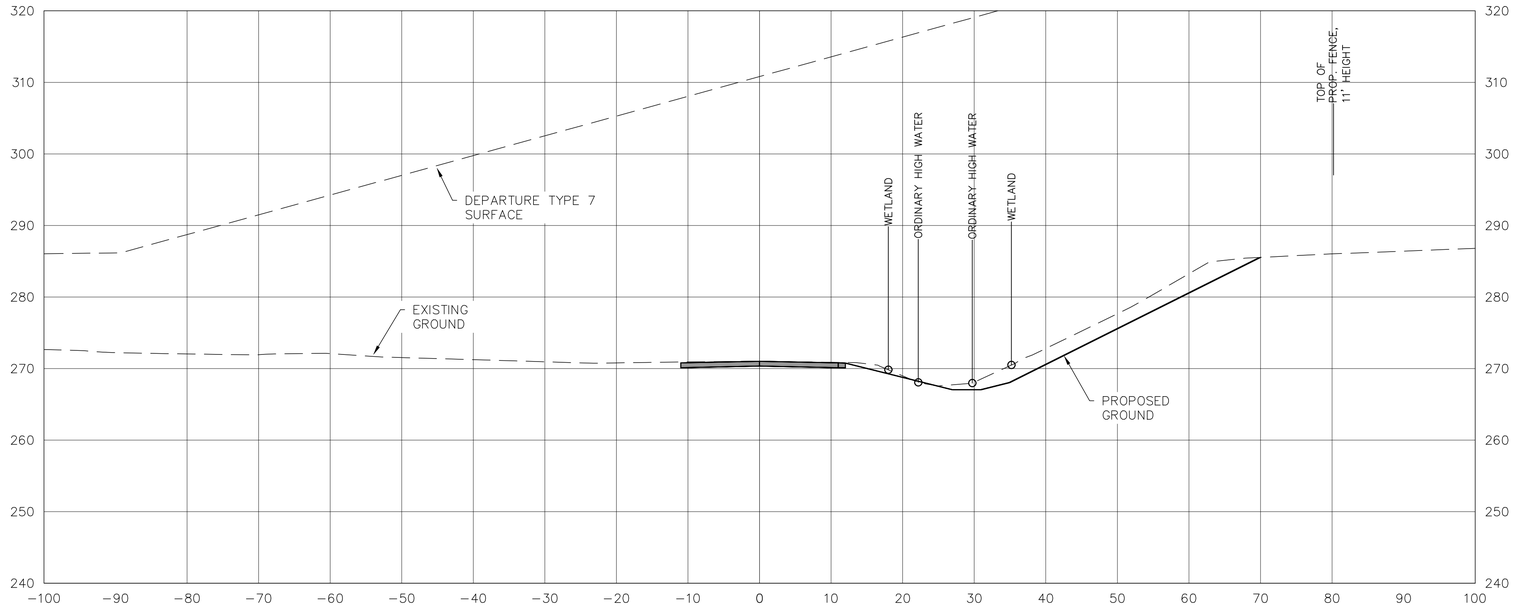

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SERVICE ROAD CROSS SECTIONS
SHEET 4 OF 12

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XS1.4

SHEET 25 OF 34

REV

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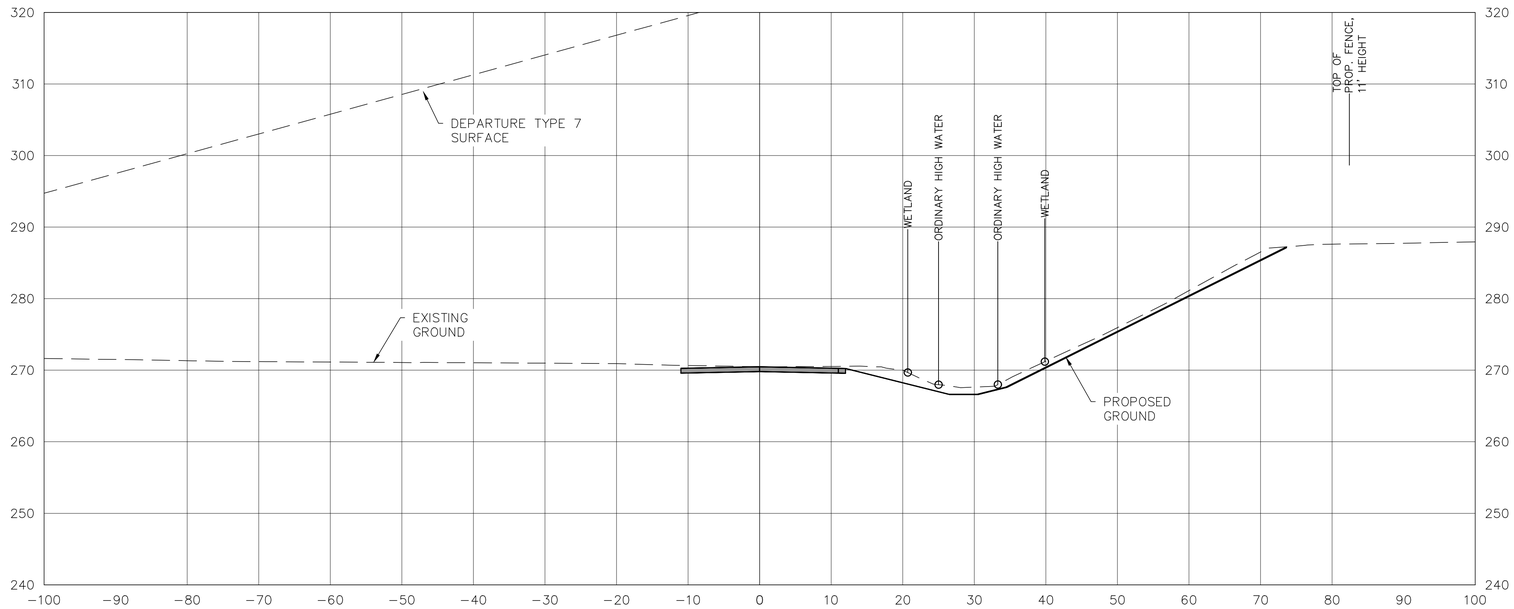

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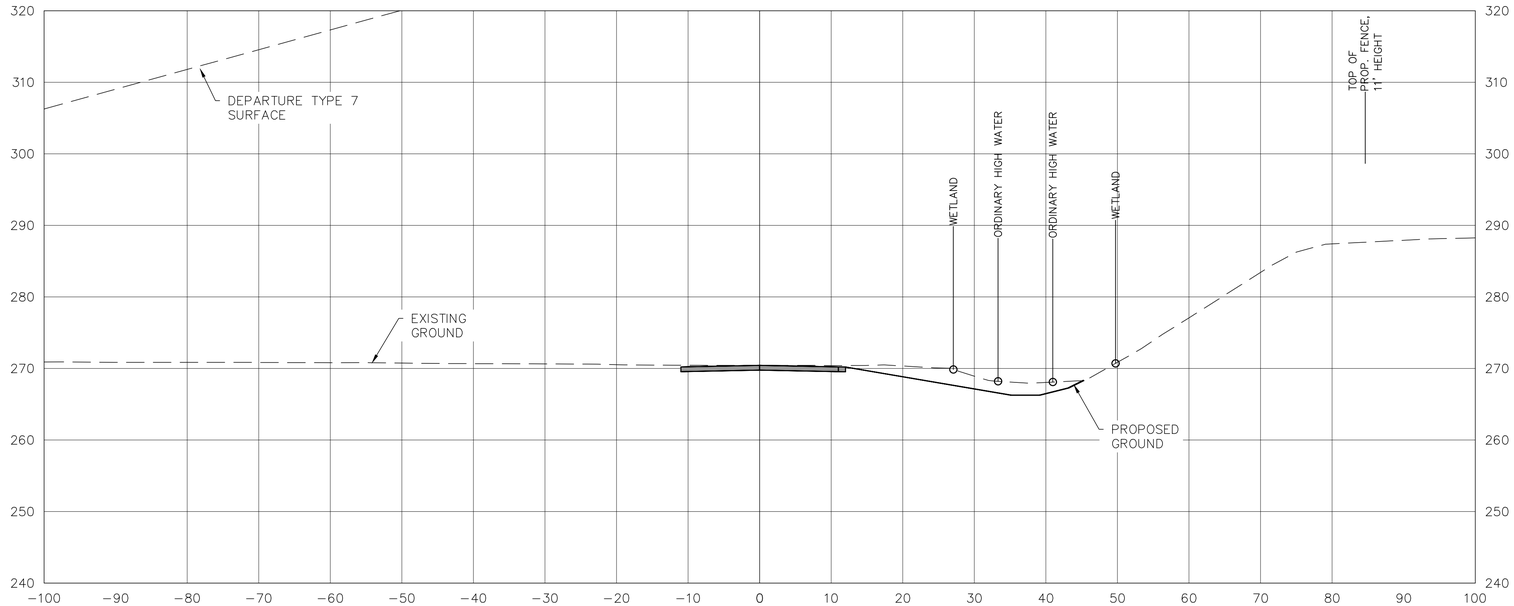

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SERVICE ROAD IMPROVEMENTS

SERVICE ROAD CROSS SECTIONS
SHEET 5 OF 12

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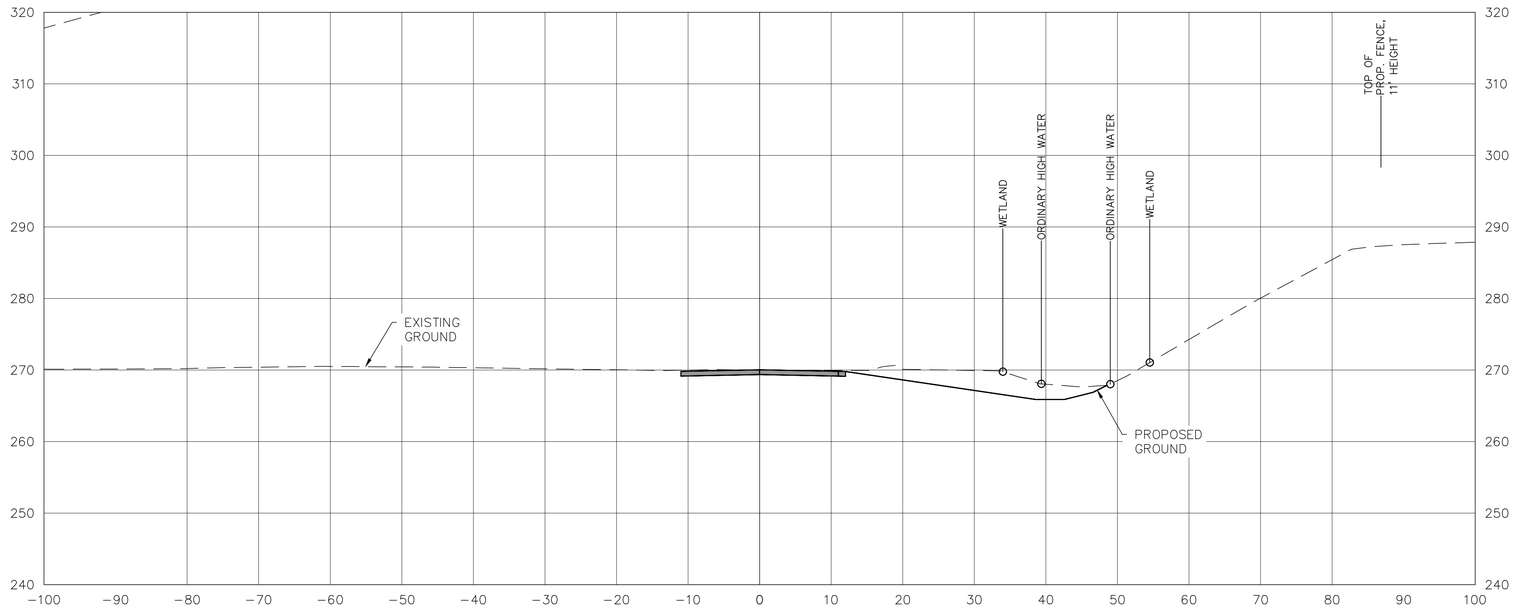
XS1.5

SHEET 26 OF 34

REV

70+50



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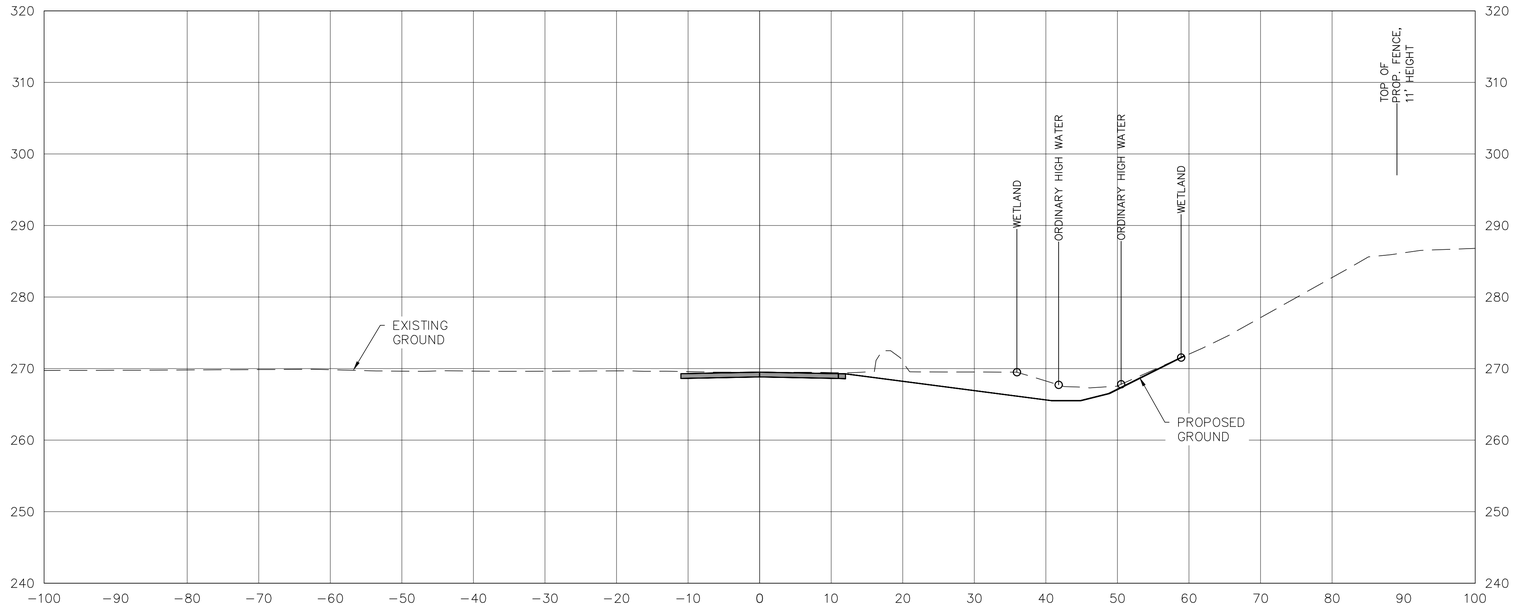

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SERVICE ROAD CROSS SECTIONS
SHEET 6 OF 12

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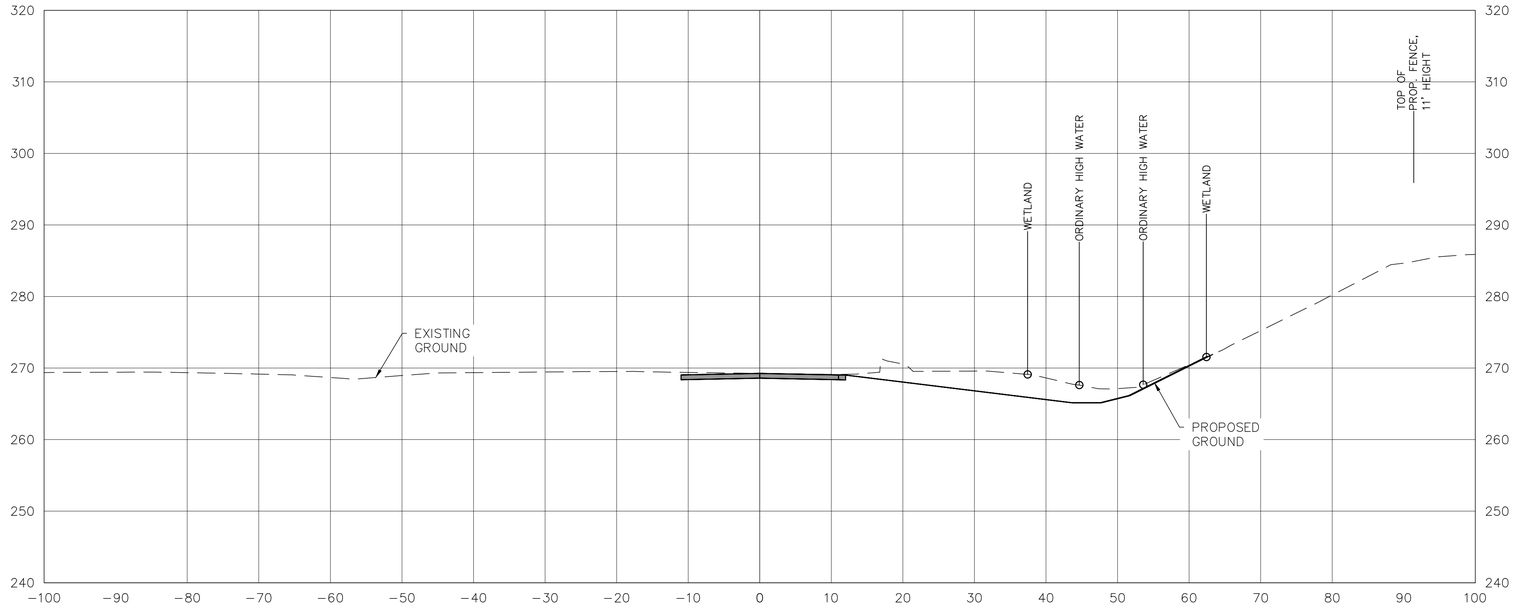
SHEET 27 OF 34

REV

71+50



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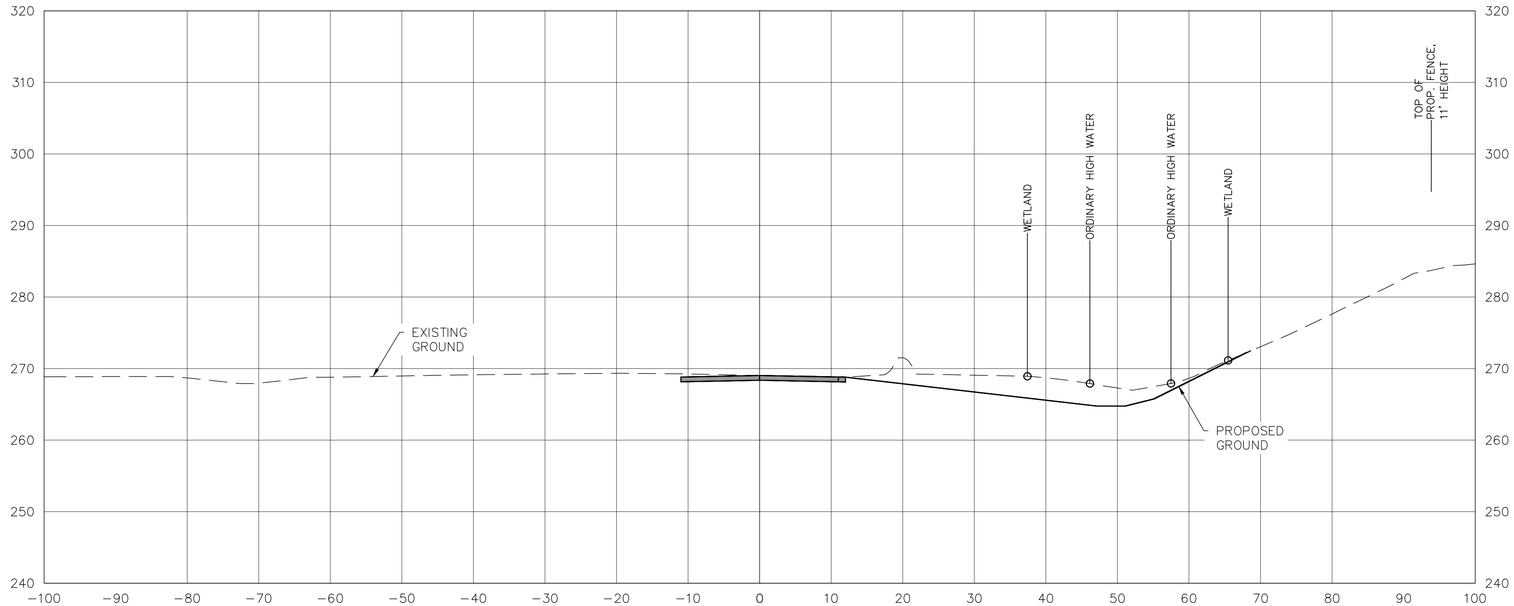

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SERVICE ROAD IMPROVEMENTS

SERVICE ROAD CROSS SECTIONS
SHEET 7 OF 12

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SHEET 28 OF 34

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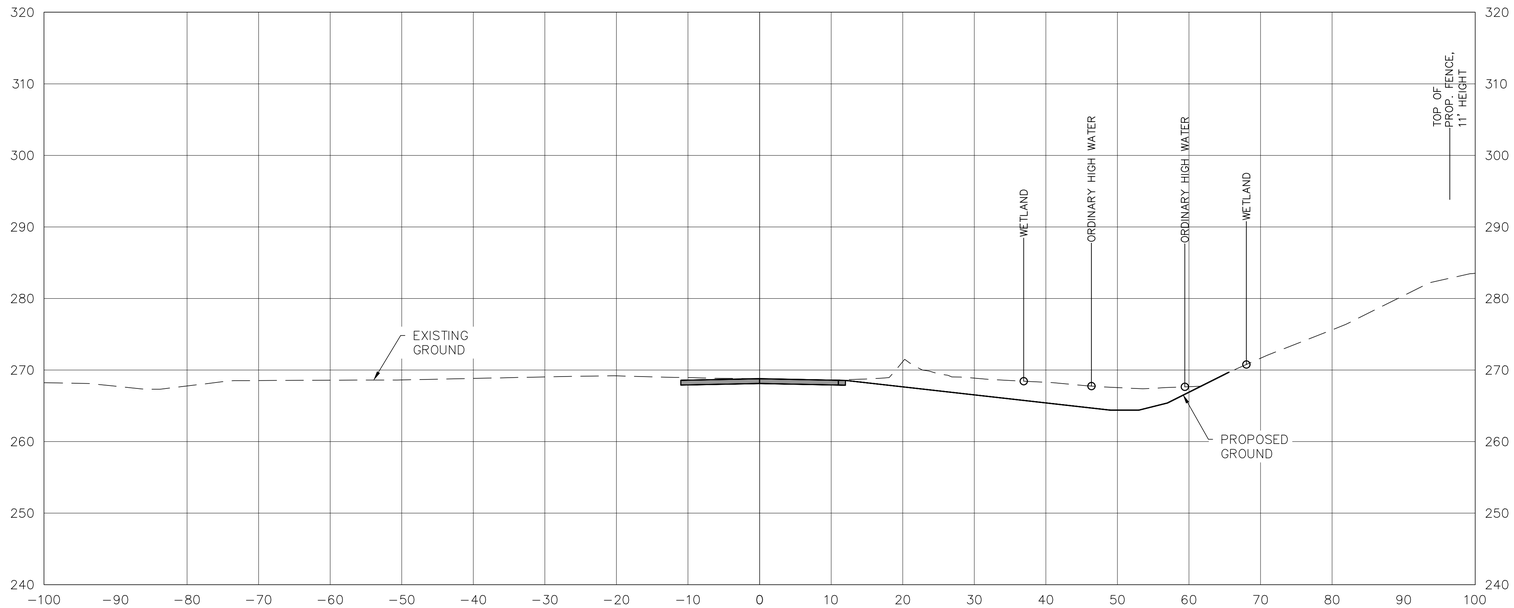

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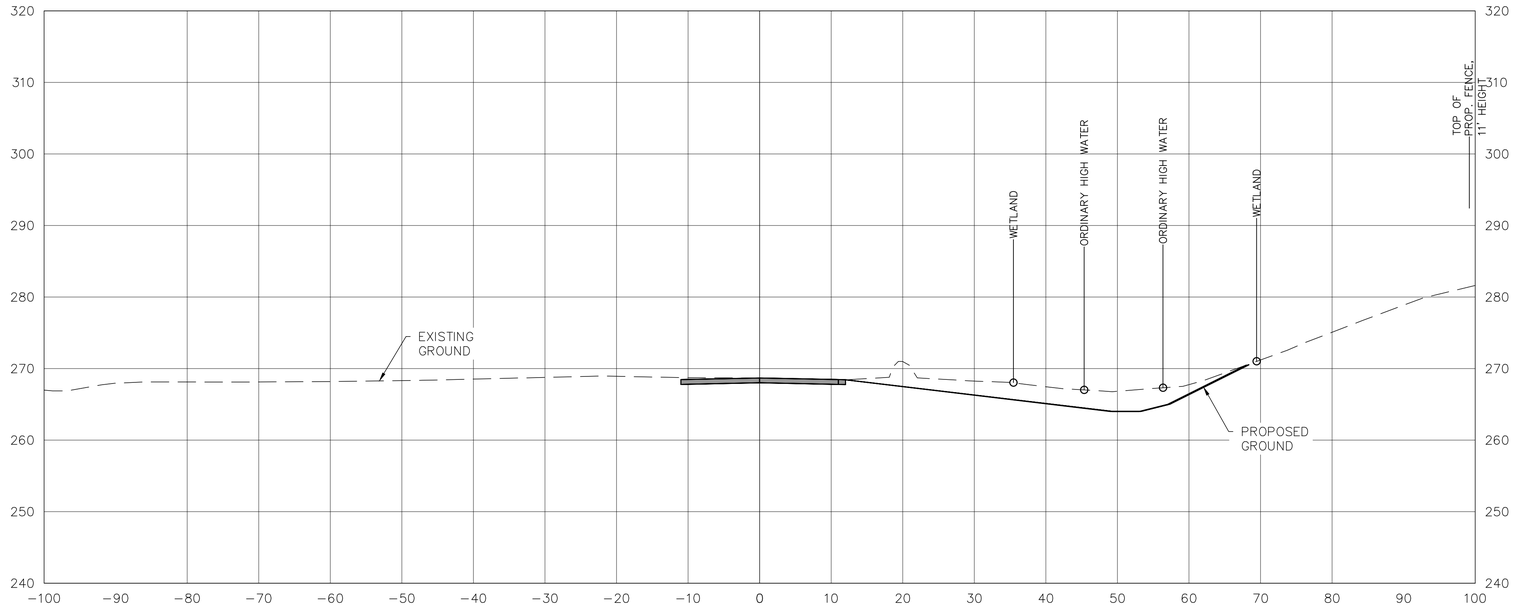

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SERVICE ROAD CROSS SECTIONS
SHEET 8 OF 12

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DATE: MARCH 2022

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REV. NO.	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

PROJ. No.: 030089.00

FILE: MHT–XS101

AIP No.: 3–33–0011–XXX–2022

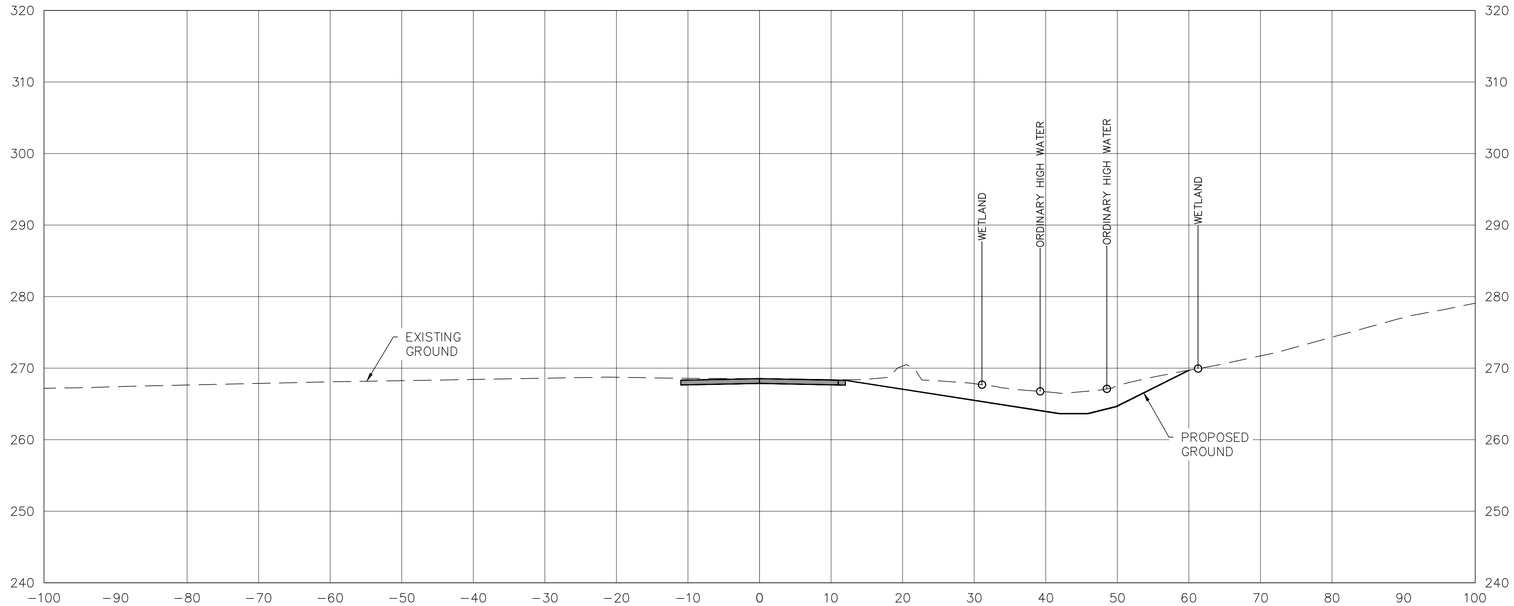
DRAWING NO.

XS1.8

SHEET 29 OF 34

REV

73+50



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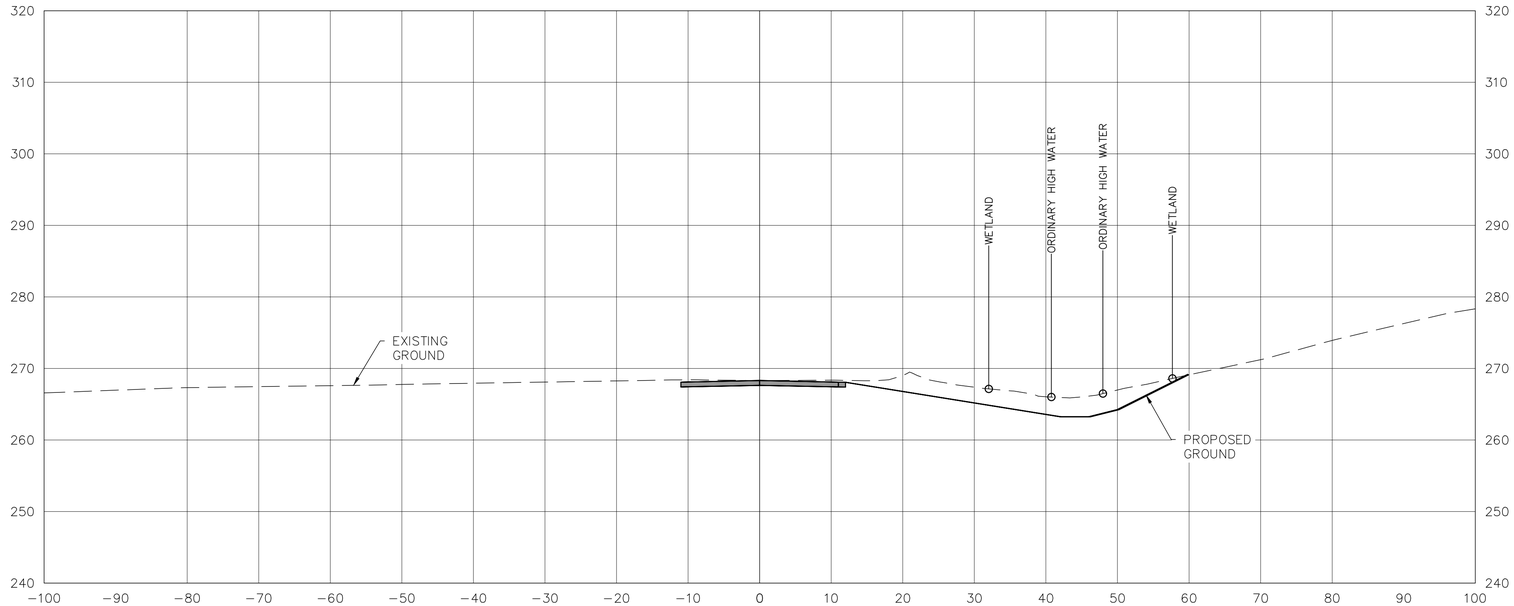

ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER

3/24/2022

PROJECT DESIGNER

HOYLE TANNER

150 Dow Street
Manchester, NH 03101
(603) 669-5555
www.hoyletanner.com

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DESIGNED BY	DRAWN BY	CHECKED BY
JCC	RPH	SLS

CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER-BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

SERVICE ROAD CROSS SECTIONS
SHEET 9 OF 12

SCALE: NOT TO SCALE

DATE: MARCH 2022

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

PROJ. No.: 030089.00

FILE: MHT−XS101

AIP No.: 3−33−0011−XXX−2022

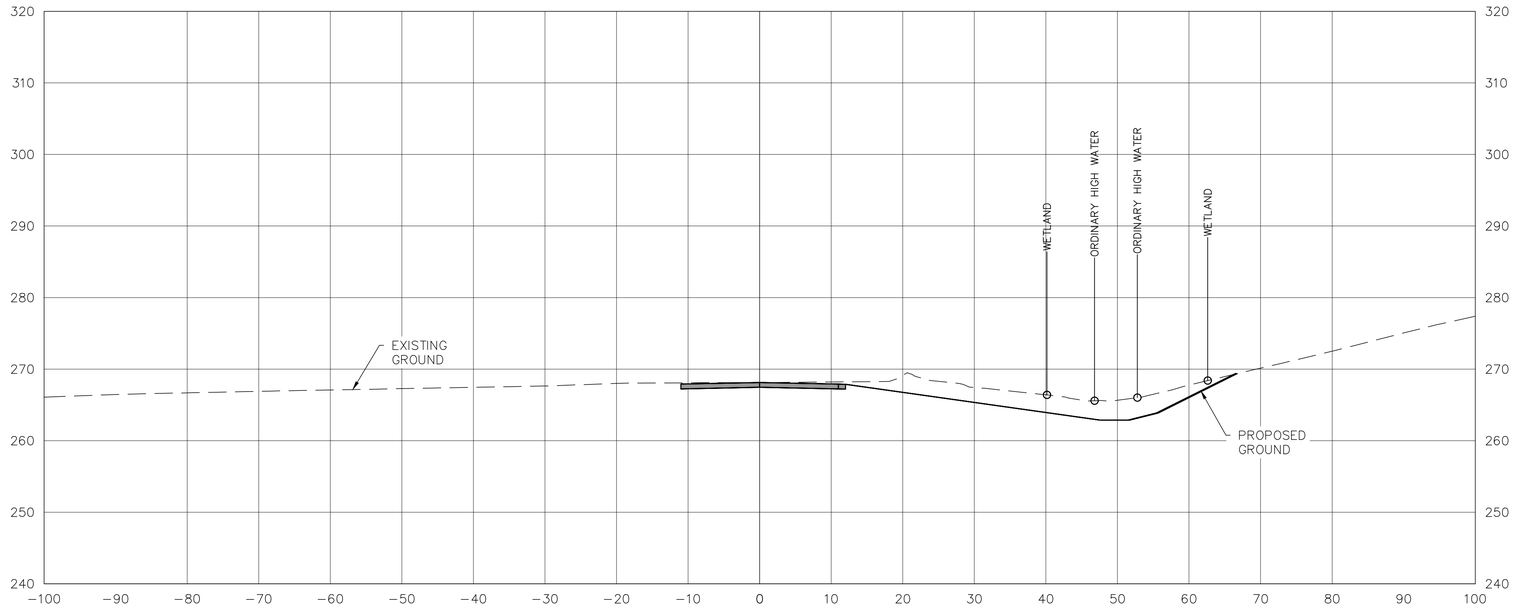
DRAWING NO.

XS1.9

SHEET 30 OF 34

REV

74+50



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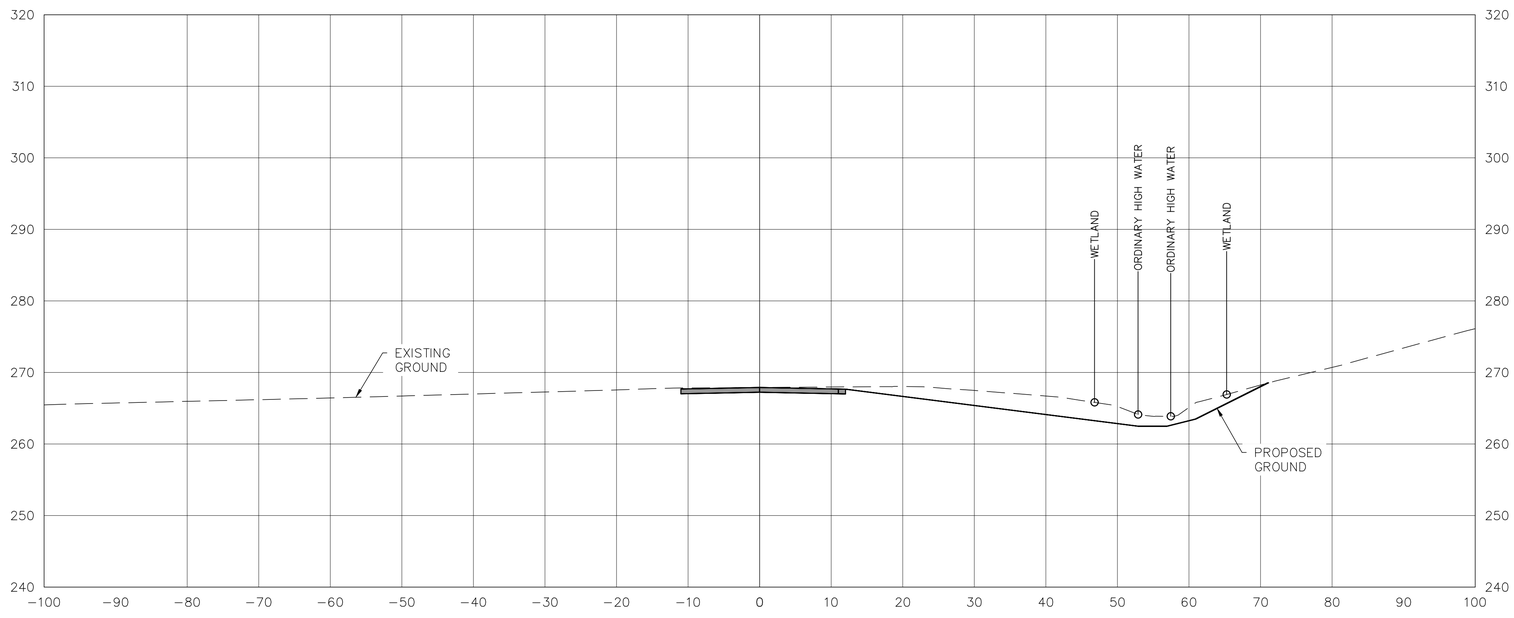

ENGINEER'S SEAL

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SUZANNE L. SHEPPARD
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3/24/2022

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DESIGNED BY	DRAWN BY	CHECKED BY
JCC	RPH	SLS

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DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston
REGIONAL AIRPORT

MANCHESTER-BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

SERVICE ROAD CROSS SECTIONS
SHEET 10 OF 12

SCALE: NOT TO SCALE

DATE: MARCH 2022

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

PROJ. No.: 030089.00
FILE: MHT-XS101
AIP No.: 3-33-0011-XXX-2022

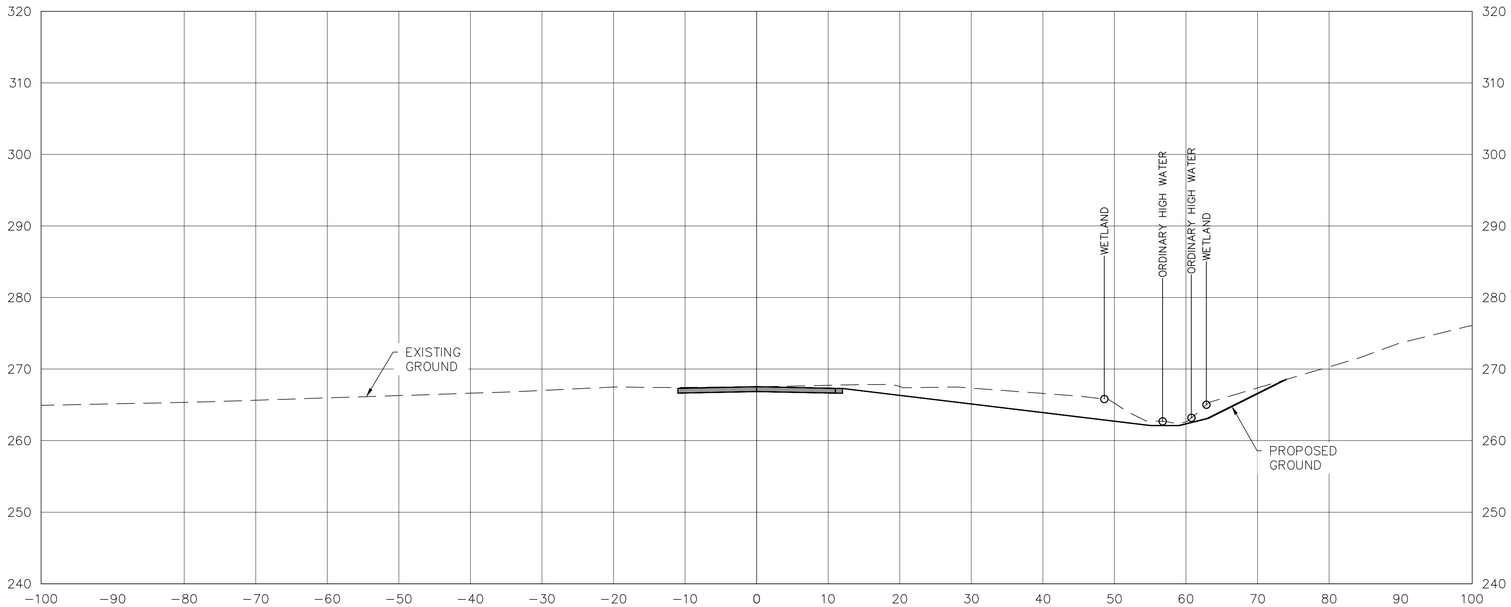
DRAWING NO.

XS1.10

SHEET 31 OF 34

REV

75+50



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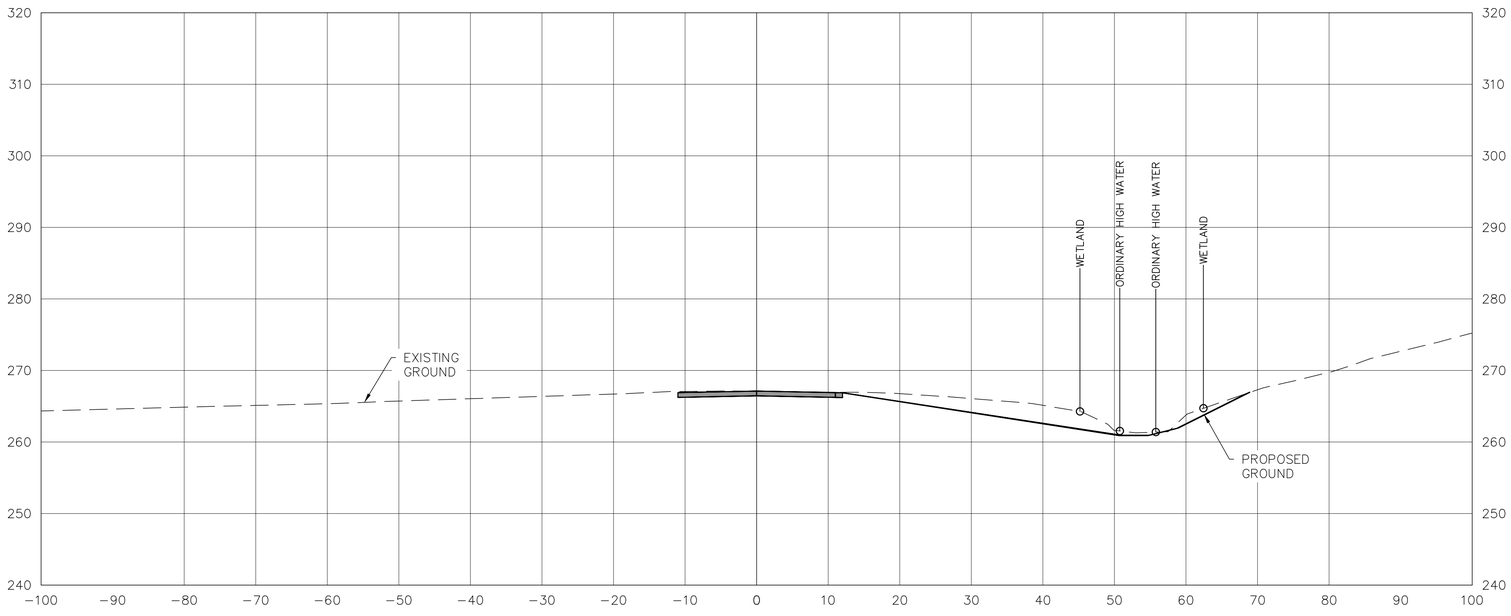

ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER

3/24/2022

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DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER–BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

SERVICE ROAD CROSS SECTIONS
SHEET 11 OF 12

SCALE: NOT TO SCALE

DATE: MARCH 2022

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

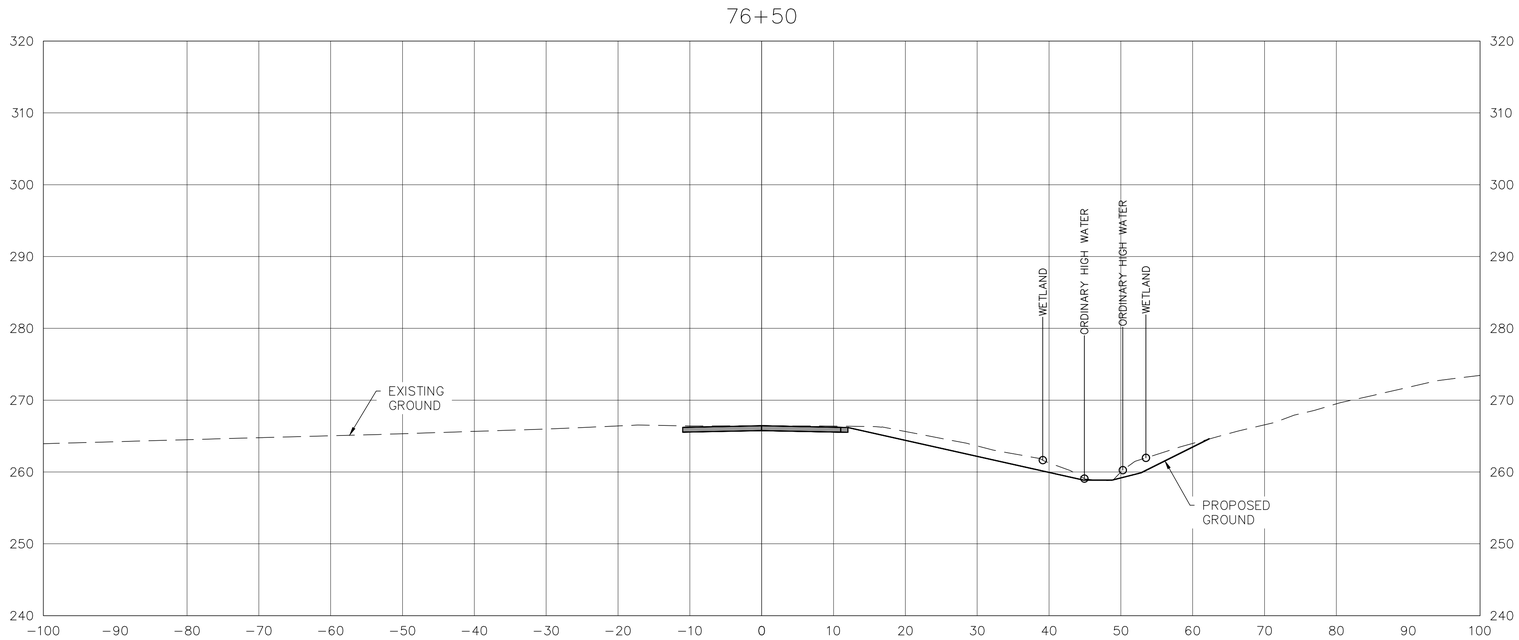
PROJ. No.: 030089.00
FILE: MHT–XS101
AIP No.: 3–33–0011–XXX–2022

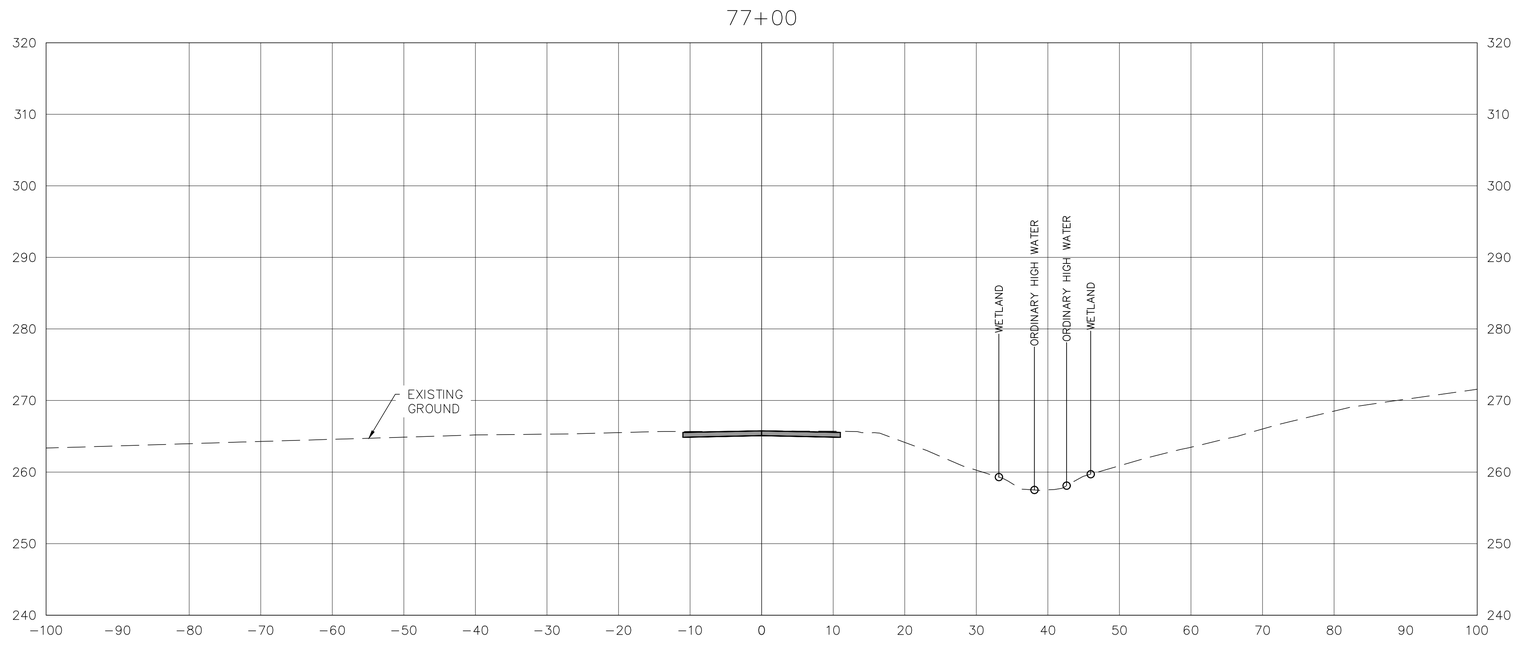
DRAWING NO.

XS1.11

SHEET 32 OF 34

REV





ENGINEER'S SEAL

STATE OF NEW HAMPSHIRE
SUZANNE L. SHEPPARD
No. 11944
LICENSED
PROFESSIONAL ENGINEER

3/24/2022

PROJECT DESIGNER

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CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER–BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

SERVICE ROAD CROSS SECTIONS
SHEET 12 OF 12

SCALE: NOT TO SCALE

DATE: MARCH 2022

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

PROJ. No.: 030089.00
FILE: MHT–XS101
AIP No.: 3–33–0011–XXX–2022

DRAWING NO.

XS1.12

SHEET 33 OF 34

REV

ENGINEER'S SEAL

BORING LOG — B-1

S.W.COLE ENGINEERING, INC.

CLIENT:	Hoyle, Tanner & Associates, Inc.	BORING NO.:	B-1
PROJECT:	Reconstruct Runway 35 End of Service Road	SHEET:	1 of 1
LOCATION:	Manchester-Boston Regional Airport, Manchester, NH	PROJECT NO.	19-1233
		DATE START:	5/5/2020
		DATE FINISH:	5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan ELEVATION (FT): N/A TOTAL DEPTH (FT): 3.0 LOGGED BY: Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC DRILLER: Sam Shaw DRILLING METHOD: Solid Stem Auger
RIG TYPE: Truck Mounted Acker AUGER ID/OD: N/A / 4 1/2 in SAMPLER: Standard Split-Spoon
HAMMER TYPE: Safety / N/A HAMMER WEIGHT (lbs): 140 CASING ID/OD: N/A /N/A CORE BARREL: N/A
HAMMER EFFICIENCY FACTOR: HAMMER DROP (inch): 30
WATER LEVEL DEPTHS (ft): No free-water observed.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling. D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear. Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot. WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector. S_v = Field Vane Shear Strength, kips/sq.ft.; q_U = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
										3 3/4 inches Asphalt Pavement (Bonded)		
			1S		0.3-1	8/8			0.3	Dark brown, silty gravelly SAND some clay (FILL) (SM)		
			1D		1-1.5	6/3	50		1.0	Brown, SAND some gravel some silt (SW-SM)		

Auger Refusal at 3.0 feet
Probable bedrock or boulder.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-1

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG — B-2

S.W.COLE ENGINEERING, INC.

CLIENT:	Hoyle, Tanner & Associates, Inc.	BORING NO.:	B-2
PROJECT:	Reconstruct Runway 35 End of Service Road	SHEET:	1 of 1
LOCATION:	Manchester-Boston Regional Airport, Manchester, NH	PROJECT NO.	19-1233
		DATE START:	5/5/2020
		DATE FINISH:	5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan ELEVATION (FT): N/A TOTAL DEPTH (FT): 3.5 LOGGED BY: Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC DRILLER: Sam Shaw DRILLING METHOD: Solid Stem Auger
RIG TYPE: Truck Mounted Acker AUGER ID/OD: N/A / 4 1/2 in SAMPLER: Standard Split-Spoon
HAMMER TYPE: Safety HAMMER WEIGHT (lbs): 140 CASING ID/OD: N/A /N/A CORE BARREL:
HAMMER EFFICIENCY FACTOR: HAMMER DROP (inch): 30
WATER LEVEL DEPTHS (ft): No free-water observed.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling. D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear. Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot. WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector. S_v = Field Vane Shear Strength, kips/sq.ft.; q_U = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
										3 1/2 inches Asphalt Pavement (Delaminated)		
			1S		0.3-1	8/8		w =7.5 %	0.3	Dark brown, silty gravelly SAND some clay (FILL) (SM)		
			1D		1-2	12/8	28-50	w =7.3 %	1.0	Dense, brown gravelly silty SAND trace clay (TILL) (SM)		

Auger Refusal at 3.5 feet
Probable bedrock or boulder.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-2

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG — B-3

S.W.COLE ENGINEERING, INC.

CLIENT:	Hoyle, Tanner & Associates, Inc.	BORING NO.:	B-3
PROJECT:	Reconstruct Runway 35 End of Service Road	SHEET:	1 of 1
LOCATION:	Manchester-Boston Regional Airport, Manchester, NH	PROJECT NO.	19-1233
		DATE START:	5/5/2020
		DATE FINISH:	5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan ELEVATION (FT): N/A TOTAL DEPTH (FT): 5.0 LOGGED BY: Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC DRILLER: Sam Shaw DRILLING METHOD: Solid Stem Auger
RIG TYPE: Truck Mounted Acker AUGER ID/OD: N/A / 4 1/2 in SAMPLER: Standard Split-Spoon
HAMMER TYPE: Safety HAMMER WEIGHT (lbs): 140 CASING ID/OD: N/A /N/A CORE BARREL:
HAMMER EFFICIENCY FACTOR: HAMMER DROP (inch): 30
WATER LEVEL DEPTHS (ft): No free-water observed.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling. D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear. Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot. WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector. S_v = Field Vane Shear Strength, kips/sq.ft.; q_U = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
										3 inches Asphalt Pavement (Delaminated)		
			1S		0.3-1	8/8			0.3	Dark brown, silty gravelly SAND some clay (FILL) (SM)		
			1D		1-3	24/16	12-20-28		1.0	Dense, gray silty SAND some clay some gravel (SC-SM)		
			2D		3-3.4	5/5	50/5"					
	5											

Auger Refusal at 5.0 feet
Probable bedrock or boulder.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-3

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG — B-4

S.W.COLE ENGINEERING, INC.

CLIENT:	Hoyle, Tanner & Associates, Inc.	BORING NO.:	B-4
PROJECT:	Reconstruct Runway 35 End of Service Road	SHEET:	1 of 1
LOCATION:	Manchester-Boston Regional Airport, Manchester, NH	PROJECT NO.	19-1233
		DATE START:	5/5/2020
		DATE FINISH:	5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan ELEVATION (FT): N/A TOTAL DEPTH (FT): 5.0 LOGGED BY: Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC DRILLER: Sam Shaw DRILLING METHOD: Solid Stem Auger
RIG TYPE: Truck Mounted Acker AUGER ID/OD: N/A / 4 1/2 in SAMPLER: Standard Split-Spoon
HAMMER TYPE: Safety HAMMER WEIGHT (lbs): 140 CASING ID/OD: N/A /N/A CORE BARREL:
HAMMER EFFICIENCY FACTOR: HAMMER DROP (inch): 30
WATER LEVEL DEPTHS (ft): No free-water observed.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling. D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear. Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot. WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector. S_v = Field Vane Shear Strength, kips/sq.ft.; q_U = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
										3 inches Asphalt Pavement (Delaminated)		
			1S		0.3-1.5	14/14		w =10.1 %	0.3	Dark brown, SAND and GRAVEL some silt trace clay (FILL) (SM)		
			1D		1.5-3.5	24/14	13-35-32-48	w =7.2 %	1.5	Dense, gray silty SAND some clay some gravel (SC-SM)		
			2D		4-4.8	9/6	48-50/3"					
	5											

Auger Refusal at 5.0 feet
Probable bedrock or boulder.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-4

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG — B-5

S.W.COLE ENGINEERING, INC.

CLIENT:	Hoyle, Tanner & Associates, Inc.	BORING NO.:	B-5
PROJECT:	Reconstruct Runway 35 End of Service Road	SHEET:	1 of 1
LOCATION:	Manchester-Boston Regional Airport, Manchester, NH	PROJECT NO.	19-1233
		DATE START:	5/5/2020
		DATE FINISH:	5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan ELEVATION (FT): N/A TOTAL DEPTH (FT): 10.0 LOGGED BY: Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC DRILLER: Sam Shaw DRILLING METHOD: Solid Stem Auger
RIG TYPE: Truck Mounted Acker AUGER ID/OD: N/A / 4 1/2 in SAMPLER: Standard Split-Spoon
HAMMER TYPE: Safety HAMMER WEIGHT (lbs): 140 CASING ID/OD: N/A /N/A CORE BARREL:
HAMMER EFFICIENCY FACTOR: HAMMER DROP (inch): 30
WATER LEVEL DEPTHS (ft): ▽ 6 ft Soil samples saturated below 6 feet.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling. D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear. Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot. WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector. S_v = Field Vane Shear Strength, kips/sq.ft.; q_U = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
										3 1/2 inches Asphalt Pavement (Bonded)		
			1S		0.3-1.5	14/14		w =6.2 %	0.3	Dark brown, gravelly SAND some silt trace clay (FILL) (SW-SM)		
			1D		1.5-3.5	24/14	20-23-40-32	w =6.9 %	1.5	Dense, brown SAND some gravel some silt (FILL) (SM)		
									3.0	Dense, brown silty SAND trace gravel trace clay (SM)		
			2D		4-6	24/16	15-23-30-20	w =9.8 %				
	5											
			3D		6-8	24/12	22-24-30-28				▽	
			4D		8-10	24/14	25-26-26-29					
	10											

Bottom of Exploration at 10.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-5

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG — B-6

S.W.COLE ENGINEERING, INC.

CLIENT:	Hoyle, Tanner & Associates, Inc.	BORING NO.:	B-6
PROJECT:	Reconstruct Runway 35 End of Service Road	SHEET:	1 of 1
LOCATION:	Manchester-Boston Regional Airport, Manchester, NH	PROJECT NO.	19-1233
		DATE START:	5/5/2020
		DATE FINISH:	5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan ELEVATION (FT): N/A TOTAL DEPTH (FT): 9.6 LOGGED BY: Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC DRILLER: Sam Shaw DRILLING METHOD: Solid Stem Auger
RIG TYPE: Truck Mounted Acker AUGER ID/OD: N/A / 4 1/2 in SAMPLER: Standard Split-Spoon
HAMMER TYPE: Safety HAMMER WEIGHT (lbs): 140 CASING ID/OD: N/A /N/A CORE BARREL:
HAMMER EFFICIENCY FACTOR: HAMMER DROP (inch): 30
WATER LEVEL DEPTHS (ft): ▽ 8 ft Soil samples saturated below 8 feet.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling. D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear. Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot. WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector. S_v = Field Vane Shear Strength, kips/sq.ft.; q_U = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
										3 inches Asphalt Pavement (Bonded)		
			1S		0.3-1.5	14/14		w =7.1 %	0.3	Dark brown, gravelly SAND some silt trace clay (FILL) (SM)		
			1D		1.5-3.3	21/12	20-22-30-50/3"	w =6.7 %	1.5	Dense to Loose, brown gravelly silty SAND trace clay (FILL) (SM)		
			2D		4-4.8	9/3	6-50/3"					
	5											
			3D		6-8	24/6	2-2-6-8					
									7.0	Medium dense to dense, brown gravelly SAND some silt (SW-SM)		
			4D		8-9.6	19/14	20-22-30-50/1"				▽	

Split Spoon Refusal at 9.6 feet
Probable bedrock or boulder.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-6

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

BORING LOG — B-7

S.W.COLE ENGINEERING, INC.

CLIENT:	Hoyle, Tanner & Associates, Inc.	BORING NO.:	B-7
PROJECT:	Reconstruct Runway 35 End of Service Road	SHEET:	1 of 1
LOCATION:	Manchester-Boston Regional Airport, Manchester, NH	PROJECT NO.	19-1233
		DATE START:	5/5/2020
		DATE FINISH:	5/5/2020

Drilling Information

LOCATION: See Exploration Location Plan ELEVATION (FT): N/A TOTAL DEPTH (FT): 10.0 LOGGED BY: Antonio Santiago
DRILLING CO.: S. W. Cole Explorations, LLC DRILLER: Sam Shaw DRILLING METHOD: Solid Stem Auger
RIG TYPE: Truck Mounted Acker AUGER ID/OD: N/A / 4 1/2 in SAMPLER: Standard Split-Spoon
HAMMER TYPE: Safety HAMMER WEIGHT (lbs): 140 CASING ID/OD: N/A /N/A CORE BARREL:
HAMMER EFFICIENCY FACTOR: HAMMER DROP (inch): 30
WATER LEVEL DEPTHS (ft): ▽ 6 ft Soil samples saturated below 6 feet.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling. D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear. Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot. WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector. S_v = Field Vane Shear Strength, kips/sq.ft.; q_U = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
										3 1/2 inches Asphalt Pavement (Bonded)		
			1S		0.3-2	20/20		w =7 %	0.3	Dark brown, gravelly silty SAND trace (FILL) (SM)		
			1D		2-4	24/14	30-18-24-20	w =6.6 %	2.0	Dense, brown silty SAND some gravel trace clay (FILL) (SM)		
									3.5	Medium dense loose, brown silty SAND some gravel (SM)		
			2D		4-6	24/4	8-9-12-14					
	5											
			3D		6-8	24/6	4-4-3-1				▽	
			4D		8-10	24/0	1-1-4-6					
	10											

Bottom of Exploration at 10.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-7

BORING / WELL 19-1233.GPJ SWCE TEMPLATE.GDT 5/19/20

PROJECT DESIGNER

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DESIGNED BY JCC | DRAWN BY RPH | CHECKED BY SLS

CITY OF MANCHESTER
DEPARTMENT OF AVIATION
MANCHESTER, NEW HAMPSHIRE

Manchester-Boston REGIONAL AIRPORT

MANCHESTER–BOSTON REGIONAL AIRPORT
SERVICE ROAD IMPROVEMENTS

BORING LOGS

DATE: MARCH 2022
SCALE: AS SHOWN

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY
△			
△			
△			
△			

DO NOT SCALE DRAWING

PROJ. No.: 030089.00
FILE: MHT–B101
AIP No.: 3–33–0011–XXX–2022

DRAWING NO.
B1.1

SHEET 29 OF 34
REV △