

BRYAN COUNTY MEGA SITE SOUTH ACCESS ROAD

PREPARED FOR:
**SAVANNAH HARBOR – INTERSTATE 16 CORRIDOR
JOINT DEVELOPMENT AUTHORITY**

**T&H PROJECT NO.
J-25503.0004**

ADDENDUM NO. 2

December 6, 2022

GENERAL

This Addendum has been issued on behalf of the Savannah Harbor – Interstate 16 Corridor Joint Development Authority. The following information should be considered by prospective bidders in preparation of their proposals and are hereby incorporated into the Proposal Documents. Bidders shall be responsible for acknowledging receipt of this addendum in the Bid Form, Document 00313. Failure to do so will result in the proposal being considered non-responsive.

PART I – QUESTIONS AND CLARIFICATIONS:

A. QUESTIONS:

Question 1: Is there a list of Plan Holders/Prospective Bidders that can be provided.

Answer: Yes plan Holders List will be provided.

Question 2: I noticed in the report from Terracon that they are suggesting the use of geogrid to be BX1100 as compared to the geogrid labeled on the "Typical Sections" drawing as BX1200. Does this mean that the road base will contain BX1200 and the suggested use of BX1100 is to be used as an alternative to improving additional subgrade performance as needed?

Answer: The geotechnical report has been revised to show BX1200 geogrid. This geogrid will go below the GAB layer. The revised geotechnical report will be included with Addendum 2.

Question 3: The scale bar that is shown on the Cross Section sheets indicates a 1"=20' scale, but the cross sections themselves indicate a 1"=10' scale. Please confirm that the scale of the sections is 1"=10'

Answer: Yes 1" = 10' is correct.

Question 4: We have a hard stopping point at station 149+00. Do you have the grade information to the next station to allow us to calculate the additional fill needed.

Answer: We will revise plans for Addendum 2 to show the transition from the end of the roadway down to existing ground.

Question 5: The Geotechnical Report states that the project is to be completed in two phases with Phase 2 occurring after heavy construction traffic has run for 3 months on the intermediate asphalt course applied in Phase 1. Is substantial completion when Phase 1 is complete or Phase 2?

Answer: *Initially the Owner proposed to construct the project into two phases to coordinate with heavy construction traffic. That is no longer feasible. All construction including paving of surface course shall be completed by the deadlines shown in the contract documents*

Revised Geotechnical report has been included in Addendum #2 for informational purposes to potential bidders. Note that the surface course pavement will be installed as part of this project.

PART II – CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS:

The Proposal Documents shall be changed in the following respects:

SECTION 00313 – BID FORM

1. The Section 00313 has been revised to include bid items associated with project extension. Delete and replace with the attached Section 00313 – “Bid Form”. New Section 00313 includes new bid items.
2. Bidder must use the enclosed form. **NO OTHER FORM SHALL BE ACCEPTED.**

PART III – DRAWINGS:

1. The drawings have been revised to include revisions to project limits and general notes. Delete and replace with the attached plan sheets.

THOMAS & HUTTON



Doyle D. Kelley, Jr., P.E.
Project Manager

End of ADDENDUM NO. 2

DOCUMENT 00313**BID FORM**

PROJECT IDENTIFICATION: BRYAN COUNTY MEGA SITE SOUTH ACCESS ROAD

**CONTRACT IDENTIFICATION
AND NUMBER:** J-25503.0004

THIS BID IS SUBMITTED TO: Thomas & Hutton

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the day of Bid opening, or for such longer period of time BIDDER may agree to in writing upon request of OWNER.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - a. BIDDER has examined and carefully studied the Plans and Specifications for the work and contractual documents relative thereto, and has read all Technical Provisions, Supplementary Conditions, and General Conditions, furnished prior to the opening of Bids, and can fulfill the requirements of the work to be performed.
 - b. BIDDER further acknowledges hereby receipt of the following Addenda:

ADDENDUM NO.	DATE
1	November 29, 2022
2	December 6, 2022

- c. BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions possibly affecting cost, progress, performance and furnishing of the Work;
- d. BIDDER is familiar with and is satisfied as to all federal, state, and local Laws and Regulations possibly affecting cost, progress, performance and furnishing of the Work.
- e. BIDDER has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structure at or contiguous to the site (except underground Facilities) have been identified in the Supplementary Conditions. BIDDER acknowledges such reports and drawings are not Contract

Documents and may not be complete for BIDDER's purposes. BIDDER acknowledges OWNER and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto. BIDDER does not consider any additional examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Bidding Documents.

- f. BIDDER is aware of the general nature of Work to be performed by Owner and others at the site relating to Work for which this Bid is submitted as indicated in the Bidding Documents.
 - g. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Bidding Documents and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
 - h. BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies BIDDER has discovered in the Bidding Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
 - i. This bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.
4. BIDDER will complete the Work in accordance with the Contract Documents for the following price(s):

BRYAN COUNTY MEGA SITE SOUTH ACCESS ROAD					
ITEM	DESCRIPTION	QUANTITY		COST	
		UNITS	MEASURE	PER UNIT	TOTAL COST
ROADWAY CONSTRUCTION					
150-1000	Traffic Control	1	ls		\$ -
151-1000	Mobilization	1	ls		\$ -
163-0232	Temporary Grassing	42	ac		\$ -
163-0240	Mulch	350	tn		\$ -
163-0301	Construct and Remove Construction Exits	2	ea		\$ -
163-0503	Construct and Remove Silt Control Gate, TP3	5	ea		\$ -
163-0528	Construct and Remove Fabric Check Dam - Type C Silt Fence	2050	lf		\$ -
163-0550	Construct and Remove Inlet Sediment Trap	10	ea		\$ -
165-0087	Maintenance of Silt Control Gate, TP 3	5	ea		\$ -
165-0010	Maintenance of Temporary Silt Fence, Type A	10,600	lf		\$ -
165-0030	Maintenance of Temporary Silt Fence, Type C	600	lf		\$ -
165-0041	Maintenance of Check Dams - All Types	2050	lf		\$ -
165-0101	Maintenance of Construction Exits	2	ea		\$ -
165-0105	Maintenance of Inlet Sediment Traps	10	ea		\$ -
171-0010	Temporary Silt Fence, Type A	8000	lf		\$ -
171-0030	Temporary Silt Fence, Type C	5600	lf		\$ -
207-0203	Found Bkfill Matl, TP2	320	cy		\$ -
210-0100	Grading Complete	1	ls		\$ -
310-5080	Gr Aggr Base Crs, 8 Inch, Incl Material	37,700	sy		\$ -
310-5120	Gr Aggr Base Crs, 12 Inch, Incl Material	1700	sy		\$ -
402-1812	Asph Conc Leveling, Incl Bitum Matl & H Lime	100	tn		\$ -
402-3130	Aph Conc 12.5 MM Superpave, GP 2 Only, Incl Bitum Matl & H Lime	3,800	tn		\$ -
402-3121	Asph Conc 25 mm Superpave, GP 1 or 2, Incl Bitum Matl & H Lime	10,900	tn		\$ -
402-3190	Asph Conc 19mm Superpave, GP 1 or 2, Incl Bitum Matl & H Lime	6,500	tn		\$ -
413-0750	Tack Coat	6000	gl		\$ -
441-6740	Conc Curb & Gutter, 8in X 30in, TP 7	10,700	lf		\$ -
446-1100	Pvmt Reinf Fabric Strips, TP2, 18 Inch Width	350	lf		\$ -
500-3002	Class AA Concrete	627	cy		\$ -
500-3800	Class A Concrete, Incl Reinf Steel	14	cy		\$ -
511-1000	Bar Reinf Steel	61,550	lb		\$ -
550-4218	Flared End Section 18 In, Storm Drain	9	ea		\$ -

BRYAN COUNTY MEGA SITE SOUTH ACCESS ROAD					
ITEM	DESCRIPTION	QUANTITY		COST	
		UNITS	MEASURE	PER UNIT	TOTAL COST
550-4236	Flared End Section 36 In, Storm Drain	3	ea		\$ -
550-5183	Storm Drain Pipe, 18 In, Class V	500	lf		\$ -
550-5243	Storm Drain Pipe, 24 in, Class V	325	lf		\$ -
550-5363	Storm Drain Pipe, 36 In, Class V	220	lf		\$ -
603-2181	Stn Dumped Rip Rap, TP3, 18 In	100	sy		\$ -
603-7000	Plastic Filter Fabric	100	sy		\$ -
629-0230	Geogrid	37,500	sy		\$ -
636-1033	Highway Signs, TP1 Matl, Refl Sheeting, TP9	43	sf		\$ -
636-1036	Highway Signs, TP1 Matl, Refl Sheeting, TP11	58	sf		\$ -
636-2070	Galv Steel Posts, TP7	190	lf		\$ -
641-1200	Guardrail, TP W	3,250	lf		\$ -
641-5001	Guardrail Anchorage, TP1	6	ea		\$ -
641-5020	Guardrail Terminal, TP 12A, 31 IN, Tangent, Energy-Absorbing	6	ea		\$ -
643-8200	Barrier Fence, (Orange), 4FT	320	lf		\$ -
653-0120	Thermoplastic Pvmt Marking, Arrow, TP 2	6	ea		\$ -
653-1501	Thermoplastic Solid Traf Stripe, 5in, White	11,000	lf		\$ -
653-1502	Thermoplastic Solid Traf Stripe, 5in, Yellow	11,800	lf		\$ -
653-1704	Thermoplastic Solid Traf Stripe, 24in, White	30	lf		\$ -
653-3501	Thermoplastic Skip Traf Stripe, 5in, White	11000	glf		\$ -
653-3502	Thermoplastic Skip Traf Stripe, 5in, Yellow	200	glf		\$ -
653-6004	Thermoplastic Traf Striping, White	150	sy		\$ -
653-6006	Thermoplastic Traf Striping, Yellow	55	sy		\$ -
654-1001	Raised Pvmt Markers TP1	10	ea		\$ -
654-1003	Raised Pvmt Markers TP3	250	ea		\$ -
654-1010	Raised Pvmt Markers TP10	7	ea		\$ -
668-1100	Catch Basin, GP 1	10	ea		\$ -
682-6226	Conduit, Nonmetl, TP 2, 6 In	1260	lf		\$ -
700-6910	Permanent Grassing	21.00	ac		\$ -
700-7000	Agricultural Lime	50.00	tn		\$ -
700-8000	Fertilizer Mixed Grade	15.00	tn		\$ -
700-8100	Fertilizer Nitrogen Content	700	lb		\$ -
001-0001	Special Headwall	1	ls		\$ -
TOTAL PROJECT					\$

TOTAL BID:

_____ Dollars

\$ _____

Unit Prices have been computed in accordance with paragraph 11.03.C of the General Conditions.

BIDDER acknowledges estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities determined as provided, determined as provided in the Contract Documents.

5. BIDDER agrees the Work will be substantially complete within 164 calendar days (May 25, 2023) after the date when the Contract Times commence to run as provided in paragraph 2.03 of the General Conditions and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions within 194 calendar days (June 24, 2023) after the date when the Contract Times commence to run.
6. BIDDER accepts provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within times specified in the Agreement.
7. The following documents are attached to and made a condition of this Bid:
 - a. Required Bid Security in the form of 10 percent of the Bid Total Price.
8. The undersigned further agrees in case of failure on his/her part to execute the said contract and the Bond within 30 consecutive calendar days after written notice being given of the award of the contract, the check or bid bond accompanying this bid, and the monies payable thereon shall be paid into the funds of the Owner as liquidated damages for such failure, otherwise, the check or bid bond accompanying this proposal shall be returned to the undersigned.
9. Communications concerning this Bid shall be addressed to:

Doyle D. Kelley, P.E.
 Thomas & Hutton
 50 Park of Commerce Way
 Savannah, GA 31405
 (912)721-4160
Kelley.d@tandh.com

- 10. Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions of Instructions.

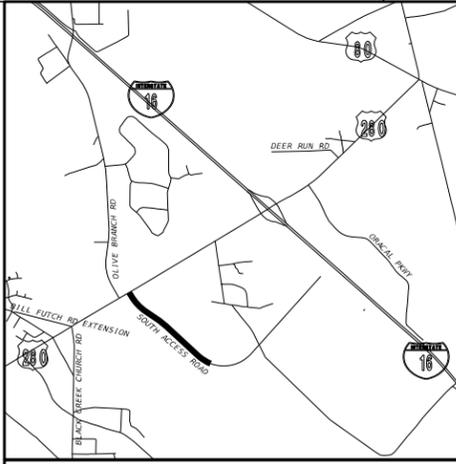
SUBMITTED _____2022.

CONTRACTOR'S NAME

ADDRESS:

BY: _____

State Contractor License No. _____



LOCATION SKETCH



Savannah Harbor-Interstate 16 Corridor Joint Development Authority

BRYAN • BULLOCH • CHATHAM • EFFINGHAM

MID-POINT COORDINATES
SOUTH ACCESS ROAD
STA 124+50.00
N 788671.3877
E 870266.9646

DESIGN DATA:
 TRAFFIC A.D.T.: 5,963 (2023)
 TRAFFIC A.D.T.: 10,992 (2043)
 TRAFFIC D.H.V.: 1800 (2023)
 TRAFFIC D.H.V.: 2687 (2043)
 DIRECTIONAL DIST: 50%-50%
 % TRUCKS: 5%
 24 HR. TRUCKS %: 26%
 SPEED DESIGN: 30/40 M.P.H.

PLAN AND PROFILE OF PROPOSED SOUTH ACCESS ROAD

BRYAN COUNTY

NOTE :
 ALL REFERENCES IN THIS DOCUMENT, WHICH INCLUDES ALL PAPERS, WRITINGS, DOCUMENTS, DRAWINGS, OR PHOTOGRAPHS USED, OR TO BE USED IN CONNECTION WITH THIS DOCUMENT, TO " STATE HIGHWAY DEPARTMENT OF GEORGIA ", " STATE HIGHWAY DEPARTMENT ", " GEORGIA STATE HIGHWAY DEPARTMENT ", " HIGHWAY DEPARTMENT ", OR " DEPARTMENT " WHEN THE CONTEXT THEREOF MEANS THE STATE HIGHWAY DEPARTMENT OF GEORGIA, AND SHALL BE DEEMED TO MEAN THE DEPARTMENT OF TRANSPORTATION.

FUNCTIONAL CLASS:
RURAL ARTERIAL

THIS PROJECT IS 100% IN BRYAN COUNTY AND IS 100% IN CONG. DIST. NO. 1.

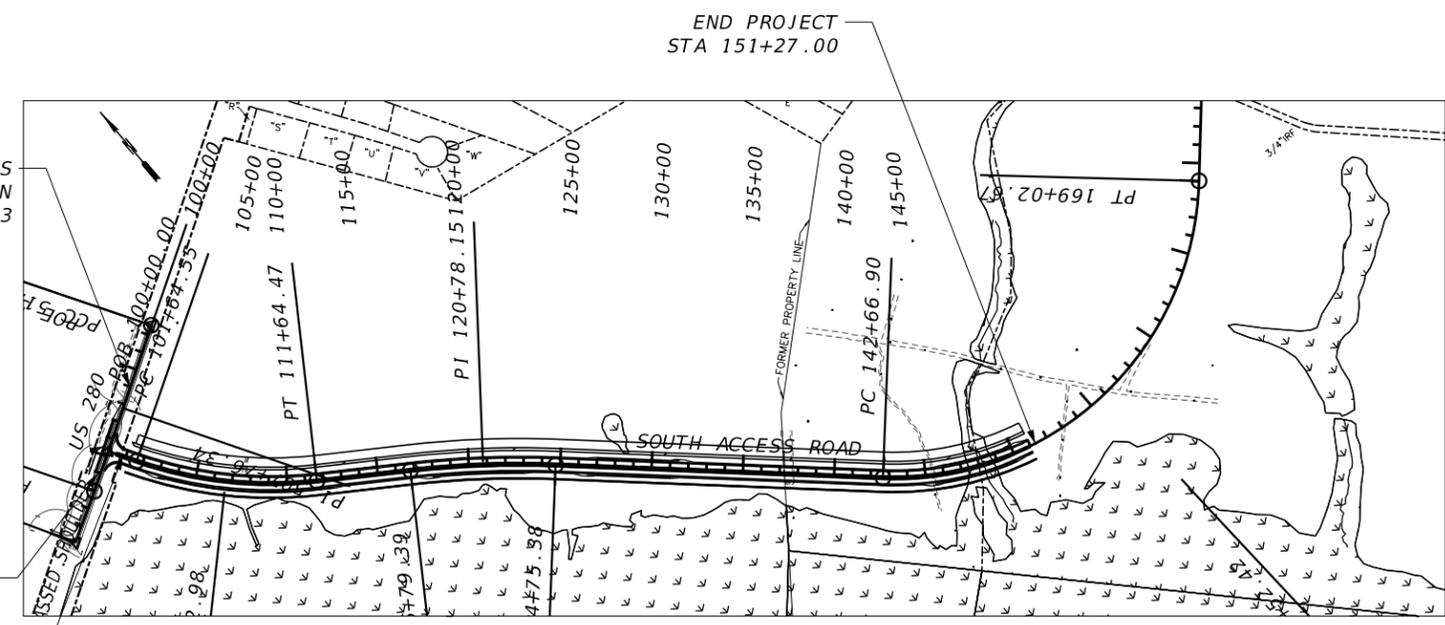
PROJECT DESIGNATION: EXEMPT
DESIGNED IN ENGLISH UNITS.

THIS PROJECT HAS BEEN PREPARED USING THE NORTH AMERICAN DATUM OF 1983 (HORIZONTAL), GEORGIA STATE PLANE COORDINATES, EAST ZONE, AND THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

PROJECT LIMITS OF CONSTRUCTION
STA 508+02.93

PROJECT LIMITS OF CONSTRUCTION
STA 503+02.89

BEGIN PROJECT
STA 100+12.47



PLANS PREPARED BY:
 THOMAS & HUTTON ENGINEERING CO.



LENGTH OF PROJECT	COUNTY No. 029 Project No. N/A
	MILES
NET LENGTH OF ROADWAY	1.081
NET LENGTH OF BRIDGES	0.000
NET LENGTH OF PROJECT	1.081
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	1.081

THOMAS & HUTTON
 50 Park of Commerce Way • P.O. Box 2727
 Savannah, GA 31402-2727 • 912.234.5300
 www.thomasandhutton.com

THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS OR IN ANYWAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, ARE BASED UPON FIELD INVESTIGATIONS AND ARE BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME ARE SHOWN AS INFORMATION ONLY, ARE NOT GUARANTEED, AND DO NOT BIND THE DEPARTMENT OF TRANSPORTATION IN ANY WAY. THE ATTENTION OF BIDDER IS SPECIFICALLY DIRECTED TO SUBSECTIONS 102.04, 102.05, AND 104.03 OF THE SPECIFICATIONS.

BID SET - NOT FOR CONSTRUCTION

1. SINCE THE PROJECT DISTURBED AREA ASSOCIATED WITH THIS PROJECT IS MORE THAN 1.0 ACRE, A NOTICE OF INTENT IS REQUIRED FOR THIS PROJECT.
2. CONTRACTOR IS TO FLUSH ALL RETAINED INLETS AND PIPE AT THE COMPLETION OF CONSTRUCTION TO REMOVE ANY SILT AND DEBRIS. THE FLUSHING AND CLEANING OF DROP INLETS, CULVERTS AND PIPES (EXISTING AND PROPOSED) SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROJECT AND THE COST SHALL BE INCLUDED IN THE COST FOR PIPE ON THE PROJECT.
3. ALL CONCRETE PIPE JOINTS SHALL BE WRAPPED WITH TWO LAYERS OF FILTER FABRIC, 4'-0" WIDE, CENTERED ON JOINT WITH A 1'-0" MINIMUM OVERLAP. EQUIVALENT TO MIRAFL 140N. THE COST FOR WRAPPING PIPE JOINTS SHALL BE INCLUDED IN THE OVERALL COST FOR PIPE ON THE PROJECT.
4. ALL BORROW AND WASTE SITES FOR THIS PROJECT SHALL BE ENVIRONMENTALLY APPROVED PRIOR TO CONSTRUCTION ACTIVITIES OCCURRING IN THEM. ALL COMMON FILL OR EXCESS MATERIAL DISPOSED OUTSIDE THE PROJECT RIGHT OF WAY SHALL BE PLACED IN EITHER A PERMITTED SOLID WASTE FACILITY, A PERMITTED INERT WASTE LANDFILL OR IN AN ENGINEERED FILL. SEE SECTION 201 OF THE STANDARD SPECIFICATION AND SUPPLEMENTS THERETO FOR ADDITIONAL INFORMATION.
5. ALL EXISTING PIPES AND STRUCTURES WITHIN THE PROPOSED CONSTRUCTION LIMITS ARE TO BE REMOVED UNLESS OTHERWISE NOTED. ALL COSTS ASSOCIATED WITH THE REMOVAL OF THESE PIPES AND STRUCTURES SHALL BE INCLUDED IN THE PRICE BID FOR CLEARING AND GRUBBING.
6. EXISTING PAVED SHOULDERS WHERE NEW TRAVEL OR TURN LANES ARE TO BE CONSTRUCTED SHALL BE REMOVED. REMOVAL SHALL BE INCLUDED IN THE PRICE BID FOR CLEARING & GRUBBING. SAWED LONGITUDINAL JOINTS ASSOCIATED WITH SHOULDER REMOVAL, AS WELL AS ALL OTHER EXISTING PAVEMENT REMOVAL AND PREPARATION, SHALL ALSO BE INCLUDED IN THE PRICE BID FOR CLEARING AND GRUBBING.
7. THERE IS NO KNOWN SUTIBLE PLACE TO BURY EXISTING BRIDGE/ CONSTRUCTION DEBRIS WITHIN THE PROJECT'S LIMITS. THE CONTRACTOR SHALL PROVIDE AN ENVIRONMENTALLY APPROVED SITE AS SHOWN IN GA. SPECIFICATION 201 TO DISPOSE OF EXISTING BRIDGE / CONSTRUCTION DEBRIS AT NO ADDITIONAL COST TO THE PROJECT.
8. FOUNDATION BACKFILL MATERIAL TP 11 WILL BE USED AT ALL CROSS DRAINS AND BOX CULVERTS.
9. NO SEPARATE PAYMENT WILL BE MADE FOR TEMPORARY DRAINAGE ITEMS. COST WILL BE INCLUDED IN OVERALL BID SUBMITTED.
10. INCLUDE ERADICATION OF INVASIVE SPECIES IF ENCOUNTERED PER SPECIFICATION SECTION 201-CLEARING AND GRUBBING RIGHT OF WAY, 201.3.05.A. SEE 'A MANAGEMENT GUIDE FOR INVASIVE PLANTS IN SOUTHERN FORESTS' GTR SRS-131, PRODUCED BY THE USDA FOREST SERVICE SOUTHERN RESEARCH STATION FOR REFERENCE ON SPECIFIC INVASIVE PEST PLANTS.
11. INVASIVE OR UNDESIRABLE SPECIES DO NOT QUALIFY FOR ANY PROTECTION AND SHOULD BE REMOVED IF POSSIBLE. THESE INCLUDE: MIMOSA- ALBIZIA JULIBRISSIN TREE OF HEAVEN - ALLANTHUS ALTISSIMA WHITE MULBERRY - MORUS ALBA PAPER MULBERRY - BROUSSONETIA PAYRIFERA CHINABERRY - MELIA AZEDARACH PRINCESS TREE - PAULOWNIA TMENTOSA SEE 'A MANAGEMENT GUIDE FOR INVASIVE PLANTS IN SOUTHERN FORESTS' GTR SRS-131, PRODUCED BY THE USDA FOREST SERVICE SOUTHERN RESEARCH STATION FOR REFERENCE.
12. THE CONTRACTOR SHALL ENSURE THAT NO CONSTRUCTION-RELATED ACTIVITIES (SUCH AS THE USE OF EASEMENTS, STAGING, CONSTRUCTION, VEHICULAR USE, BORROW OR WASTE ACTIVITIES, SEDIMENT BASINS, TRAILER PLACEMENT, ETC.) OCCUR UNDER THE DRIP LINE OF EXISTING TREES TO REMAIN IN THE RIGHT OF WAY. THIS DOES NOT APPLY TO TREES WITHIN THE CONSTRUCTION LIMITS OR LIMITS OF DISTURBANCE THAT WILL BE REMOVED OR DESTROYED TO ALLOW FOR CONSTRUCTION.
13. THIS IS NOT A SUE UTILITY LOCATION PROJECT. UTILITIES SHOWN ARE BASED ON INFORMATION OBTAINED FROM UTILITY COMPANIES. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH UTILITIES DURING THE CONSTRUCTION.

14. IN AREAS WHERE NEW PAVEMENT OR PAVEMENT WIDENING IS REQUIRED, SAW CUT OF EXISTING PAVEMENT WILL BE REQUIRED IN ACCORDANCE WITH SECTION 411 OF THE GEORGIA STANDARD SPECIFICATIONS AND WILL BE INCLUDED IN PRICE BID FOR CLEARING AND GRUBBING.
15. CONTRACTOR SHALL CLEAR AND GRUB ENTIRE RIGHT OF WAY ALONG SOUTH ACCESS ROAD. NO GRUBBING WILL BE ALLOWED OUTSIDE OF CUT/FILL LIMITS. ALL STUMPS OUTSIDE CUT/FILL LIMITS WILL BE CUT FLUSH WITH EXISTING GROUND.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR EMPLOYMENT AND PAYMENT OF ALL REQUIRED QUALITY TESTING SERVICES. COST OF TESTING SHALL BE PAID FOR IN OVERALL COST OF BID. TESTING FREQUENCY AND PROCEDURES SHALL FOLLOW GDOT STANDARD SPECIFICATIONS.
17. ALL UNDERGROUND CONDUIT SHALL BE SCH 40 PVC. CONDUIT INSTALLED UNDERNEATH ROADWAYS AND DRIVES SHALL BE BURIED IN EARTH AT A DEPTH OF NOT LESS THAN 24".
18. ALL CONDUIT AND ELECTRICAL JUNCTION BOXES (EJB) PLACEMENTT ON THE DRAWING ARE DIAGRAMMATIC. CONTRACTOR SHALL INSTALL THEM WITHIN THE RIGHT OF WAY.
19. THE CONTRACTOR SHALL INSTALL A NYLON PULL CORD OR GALVANIZED PULL WIRE IN EACH EMPTY CONDUIT. THE COST OF THIS ITEM IS TO BE INCLUDED WITH THE COST OF THE CONDUIT.
20. ALL CONDUIT WHICH IS RUN UNDER ROADWAY SHALL BE INSTALLED PRIOR TO ANY NEW PAVING. NO NEW PAVING SHALL BE CUT TO INSTALL CONDUIT/EQUIPMENT.
21. BID ITEM FOR GEORGRID IS INCLUDED IN BID FORM. THIS QUANTITY IS TO BE USED AS SHOWN IN THE TYPICAL SECTIONS. GEORGRID SHALL BE TENSAR BX1200 OR EQUIVALENT.
22. ALL PIPE SHALL BE CONCRETE CLASS V UNLESS OTHERWISE NOTED.
23. A NOI IS REQUIRED FOR THIS PROJECT.
24. RESTORE TEMPORARY EASEMENTS AREA TO EXISTING CONDITIONS OR BETTER AFTER CONSTRUCTION IS COMPLETED.
25. CONTRACTOR IS RESPONSIBLE FOR REPLACEMENT OF DAMAGED ITEMS IN EASEMENTS.
26. MAINTAIN ACCESS TO THE PROPERTIES DURING CONSTRUCTION. COORDINATE WITH PROPERTY OWNERS AND THE SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY ON ANY PROPOSED DISTURBANCE TO ACCESS.
27. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL PRACTICES. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, INLET PROTECTION, SILT FENCE INSTALLATION AS NEEDED, GRASSING IN UNPAVED AREAS, CONSTRUCTION ACCESS AND STORM WATER MONITORING. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND REMOVING EROSION CONTROL PRACTICES ONCE CONSTRUCTION IS COMPLETE. ALL EROSION CONTROL PRACTICES SHALL BE IMPLEMENTED IN ACCORDANCE WITH THE STATE OF GEORGIA SOIL AND WATER CONSERVATION DISTRICT'S FIELD MANUAL (THE GREEN BOOK).
28. ALL EXISTING WATER MAINS ARE ACTIVE. CONTRACTOR TO COORDINATE WITH THE SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY TO SCHEDULE SHUT DOWN OF SECTIONS OF EXISTING WATER MAINS USING EXISTING VALVES A MINIMUM IF 72 HOURS PRIOR TO CONSTRUCTION.
29. ALL EXISTING GAS LINES ARE ACTIVE. CONTRACTOR TO COORDINATE WITH THE SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY AND UTILITY OWNER A MINIMUM OF 72 PRIOR TO CONSTRUCTION.
30. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES. INCLUDING EXISTING WATER MAINS, GAS LINES, AND SEWER MAINS. CONTRACTOR TO REMOVE AND REPLACE EXISTING UTILITIES ONLY IF NECESSARY FOR THE PROTECTION OF THE UTILITIES. AND SHALL COORDINATE WITH THE LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

UTILITY OWNER	SERVICE
BRYAN COUNTY	WATER
BRYAN COUNTY	SEWER
GA GAS AUTHORITY/CLAXTON	NATURAL GAS
PAC FIBER	FIBER

31. CONTRACTOR TO MAINTAIN A MINIMUM OF 18' OF VERTICAL CLEARANCE SEPARATION BETWEEN THE BOTTOM OF PROPOSED STORM PIPES AND THE TOPS OF PROPOSED RELOCATED WATER MAINS WHERE VERTICAL CROSSING ARE NECESSARY.
32. UNSUITABLE MATERIAL IS NOT ANTICIPATED ON THIS PROJECT AT THIS TIME. CONTRACTOR SHALL NOTIFY THE SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY AND ENGINEER SHOULD ANY POTENTIAL UNSUITABLE MATERIAL BE ENCOUNTERED DURING CONSTRUCTION.
33. ANY TEMPORARY PAVING REQUIRED TO FACILITATE THE CONSTRUCTION OF THE JOB SHALL BE INCLUDED IN THE LUMP SUM BID FOR TRAFFIC CONTROL.
34. IF ANY UTILITIES ARE LOCATED IN THE FIELD THAT ARE NOT SHOWN ON THE CONSTRUCTION PLANS, CONTRACTOR SHALL NOTIFY THE SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY AND THE ENGINEER IMMEDIATELY.
35. CONTRACTOR SHALL SUBMIT TRAFIC CONTROL AND STAGING PLANS TO THE SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY AND THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. ALL SIGNS AND NECESSARY MATERIALS SHALL BE INCLUDED IN LUMP SUM BID FOR TRAFFIC CONTROL. THE CONTRACTOR SHALL INCLUDE ANY TEMPORARY PAVEMENT REQUIRED TO STAGE THE JOB IN THE LUMP SUM BID FOR TRAFFIC CONTROL.
36. THE COST OF LABOR, MATERIALS INCLUDING REINFORCING STEEL, INCIDENTALS OR ANY OTHER CONSTRUCTION COST ASSOCIATED WITH THE CONSTRUCTION OF THE SPECIAL HEADWALL LOCATED AT STA. 109+50 RT SHALL BE PAID FOR UNDER THE BID ITEM 001-0001 SPECIAL HEADWALL (LS). ALL MATERIALS USED SHALL CONFORM TO GDOT TESTING STANDARDS.
37. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SIGNAGE TO RESTRICT LEFT TURNS OUT OF THE ACCESS ROAD FOR MULTI-UNIT TRUCKS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PUT UP AND TAKE DOWN REQUIRED SIGNAGE FOR THESE MOVEMENTS AS NEEDED. THE COST FOR THE ABOVE SIGNAGE SHALL BE INCLUDED IN THE COST FOR THE BID ITEM "TRAFFIC CONTROL".

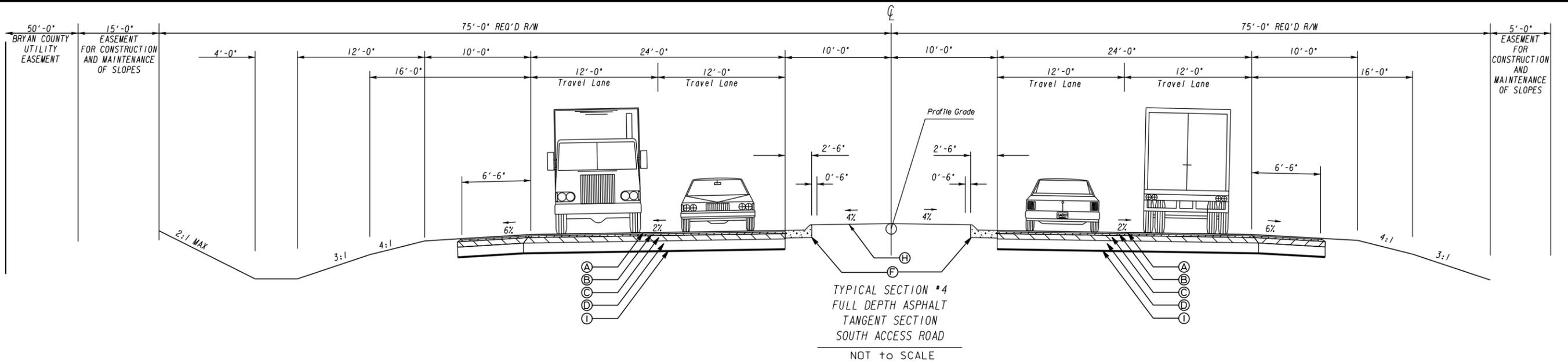
BID SET - NOT FOR CONSTRUCTION



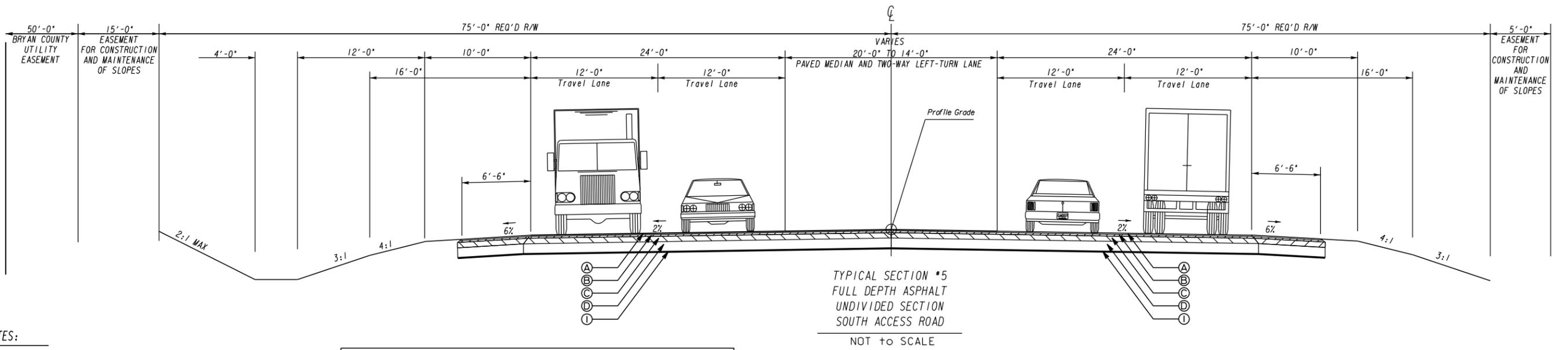
REVISION DATES	
Addendum 2 - 12-6-2022	

GENERAL NOTES
SOUTH ACCESS ROAD

CHECKED:	DATE:	DRAWING No. 04-0001
BACKCHECKED:	DATE:	
CORRECTED:	DATE:	
VERIFIED:	DATE:	



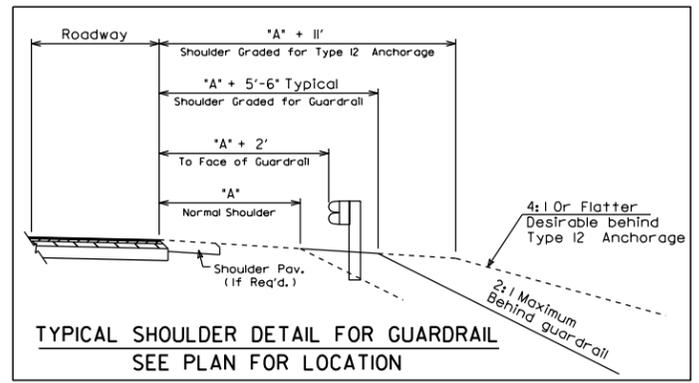
STA. 101+00.00 to STA. 149+10.00



STA. 149+10.00 to STA. 151+27.00

NOTES:

1. TYPICAL SECTIONS ILLUSTRATING SUPERELEVATION AND TURN LANES ALSO APPLY TO OPPOSITE-HAND SECTIONS. SEE PLANS FOR LOCATION, DIRECTION AND COMPLETE DETAILS OF EACH.
2. SEE ROADWAY PLANS FOR METHOD OF SUPERELEVATION, SUPERELEVATION RATES AND TRANSITIONS, AND LOCATIONS OF NORMAL CROWN AND S.E. SECTIONS.
3. SEE ROADWAY PLANS FOR LOCATION OF GUARDRAIL.
4. MILLING WILL BE REQUIRED TO CREATE A SMOOTH TIE TO THE EXISTING PAVEMENT, THE COST OF WHICH WILL BE INCLUDED IN THE OVERALL COST OF THE PROJECT.



REQUIRED PAVEMENT - SOUTH ACCESS ROAD

- Ⓐ RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM & H LIME - 192.5 LB/SY
- Ⓑ RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM & H LIME - 330 LB/SY
- Ⓒ RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM & H LIME - 550 LB/SY
- Ⓓ GRADED AGGREGATE BASE COURSE - 8 IN
- Ⓔ RECYCLED ASPHALT CONC LEVELING, INCL BITUM & H LIME
- Ⓕ CONC CURB & GUTTER, 8 IN X 30 IN, TP 7
- Ⓖ PVMT REINF FABRIC STRIPS, TP 2, 18 INCH WIDTH
- Ⓖ GRASSED MEDIAN
- Ⓗ BIOAXIAL GEOGRID (TENSAR BX1200 OR EQUIVALENT)
- Ⓘ GRADED AGGREGATE BASE COURSE - 12 IN



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NOT TO SCALE

REVISION DATES	
ADDENDUM 2 - 12-6-2022	

TYPICAL SECTIONS
SOUTH ACCESS ROAD

CHECKED:	DATE:	DRAWING No.
BACKCHECKED:	DATE:	05-0003
CORRECTED:	DATE:	
VERIFIED:	DATE:	

MATCH LINE STA. 139+00 DRAWING No. 11-0003

140+00

145+00

150+00

S47°16'42.1"E

PC 142+66.90

SOUTH ACCESS ROAD

CURVE 3

END PROJECT
STA. 151+27.00

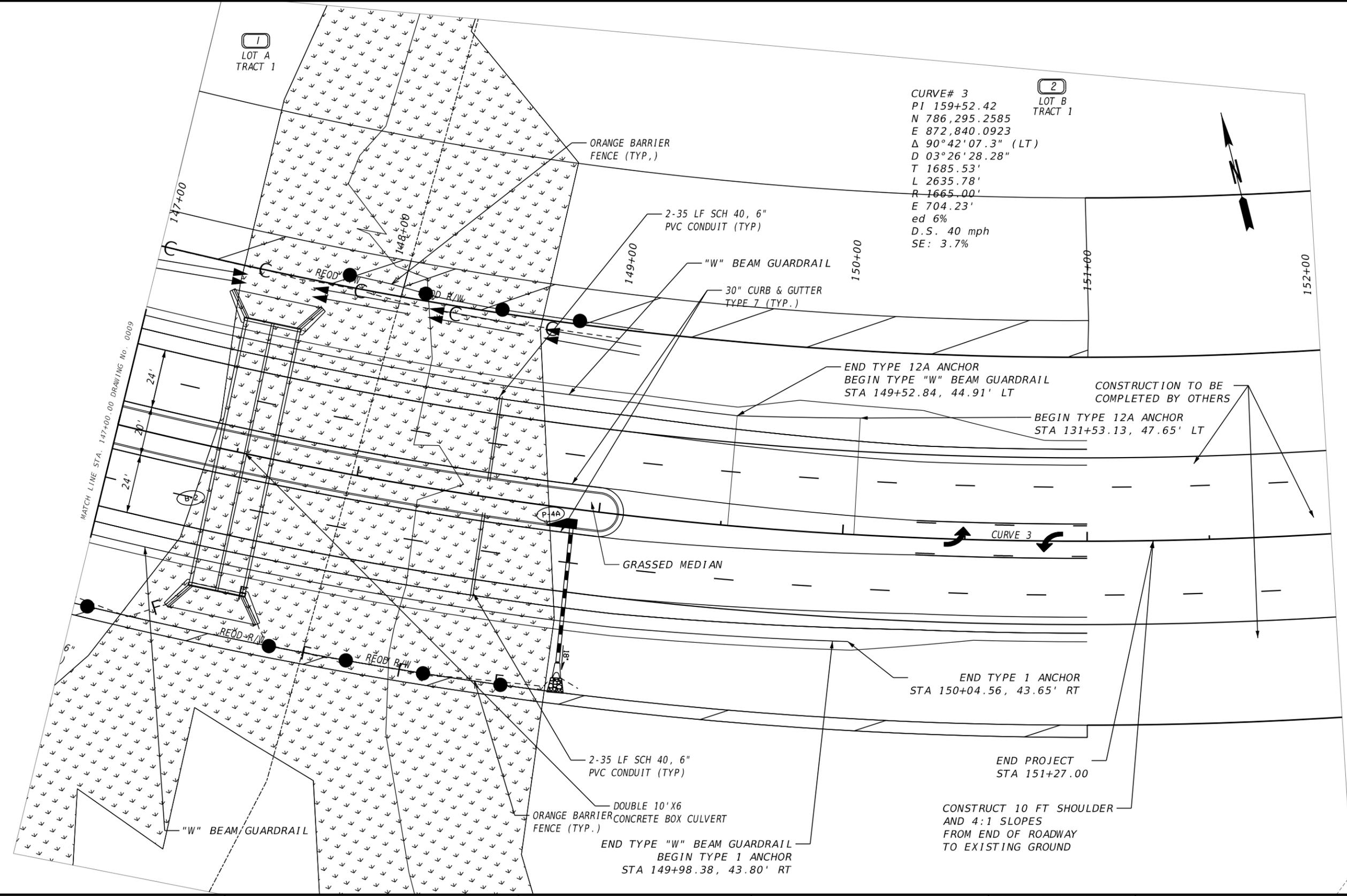
5000-11 10' N 0° 0' 0" E 151+27.00
5000-11 10' N 0° 0' 0" E 141+00

CURVE# 3
PI 159+52.42
N 786,295.2585
E 872,840.0923
Δ 90°42'07.3" (LT)
D 03°26'28.28"
T 1685.53'
L 2635.78'
R 1665.00'
E 704.23'
ed 6%
D.S. 40 mph
SE: 3.7%



REVISION DATES	

CONSTRUCTION LAYOUT			
SOUTH ACCESS ROAD			
CHECKED:		DATE:	
BACKCHECKED:		DATE:	
CORRECTED:		DATE:	
VERIFIED:		DATE:	
DRAWING No.			11-0004



2
LOT B
TRACT 1

CURVE# 3
 PI 159+52.42
 N 786,295.2585
 E 872,840.0923
 Δ 90°42'07.3" (LT)
 D 03°26'28.28"
 T 1685.53'
 L 2635.78'
 R 1665.00'
 E 704.23'
 ed 6%
 D.S. 40 mph
 SE: 3.7%



PROPERTY AND EXISTING R/W LINE	-----P-----
REQUIRED R/W LINE	-----R-----
CONSTRUCTION LIMITS	---C---F---
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	
EASEMENT FOR CONSTR OF SLOPES	
EASEMENT FOR CONSTR OF DRIVES	

BEGIN LIMIT OF ACCESS.....BLA	-----
END LIMIT OF ACCESS.....ELA	-----
EXISTING LIMIT OF ACCESS	-----
REQ'D LIMIT OF ACCESS	-----
EXISTING LIMIT OF ACCESS & R/W	-----
REQ'D LIMIT OF ACCESS & R/W	-----
ORANGE BARRIER FENCE	-----
ESA - ENV. SENSITIVE AREA	-----



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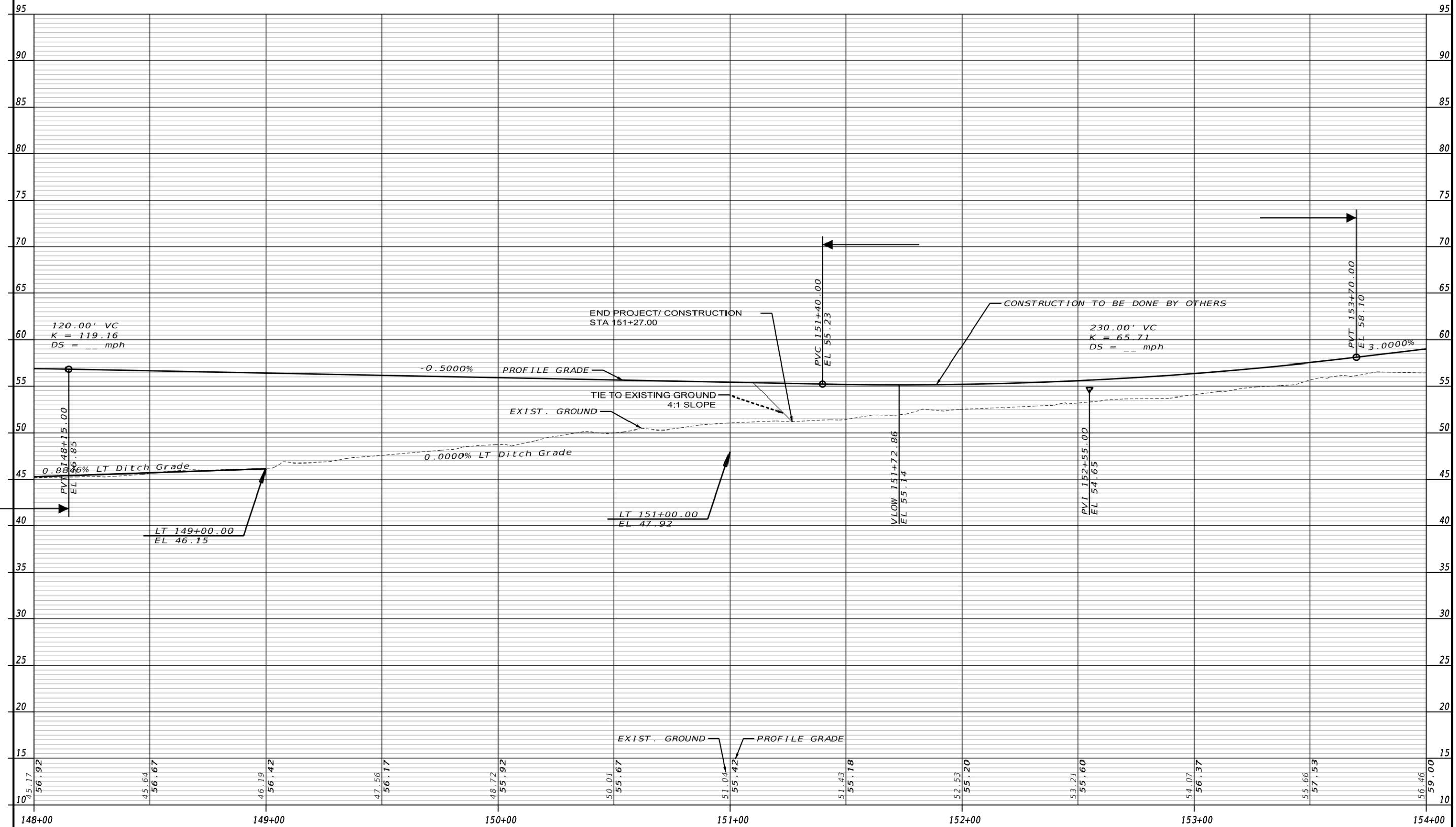
SCALE IN FEET
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REVISION DATES	
Addendum 2 - 12-6-2022	
CHECKED:	DATE:
BACKCHECKED:	DATE:
CORRECTED:	DATE:
VERIFIED:	DATE:

CONSTRUCTION PLAN
SOUTH ACCESS ROAD

CHECKED:	DATE:	DRAWING No.
BACKCHECKED:	DATE:	13-0010
CORRECTED:	DATE:	
VERIFIED:	DATE:	

BID SET - NOT FOR CONSTRUCTION



BID SET - NOT FOR CONSTRUCTION



REVISION DATES	

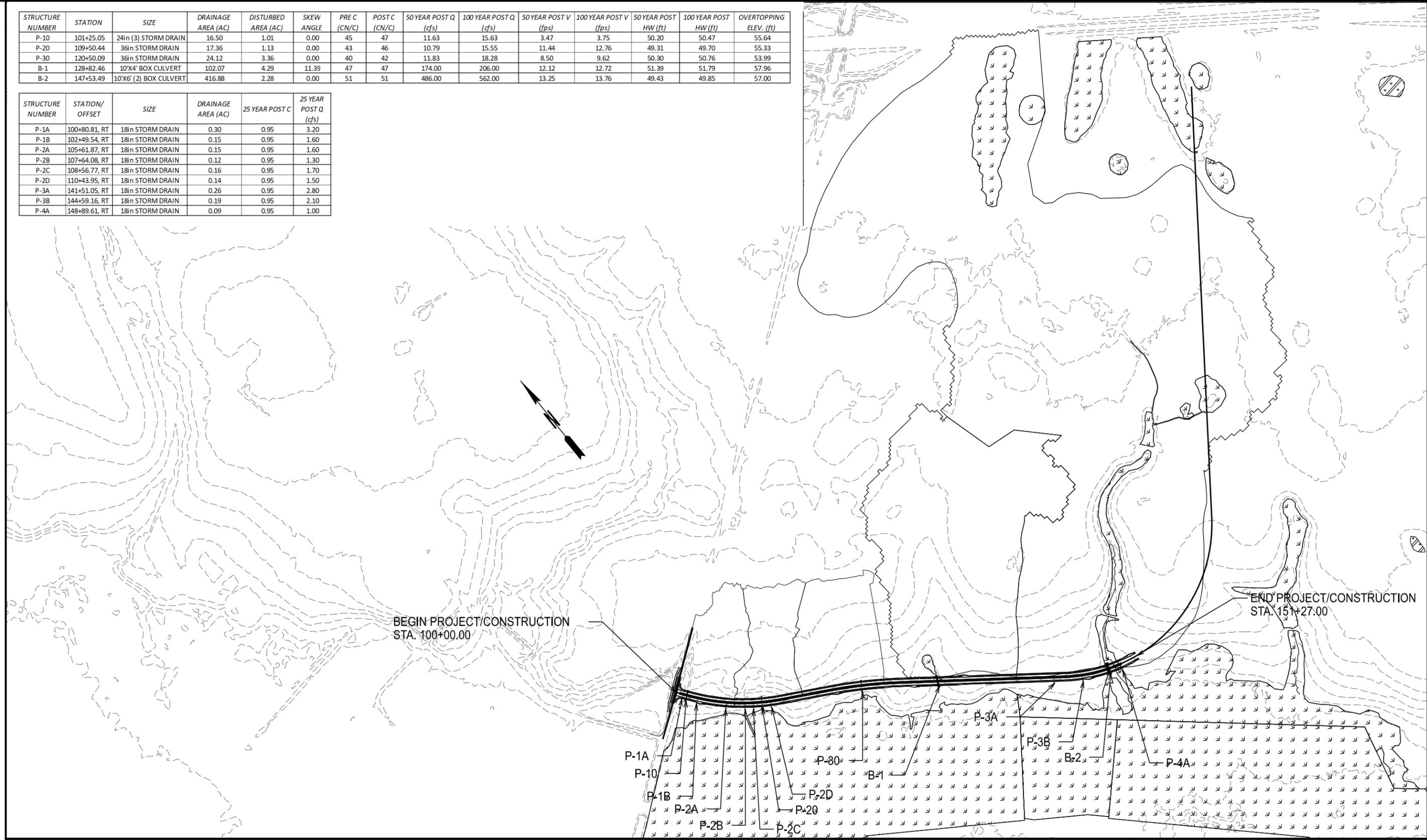
Addendum 2 - 12-6-2022

MAINLINE PROFILE
SOUTH ACCESS ROAD

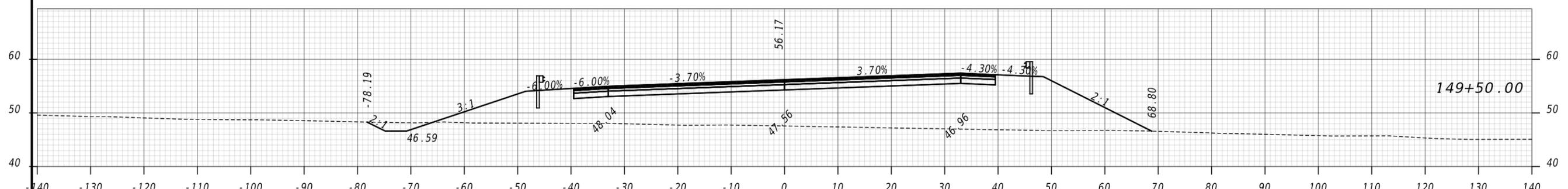
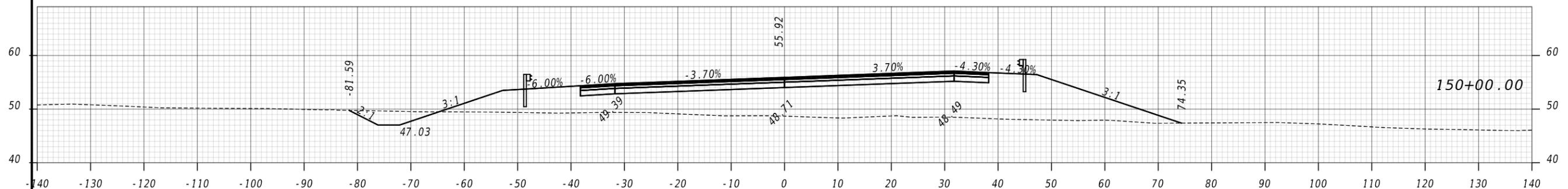
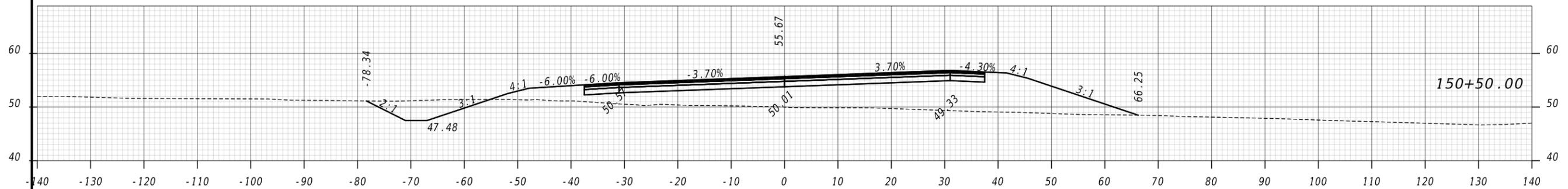
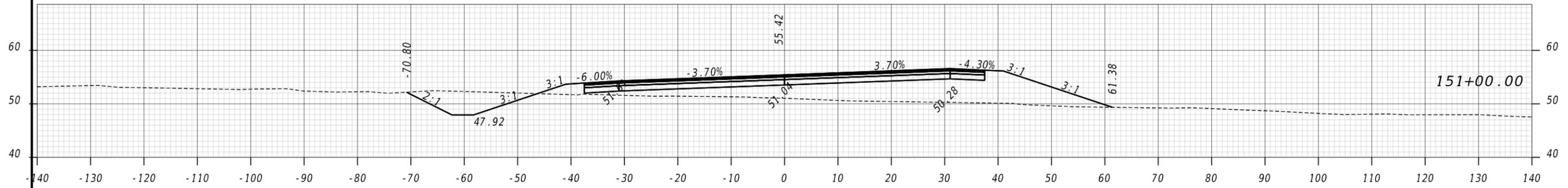
CHECKED:	DATE:	DRAWING No. 15-0010
BACKCHECKED:	DATE:	
CORRECTED:	DATE:	
VERIFIED:	DATE:	

STRUCTURE NUMBER	STATION	SIZE	DRAINAGE AREA (AC)	DISTURBED AREA (AC)	SKEW ANGLE	PRE C (CN/C)	POST C (CN/C)	50 YEAR POST Q (cfs)	100 YEAR POST Q (cfs)	50 YEAR POST V (fps)	100 YEAR POST V (fps)	50 YEAR POST HW (ft)	100 YEAR POST HW (ft)	OVERTOPPING ELEV. (ft)
P-10	101+25.05	24in (3) STORM DRAIN	16.50	1.01	0.00	45	47	11.63	15.63	3.47	3.75	50.20	50.47	55.64
P-20	109+50.44	36in STORM DRAIN	17.36	1.13	0.00	43	46	10.79	15.55	11.44	12.76	49.31	49.70	55.33
P-30	120+50.09	36in STORM DRAIN	24.12	3.36	0.00	40	42	11.83	18.28	8.50	9.62	50.30	50.76	53.99
B-1	128+82.46	10'X4' BOX CULVERT	102.07	4.29	11.39	47	47	174.00	206.00	12.12	12.72	51.39	51.79	57.96
B-2	147+53.49	10'X6' (2) BOX CULVERT	416.88	2.28	0.00	51	51	486.00	562.00	13.25	13.76	49.43	49.85	57.00

STRUCTURE NUMBER	STATION/OFFSET	SIZE	DRAINAGE AREA (AC)	25 YEAR POST C (cfs)	25 YEAR POST Q (cfs)
P-1A	100+80.81, RT	18in STORM DRAIN	0.30	0.95	3.20
P-1B	102+49.54, RT	18in STORM DRAIN	0.15	0.95	1.60
P-2A	105+61.87, RT	18in STORM DRAIN	0.15	0.95	1.60
P-2B	107+64.08, RT	18in STORM DRAIN	0.12	0.95	1.30
P-2C	108+56.77, RT	18in STORM DRAIN	0.16	0.95	1.70
P-2D	110+43.95, RT	18in STORM DRAIN	0.14	0.95	1.50
P-3A	141+51.05, RT	18in STORM DRAIN	0.26	0.95	2.80
P-3B	144+59.16, RT	18in STORM DRAIN	0.19	0.95	2.10
P-4A	148+89.61, RT	18in STORM DRAIN	0.09	0.95	1.00



BID SET - NOT FOR CONSTRUCTION



BID SET - NOT FOR CONSTRUCTION



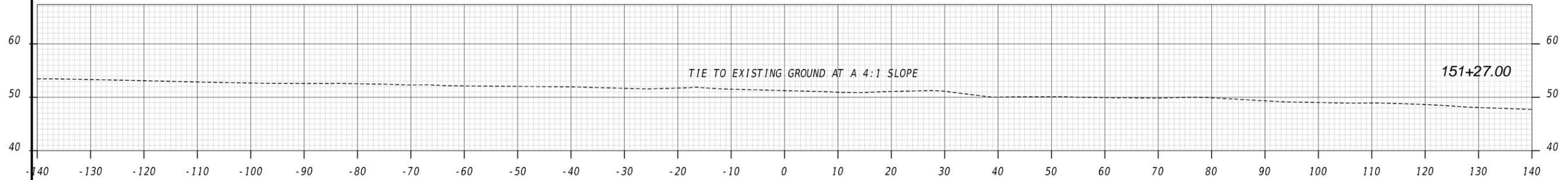
SCALE: 10H : 20V

REVISION DATES

Addendum 2 - 12-6-2022

EARTHWORK CROSS SECTIONS
SOUTH ACCESS ROAD

CHECKED:	DATE:	DRAWING No.
BACKCHECKED:	DATE:	23-0029
CORRECTED:	DATE:	
VERIFIED:	DATE:	



SCALE: 10H : 20V

REVISION DATES

Addendum 2 - 12-6-2022

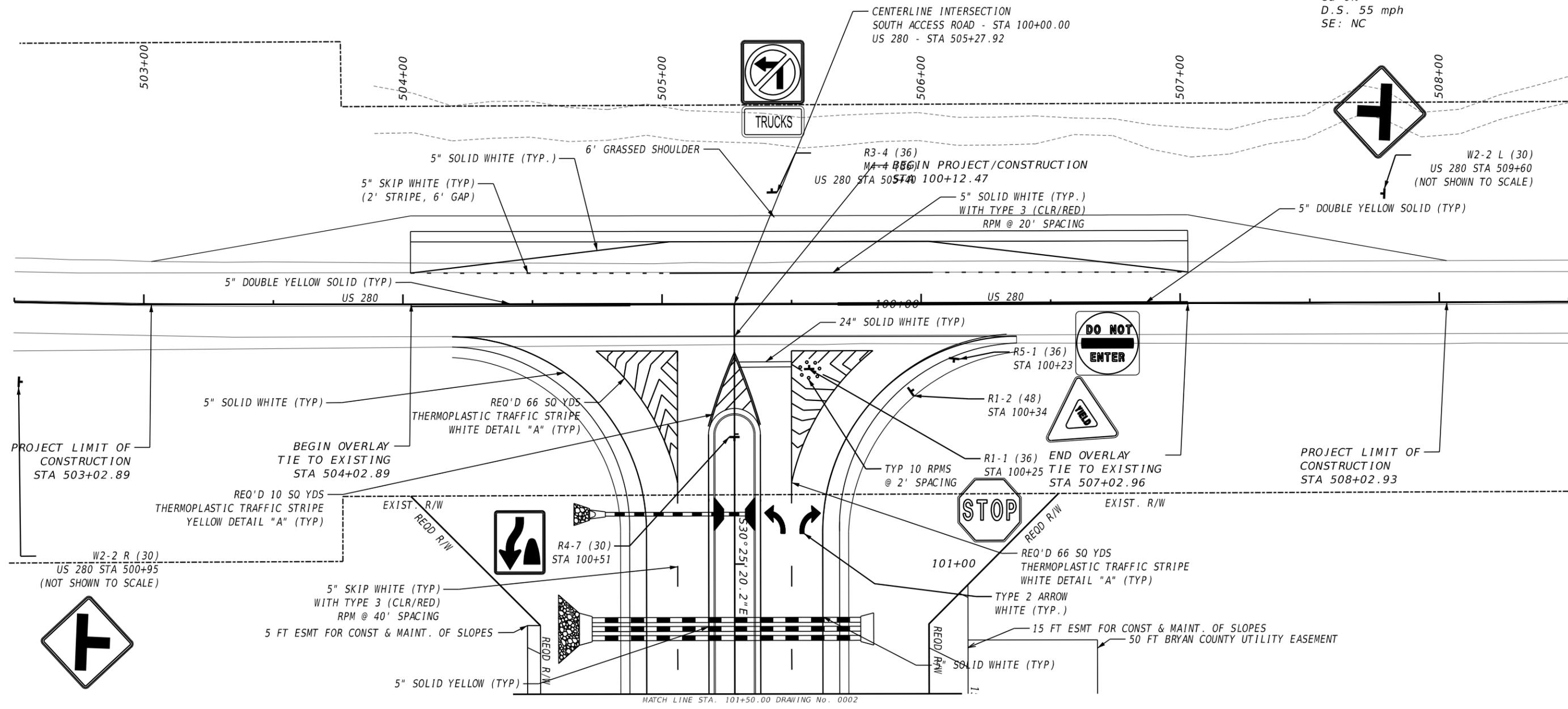
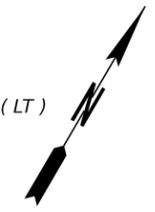
EARTHWORK CROSS SECTIONS
SOUTH ACCESS ROAD

CHECKED:		DATE:	
BACKCHECKED:		DATE:	
CORRECTED:		DATE:	
VERIFIED:		DATE:	

DRAWING No.
23-0030

BID SET - NOT FOR CONSTRUCTION

CURVE# 4
 PI 507+76.34
 N 790,425.4797
 E 868,687.5503
 Δ 00°29'41.5" (LT)
 D 00°03'05.93"
 T 479.09'
 L 958.17'
 R 110936.47'
 E 1.03'
 ed 6%
 D.S. 55 mph
 SE: NC



PROJECT LIMIT OF CONSTRUCTION STA 503+02.89

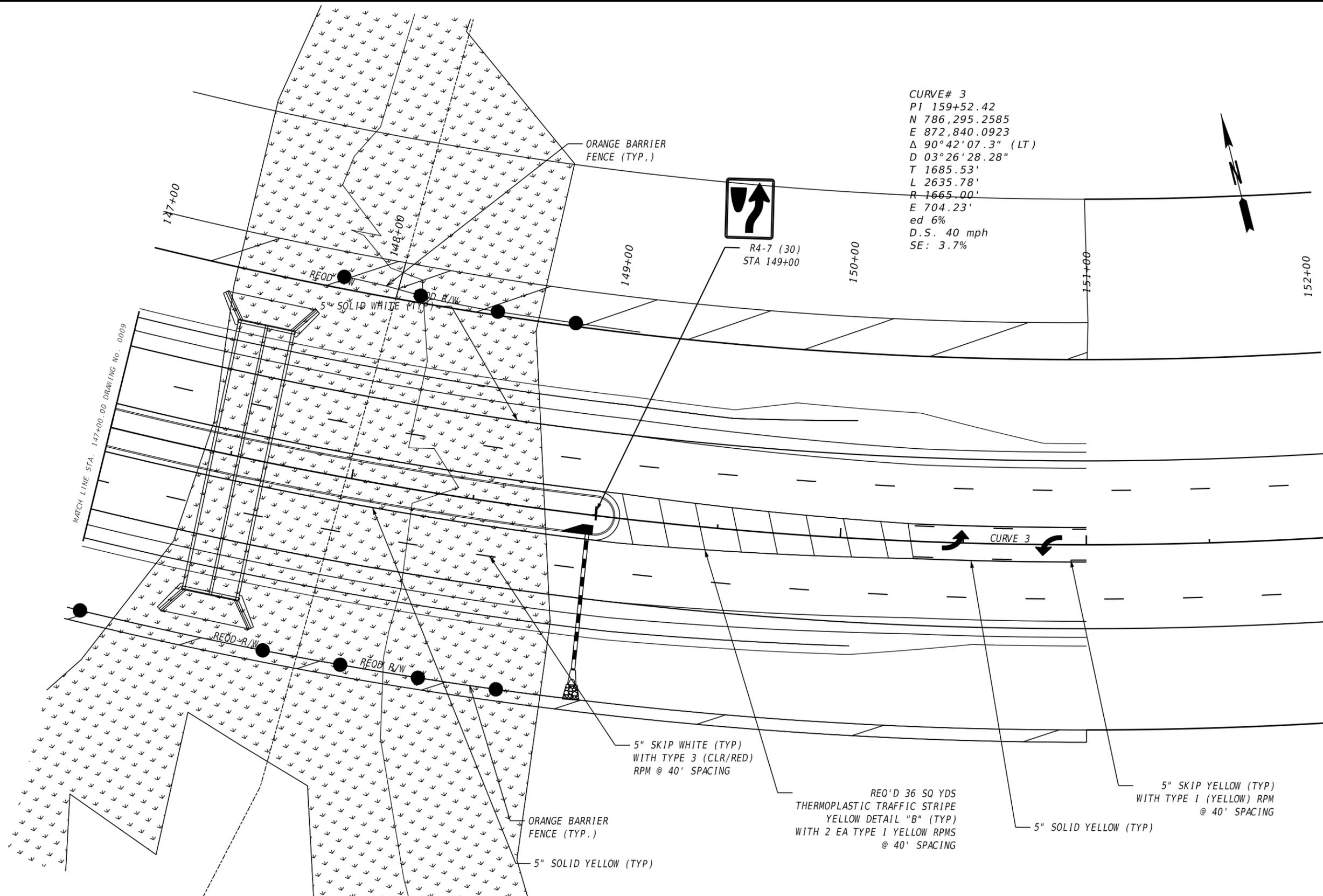
PROJECT LIMIT OF CONSTRUCTION STA 508+02.93

MATCH LINE STA. 101+50.00 DRAWING No. 0002

REVISION DATES	
ADDENDUM 2 - 12-6-2022	

SIGNING AND MARKING PLANS			
SOUTH ACCESS ROAD			
CHECKED:	DATE:	CHECKED:	DATE:
BACKCHECKED:	DATE:	CORRECTED:	DATE:
VERIFIED:	DATE:		
DRAWING No.			26-0001

BID SET - NOT FOR CONSTRUCTION



CURVE# 3
 PI 159+52.42
 N 786,295.2585
 E 872,840.0923
 Δ 90°42'07.3" (LT)
 D 03°26'28.28"
 T 1685.53'
 L 2635.78'
 R 1665.00'
 E 704.23'
 ed 6%
 D.S. 40 mph
 SE: 3.7%

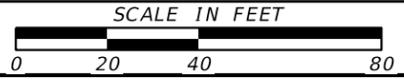


R4-7 (30)
 STA 149+00

MATCH LINE STA. 147+00.00 DRAWING No. 0009

 Savannah Harbor-Interstate 16 Corridor
 Joint Development Authority
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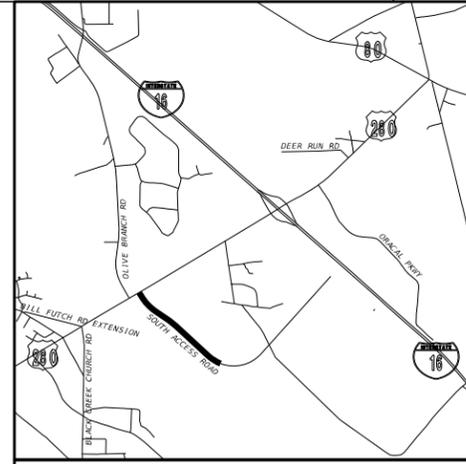
REVISION DATES	
Addendum 2 - 12-6-2022	

SIGNING AND MARKING PLANS
 SOUTH ACCESS ROAD

CHECKED:		DATE:	
BACKCHECKED:		DATE:	
CORRECTED:		DATE:	
VERIFIED:		DATE:	

DRAWING No.
26-0010

BID SET - NOT FOR CONSTRUCTION



LOCATION SKETCH

THIS PROJECT HAS BEEN PREPARED USING THE NORTH AMERICAN DATUM OF 1983 (HORIZONTAL), GEORGIA STATE PLANE COORDINATES, EAST ZONE, AND THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.



**Savannah Harbor-Interstate 16 Corridor
Joint Development Authority**
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EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN
PLAN AND PROFILE OF PROPOSED SOUTH ACCESS ROAD
BRYAN COUNTY

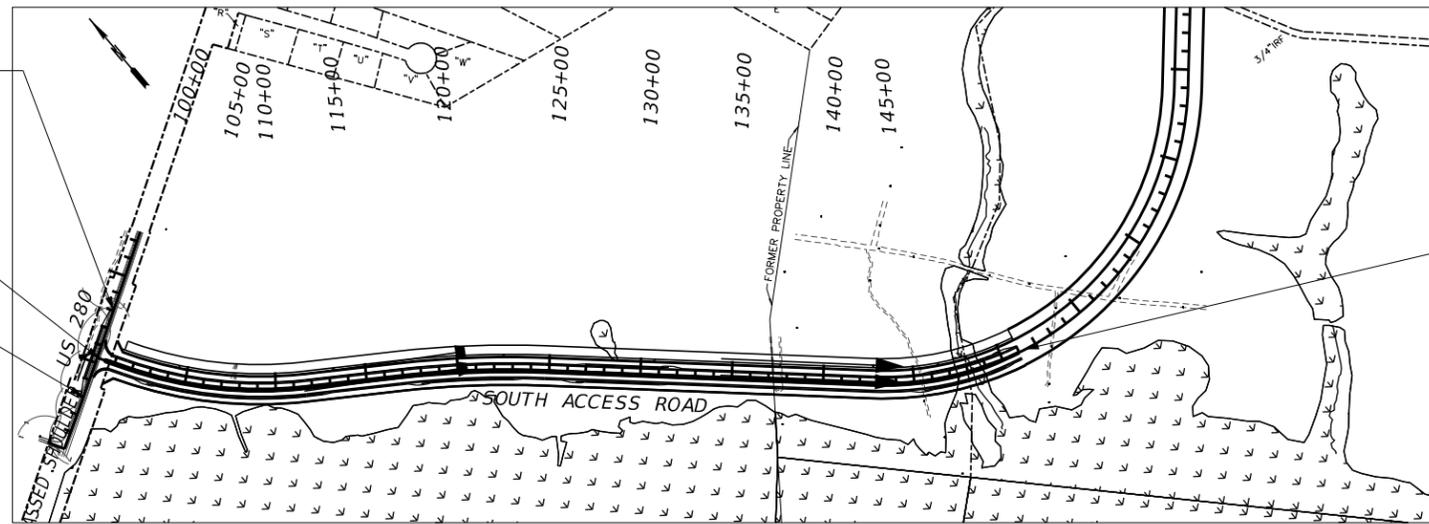
"I certify that this Erosion, Sedimentation and Pollution Control Plan has been prepared in accordance with Part IV, of the General NPDES Permit No. GAR100002."

"I certify that the permittee's Erosion, Sedimentation and Pollution Control Plan provides for an appropriate and comprehensive system of best management practices required by the Georgia Water Quality Control Act and the document "Manual for Erosion and Sediment Control in Georgia" (Manual) published by the State Soil and Water Conservation Commission as of January 1 of the year in which the land disturbing activity was permitted, provides for sampling of the receiving water(s) or the sampling of the storm water outfalls and that the designed system of best management practices and sampling methods is expected to meet the requirements contained in the General NPDES Permit No. GAR100002."

"I certify that the permittee's Erosion, Sedimentation and Pollution Control Plan provides for the monitoring of: (a) all perennial and intermittent streams and other water bodies shown on the USGS topographic map and all other field verified perennial and intermittent streams and other water bodies, or (b) where any such specific identified perennial or intermittent stream and other water body is not proposed to be sampled, I have determined in my professional judgment, utilizing the factors required in the General NPDES Permit No. GAR100002, that the increase in the turbidity of each specific identified sampled receiving water will be representative of the increase in the turbidity of a specific identified un-sampled receiving water."

"I certify under penalty of law that this plan was prepared after a site visit to the location described herein by myself or my authorized agent, under my direct supervision."

PROJECT LIMITS OF CONSTRUCTION STA 508+02.93
BEGIN PROJECT STA 100+12.47
PROJECT LIMITS OF CONSTRUCTION STA 503+02.89



END PROJECT STA 151+27.00

BEGIN-POINT COORDINATES Longitude: -081.4805° Latitude: 32.1710°
MID-POINT COORDINATES Longitude: -081.4747° Latitude: 32.1665°
END-POINT COORDINATES Longitude: -081.4680° Latitude: 32.1620°

PRIMARY PERMITTEE
SAVANNAH HARBOR - INTERSTATE 16
CORRIDOR JOINT DEVELOPMENT AUTHORITY
P.O. BOX 128
SAVANNAH, GA 31402
CONTACT: TRIPP TOLLISON
EMAIL: TTOLLISON@SEDA.ORG
PHONE: 912-447-8450

PLANS PREPARED BY: THOMAS & HUTTON

RECOMMENDED FOR APPROVAL BY:

11-09-2022 Date: Doyle Kelley, P.E. - ENGINEER
0000024601 GSWCC LEVEL II Certification Number



24 HOUR CONTACT:

Name _____
Street Address _____
City, State Zip _____
Phone Number _____
Email Address _____
Contractor shall complete the information in this box.

LENGTH OF PROJECT	COUNTY No. 029 COUNTY NAME: BRYAN
	MILES
NET LENGTH OF ROADWAY	1.081
NET LENGTH OF BRIDGES	0.000
NET LENGTH OF PROJECT	1.081
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	1.081

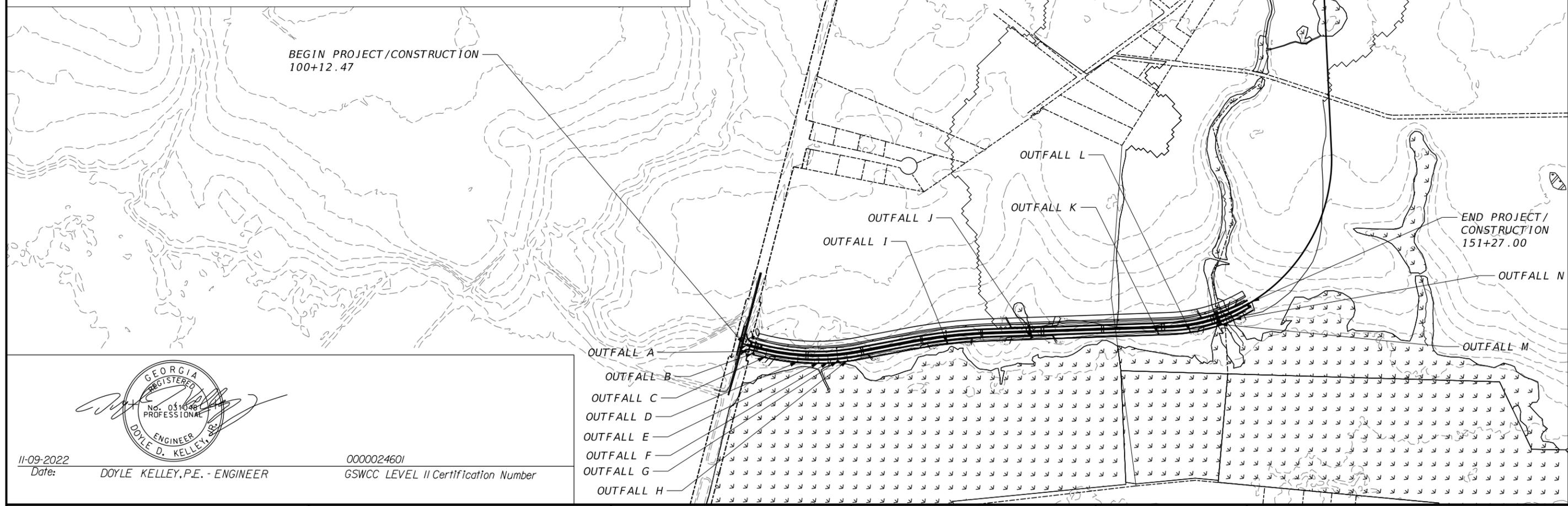
PLANS COMPLETED						
REVISIONS						
DATE	ENTITY REQUESTING REVISION(S)	DRAWING NUMBER(S)	SIGNATURE	GSWCC LEVEL II CERT.#	REVIEWER SIGNATURE	GSWCC LEVEL II CERT.#
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

BID SET - NOT FOR CONSTRUCTION

THE TOTAL PROJECT AREA IS 20.63 ACRES
THE EXPECTED PROJECT DISTURBED AREA IS 15.48 ACRES
RECEIVING WATERS = BLACK CREEK

OUTFALL NUMBER	STATION/OFFSET	SIZE	DRAINAGE AREA (AC)	25 YR POST Q (cfs)	25 YR POST V (fps)	25 YR PRE C (CN)	25 YR POST C (CN)
A	100+80.81/56' RT	18in STORM DRAIN	0.30	3.2	6.157	0.10	0.95
C	102+49.54/66' RT	18in STORM DRAIN	0.15	1.6	5.283	0.10	0.95
D	105+61.87/67' RT	18in STORM DRAIN	0.15	1.6	8.609	0.10	0.95
E	107+64.08/69' RT	18in STORM DRAIN	0.12	1.3	6.911	0.10	0.95
F	108+56.77/69' RT	18in STORM DRAIN	0.16	1.7	9.364	0.10	0.95
H	110+43.95/66' RT	18in STORM DRAIN	0.14	1.5	7.124	0.10	0.95
K	141+51.05/63' RT	18in STORM DRAIN	0.26	2.8	5.553	0.10	0.95
L	144+59.16/64' RT	18in STORM DRAIN	0.18	2.1	5.229	0.10	0.95
N	148+89.61/73' RT	18in STORM DRAIN	0.08	1.0	4.828	0.10	0.95

OUTFALL NUMBER	STATION/OFFSET	SIZE	DRAINAGE AREA (AC)	50 YR POST Q (cfs)	50 YR POST V (fps)	50 YR PRE C (CN)	50 YR POST C (CN)
B	101+25.00/60' RT	3-24in STORM DRAINS	16.50	11.63	3.47	45	47
G	109+50.44/69' RT	36in STORM DRAIN	17.36	10.79	11.44	43	46
I	120+50.50/62' RT	36in STORM DRAIN	24.12	11.83	8.50	40	42
J	128+95.30/65' RT	SINGLE 10' X 4' BOX CULVERT	102.07	174.00	12.12	47	47
M	147+53.42/67' RT	DOUBLE 10' X 6' BOX CULVERT	416.88	486.00	13.25	51	51



11-09-2022 Date: Doyle Kelley, P.E. - ENGINEER
0000024601 GSWCC LEVEL II Certification Number

- OUTFALL A
- OUTFALL B
- OUTFALL C
- OUTFALL D
- OUTFALL E
- OUTFALL F
- OUTFALL G
- OUTFALL H
- OUTFALL I
- OUTFALL J
- OUTFALL K
- OUTFALL L
- OUTFALL M
- OUTFALL N

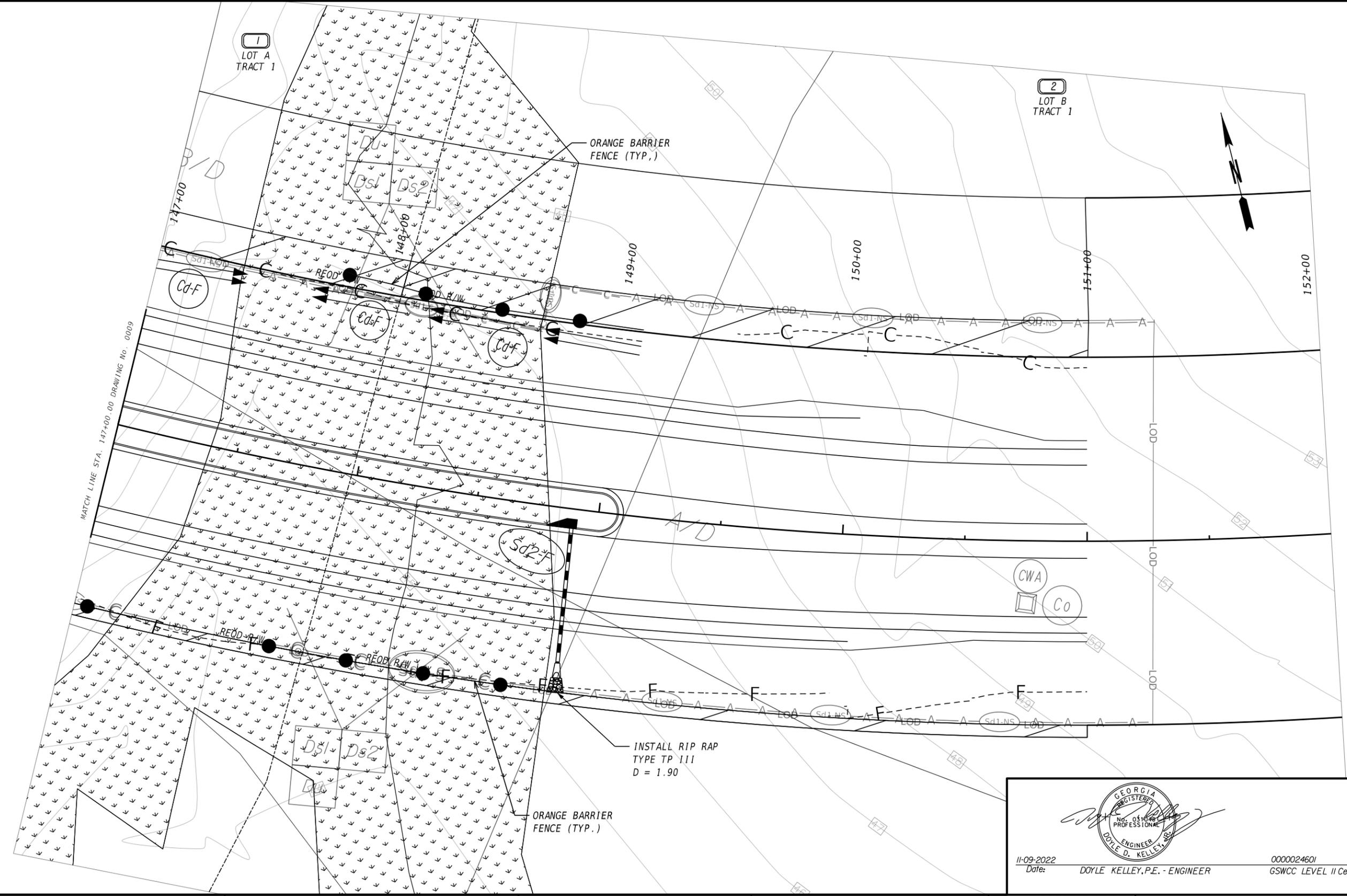
BID SET - NOT FOR CONSTRUCTION



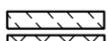
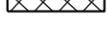
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SCALE IN FEET
0 500 1000 2000

REVISION DATES		EROSION CONTROL DRAINAGE AREA MAP	
Addendum 2 - 12-6-2022		SOUTH ACCESS ROAD	
CHECKED:	DATE:	CHECKED:	DATE:
BACKCHECKED:	DATE:	CORRECTED:	DATE:
CORRECTED:	DATE:	VERIFIED:	DATE:
			DRAWING No. 53-0001

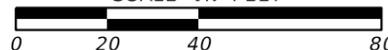



 11-09-2022
 Date: DOYLE KELLEY, P.E. - ENGINEER
 0000024601
 GSWCC LEVEL II Certification Number

PROPERTY AND EXISTING R/W LINE	-----e-----
REQUIRED R/W LINE	—————
CONSTRUCTION LIMITS	---C---F---
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	
EASEMENT FOR CONSTR OF SLOPES	
EASEMENT FOR CONSTR OF DRIVES	

BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
EXISTING LIMIT OF ACCESS
REQ'D LIMIT OF ACCESS
EXISTING LIMIT OF ACCESS & R/W
REQ'D LIMIT OF ACCESS & R/W
ORANGE BARRIER FENCE
ESA - ENV. SENSITIVE AREA



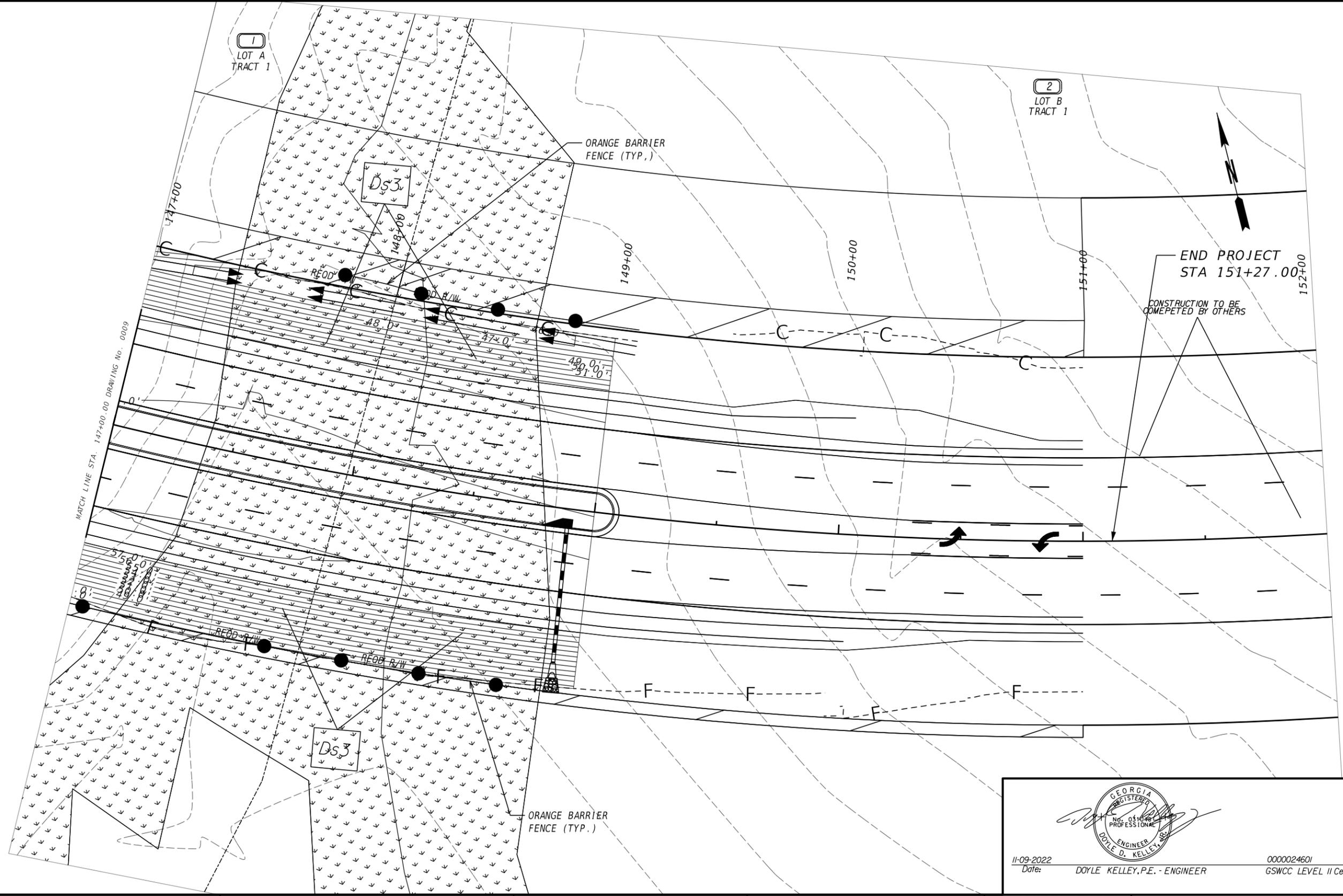
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SCALE IN FEET


REVISION DATES	
Addendum 2 - 12-6-2022	
CHECKED:	DATE:
BACKCHECKED:	DATE:
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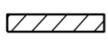
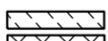
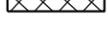
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SOUTH ACCESS ROAD
INTERMEDIATE PHASE

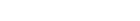
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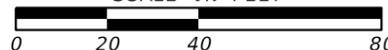



 11-09-2022
 Date: DOYLE KELLEY, P.E. - ENGINEER
 0000024601
 GSWCC LEVEL II Certification Number

PROPERTY AND EXISTING R/W LINE	-----e-----
REQUIRED R/W LINE	—————
CONSTRUCTION LIMITS	---C---F---
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	
EASEMENT FOR CONSTR OF SLOPES	
EASEMENT FOR CONSTR OF DRIVES	

BEGIN LIMIT OF ACCESS.....BLA	
END LIMIT OF ACCESS.....ELA	
EXISTING LIMIT OF ACCESS	
REQ'D LIMIT OF ACCESS	
EXISTING LIMIT OF ACCESS & R/W	
REQ'D LIMIT OF ACCESS & R/W	
ORANGE BARRIER FENCE	
ESA - ENV. SENSITIVE AREA	


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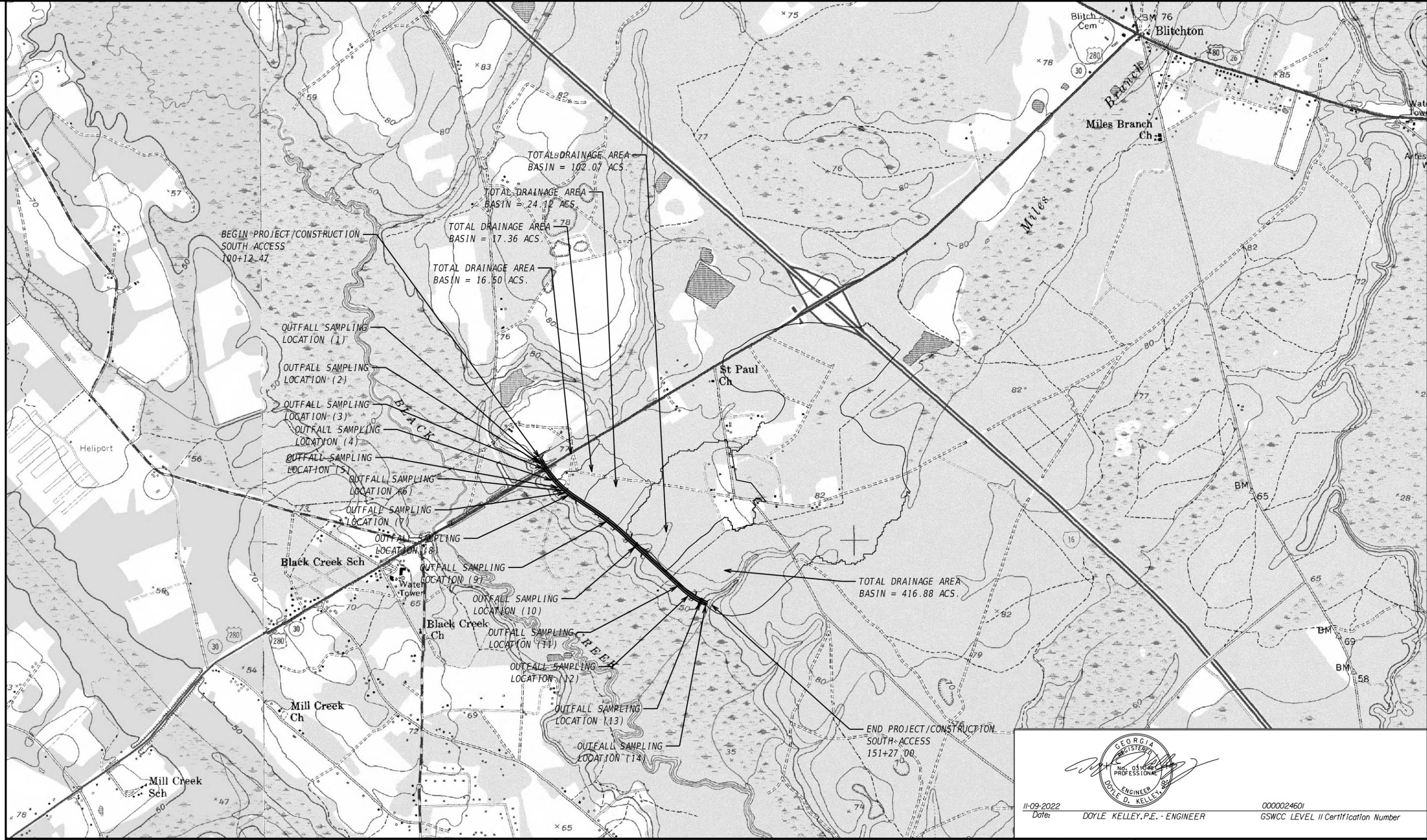
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 Savannah, GA 31402-2727 • 912.234.5300
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SCALE IN FEET


REVISION DATES	
Addendum 2 - 12-6-2022	

BMP LOCATION DETAILS
 SOUTH ACCESS ROAD
 FINAL PHASE

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CORRECTED:	DATE:	
VERIFIED:	DATE:	

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11-09-2022 Date: **DOYLE KELLEY, P.E. - ENGINEER** 0000024601 GSWCC LEVEL II Certification Number

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REVISION DATES		WATERSHED MAP SITE MONITORING PLAN	
Addendum 2 - 12-6-2022		SOUTH ACCESS ROAD	
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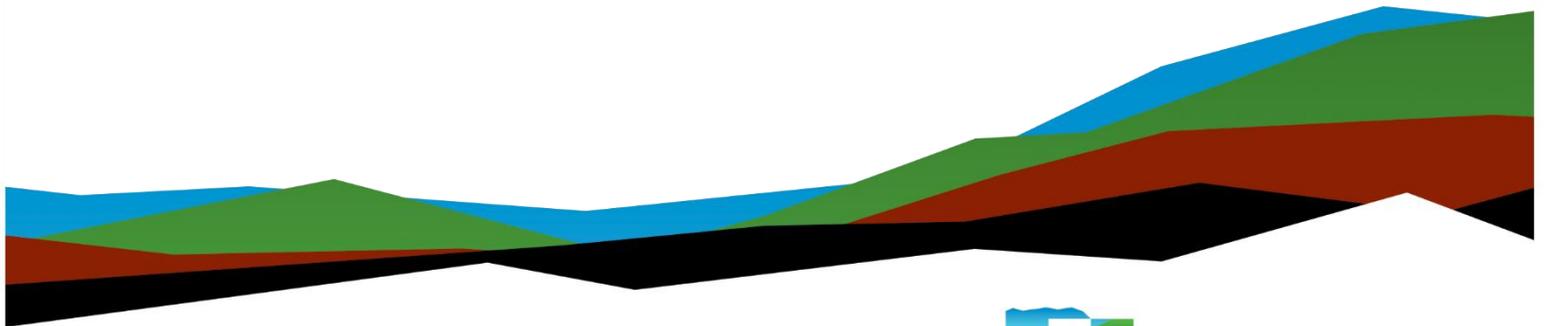
BID SET - NOT FOR CONSTRUCTION

Hyundai Motor Group Metaplant America South Entrance Road Geotechnical Engineering Report

December 2, 2022 | Terracon Project No. ES225163D

Prepared for:

Thomas & Hutton
50 Park of Commerce Way
Savannah, Georgia 31405



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Savannah, GA 31404
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Terracon.com

December 2, 2022

Thomas & Hutton
50 Park of Commerce Way
Savannah, Georgia 31405

Attn: Mr. Doyle Kelley, P.E.
P: (912) 721 4160
E: Kelley.d@tandh.com

Re: Geotechnical Engineering Report
Hyundai Motor Group Metaplant America South Entrance Road
Ellabell, GA
Terracon Project No. ES225163D

Dear Mr. Kelley:

We have completed the scope of Geotechnical Engineering services for the above referenced project in general accordance with Terracon Proposal No. PES225163D dated June 23, 2022. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of pavement for the proposed access road.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon

Nurudeen Abidoeye M.S.

Staff Geotechnical Engineer

Guoming Lin, Ph.D., P.E., D.GE

Senior Consultant

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Attachments

EXHIBIT A: Exploration Plan and Procedures

EXHIBIT B: Exploration and Testing Results

EXHIBIT C: Supporting Information

Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

Refer to each individual Attachment for a listing of contents.

Report Summary

Topic	Overview Statement ¹
<p>Project Description</p>	<p>The project includes the construction of approximately 4,700 (Linear Feet) LF access road at the proposed Hyundai EV plant. The final grading plan is assumed to be close to the existing grade. Expected traffic count provided by client are as follows;</p> <p>300,000 Vehicle production per Year (vpy)</p> <ul style="list-style-type: none"> ■ Commuter cars: 4,430 vehicles per day ■ Trucks: 1,533 vehicles per day <p>500,000 Vehicle production per year</p> <ul style="list-style-type: none"> ■ Commuter cars: 8,538 vehicles per day ■ Trucks: 2,454 vehicles per day <p>Note: the overweight/ oversized (OWOS) vehicles traffic of 100 trucks per day for a three (3) months period with a maximum weight of 250,000 pounds each are included for either of the chosen traffic. Pavement design is 20 years.</p>
<p>Geotechnical Characterization</p>	<ul style="list-style-type: none"> ■ Subsurface condition at the site is suitable for the proposed construction. ■ Approximately 6 to 12 inches of topsoil (including organics such as pinestraws/ leaves / root). ■ Below the topsoil, the site consists of sand mixtures (silty sands/ poorly graded sand with silt/ clayey sands interbedded with sandy clays to the termination of HA boring at 5 feet below the existing ground surface (BGS). A more detailed soil stratification is discussed in detail in Geotechnical Characterization. <p>Groundwater was not encountered during our field exploration. The seasonal high groundwater table is estimated to range from 1 to 3.5 feet BGS.</p>
<p>Earthwork</p>	<ul style="list-style-type: none"> ■ Install a site drainage system ■ Strip/grub topsoil. ■ Level, densify, proofroll subgrade during subgrade preparation. If any soft/weak subgrade areas are detected during proofroll testing, the subgrade should be repaired by undercut and backfill. <p>We recommend the upper two feet of the subgrade be relatively clean sands with percent fines less than 15 percent. The need and</p>

	extent of subgrade improvement should also be evaluated in consideration of the fill thickness and site drainage conditions.
Pavements	<p>The traffic load information was provided. Based on our analyses we recommend flexible (asphalt) pavement. We understand the traffic is designed to accommodate 500,000 vpy. The construction of the pavement after the subgrade has been prepared as noted in Earthwork shall be in two phases for the pavement construction of the south entrance road.</p> <p>For 500,000 Vehicle Production Per Year</p> <ul style="list-style-type: none">■ Phase 1: Initial construction traffic (8" AC intermediate course over 8" GAB for the proposed south entrance road).■ Phase 2: Final surface course to be applied after the heavy construction traffic is completed and repairs have been made to the pavements if necessary (1.75" AC surface course over Phase 1)
General Comments	<p>This section contains important information about the limitations of this geotechnical engineering report.</p>

1. This summary is for convenience only. It should be used in conjunction with the entire report for design purposes.

Introduction

This report presents the results of our subsurface exploration and Geotechnical Engineering services performed for the proposed south entrance access road to be located at the Hyundai EV Metaplant America in Ellabell, GA. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Pavement design and construction

The geotechnical engineering Scope of Services for this project included the advancement of 16 hand auger (HA) borings to depths of approximately 5 feet below existing site grades (BGS, termination depths).

Drawings showing the site and boring locations are shown on [Exhibit A-1](#) and [Exhibit A-2](#), respectively. The results of the laboratory testing performed on soil samples obtained from the site during our field exploration are included on the boring logs and as separate graphs in the [Exhibit B-3](#) through [B-6](#) section.

Project Description

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	We received a conceptual layout exhibit via email from Mr. Doyle Kelley on June 16 th , 2022. Additional information concerning the traffic information was provided via email on August 9 th , 2022. We used traffic information provided on October 25 th , 2022 for the most recent pavement design.
Project Description	The project includes the construction of an access road at the southern entrance of the plant with approximately 4,700 (Linear Feet) LF.
Proposed Structure	Approximately 4,700 LF of paved access road.

Item	Description
Grading/Slopes	It is anticipated that the site work will involve a minimal amount of cut/ fill during site preparation.
Pavements	<p>The most recent traffic information used for the design of the proposed access road was provided by Mr. Doyle Kelley in an email dated 10/25/2022. We understand that flexible (asphalt) is the preferred pavement option. The following traffic condition listed below were considered in our pavement design analysis for the south entrance road (B). This traffic represents both traffic at the inbound and outbound section. Based on communication from Thomas & Hutton and Bryan County, we understand the target Hyundai EV production per year is 500,000 vpd.</p> <p>300,000 Vehicle production per year</p> <ul style="list-style-type: none"> ■ Commuter cars: 4,430 vehicles per day ■ Trucks: 1,533 vehicles per day <p>500,000 Vehicle production per year</p> <ul style="list-style-type: none"> ■ Commuter cars: 8,538 vehicles per day ■ Trucks: 2,454 vehicles per day <p>Note: the oversized/ overweight (OSOW) vehicles traffic of 100 trucks per day for a three (3) months period with a maximum weight of 250,000 pounds each are included for either of the chosen traffic.</p>

Terracon should be notified if any of the above information is inconsistent with the planned construction, as modifications to our recommendations may be necessary.

Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located at the Hyundai Motor Group Metaplant America Project in Ellabell, GA. Latitude: 32.1664°, Longitude: -81.4746° See Exhibit A-1
Existing Improvements	None
Current Ground Cover	Heavily wooded area.

Item	Description
Existing Topography	Relatively level.

Geotechnical Characterization

Subsurface Profile

We have developed a general characterization of the subsurface conditions based upon our review of the data and our understanding of the planned construction. The geotechnical characterization forms the basis of our geotechnical calculations and evaluation of the site preparation and pavement options. The following tables provide our geotechnical characterization.

Stratum	Approximate Depth to Bottom of Stratum (feet)	Material Description
1	0.5 to 1 ¹	Topsoil: fine silty sands with pinestraws
2	5, termination of HA borings	Sand mixtures: silty sands, clayey sands, poorly graded sands with silt interbedded with sandy clays ²

1. Topsoil depth will vary throughout the site. The contractor should be prepared to strip/remove organics and unsuitable material prior to construction.
2. The sandy clay was encountered at the following locations during our field exploration (See HA1, HA2, HA3, HA5, HA6 and HA8).

Conditions observed at each exploration points across the site are indicated on the individual logs shown in **Exhibit B** in the attachment of this report. Stratification boundaries on the HA boring logs represent the approximate location of changes in native soil types; in situ, **the transition between materials may be gradual.**

Groundwater Conditions

The boreholes were observed while drilling and after completion for the presence and level of groundwater. Groundwater was not encountered within the maximum drilling depth at the time of our field exploration.

It is important to note: Groundwater conditions may change because of seasonal variations in rainfall, runoff, and other conditions not apparent at the time the borings were performed. Mottling an indicator of seasonal high groundwater table, was encountered between 0.5 and 3.5 feet BGS at most of the boring locations. The possibility

of groundwater level fluctuations should be considered when developing the design and construction plans for the project. A positive site drainage plan is critical to site stability. A groundwater table should be checked prior to construction to assess its effect on sitework and other construction activities.

Corrosivity

A soil sample was sent to our analytical laboratory for testing of chemical properties that can influence the corrosion potential of the site. The test was performed to provide preliminary data for engineers and manufacturers of various products to evaluate the corrosion risk and the need for corrosion protection measures. The table below lists the results of laboratory soluble sulfate, soluble chloride, electrical resistivity, redox and pH testing with more details in **Exhibit B-6** in the attachment of this report.

Corrosivity Test Results Summary

Sample No	Sample Depth (feet)	pH	Soluble Sulfate mg/kg (ppm)	Soluble Chloride mg/kg (ppm)	Resistivity (Ω-cm)	Red-ox
HA 8	1 – 3	5.9	3	24	130,000	+617

We evaluated the corrosion test results in accordance with the Georgia Department of Transportation (GDOT) Pipe Culvert Material Alternates and ACI 318-14. GDOT uses pH and electric resistivity to determine pipe materials allowed for corrosion consideration. Based on the above test results, concrete, plastic pipes, corrugated steel (AASHTO M-36), and corrugated aluminum (AASHTO M-196) are allowed under some conditions. Please refer to the results in the appendix for the complete list of pipe materials that are allowed for this site.

ACI 318 Table 19.3.1.1 list five categories for concrete exposure to water-soluble sulfate (SO_4^{2-}) and dissolved sulfate (SO_4^{2-}) in water. The lab tests indicated sulfate and chloride content is minimal. As such, the site is in S0 exposure class, and no special cement is required for protection against sulfate or chloride.

Recommendations for Design and Construction

The following evaluation and recommendations are based upon our understanding of the proposed construction and the results from our field exploration. **If the above-described project conditions are incorrect or changed after this report, or subsurface conditions encountered during construction are significantly different from those**

reported, Terracon should be notified so we can re-evaluate our recommendations and make appropriate revisions.

Geotechnical Considerations

The subsurface conditions are consistent across the site and adaptable for the proposed construction. The generalized soil profile is presented in the **Geotechnical Characterization** section.

The information regarding the traffic loads is included in the **Project Description** of this report. The native soils below the topsoil in the upper 2 feet are mostly sandy soils (silty sand, poorly graded sands and clayey sands) except at locations HA1 and HA3 where the topsoil is underlain by clayey soils. The clayey soils (sandy clays and clayey sands) have poor drainage characteristics and can become unstable when wet/ disturbed by construction traffic.

In general, the in-situ soils are adequate for pavement support as subgrade material after proper densification and proof rolling has been performed. In some localized areas after removal of topsoil, the near surface materials are clayey soils near HA1 and HA3 which have poor drainage characteristics and are deemed unsuitable for subgrade support. We recommend the upper two feet of the subgrade be relatively clean sands with percent fines less than 15 percent. The need and extent of subgrade improvement should also be evaluated in consideration of the fill thickness and site drainage conditions. A more detailed discussion of the site preparation for construction can be found in the **Earthwork** section of this report.

Earthwork

Site preparation should include installation of a site drainage system, topsoil stripping and grubbing, subgrade preparation, densification, and proofrolling. **Please bear in mind**, due to the uneven ground surface of the site, the volume of topsoil and organics may be significantly greater than the area times the topsoil/organics thickness indicated in the boring logs. Rutting of the subgrade can also cause the mixing of topsoil/organics with underlying soils which will result in additional required topsoil/organics stripping. Deeper undercuts may be needed in some localized areas to remove unsuitable materials.

Subgrade Preparation

The proposed site had a brush vegetation, with leaves and pinestraws at the time of our field exploration. The site clearing should strip topsoil, rootmat and organics. During the subgrade preparation, the near-surface soils with organics / soft soils (muck) should be removed with scrapers and bulldozers. Furthermore, to minimize the disturbance of the

natural soils during the site work, we recommend track-mounted lightweight equipment should be used as opposed to a rubber-tired machine.

We recommend a thorough field quality control program of proofrolling of the subgrade. The bottom of the excavation should be observed for potentially unsuitable material. Hand auger (HA) boring and dynamic cone penetration (DCP) testing should be performed to evaluate and confirm the subgrade conditions. It is anticipated that some deeper subgrade soil undercutting, and backfilling may be required in the pavement areas during the subgrade preparation.

Site Drainage

An effective drainage system should be installed prior to logging, site preparation and grading activities to intercept surface water and to improve overall shallow drainage. The site should be graded to shed water and avoid ponding over the subgrade.

Densification and Proofrolling

Prior to fill placement on the subgrade, the entire pavement areas should be densified with a heavy-duty static roller to achieve a uniform subgrade. The subgrade should be thoroughly proofrolled after the completion of densification. Proofrolling will help detect any isolated soft or loose areas that "pump", deflect or rut excessively, and also densify the near-surface soils for pavement support.

A loaded tandem axle dump truck, capable of transferring a load in excess of 20 tons, should be utilized for this operation. Proofrolling should be performed under the Geotechnical Engineer's observation. Areas where pumping, excessive deflection or rutting is observed after successive passes of the proofrolling equipment should be undercut, backfilled and then properly compacted. It is anticipated that some amount of subgrade undercutting may be required during subgrade preparation.

Fill Material Types

Fill required to achieve design grade should be classified as structural fill and general fill. Structural fill is material used below the pavements. General fill is material used to achieve grade outside of these areas.

Reuse of On-Site Soil: Some of the onsite soil may be selectively reused as fill below the pavement. Portions of the onsite soil have an elevated fines content and will be sensitive to moisture conditions (particularly during seasonally wet periods) and may not be suitable for reuse.

Based on the findings from our hand auger borings, the subject site mostly consists of silty sands (SM), poorly graded sand with silty (SP-SM), clayey sands (SC) and sandy clays (CL) in the upper 5 feet BGS. The sandy soils encountered are generally suitable for structural fill, provided that the soils are free of roots, organics or other foreign materials and meet the gradation requirements above. The clayey sands are **marginally suitable** after performing proper moisture and compaction control efforts and the sandy clays are **not considered suitable** for structural fill.

We define marginally suitable as the soils that may require extra effort to adjust the moisture before they can be compacted. The amount of effort required will be highly dependent on the season and the weather conditions during construction. We recommend Terracon be retained during construction to determine the suitability of the onsite soil as fill material.

Material property requirements for on-site soil for use as general fill and structural fill are noted in the table below:

Property	General Fill	Structural Fill
Composition	Free of deleterious material	Free of deleterious material
Maximum particle size	6 inches (or 2/3 of the lift thickness)	3 inches
Fines content	Not limited	Less than 25% Passing No. 200 sieve
Plasticity	Not limited	Maximum plasticity index of 10
Soil Materials Expected to be Suitable ¹	SM, SP-SM, SC	SM, SP-SM

1. Based on subsurface exploration. Actual material suitability should be determined in the field at time of construction.

Imported Fill Materials: Imported fill materials should meet the following material property requirements. Regardless of its source, compacted fill should consist of approved materials that are free of organic matter and debris.

Soil Type ¹	USCS Classification	Acceptable Parameters (for Structural Fill)
Granular	GW, GP, GM, GC, SW, SP, SM, SC	Less than 15% passing No. 200 sieve in the upper 24 inches and less than 25% below 24 inches.

1. Structural and general fill should consist of approved materials free of organic matter and debris. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.

We recommend Terracon be retained during construction to determine the suitability of the onsite soil as fill material.

Fill Placement and Compaction Requirements

Structural and general fill should meet the following compaction requirements.

Item	Structural Fill	General Fill
Maximum Lift Thickness	8 to 10 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used	Same as structural fill
Minimum Compaction Requirements ¹	95% of max. above foundations, below floor slabs, and below finished pavement subgrade	92% of max.
Water Content Range ¹	Granular: -3% to +3% of optimum	As required to achieve min. compaction requirements

1. Maximum density and optimum water content as determined by the modified proctor test (ASTM D 1557).

Earthwork Construction Considerations

Shallow undercuts for the proposed pavement sections, are anticipated to be accomplished with conventional construction equipment. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over, or adjacent to, construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted, prior to pavement construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, verification of on-site fill material, proofrolling, and mitigation of areas delineated by the proofroll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency provided by the project plan and specifications.

Pavements

General Pavement Comments

This section presents thickness recommendations for asphalt concrete pavements and general considerations for the pavement construction of the access road noted in **Project Description** sections of this report. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Pavement thickness design is dependent upon:

- The traffic loads including traffic pattern and the service life of the pavement;
- Subgrade conditions including soil strength and drainage characteristics;
- Paving material characteristics;
- Climatic conditions of the region.

We understand the south entrance road is an access road to Hyundai Motor Group Metaplant American Project. Based on the traffic information provided by Thomas and Hutton in an email dated 10/25/2022, we understand the South access road traffic will have one of the following traffic loads or a combination of both traffic load depending on the annual vehicle production rate of the plant. The traffic load listed below includes both inbound and outbound traffic at the plant.

300,000 vehicle per year (vpy)

- 4,430 Commuter cars per day
- 1533 Trucks per day

500,000 vehicle per year (vpy)

- 8,538 Commuter cars per day
- 2,454 Trucks per day

In addition, we considered an initial traffic of 100 trucks per day for a 3 month period with a maximum overweight/ oversized trucks hauling heavy equipment of approximately 250,000 pounds each.

Pavement Design Parameters

The pavement analysis was completed using the GDOT Pavement Design Tool v2.0. The following design parameters were utilized in the development of the pavement thickness recommendations. The result of the proposed flexible full depth pavement structure is presented in **Exhibit B-7** section of this report.

Pavement Analysis for South Entrance Roadway

Pavement Analysis	Design Parameters	Values		
		300,000 vpy*	300,000 vpy* growth to 500,000 vpy*	500,000 vpy*
Flexible Pavement	No. of Lanes in 1 direction	2		
	Mean Annual Average Daily Traffic (one-way)	2,982	4,239	5,496
	SU Truck %	5	5	3
	COMB/ MU Tuck %	21	20	20
	Lane Distribution Factor %	90		
	Terminal Serviceability Index	2.5 (default)		
	Soil Support Value	4.0 (default)		
	Regional Factor	1.7 (default)		
	Single Unit ESAL	0.4 (default)		
	Multiple Unit ESAL	1.5 (default)		
	Representative 18-KIP ESAL	1.29	1.28	1.36
	Total Design Period ESAL	6,570,000	8,920,600	11,271,200
	Under-designed %	9.26	8.82	10.33

* Vehicle Production per Year (vpy)

Pavement Section Thicknesses

Based on email communication provided by Mr. Doyle Kelley of Thomas and Hutton on November 3rd, 2022. We understand that the preferred pavement option by Bryan County is for the **500,000 vehicle production per year**. The following table provides our opinion of minimum thickness for AC sections:

Asphaltic Concrete Design

Layer	Minimum Section Thickness (inches) (South Entrance Access Road) ¹
	500,000 (Hyundai EV Production per Year)
AC ²	1.75
Asphalt Intermediate Course ²	3
Asphalt Base Course ²	5
Aggregate Base ²	8
Total Pavement Section	17.75
Geogrid (Tensar BX1200 or equivalent)	One layer
Select fill ³ / improved subgrade ⁴	24

1. See **Project Description** for more specifics regarding traffic assumptions.
2. Asphalt concrete and base course materials should conform to the following GDOT material specifications.
 - Section 815 for Graded Aggregate
 - Section 828 for Hot Mix Asphalt Concrete Mixture. The surface course may use 12.5 mm Superpave for the heavy-duty section. 19 mm and/or 25 mm Superpave is recommended for the intermediate and base course respectively.
3. The select fill should be relatively clean sands with percent fines less than 15%. The fill material should be compacted to a minimum of 95% of the soil’s Modified Proctor maximum dry density (ASTM D-1557).
4. If SP or SP-SM or SM soils exist at the proposed subgrade elevation extending to a depth at least 24 inches below the proposed subgrade level, the in-situ soils can replace the select fill and the subgrade should be improved using densification as discussed in the **Earthwork** section.

Notes:

- Proper surface and subgrade drainage system should be installed to avoid saturation of subgrade soils underneath the asphalt pavements. The site drainage should be designed to maintain the groundwater at least 2 feet below the top of the subgrade.
- Some subgrade soil undercutting and backfilling with suitable structural fill will be required if unstable subgrade soils are encountered during subgrade preparation. The use of geogrid (Tensar BX1200 or equivalent) may be necessary to help reduce the depth of undercut to achieve

Asphaltic Concrete Design

Layer	Minimum Section Thickness (inches) (South Entrance Access Road) ¹
	500,000 (Hyundai EV Production per Year)

stability if the unstable subgrade soils extend to greater depths. The need for geogrid and/or the need for undercutting and backfilling should be determined in the field during subgrade preparation.

A design life of 20 years was assumed to develop the total traffic in the thickness design. As typical for pavement, it should be noted maintenance repairs are typically required after a period of 7 to 10 years to keep the pavement in acceptable condition.

Based on email communication with Thomas and Hutton, we understand that asphalt pavement is the preferred option for the South entrance road (B). We have recommended the asphalt pavement be designed/ constructed in two-phases to account for the impact of the oversized and overweight truck traffic load (OSOW). We understand there would be an initial traffic of 100 trucks per day, seven days a week for a three month period. The OSOW trucks are expected to run on the South entrance road for approximately 3 months, and it is expected that the maximum weight of the OSOW trucks will be approximately 250,000 pounds. The proposed asphalt pavement design phases are listed below;

- **Phase 1 Construction:** we recommended the construction traffic including the oversized/ overweighed heavy-duty truck traffic be allowed to run on after the construction of the asphalt intermediate course (3")/ asphalt base course (5") and aggregate base (8") has been completed. The subgrade strength and stability conditions will be key to the pavement performance. Therefore, we recommend a layer of geogrid at the bottom of the GAB layer.
- **Phase 2 Construction:** The final surface course (1.75") should be applied after the heavy traffic has been completed and repairs have been made to any rutting (if any).

The minimum thickness proposed by Terracon is based on our understanding of the proposed traffic for 500,000 vehicle production per year. If the information used are not consistent with the project design Terracon should be contacted to review this design.

For pavement support, subgrade conditions can often be the overriding factor in pavement performance. The subgrade conditions will depend on the in-situ soils at the subgrade level, characteristics of fill material for the subgrade, as well as site preparation procedures.

The site grading plan was not available at this time. We anticipate the finished subgrade elevation will be near the existing ground surface. The site pavement should be prepared with suitable soil as mentioned in the **Earthwork** section. Beneath the topsoil layer, our hand auger

borings encountered soils varying from silty sands (SM)/ poorly graded sands with silt (SP-SM) to clayey sands (SC) and sandy clays (CL). The sandy soils if meeting the gradation requirement above, are deemed suitable for the pavement subgrade support. The clayey sands (SC) /sandy clays (CL) should not be used for the subgrade support due to poor drainage.

If, during construction, clayey sands or sandy clays are encountered at the subgrade level, the upper two (2) feet of the subgrade should be replaced with relatively clean sands with less than 15 percent fines. Based on the in-situ soils at the site and typical imported fills available in this area, a California Bearing Ratio (CBR) value of 8 has been estimated.

The above flexible pavement sections represent the minimum design thicknesses and, as such, periodic maintenance should be anticipated. Prior to the placement of the crushed stones, the pavement subgrade should be thoroughly proofrolled.

Pavement Construction Consideration

Pavement subgrades prepared early in the project should be carefully evaluated as the time for pavement construction approaches. We recommend the pavement areas be rough graded and then thoroughly proofrolled with a loaded tandem-axle dump truck. Particular attention should be paid to the high traffic areas that were rutted and disturbed, and to the areas where backfilled trenches are located.

Areas, where unsuitable conditions are located, should be repaired by removing and replacing the materials with properly compacted fill. After proofrolling and repairing subgrade deficiencies, the entire subgrade should be scarified to a depth of 12 inches, and uniformly compacted to at least 95% of the materials' modified Proctor maximum dry density.

Pavement Drainage

Poor pavement subgrade drainage is the most common cause of pavement failure in this area. Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the granular subbase.

Based on the possibility of shallow and/or perched groundwater, we recommend installing a pavement subdrain system to control groundwater, improve stability, and improve long-term pavement performance. The civil engineer should decide the locations of the subgrade drains based on the overall site grading and drainage plans.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic upkeep should be anticipated. Preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Pavement care consists of both localized (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Additional engineering consultation is recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur, and repairs may be required.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.
- Place curb, gutter and/or sidewalk directly on clay subgrade soils rather than on unbound granular base course materials.

General Comments

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly affect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

ATTACHMENT

EXHIBIT A: Exploration Plan and Procedures

EXHIBIT B: Exploration and Testing Results

EXHIBIT C: Supporting Information

EXHIBIT A

EXPLORATION PLAN AND PROCEDURES

- **Exhibit A-1:** Site Location Plan
- **Exhibit A-2:** Exploration Plan
- **Exhibit A-3:** Exploration and Testing Procedures

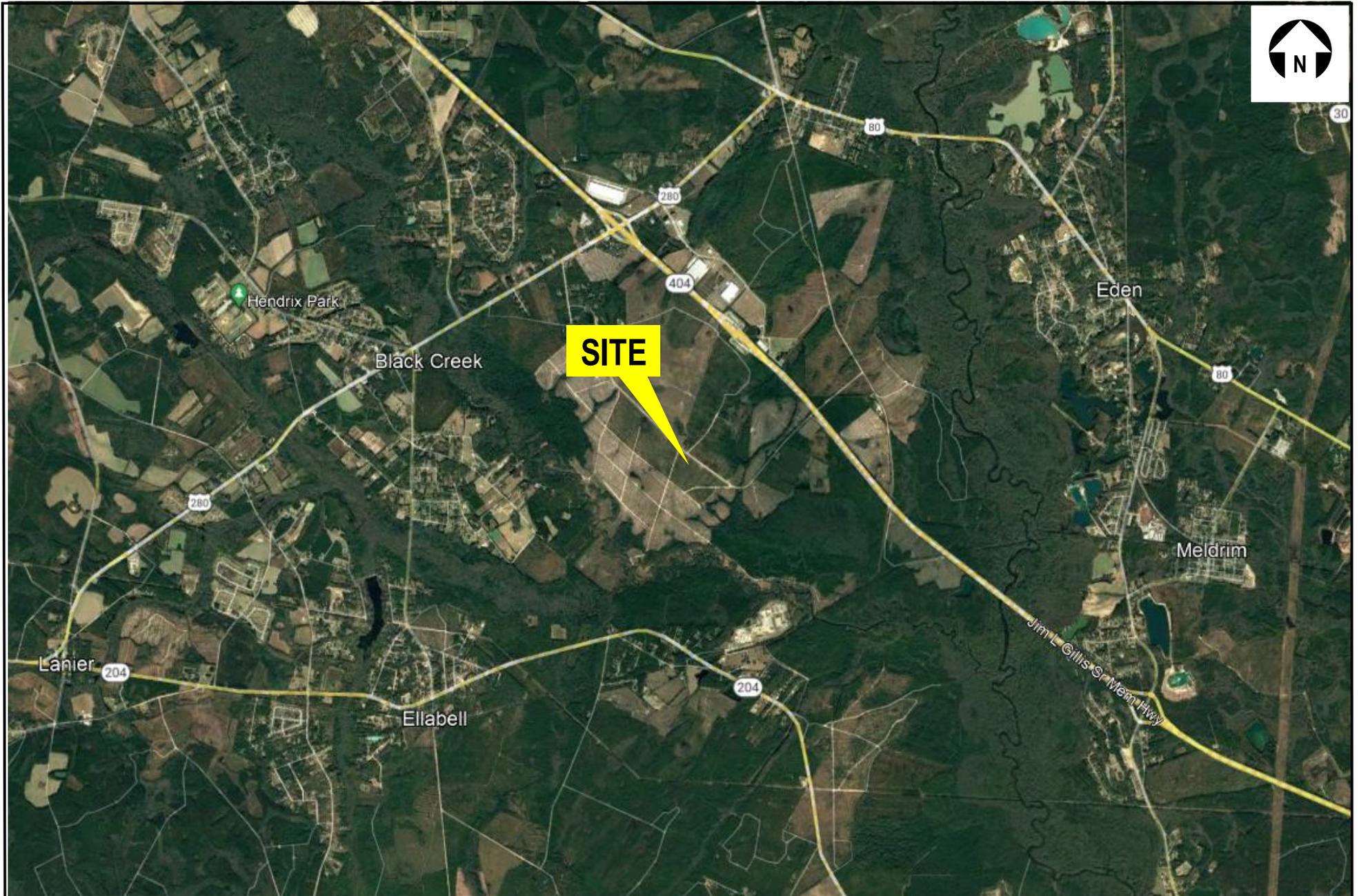


Image Courtesy of
Google Earth™

Project Manager:	NAA
Drawn by:	NAA
Checked by:	YJ
Approved by:	GL

Project No.	ES225163D
Scale:	N.T.S.
File Name:	
Date:	09-01-22



2201 Rowland Avenue Savannah, Georgia 31404
Phone (912) 629 4000 Fax (912) 629 4001

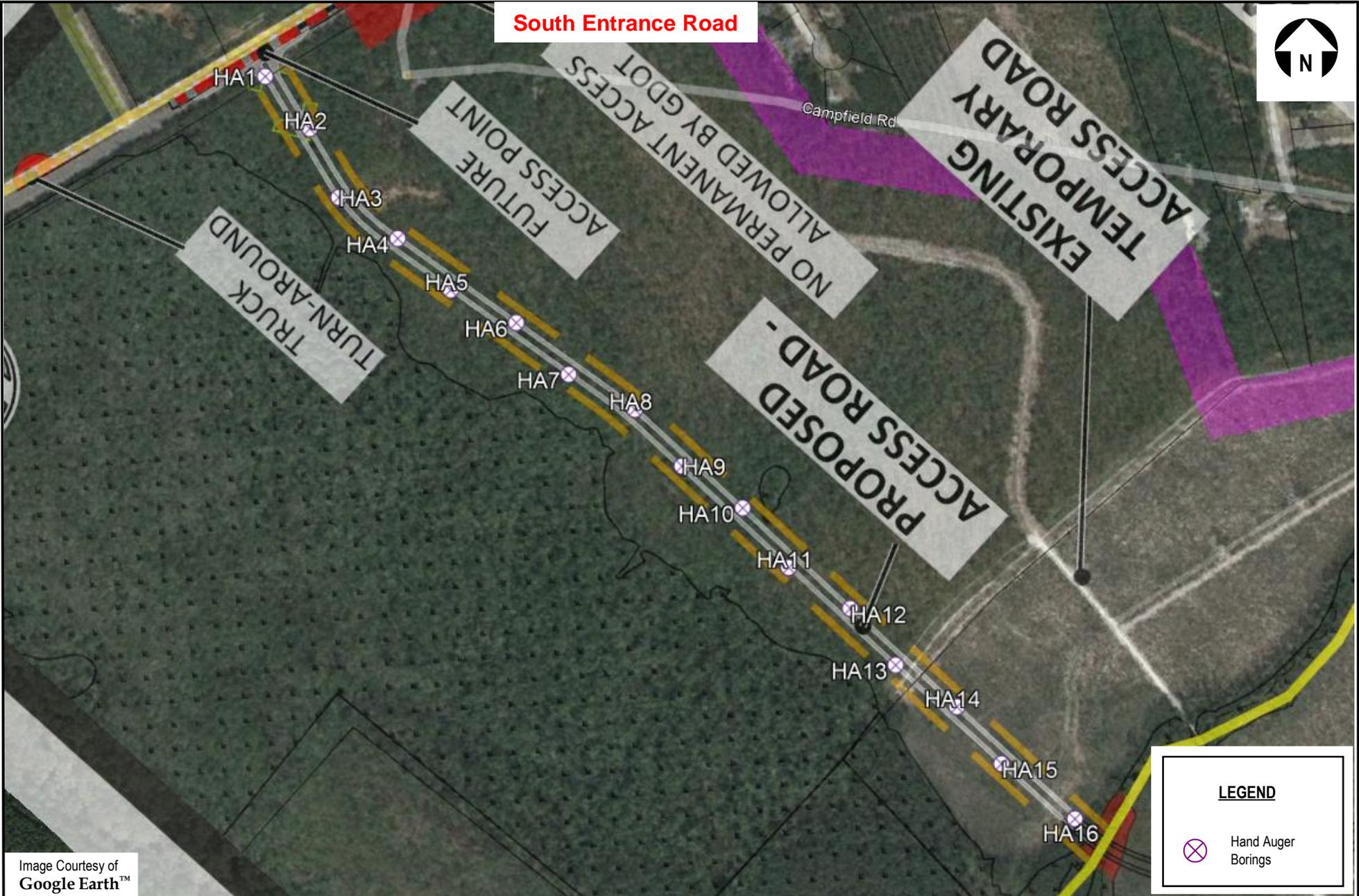
SITE LOCATION PLAN

Hyundai Motor Group Metaplant America South Entrance Road
Ellabell
Bryan County, Georgia

Exhibit:

A-1

South Entrance Road



LEGEND

⊗ Hand Auger Borings

Image Courtesy of Google Earth™

NOTES:
 CONCEPTUAL PLAN PROVIDED TO TERRACON BY THOMAS & HUTTON VIA EMAIL ON 06-16-2022.
 ALL EXPLORATION LOCATIONS WERE LOCATED IN THE FIELD USING A GPS UNIT AND / OR SITE LANDMARKS. EXPLORATION LOCATIONS SHOULD BE CONSIDERED APPROXIMATE. DIAGRAM IS FOR GENERAL LOCATION ONLY; NOT INTENDED FOR CONSTRUCTION PURPOSES.

Project Manager: NAA
Drawn by: NAA
Checked by: YJ
Approved by: GL

Project No. ES225163D
Scale: N.T.S.
File Name:
Date: 09-01-22

2201 Rowland Avenue Savannah, Georgia 31404
 Phone (912) 629 4000 Fax (912) 629 4001

EXPLORATION PLAN

Hyundai Motor Group Metaplant America South Entrance Road
 Ellabell
 Bryan County, Georgia

Exhibit:
A-2

Exploration and Testing Procedures

Field Exploration

Number of Borings	Maximum Depth (feet, below ground surface)	Location
16 Hand Auger (HA) borings	5	Pavement (South Access Road)

Boring Layout and Elevations: Terracon personnel provided the boring layout. Coordinates were obtained using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet).

Subsurface Exploration Procedures:

Hand Auger Borings: Hand auger borings were conducted in general accordance with ASTM D 1452-80 to determine the subsurface conditions at shallow depths. In this test, the hand auger boring is drilled by rotating and advancing a bucket auger to the desired depths while periodically removing the auger from the hole to clear and examine the auger cuttings. The soils will be visually classified by a geotechnical engineer or geologist in accordance with ASTM D-2488.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. Bag/bucket samples were obtained at multiple depths ranging from 1.5 to 5 feet below existing grade surface and shipped to Terracon's laboratory for the following testing procedures. The laboratory testing program included the following types of tests:

- **Grain Size Analysis:** ASTM D422 – Standard Test Method for Particle Size Distribution of Soils
- **Atterberg Limits:** ASTM D4318 – Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- **Corrosion Series:** ASTM D516-16 and G51-18 – Standard Test Method for Corrosion Test Series of Soils

Exhibit: A-3-1

Geotechnical Engineering Report

Hyundai Motor Group Metaplant America South Entrance Road | Ellabell, GA
September 26, 2022 | Terracon Project No. ES225163D



The laboratory results are represented in individual graphs and tables in detail in **Exhibit B-3** through **B-6**. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System.

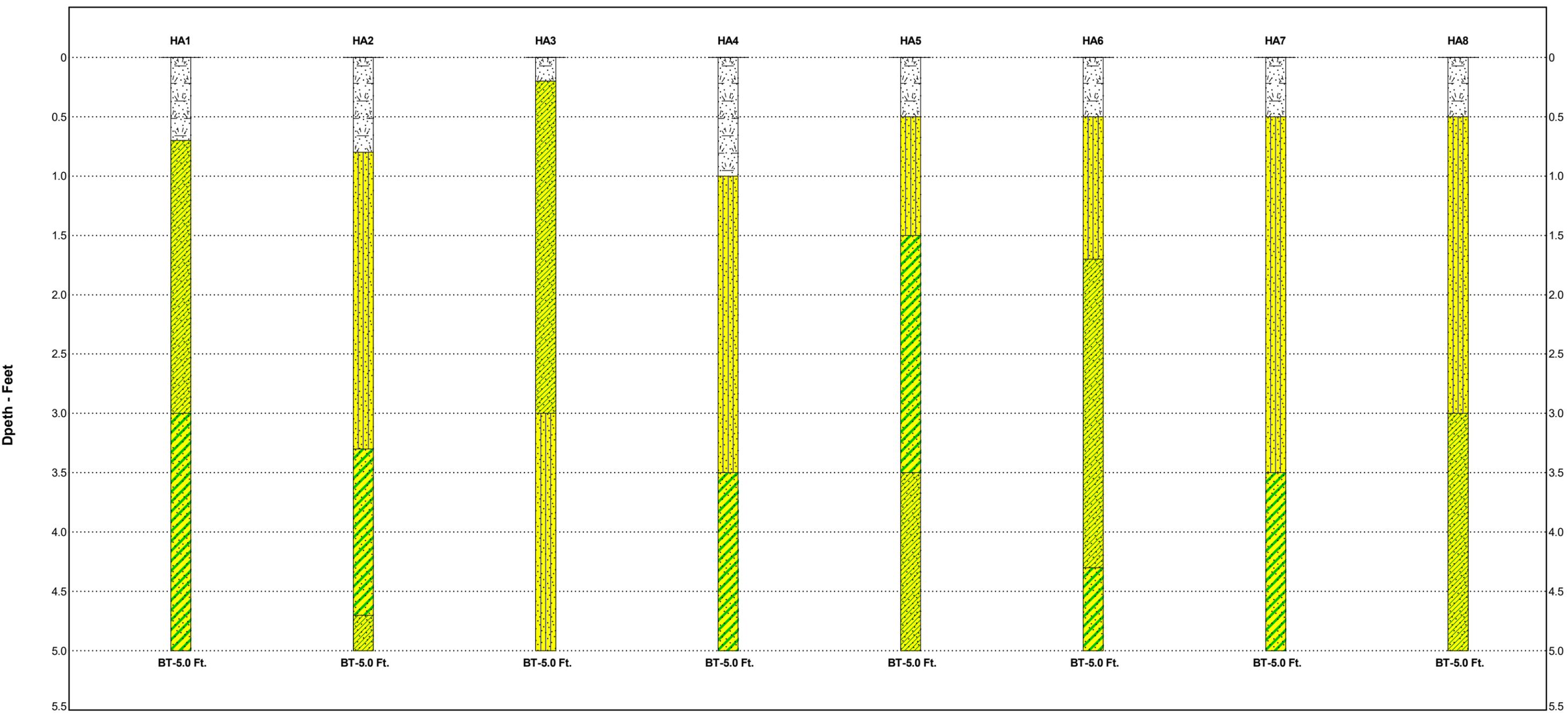
Exhibit: A-3-2

EXHIBIT B

EXPLORATION AND TESTING RESULTS

- **Exhibit B-1:** Subsurface Profile
- **Exhibit B-2:** Hand Auger Boring Logs
- **Exhibit B-3:** Summary of Laboratory Test Results
- **Exhibit B-4:** Grain Size Distribution
- **Exhibit B-5:** Atterberg Limit
- **Exhibit B-6:** Corrosion Series Test Result
- **Exhibit B-7:** Flexible Pavement Design Structure

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT: SMART FENCE ES225163D HYUNDAI EV PLANT .GPJ TERRACON_DATA\TEMPLATE.GDT 9/26/22



Depth - Feet

Explanation

- Topsoil
- Sandy Lean Clay
- Clayey Sand
- Silty Sand

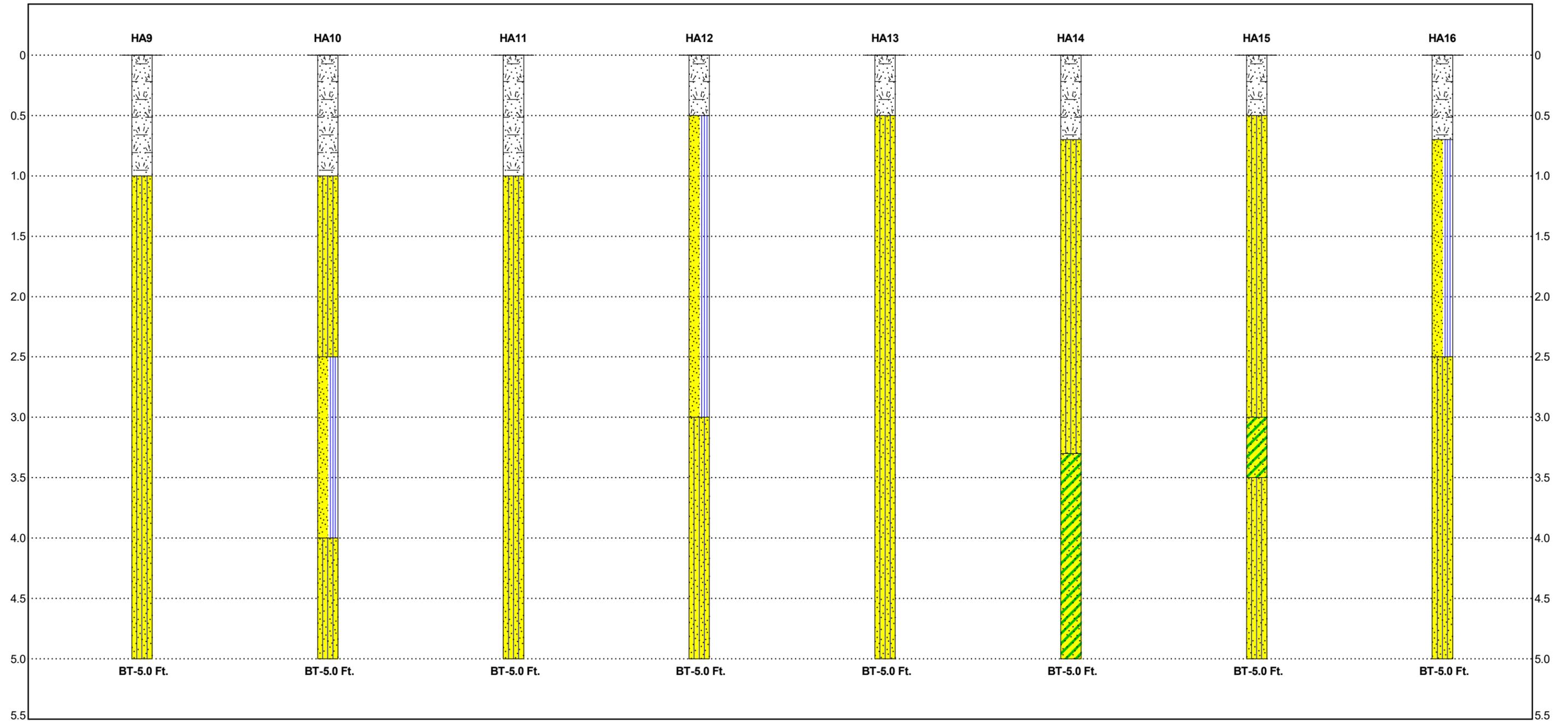
HA1 — Borehole Number
 Moisture Content — %w
 Sampling (See General Notes)
 AR — Borehole Refusal
 BT — Borehole Termination Type
 LL PL — Liquid and Plastic Limits
 Borehole Lithology

NOTES:
 See [Exploration Plan](#) for orientation of soil profile.
 See General Notes in [Supporting Information](#) for symbols and soil classifications.
 Soils profile provided for illustration purposes only.
 Soils between borings may differ
 AR - Auger Refusal
 BT - Boring Termination

Exhibit: B-1-1

Project No.: ES225163D Date: 9/26/2022 Scale: N.T.S.	 2201 Rowland Ave Savannah, GA	SUBSURFACE PROFILE HYUNDAI MOTOR GRP. METAPLANT AMERICA SOUTH ENTRANCE RD. US HWY 280, ELLABELL, GA
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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT: SMART FENCE ES225163D HYUNDAI EV PLANT .GPJ TERRACON_DATA\TEMPLATE.GDT 9/26/22



Explanation

- HA9 — Borehole Number
- Moisture Content — %w
- Sampling (See General Notes)
- AR — Borehole Refusal
- BT — Borehole Termination Type
- LL PL — Liquid and Plastic Limits
- Borehole Lithology
- Water Level Reading at time of drilling.
- Water Level Reading after drilling.

- Topsoil
- Silty Sand
- Poorly-graded Sand with Silt
- Clayey Sand

NOTES:
 See [Exploration Plan](#) for orientation of soil profile.
 See General Notes in [Supporting Information](#) for symbols and soil classifications.
 Soils profile provided for illustration purposes only.
 Soils between borings may differ
 AR - Auger Refusal
 BT - Boring Termination

Exhibit: B-1-2

Project No.: ES225163D	<p style="font-size: small; margin-top: 10px;">2201 Rowland Ave Savannah, GA</p>	SUBSURFACE PROFILE
Date: 9/26/2022		HYUNDAI MOTOR GRP. METAPLANT AMERICA SOUTH ENTRANCE RD.
Scale: N.T.S.		US HWY 280, ELLABELL, GA

BORING LOG NO. HA1

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV PLANT GPU TERRACON DATATEMPLATE.GDT 9/26/22

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1707° Longitude: -81.4800°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES	WATER CONTENT (%)	ATTERBERG LIMITS
							LL-PL-PI
DEPTH							
0.7	TOPSOIL , with pinestraw, fine to medium grained, brown, silty sand						
3.0	SANDY LEAN CLAY (CL) , brown/orange	1 2 3					
5.0	CLAYEY SAND (SC) , with clast clay, fine to medium grained, brown/red	4	~		36	14.5	33-22-11
5.0	Boring Terminated at 5 Feet	5					

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:
Abandonment Method: Boring backfilled with auger cuttings upon completion.		
WATER LEVEL OBSERVATIONS		
Groundwater not encountered Mottling encountered @ 0.7 ft BGS	Boring Started: 08-16-2022 Drill Rig: Hand Auger Project No.: ES225163D	Boring Completed: 08-16-2022 Driller: Exhibit: B-2-1

BORING LOG NO. HA2

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV PLANT. GPJ TERRACON. DATATEMPLATE.GDT 9/26/22

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1701° Longitude: -81.4795°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
DEPTH				
	TOPSOIL , with pinestraw, fine to medium grained, brown, silty sand			
0.8		1		
	SILTY SAND (SM) , fine to medium grained, light brown			
3.3		2		
	CLAYEY SAND (SC) , fine to medium grained, brown/orange			
4.7		3		
	SANDY LEAN CLAY (CL) , red/orange			
5.0		4		
	Boring Terminated at 5 Feet	5		

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any). See Supporting Information for explanation of symbols and abbreviations.	Notes:	
Abandonment Method: Boring backfilled with auger cuttings upon completion.			
WATER LEVEL OBSERVATIONS		Boring Started: 08-16-2022	Boring Completed: 08-16-2022
Groundwater not encountered Mottling encountered @ 3.3 ft BGS	2201 Rowland Ave Savannah, GA	Drill Rig: Hand Auger	Driller:
		Project No.: ES225163D	Exhibit: B-2-2

BORING LOG NO. HA3

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV PLANT. GPJ TERRACON DATATEMPLATE.GDT 9/26/22

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1695° Longitude: -81.4790°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
DEPTH				
0.2	TOPSOIL , with pinestraw, fine to medium grained, brown, silty sand			
3.0	SANDY LEAN CLAY (CL) , orange/red	1		
5.0	SILTY SAND (SM) , fine to medium grained, orange/light brown	2		
5.0	Boring Terminated at 5 Feet	3		
		4		
		5		

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:	
Abandonment Method: Boring backfilled with auger cuttings upon completion.			
WATER LEVEL OBSERVATIONS		Boring Started: 08-16-2022	Boring Completed: 08-16-2022
Groundwater not encountered Mottling encountered @ 0.2 ft BGS	2201 Rowland Ave Savannah, GA	Drill Rig: Hand Auger	Driller:
		Project No.: ES225163D	Exhibit: B-2-3

BORING LOG NO. HA4

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV PLANT. GPJ TERRACON. DATATEMPLATE.GDT 9/26/22

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1689° Longitude: -81.4783°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES	WATER CONTENT (%)	ATTERBERG LIMITS
							LL-PL-PI
DEPTH							
1.0	TOPSOIL , with pinestraw, fine to medium grained, brown, silty sand						
3.5	SILTY SAND (SM) , fine to medium grained, light brown						
5.0	CLAYEY SAND (SC) , fine to medium grained, orange/red		~		35	20.7	61-24-37
5.0	Boring Terminated at 5 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:
Abandonment Method: Boring backfilled with auger cuttings upon completion.		
WATER LEVEL OBSERVATIONS		Boring Started: 08-16-2022
Groundwater not encountered Mottling encountered @ 3.3 ft BGS	2201 Rowland Ave Savannah, GA	Boring Completed: 08-16-2022
		Drill Rig: Hand Auger
		Project No.: ES225163D
		Exhibit: B-2-4

BORING LOG NO. HA5

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV PLANT. GPJ TERRACON DATATEMPLATE.GDT 9/26/22

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1685° Longitude: -81.4775°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES	WATER CONTENT (%)	ATTERBERG LIMITS
							LL-PL-PI
DEPTH							
0.5	TOPSOIL , with pinestraw, fine to medium grained, brown, silty sand						
1.5	SILTY SAND (SM) , fine to medium grained, brown						
2.5	CLAYEY SAND (SC) , fine to medium grained, brown						
3.5	SANDY LEAN CLAY (CL) , red/orange			33	16.0	31-21-10	
5.0	Boring Terminated at 5 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any). See Supporting Information for explanation of symbols and abbreviations.	Notes:
Abandonment Method: Boring backfilled with auger cuttings upon completion.		
WATER LEVEL OBSERVATIONS		
Groundwater not encountered Mottling encountered @ 1.3 ft BGS	2201 Rowland Ave Savannah, GA	Boring Started: 08-16-2022 Boring Completed: 08-16-2022 Drill Rig: Hand Auger Driller: Project No.: ES225163D Exhibit: B-2-5

BORING LOG NO. HA6

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV/PLANT. GPJ TERRACON DATATEMPLATE.GDT 9/26/22

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1680° Longitude: -81.4768°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
DEPTH				
	TOPSOIL , with pinestraw, fine to medium grained, brown, silty sand	0.5		
	SILTY SAND (SM) , fine to medium grained, brown	1.7	1	
	SANDY LEAN CLAY (CL) , orange/red orange/red/light gray	4.3	2 3 4	
	CLAYEY SAND (SC) , fine to medium grained, orange/red	5.0	5	
	Boring Terminated at 5 Feet			

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:	
Abandonment Method: Boring backfilled with auger cuttings upon completion.			
WATER LEVEL OBSERVATIONS		Boring Started: 08-16-2022	Boring Completed: 08-16-2022
Groundwater not encountered Mottling encountered @ 2.3 ft BGS	2201 Rowland Ave Savannah, GA	Drill Rig: Hand Auger	Driller:
		Project No.: ES225163D	Exhibit: B-2-6

BORING LOG NO. HA7

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1675° Longitude: -81.4759°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES	WATER CONTENT (%)	ATTERBERG LIMITS
							LL-PL-PI
DEPTH							
0.5	TOPSOIL , with pinestraw, fine to medium grained, light brown, silty sand						
1.0	SILTY SAND , fine to medium grained, light brown	1					
2.0		2					
3.0		3					
3.5	CLAYEY SAND (SC) , fine to medium grained, orange/red	4					
5.0	Boring Terminated at 5 Feet	5		~	35	22.8	36-15-21

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:
Abandonment Method: Boring backfilled with auger cuttings upon completion.		
WATER LEVEL OBSERVATIONS		Boring Started: 08-16-2022
Groundwater not encountered Mottling encountered @ 3.5 ft BGS	2201 Rowland Ave Savannah, GA	Boring Completed: 08-16-2022
		Drill Rig: Hand Auger
		Driller:
		Project No.: ES225163D
		Exhibit: B-2-7

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV PLANT. GPJ TERRACON_DATATEMPLATE.GDT 9/26/22

BORING LOG NO. HA8

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV PLANT. GPJ TERRACON. DATATEMPLATE.GDT 9/26/22

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1670° Longitude: -81.4752°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
DEPTH				
0.5	TOPSOIL , with pinestraw, fine to medium grained, light brown, silty sand			
1.0	SILTY SAND , fine to medium grained, light brown	1		
3.0	SANDY LEAN CLAY (CL) , orange/red	2		
4.0		3		
5.0	Boring Terminated at 5 Feet	4		
		5		

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:	
Abandonment Method: Boring backfilled with auger cuttings upon completion.			
WATER LEVEL OBSERVATIONS		Boring Started: 08-16-2022	Boring Completed: 08-16-2022
Groundwater not encountered Mottling encountered @ 3 ft BGS	2201 Rowland Ave Savannah, GA	Drill Rig: Hand Auger	Driller:
		Project No.: ES225163D	Exhibit: B-2-8

BORING LOG NO. HA9

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1665° Longitude: -81.4745°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
	DEPTH			

	TOPSOIL , with pinestraw, fine to medium grained, light gray, silty sand	1.0		
--	---	-----	--	--

	SILTY SAND (SM) , fine to medium grained, light brown	1.0		
		2		
		3		
		4		
		5.0		

	Boring Terminated at 5 Feet	5		
--	------------------------------------	---	--	--

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:	
Abandonment Method: Boring backfilled with auger cuttings upon completion.			
WATER LEVEL OBSERVATIONS Groundwater not encountered Mottling not encountered	 2201 Rowland Ave Savannah, GA	Boring Started: 08-16-2022 Drill Rig: Hand Auger Project No.: ES225163D	Boring Completed: 08-16-2022 Driller: Exhibit: B-2-9

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES225163D HYUNDAI EV PLANT GPU TERRACON DATATEMPLATE GDT 9/26/22

BORING LOG NO. HA10

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV/PLANT. GPJ TERRACON DATATEMPLATE.GDT 9/26/22

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1659° Longitude: -81.4738°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES	WATER CONTENT (%)
DEPTH						
0.0	TOPSOIL , with pinestraw, fine to medium grained, dark brown, silty sand					
1.0	SILTY SAND (SM) , fine to medium grained, light brown	1				
2.5	POORLY GRADED SAND WITH SILT (SP-SM) , fine to medium grained, light brown	2				
4.0	SILTY SAND (SM) , fine to medium grained, light brown	3	11		6.6	
5.0	Boring Terminated at 5 Feet	4				
		5				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:
Abandonment Method: Boring backfilled with auger cuttings upon completion.		
WATER LEVEL OBSERVATIONS		
Groundwater not encountered Mottling not encountered	Boring Started: 08-16-2022 Drill Rig: Hand Auger Project No.: ES225163D	Boring Completed: 08-16-2022 Driller: Exhibit: B-2-10

BORING LOG NO. HA12

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1647° Longitude: -81.4723°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES	WATER CONTENT (%)
DEPTH						
0.5	TOPSOIL , with pinestraw, fine to medium grained, gray, silty sand					
1	POORLY GRADED SAND WITH SILT (SP-SM) , with medium roots from 1 to 2 ft BGS, fine to medium grained, light brown					
2			11	6.2		
3	SILTY SAND (SM) , fine to medium grained, light brown					
4						
5	Boring Terminated at 5 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:
Abandonment Method: Boring backfilled with auger cuttings upon completion.		
WATER LEVEL OBSERVATIONS		
Groundwater not encountered Mottling not encountered		Boring Started: 08-16-2022 Boring Completed: 08-16-2022 Drill Rig: Hand Auger Driller: Project No.: ES225163D Exhibit: B-2-12

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES225163D HYUNDAI EV PLANT GPU TERRACON DATATEMPLATE GDT 9/26/22

BORING LOG NO. HA13

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1642° Longitude: -81.4716°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
DEPTH				
0.5	TOPSOIL , with grass, pinestraws and wood debris, fine to medium grained, light gray, silty sand			
1.0	SILTY SAND (SM) , fine to medium grained, light brown	1		
2.0		2		
3.0		3		
4.0	light gray	4		
5.0	Boring Terminated at 5 Feet	5		

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any). See Supporting Information for explanation of symbols and abbreviations.	Notes:	
Abandonment Method: Boring backfilled with auger cuttings upon completion.			
WATER LEVEL OBSERVATIONS		Boring Started: 08-16-2022	Boring Completed: 08-16-2022
Groundwater not encountered Mottling not encountered	2201 Rowland Ave Savannah, GA	Drill Rig: Hand Auger	Driller:
		Project No.: ES225163D	Exhibit: B-2-13

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV PLANT. GPJ TERRACON. DATATEMPLATE.GDT 9/26/22

BORING LOG NO. HA14

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV PLANT. GPJ TERRACON DATATEMPLATE.GDT 9/26/22

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1636° Longitude: -81.4709°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
DEPTH				
	TOPSOIL , with pinestraw, fine to medium grained, gray, silty sand			
0.7	SILTY SAND (SM) , fine to medium grained, light brown light brown/orange	1		
3.3	CLAYEY SAND (SC) , fine to medium grained, gray/orange	2		
5.0	Boring Terminated at 5 Feet	3		
		4		
		5		

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:	
Abandonment Method: Boring backfilled with auger cuttings upon completion.			
WATER LEVEL OBSERVATIONS		Boring Started: 08-16-2022	Boring Completed: 08-16-2022
Groundwater not encountered Mottling encountered @ 2 ft BGS	2201 Rowland Ave Savannah, GA	Drill Rig: Hand Auger	Driller:
		Project No.: ES225163D	Exhibit: B-2-14

BORING LOG NO. HA15

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1631° Longitude: -81.4702°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES	WATER CONTENT (%)
DEPTH						
0.5	TOPSOIL , with grass and pinestraw, fine to medium grained, light gray, silty sand					
1.0	SILTY SAND (SM) , fine to medium grained, light brown	1				
2.0		2				
3.0	CLAYEY SAND (SC) , fine to medium grained, light brown/orange	3				
3.5						
4.0	SILTY SAND (SM) , fine to medium grained, light brown/orange	4	~		20	12.4
5.0	Boring Terminated at 5 Feet	5				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:
Abandonment Method: Boring backfilled with auger cuttings upon completion.		
WATER LEVEL OBSERVATIONS Groundwater not encountered Mottling encountered @ 3 ft BGS	 2201 Rowland Ave Savannah, GA	Boring Started: 08-16-2022 Drill Rig: Hand Auger Project No.: ES225163D
		Boring Completed: 08-16-2022 Driller: Exhibit: B-2-15

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV/PLANT GPU TERRACON_DATATEMPLATE.GDT 9/26/22

BORING LOG NO. HA16

PROJECT: Hyundai Motor Group Metaplant America
South Entrance Road

CLIENT: Thomas & Hutton
Savannah, GA

SITE: US Hwy 280
Ellabell, GA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. ES225163D HYUNDAI EV/PLANT. GPJ TERRACON DATATEMPLATE GDT 9/26/22

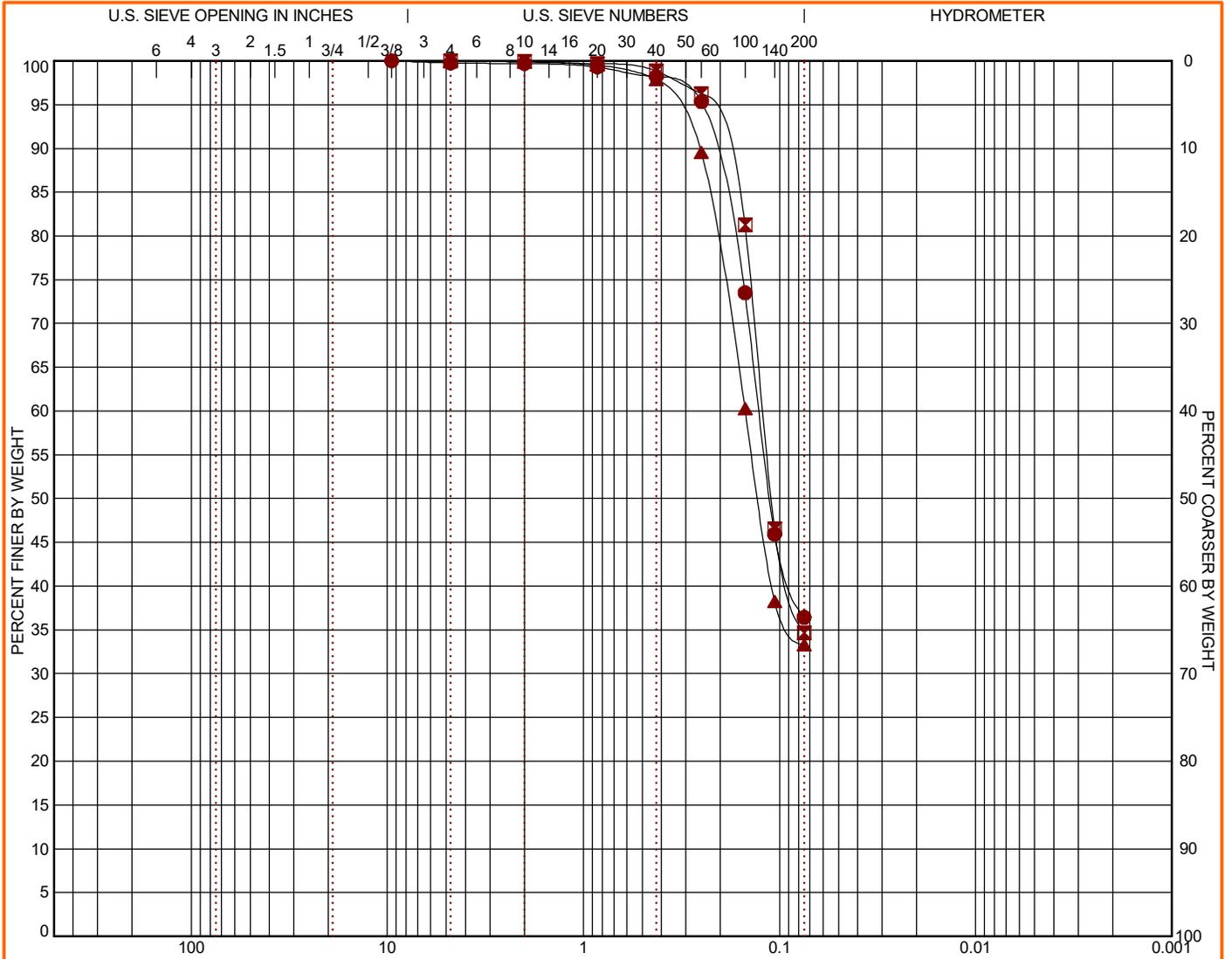
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 32.1625° Longitude: -81.4694°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES	WATER CONTENT (%)
DEPTH						
0.7	TOPSOIL , with pinestraw, fine to medium grained, gray, silty sand					
1	POORLY GRADED SAND WITH SILT (SP-SM) , fine to medium grained, light gray brown					
2			11		10.6	
2.5	SILTY SAND (SM) , fine to medium grained, light gray brown					
3						
4						
5	Boring Terminated at 5 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method: Manual hand auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations.	Notes:
Abandonment Method: Boring backfilled with auger cuttings upon completion.		
WATER LEVEL OBSERVATIONS		Boring Started: 08-16-2022 Drill Rig: Hand Auger Project No.: ES225163D
Groundwater not encountered Mottling not encountered	2201 Rowland Ave Savannah, GA	Boring Completed: 08-16-2022 Driller: Exhibit: B-2-16

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
● HA1	4 - 4.5	0.0	0.2	63.3		36.4		SC
☒ HA4	4 - 4.5	0.0	0.0	65.3		34.7		SC
▲ HA5	2.5 - 3	0.0	0.0	66.7		33.3		SC

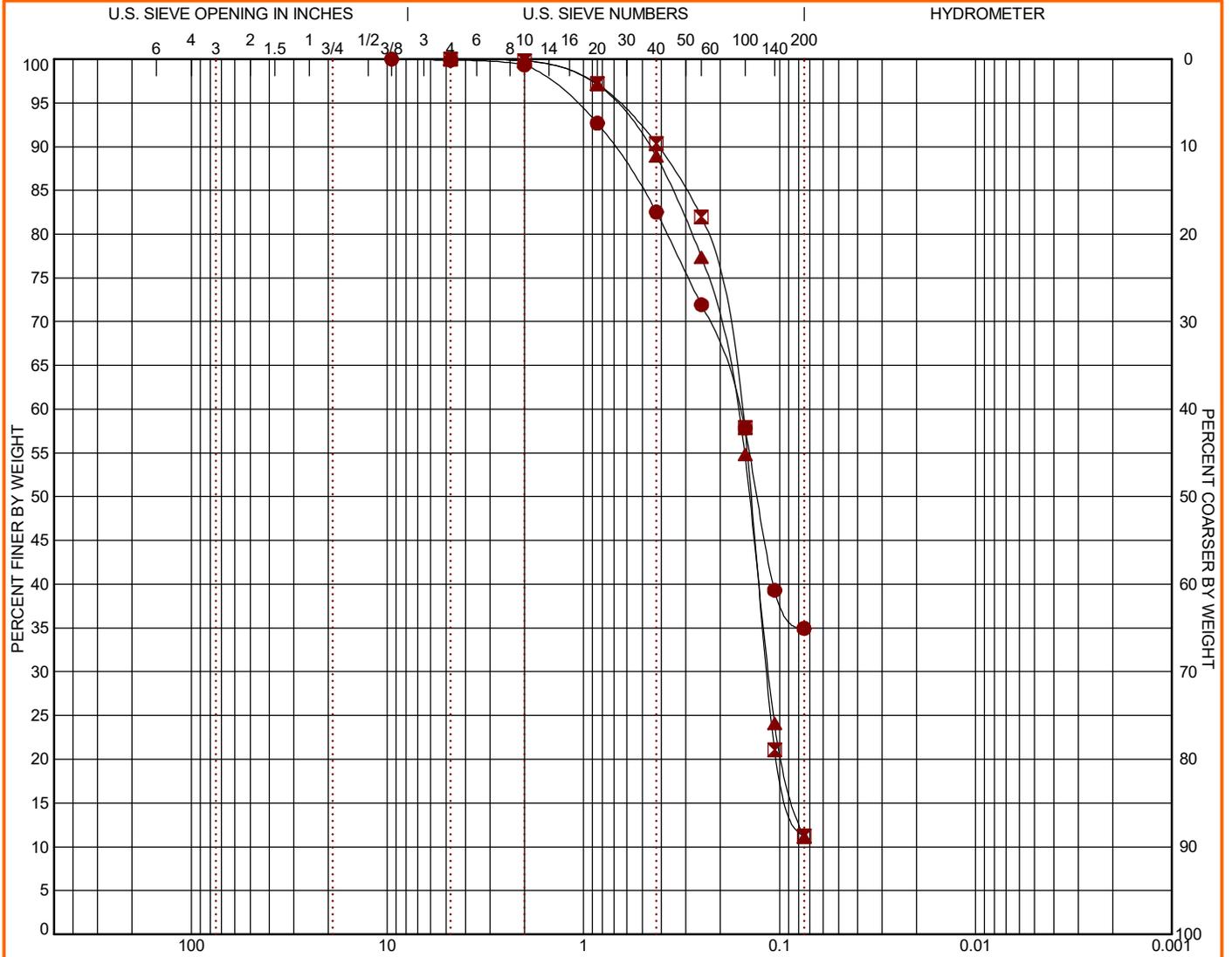
GRAIN SIZE				SOIL DESCRIPTION					
	●	☒	▲	Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
D ₇₅	0.155	0.141	0.194	3/8"	100.0	#4	100.0	#4	100.0
D ₆₀	0.127	0.121	0.149	#4	99.76	#10	99.94	#10	99.87
D ₃₀				#10	99.7	#20	99.68	#20	99.51
D ₁₀				#20	99.3	#40	98.84	#40	97.88
COEFFICIENTS				#40	98.19	#60	96.29	#60	89.55
				#60	95.34	#100	81.26	#100	60.3
				#100	73.51	#140	46.52	#140	38.27
				#140	45.94	#200	34.66	#200	33.31
				#200	36.43				

PROJECT: Hyundai Motor Group Metaplant America South Entrance Road	<p>2201 Rowland Ave Savannah, GA</p>	PROJECT NUMBER: ES225163D
SITE: US Hwy 280 Ellabell, GA		CLIENT: Thomas & Hutton Savannah, GA

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GADOT_GRAIN SIZE: USCS 1 ES225163D HYUNDAI EV PLANT .GPJ TERRACON_DATA TEMPLATE.GDT 9/26/22

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
● HA7	4.5 - 5	0.0	0.1	64.9		34.9		SC
☒ HA10	3 - 3.5	0.0	0.0	88.7		11.3		(SP-SM)
▲ HA12	2 - 2.5	0.0	0.0	88.9		11.1		(SP-SM)

GRAIN SIZE			
	●	☒	▲
D ₇₅	0.292	0.216	0.237
D ₆₀	0.162	0.157	0.169
D ₃₀		0.115	0.113
D ₁₀			
COEFFICIENTS			
	●	☒	▲
C _c		1.18	1.05
C _u		2.19	2.32

●		☒		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
3/8"	100.0	#4	100.0	#4	100.0
#4	99.89	#10	99.83	#10	99.83
#10	99.33	#20	97.18	#20	97.1
#20	92.68	#40	90.36	#40	88.9
#40	82.52	#60	81.96	#60	77.39
#60	71.93	#100	57.89	#100	54.82
#100	57.82	#140	21.09	#140	24.09
#140	39.31	#200	11.27	#200	11.09
#200	34.94				

SOIL DESCRIPTION	
●	CLAYEY SAND (SC)
☒	POORLY GRADED SAND WITH SILT (SP-SM)
▲	POORLY GRADED SAND WITH SILT (SP-SM)
REMARKS	
●	
☒	
▲	

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GADOT_GRAIN SIZE: USCS 1 ES225163D HYUNDAI EV PLANT .GPJ TERRACON_DATA TEMPLATE.GDT 9/26/22

PROJECT: Hyundai Motor Group Metaplant
America South Entrance Road

SITE: US Hwy 280
Ellabell, GA

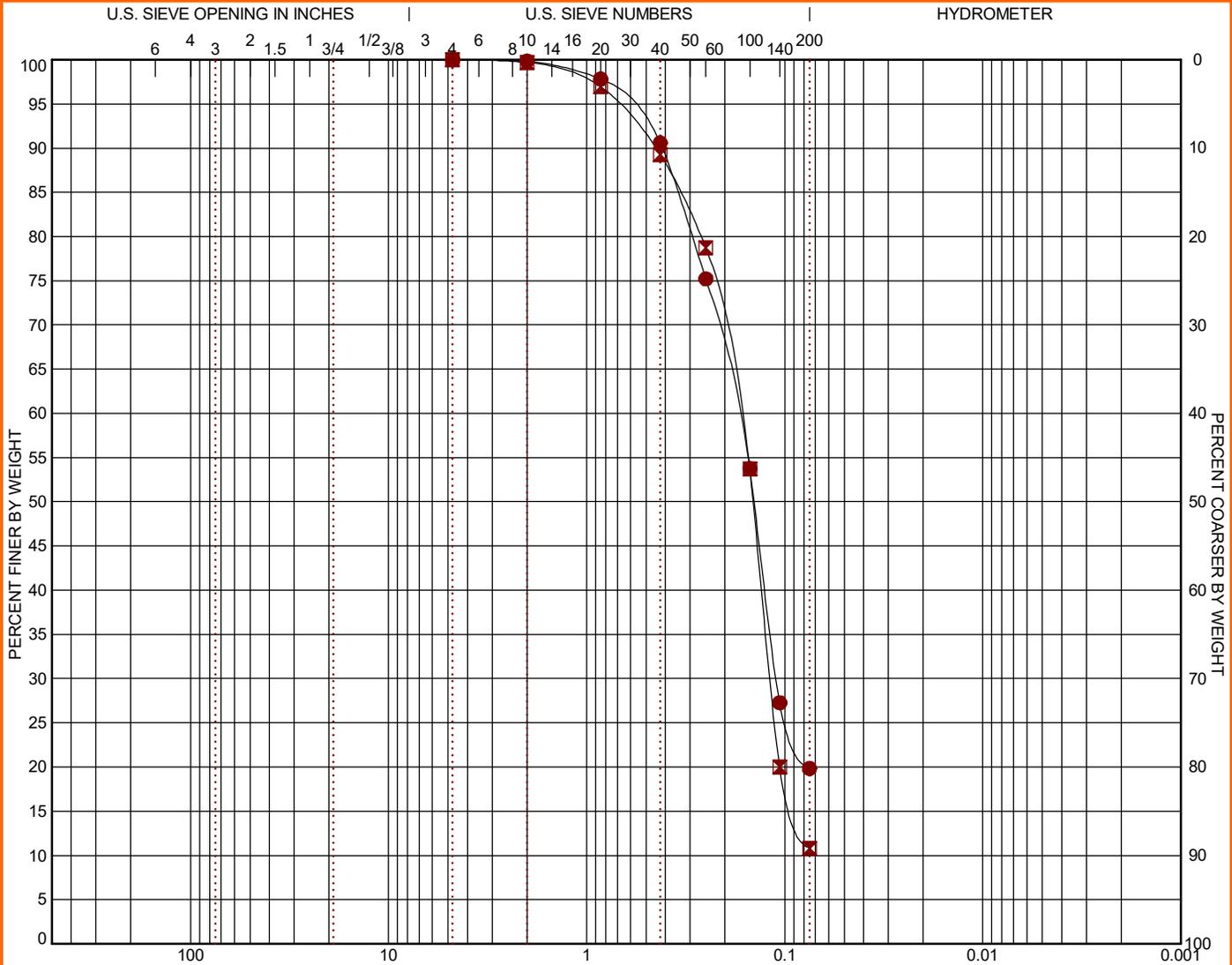


PROJECT NUMBER: ES225163D

CLIENT: Thomas & Hutton
Savannah, GA

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
● HA15	4 - 4.5	0.0	0.0	80.2		19.8		(SM)
☒ HA16	1.5 - 2	0.0	0.0	89.2		10.8		(SP-SM)

GRAIN SIZE			
	●	☒	
D ₇₅	0.249	0.232	
D ₆₀	0.174	0.171	
D ₃₀	0.11	0.117	
D ₁₀			
COEFFICIENTS			
	●	☒	
C _c		1.11	
C _u		2.34	

Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
#4	100.0	#4	100.0		
#10	99.85	#10	99.69		
#20	97.83	#20	96.95		
#40	90.58	#40	89.28		
#60	75.21	#60	78.71		
#100	53.76	#100	53.72		
#140	27.27	#140	19.99		
#200	19.83	#200	10.79		

SOIL DESCRIPTION	
●	SILTY SAND (SM)
☒	POORLY GRADED SAND WITH SILT (SP-SM)
REMARKS	
●	
☒	

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GADOT_GRAIN SIZE: USCS 1 ES225163D HYUNDAI EV PLANT .GPJ TERRACON_DATA TEMPLATE.GDT 9/26/22

PROJECT: Hyundai Motor Group Metaplant
America South Entrance Road

SITE: US Hwy 280
Ellabell, GA



PROJECT NUMBER: ES225163D

CLIENT: Thomas & Hutton
Savannah, GA



Client Thomas & Hutton Savannah, GA	Project Hyundai Motor Group Metaplant America South Entrance Road ES225163D
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Date Received: 8/19/2022

Results from Corrosion Testing

Sample Location	HA 8
Sample Depth (ft.)	1.0'-3.0'
pH Analysis, ASTM G 51	5.90
Water Soluble Sulfate (SO ₄), ASTM C 1580 (ppm)	3
Sulfides, AWWA 4500-S D, (mg/kg)	Nil
Chlorides, ASTM D 512, (ppm)	24
Red-Ox, ASTM G 200, (mV)	+617
Total Salts, AWWA 2520 B, (mg/kg)	59
Resistivity (Saturated), ASTM G 57, (ohm-cm)	130000

Analyzed By: ChrisAnne Ross
Field Geologist

The tests were performed in general accordance with applicable ASTM and AWWA test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

pH 5.9
 Resistivity 113000

Boring Number: HA8

Sample Depth: 1' to 3'

Project Name: **Hyundai Motor Grp. Metaplant America South Entrance Road**
 Location: **Ellabell, GA**

Project No. : ES225163D

Pipe Culvert Material Alternates

TYPE OF INSTALLATION		PIPE TYPE													
		CONCRETE	STEEL			ALLUMINUM	THERMOPLASTIC								
		REINFORCED CONCRETE AASHTO M-170	CORRUGATED STEEL ALUMINUM COATED (TYPE 2) AASHTO M-36	CORRUGATED STEEL PLAIN ZINC COATED AASHTO M-36	POLYMER COATED STEEL AASHTO M-245	CORRUGATED ALUMINUM AASHTO M-196	CORRUGATED HDPE AASHTO M-252	CORRUGATED SMOOTHED LINED HDPE TYPE "S" AASHTO M-294	CORRUGATED SMOOTH LINED POLYPROPYLENE AASHTO M 330	PVC CORRUGATED SMOOTH INTERIOR ASTM F-949	PVC Profile Wall Drain Pipe AASHTO M-304				
S T O R M D R A I N	NON-TRAVEL BEARING (OUTSIDE ROADBED)	INTERSTATE	X												
		NON INTERSTATE	X	X		X	X		X	X	X	X	X	X	
	TRAVEL BEARING (INSIDE ROADBED)	GRADE ≤ 10%	ADT < 1,500	X	X		X	X		X	X	X	X	X	X
			1,500 < ADT < 5,000	X	X		X	X		X	X	X	X	X	X
			5,000 < ADT < 15,000	X						X	X	X	X	X	X
ADT > 15,000 & INTERSTATES			X												
	GRADE > 10%				X			X	X	X	X	X	X	X	
SIDE DRAIN		X	X		X	X		X	X	X	X	X	X	X	
PERMANENT SLOPE DRAIN			X	X	X	X		X	X	X	X	X	X	X	
PERFORATED UNDERDRAIN			X	X		X		X	X	X	X	X	X	X	

NOTES:

- 1 Allowable materials are indicated by an "X".
- 2 Structural, installation, fill height and backfill requirements of storm drain pipe will be in accordance with Georgia Standard 1030-D or 1030-P and the Standard Specifications
- 3 The Contractor shall provide additional storm sewer capacity calculations if a pipe material other than concrete is selected.
- 4 Pipe used under mechanically stabilized earth (MSE) walls, within MSE wall backfill, or within five feet of an MSE wall face shall be Class V Concrete Pipe.

Flexible Pavement Design Analysis

PI Number		County(s)	Bryan
Project Number	ES225163D	Design Name	Hyundai South Entrance Road
Project Description	Hyundai Motor Group Metaplant America South Entrance Road		

Traffic Data (AADTs are one-way)					Miscellaneous Data		
Initial Design Year	2023	Initial AADT, VPD	2,982	24 Hour Truck %	26.00	Lanes in one direction	2
Final Design Year	2043	Final AADT, VPD	2,982	SU Truck %	5.00	Curb & Gutter/Barrier	No
		Mean AADT, VPD	2,982	MU Truck %	21.00		

Design Data					
Lane Distribution Factor (%)	90.00	Soil Support Value	4.00	Single Unit ESAL	0.40
Terminal Serviceability Index	2.50	Regional Factor	1.70	Multiple Unit ESAL	1.50
		User Defined 18-KIP ESAL	0.00	Calculated 18-KIP ESAL	1.29
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
2,982	90.00	Single Unit Truck	5.00	0.40	54
		Multi Unit Truck	21.00	1.50	846
Total Daily ESALs					900
Total Design Period ESALs					6,570,000

Proposed Flexible Full Depth Pavement Structure				
Course	Material	Thickness (inches)	Structural Coefficient	Structural Value
Course 1	12.5 mm Superpave	1.50	0.4400	0.66
Course 2	19 mm Superpave	2.25	0.4400	0.99
Course 3	25 mm Superpave	0.75	0.4400	0.33
		4.25	0.3000	1.28
Course 4	Graded Aggregate Base	8.00	0.1600	1.28
Required SN	5.00	Proposed pavement is 9.26% Underdesigned		Proposed SN
				4.54

Design Remarks	This design considered the production rate of 300,000 vehicles per year only
-----------------------	--

Prepared By	Nurudeen Abidoye	10/26/2022 9:58 AM
	_____	Date
Recommended By	Consultant Design Phase Leader	
	_____	Date
Approved By	State Pavement Engineer	
	_____	Date

Flexible Pavement Design Analysis

PI Number		County(s)	Bryan
Project Number	ES225163D	Design Name	Hyundai South Entrance Road
Project Description	Hyundai Motor Group Metaplant America South Entrance Road		

Traffic Data (AADTs are one-way)						Miscellaneous Data	
Initial Design Year	2023	Initial AADT, VPD	2,982	24 Hour Truck %	25.00	Lanes in one direction	2
Final Design Year	2043	Final AADT, VPD	5,496	SU Truck %	5.00	Curb & Gutter/Barrier	No
		Mean AADT, VPD	4,239	MU Truck %	20.00		

Design Data						
Lane Distribution Factor (%)	90.00	Soil Support Value	4.00	Single Unit ESAL	0.40	
Terminal Serviceability Index	2.50	Regional Factor	1.70	Multiple Unit ESAL	1.50	
			User Defined 18-KIP ESAL	0.00	Calculated 18-KIP ESAL	1.28
Non-Standard Value Comment						

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
4,239	90.00	Single Unit Truck	5.00	0.40	77
		Multi Unit Truck	20.00	1.50	1,145
Total Daily ESALs					1,222
Total Design Period ESALs					8,920,600

Proposed Flexible Full Depth Pavement Structure					
Course	Material	Thickness (inches)	Structural Coefficient	Structural Value	
Course 1	12.5 mm Superpave	1.50	0.4400	0.66	
Course 2	19 mm Superpave	3.00	0.4400	1.32	
Course 3	25 mm Superpave	5.00	0.3000	1.50	
Course 4	Graded Aggregate Base	8.00	0.1600	1.28	
Required SN	5.22	Proposed pavement is 8.82% Underdesigned		Proposed SN	4.76

Design Remarks	This design took into consideration the increase in production rate from 300,000 vehicles per year to 500,000 vehicles per year
-----------------------	---

Prepared By _____ 10/26/2022 10:04 AM
Nurudeen Abidoye Date

Recommended By _____
Consultant Design Phase Leader Date

Approved By _____
State Pavement Engineer Date

Flexible Pavement Design Analysis

PI Number		County(s)	Bryan
Project Number	ES225163D	Design Name	Hyundai South Entrance Road
Project Description	Hyundai Motor Group Metaplant America South Entrance Road		

Traffic Data (AADTs are one-way)					Miscellaneous Data		
Initial Design Year	2023	Initial AADT, VPD	5,496	24 Hour Truck %	23.00	Lanes in one direction	2
Final Design Year	2043	Final AADT, VPD	5,496	SU Truck %	3.00	Curb & Gutter/Barrier	No
		Mean AADT, VPD	5,496	MU Truck %	20.00		

Design Data					
Lane Distribution Factor (%)	90.00	Soil Support Value	4.00	Single Unit ESAL	0.40
Terminal Serviceability Index	2.50	Regional Factor	1.70	Multiple Unit ESAL	1.50
		User Defined 18-KIP ESAL	0.00	Calculated 18-KIP ESAL	1.36
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
5,496	90.00	Single Unit Truck	3.00	0.40	60
		Multi Unit Truck	20.00	1.50	1,484
Total Daily ESALs					1,544
Total Design Period ESALs					11,271,200

Proposed Flexible Full Depth Pavement Structure				
Course	Material	Thickness (inches)	Structural Coefficient	Structural Value
Course 1	12.5 mm Superpave	1.75	0.4400	0.77
Course 2	19 mm Superpave	2.75	0.4400	1.21
		0.25	0.3000	0.08
Course 3	25 mm Superpave	5.00	0.3000	1.50
Course 4	Graded Aggregate Base	8.00	0.1600	1.28
Required SN	5.39	Proposed pavement is 10.33% Underdesigned		Proposed SN
				4.84

Design Remarks	This design considered the production rate of 500,000 vehicle production per year only
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Prepared By _____ 10/26/2022 12:29 PM
Nurudeen Abidoye **Date**

Recommended By _____
Consultant Design Phase Leader **Date**

Approved By _____
State Pavement Engineer **Date**

EXHIBIT C

SUPPORTING INFORMATION

- **Exhibit C-1:** General Notes
- **Exhibit C-2:** Unified Soil Classification System

GENERAL NOTES



DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING		Auger	GROUNDWATER		Groundwater Initially Encountered	FIELD TESTS	(HP)	Hand Penetrometer	
		Split Spoon			Groundwater Level After a Specified Period of Time		(T)	Torvane	
		Shelby Tube			Static Groundwater Level After a Specified Period of Time		(b/f)	Standard Penetration Test (blows per foot)	
		Macro Core			No Groundwater Observed		(PID)	Photo-Ionization Detector	
		No Recovery		Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.			(OVA)	Organic Vapor Analyzer	
		Rock Core							
		Ring Sampler							

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
	Descriptive Term (Density)	Std. Penetration Resistance (blows per foot)	Descriptive Term (Consistency)	Undrained Shear Strength (kips per square foot)	Std. Penetration Resistance (blows per foot)
	Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
	Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
	Medium Dense	10 - 29	Medium-Stiff	0.50 to 1.00	5 - 7
	Dense	30 - 50	Stiff	1.00 to 2.00	8 - 14
	Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	above 4.00	> 30	

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Descriptive Term(s) of other constituents	Percent of Dry Weight
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification	
				Group Symbol	Group Name ^B
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	$Cu \geq 4$ and $1 \leq Cc \leq 3$ ^E	GW	Well-graded gravel ^F
		Gravels with Fines: More than 12% fines ^C	$Cu < 4$ and/or $[Cc < 1 \text{ or } Cc > 3.0]$ ^E	GP	Poorly graded gravel ^F
			Fines classify as ML or MH	GM	Silty gravel ^{F, G, H}
		Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	Fines classify as CL or CH	GC
	$Cu \geq 6$ and $1 \leq Cc \leq 3$ ^E			SW	Well-graded sand ^I
	Sands with Fines: More than 12% fines ^D		$Cu < 6$ and/or $[Cc < 1 \text{ or } Cc > 3.0]$ ^E	SP	Poorly graded sand ^I
			Fines classify as ML or MH	SM	Silty sand ^{G, H, I}
	Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	PI > 7 and plots above "A" line ^J	CL
PI < 4 or plots below "A" line ^J				ML	Silt ^{K, L, M}
Organic:			$\frac{LL \text{ oven dried}}{LL \text{ not dried}} < 0.75$	OL	Organic clay ^{K, L, M, N} Organic silt ^{K, L, M, O}
			Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above "A" line
PI plots below "A" line		MH			Elastic silt ^{K, L, M}
Organic:		$\frac{LL \text{ oven dried}}{LL \text{ not dried}} < 0.75$		OH	Organic clay ^{K, L, M, P} Organic silt ^{K, L, M, Q}
		Highly organic soils:		Primarily organic matter, dark in color, and organic odor	

^A Based on the material passing the 3-inch (75-mm) sieve.

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

^E $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N PI ≥ 4 and plots on or above "A" line.

^O PI < 4 or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.

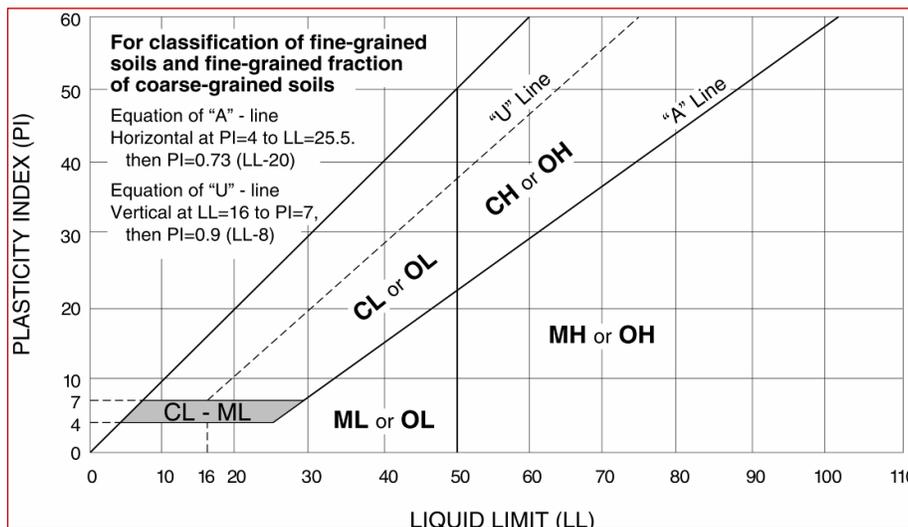


Exhibit: C-2