ADDENDUM NO. 1

TO

CONTRACT DOCUMENTS AND SPECIFICATIONS
FOR IMPROVEMENTS FOR

APRON PAVEMENT REHABILITATION – PHASE 2
FOR THE
DALTON MUNICIPAL AIRPORT
DALTON, GEORGIA

Croy Engineering, LLC Project 2106.005

Date Addendum Issued:
November 29, 2022

Bid Opening Date:
December 5, 2022

TO ALL BIDDERS: The original contract documents for the above reference project are amended as noted herein. This Addendum hereby becomes a part of said contract documents. Acknowledge receipt of this Addendum in the space provided in the bid package. Insofar as those documents are at variance with this Addendum, this Addendum will govern.

Questions Received to date:

- *Engineer Responses are in BLUE*

2. The plans nor proposal state if the aggregate required for the asphalt mixes should be Group 1 – Limestone (local) or Group 2 – Granite (must be imported). Please clarify the type of aggregate required for both 19mm and 12.5mm mixes.
    - *Group I – Limestone (local) shall be used for both mixes*

3. The plans require transitional milling at all locations where new and existing asphalt meet. Please provide a Pay Item for this work.
    - *Bid form has been updated*
        - *Pay Item for Transitional Milling has been provided per FAA P-101*
        - *Estimated Qty = 600 SY*

4. The Plans require Cement Treated Soil Base Course (P-220) as a part of the pavement typical section. This specification requires test to be performed on the soil to determine the amount of cement to use. Since it is unknown how much cement to use prior to the bid and as per the specifications, a Pay Item will have to be established for P-220-6.2 Cement per Ton. If not, then it must be specified how much cement to use for bidding purposes and then adjust per supplemental agreement for any amount over that amount that may be required.
    - *A Pay Item for Cement per Ton has been added with the quantity based on an application rate of 10% cement. Soil cement will need to achieve a minimum 7-day compressive strength of 300 psi.*

- *Estimated Quantity = 490 Tons*

5. Is there a geotechnical report available to determine how much asphalt and aggregate base are present that must be removed?
   - *There is a Geotech report, and it is attached for reference.*

6. Can manhole A2 be moved to the dividing line between phase 1 and phase 2 or will an additional manhole need to be added?
   - *Manhole A2 can be moved to the phase line. However, adjustments to the elevations may be required to maintain grade.*

7. When the Induction Loop/Sensor for the gate is removed, does removal of that loop require temporary security?
   - *Yes. Contractor shall provide temporary security while gate is inoperable.*

8. The construction safety and phasing plan only provides one access point to the work area. Since the project requires 2 phases there will need to be 2 access points to access the work area without crossing airfield operations. Please provide a second access point.
   - *Access through the security gate between the terminal building and the hangar can serve as an additional access point.*

9. Note #13 on plan sheet G-001 states that all site concrete will be 4,000 psi at 28 days. It also states it will be Class “A”. However, Ga DOT Class A is 3,000 psi not 4,000 psi. Please clarify which is correct. If this is not a Ga DOT mix design, please provide a specification for the mix design.
   - *3,000 psi Class A concrete shall be used*

10. On plan sheet C-300, Note #1 for Reinforced Concrete Paving Detail states that the concrete will be 4,000 psi. The Summary of Quantities block on plan sheet G-001 states that the 6” Reinforced Concrete Paving will be as per Ga DOT Specification 430. The required concrete in this specification is Class 1 which is 3,000 psi. Please clarify which is correct.
    - *3,000 psi Class A concrete shall be used*

11. Note #13 on plan sheet G-001 states that all site concrete will be 4,000 psi at 28 days. The Summary of Quantities block on plan sheet G-001 states that the 24” Concrete Curb & Gutter & the 6” Concrete Header Curb items will be as per Ga DOT Specification 430. The required concrete in this specification is Class B which is 2,200 psi. Please clarify which is correct.
    - *3,000 psi Class A concrete shall be used*

12. Please clarify how the Concrete Slope Paving shown on plan sheet C-300 will be paid.
    - *Under Pay Item GDOT 430 – 6” Reinforced Concrete Paving (including Steel)*

13. Please clarify how the 10'x20' Reinforced Concrete Dumpster Pad with Curb shown on plan sheet C-300 will be paid.
    - *Under Pay Item GDOT 430 – 6" Reinforced Concrete Paving (including Steel)*

14. The Reinforced Concrete Paving Detail requires 6" GAB under all concrete. There is not a Pay Item for 6 inch Graded Aggregate Base. Will a Pay Item be added for this work?
    - *Pay Item GDOT 310 Graded Aggregate Base Course, 6" - including material has been added for this work.*

15. The haul road(s) will be damaged during construction. How will repairs be paid for?
    - *Per General Note #7 on sheet G-001, the Contractor is responsible for damages to existing streets caused by the proposed construction.*

Summary of Revisions to the Contract Documents:

1. **PROPOSAL BID FORM** – Replace pages 31-33: Pay Item Descriptions, Quantities, and Units have been updated as noted above. New Pay Items have been added for Transitional Milling, 0-2", Graded Aggregate Base Course, 6", and Cement.
2. **Section 310 Graded Aggregate Construction** – Replace page 202: This adds a pay item for Graded Aggregate Base Course, 6" – including material per square yard.
3. **Item P-220 Cement Treated Soil Base Course** – Replace pages 325 and 328: This details an application rate of 10% cement and adds a pay item for Cement per Ton.
4. **PLAN SET** –
   a. Replace Sheet #2 due to changes to the Summary of Quantities and General Notes
   b. Replace Sheet #6 due to the relocation of manhole/junction box A2 to the phasing line
   c. Replace Sheet #7 due to the changes to the Reinforced Concrete Paving Detail

Attachments:

Pages 31-33, Proposal Bid Form
Page 202, Section 310 Graded Aggregate Construction
Pages 325 & 328, Item P-220 Cement Treated Soil Base Course
Plan Sheet 2
Plan Sheet 6
Plan Sheet 7
Geotechnical Report
Pre-Bid Meeting Sign-In Sheet
Pre-Bid Meeting Minutes

END OF ADDENDUM NO. 1
THIS ADDENDUM MUST BE ACKNOWLEDGED IN BID.
QUESTIONS SHALL BE DIRECTED TO CHERYL GAYTON AT CGAYTON@CROYENG.COM.

PROPOSAL BID FORM

IMPROVEMENTS TO DALTON MUNICIPAL AIRPORT
DALTON, GEORGIA

APRON REHABILITATION – PHASE II

SUMMARY OF QUANTITIES							
Item No.	FAA Item No.	GDOT Item No.	Description	Approx. Qty	Unit	Unit Price	Amount
1	C-105		Mobilization (Including Staging area preparation and repair to pre-construction conditions) @_____	1	LS		
2	C-102-5.1a		Construction Entrance/Exit, including installation, maintenance, and removal @_____	1	EA		
3	C-102-5.1b		Silt Fence, Non-Sensitive, including installation, maintenance, and removal @_____	500	LF		
4	C-102-5.1c		Inlet Sediment Trap, including installation, maintenance, and removal @_____	5	EA		
5	T-901-5.1		Temporary Seeding @_____	0.25	AC		
6	T-901-5.2		Permanent Seeding @_____	0.25	AC		
7	T-908-5.1		Mulching @_____	0.25	AC		
8	P-101-5.1		Pavement Removal (Including Aggregate Base) @_____	14,200	SY		
9	*P-101-5.6*		Transitional Milling, 0-2” @_____	600	SY		
10	P-152-4.1		Unclassified Excavation @_____	500	CY		

11		430	6" Reinforced Concrete Paving (Including Steel) @_____	600	SY		
12		441	24" Concrete Curb and Gutter @_____	145	LF		
13		441	6" Concrete Header Curb @_____	110	LF		
14		310	Graded Aggregate Base Course, 4" - including material @_____	*13,850*	SY		
15		*310*	*Graded Aggregate Base Course, 6" - including material* @_____	*600*	*SY*		
16	P-220-6.1		*Soil-Cement Stabilized Base 8"* @_____	14,300	SY		
17	*P-220-6.2*		*Cement* @_____	*490*	*TON*		
18		402	Recycled Asphaltic Concrete 19 mm Superpave including Bituminous Material and Hydrated Lime - 2" @_____	1,600	TON		
19		402	Recycled Asphaltic Concrete 12.5 mm Superpave including Bituminous Material and Hydrated Lime - 2" @_____	1,525	TON		
20	P-602-5.1		Emulsified Asphalt Prime Coat @_____	6,200	GAL		
21	P-603-5.1		Bituminous Tack Coat @_____	870	GAL		
22	P-620-5.1a		Removal of Existing Striping by Water Blasting @_____	850	SF		
23	P-620-5.1b		Taxiway Marking, Type II, Yellow, including Reflective Media (Type III, Gradation A) and Microbicide @_____	2,300	SF		

24	P-620-5.1c		Temporary Taxiway Marking @_____	2,300	SF		
25	P-620-5.1d		Taxiway Marking, Type II, Green, including Microbicide @_____	5,600	SF		
26	C-101-5.1		Aircraft Tie Down, per set (including 3 anchors, foundations, ropes, striping, etc.) @_____	2	EA		
27	D-751-5.1		GDOT STD 1019A Drop Inlet - 72" Dia @_____	2	EA		
28	D-751-5.2		Raised Weir Inlet - 72" Dia @_____	1	EA		
29	D-751-5.3		GDOT STD 1011A Junction Box - 72" Dia @_____	1	EA		
30		600	Flowable Fill (30" CMP Abandonment) @_____	7	CY		
31		682	Remove and Replace Existing Induction Loop at Access Gate (including testing) @_____	1	EA		
32	D-701-5.1		30" RCP, Class III @_____	363	LF		
33	P-101-5.2		Removal of Existing 30" CMP (including disposal) @_____	312	LF		

TOTAL BID:	

Signature: _____
(Bidder)

A. Graded Aggregate

Where specified for payment by the ton (megagram), graded aggregate base, subbase or shoulder materials are measured in tons (megagrams), mixed and accepted. When hauling material to the roadway, the actual weight of each loaded vehicle is determined with an approved motor truck scale.

Where specified for payment by the square yard (meter) for a certain thickness, the surface length is measured along the centerline, and the width is specified on the Plans. Measure irregular areas, such as turnouts and intersections, by the square yard (meter).

B. Bituminous Prime

Bituminous prime is not measured for separate payment.

310.4.01 Limits

General Provisions 101 through 150.

310.5 Payment

A. Graded Aggregate

Graded aggregate base, subbase, or shoulder course will be paid for at the Contract Unit Price per ton (megagram) or per square yard (meter), complete, in place, and accepted. This payment shall be full compensation for:

- Materials
- Shaping and compacting the existing roadbed Loading, hauling, and unloading
- Crushing and processing Mixing
- Spreading
- Watering
- Compacting and shaping Maintenance
- Priming, when required
- All incidentals necessary to complete The Work

Payment will be made under:

Item No. 310	Graded aggregate base course, 4”— including material	Per square yard (meter)
Item No. 310	***Graded aggregate base course, 6”— including material***	***Per square yard (meter)***

310.5.01 Adjustments

General Provisions 101 through 150.

END OF SECTION 310

DIVISION 11 - FAA – Base Courses

Item P-220 Cement Treated Soil Base Course

DESCRIPTION

220-1.1 This item shall consist of constructing a base course by uniformly mixing soil, cement, and water. The mixed material shall be spread, shaped, and compacted in accordance with these specifications and in conformity to the dimensions and typical cross-section shown on the plans. Tests shall be required for each approved soil included within the treated layer.

Runway, taxiway, or apron pavements shall be built in a series of parallel lanes using a plan that reduces the number of longitudinal and transverse joints to a minimum.

MATERIALS

220-2.1 Cement. Cement shall conform to the requirements of ASTM C150, Type I, IA, II, or IIA or ASTM C595, Type IS, IS(A), IP or IL.

220-2.2 Water. Water used in mixing or curing shall be from potable water sources. Other sources shall be tested in accordance with ASTM C1602 prior to use.

220-2.3 Soil. The soil for this work shall consist of on-site materials and shall be free of roots, sod, weeds, and stones larger than 2-1/2 inches (60 mm) with a sulfate content of less than 0.3%.

220-2.4 Asphalt material. The types, grades, controlling specifications, and application temperatures for the asphalt materials used for curing the soil-cement shall be as detailed in the plans.

MIX DESIGN

220-3.1 Proportions. Before the start of base course construction, tests shall be made on the soil or soil-aggregate material to be stabilized to determine the quantity of cement required for the mix design.

Test specimens containing various amounts of cement shall be compacted per ASTM D558, and the optimum moisture determined for each test specimen. Samples at the optimum moisture shall be subjected to the wet-dry and the freeze-thaw test in accordance with ASTM D559 and ASTM D560, respectively.

Cement shall be added at an application rate ***of 10 percent of dry unit weight of soil***.

Add cement until a minimum California Bearing Ration (CBR) of 100 or a 7-day compressive strength of 300 to 800 psi (2068 to 5516 kPa) per ASTM C1633 is achieved.

CONSTRUCTION METHODS

220-4.1 Control Strip. The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the Resident Project Representative (RPR), that the

square yards (1000 square meters), but not less than four (4) tests per day of production. Sampling locations will be determined on a random basis per ASTM D3665.

a. Density. The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance.

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM D698. The in-place field density shall be determined per ASTM D1556 or ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The in-place moisture content shall be determined in accordance with ASTM D2216. Perform in-place density test immediately after completion of compaction to determine degree of compaction. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompacted at the Contractor's expense and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

b. Thickness. Depth tests shall be made by test holes or cores at least 3 inches (75 mm) in diameter that extend through the base. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each sublot. Where the thickness is deficient by more than 1/2-inch (12 mm), the material shall be removed to full depth and replaced, at Contractor's expense.

METHOD OF MEASUREMENT

220-5.1 The quantity of cement treated soil base course shall be the number of square yards (square meter) of completed and accepted base course.

220-5.2 Cement shall be measured by the ton (kg).

BASIS OF PAYMENT

220-6.1 Payment shall be made at the contract unit price per square yard (m^2) for cement treated soil base course. This price shall be full compensation for furnishing all materials, except cement, and for all preparation, delivering, placing, and mixing of these materials; and for all labor, equipment, tools and incidentals necessary to complete the item.

220-6.2 Payment ***shall be made at the contract unit price per ton (kg) for cement***. This price shall be full compensation for furnishing this material and for all delivery, placing, and incorporation of this material, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-220-6.1 Cement treated soil Base Course, 8"- per square yard (square meter)

Item P-220-6.2 Cement – ***per ton (kg)***

SUMMARY OF QUANTITIES

2106.005 DNN — APRON PAVEMENT REHABILITATION PHASE II

SUMMARY OF QUANTITIES

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4	C-102-5.1c		Inlet Sediment Trap, including installation, maintenance, and removal	5	EA
5	T-901-5.1		Temporary Seeding	0.25	AC
6	T-901-5.2		Permanent Seeding	0.25	AC
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17	P-220-6.2		Cement	490	TN
18		402	Recycled Asphaltic Concrete 19 mm Superpave including Bituminous Material and Hydrated Lime - 2" - Group I	1,600	TON
19		402	Recycled Asphaltic Concrete 12.5 mm Superpave including Bituminous Material and Hydrated Lime - 2" - Group I	1,525	TON
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21	P-603-5.1		Bituminous Tack Coat	870	GAL
22	P-620-5.1a		Removal of Existing Striping by Water Blasting	850	SF
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25	P-620-5.1d		Taxiway Marking, Type III, Green, including Microbicide	5,600	SF
26	C-101-5.1		Aircraft Tie-downs, (Incl. 3 anchors, foundations, ropes, striping, etc.)	2	EA
27	D-751-5.1		GDOT STD 1019A Drop Inlet - 72" Dia	2	EA
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33	P-101-5.2		Removal of Existing 30" CMP (incl disposal)	312	LF

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GENERAL NOTES:

1. SITE TOPOGRAPHY MAPS AND OTHER TOPOGRAPHIC DATA SHOWN ON THESE PLANS ARE FOR THE INFORMATION OF THE CONTRACTOR. THE CONTRACTOR SHALL MAKE SUCH ADDITIONAL INVESTIGATIONS AS REQUIRED TO ACQUAINT HIMSELF ADEQUATELY WITH THE SITE TOPOGRAPHY AND SUBSURFACE SOIL CONDITIONS FOR PREPARATION OF HIS BID AND FOR THE SUCCESSFUL EXECUTION OF THE WORK.
2. PROTECTION OF WORK: THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF HIS WORK. THE OWNER MAY DIRECT THE CONTRACTOR TO PERFORM NECESSARY GRADING AND DRAINAGE TO PREVENT SURFACE RUN-OFF FROM DAMAGING THE WORK. SUCH GRADING IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING EXISTING UTILITIES LOCATED PRIOR TO EXCAVATION. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE DRAWINGS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS; CONSULTANT ASSUMES NO RESPONSIBILITY AS TO THE ACCURACY OF THEIR DEPICTED LOCATION ON THESE DRAWINGS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN AND ALL OTHER UTILITIES NOT OF RECORD OR NOT SHOWN ON THESE DRAWINGS BY VERIFICATION OF THEIR LOCATION IN THE FIELD PRIOR TO THE INITIATION OF THEIR WORK.
4. ALL TRENCHING AND EXCAVATION SHALL COMPLY WITH THE "DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION PUBLICATION (29 CFR PART 1926) OCCUPATIONAL SAFETY AND HEALTH STANDARDS – EXCAVATIONS", LATEST EDITION.
5. FUGITIVE DUST EMISSIONS SHALL BE CONTROLLED BY CONTRACTOR.
6. ALL EXISTING TREES OUTSIDE OF THE LIMITS OF WORK SHALL BE PROTECTED DURING THE ACCOMPLISHMENT OF THE WORK, AND SHALL NOT BE DAMAGED IN ANY MANNER.
7. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING STREETS BY HIS CONSTRUCTION OPERATIONS.
8. ALL BOULDERS, DEBRIS, UNSUITABLE SOIL, EXCESS SOIL, EXCESS CONSTRUCTION MATERIALS OR TRASH SHALL BE REMOVED FROM THE SITE AT THE CONTRACTOR'S EXPENSE.
9. ALL PROPOSED CONTOUR ELEVATIONS SHOWN ON THESE PLANS ARE FINISH GRADE.
10. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE WORK ZONE TRAFFIC CONTROL AND PROTECTION IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), LATEST EDITION.
11. IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
12. THE DUTY OF THE CITY TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, OR NEAR, THE CONSTRUCTION SITE.
13. ALL SITE CONCRETE SHALL BE 3,000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS, CLASS "A", UNLESS OTHERWISE NOTED. 1
14. ALL REINFORCING STEEL SHALL BE GRADE 60 DEFORMED AND SHALL CONFORM TO ASTM A615, FOR BILLET STEEL.
15. ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185, SMOOTH FABRIC WITH AN ASTM YIELD STRENGTH OF 65,000 PSI.
16. ALL STORM DRAINAGE PIPES SHALL BE REINFORCED CONCRETE CLASS III PER ASTM C-76 UNLESS OTHERWISE NOTED. COMPACTED GRANULAR FILL MATERIAL FOR PIPE TRENCH SHALL BE REQUIRED UNDER PAVED AREAS AND WITHIN 2 FEET OF BACK OF CURB IN NON PAVED AREAS.
17. THE CONTRACTOR SHALL PREVENT THE DESTRUCTION OF ALL SURVEY MONUMENTS, BENCH MARKS, PROPERTY CORNERS AND ALL OTHER SURVEY POINTS. WHERE THE REMOVAL OF SUCH POINTS IS NECESSARY FOR THE ACCOMPLISHMENT OF THE WORK, THE CONTRACTOR SHALL INFORM THE CONSULTANT IN WRITING, PRIOR TO THE DISTURBANCE OF ANY POINT, AND SHALL NOT DISTURB THE POINT UNTIL WRITTEN PERMISSION TO DO SO HAS BEEN ISSUED BY THE CONSULTANT.
18. THE CONTRACTOR WILL BE RESPONSIBLE FOR CLEANING DIRT AND DEBRIS FROM THE ADJOINING STREETS DURING CONSTRUCTION. ANY DAMAGE TO ADJOINING AND EXISTING STREETS MUST BE REPAIRED BY THE CONTRACTOR DURING THE CONSTRUCTION OF THE PROJECT AT NO ADDITIONAL COST TO THE OWNER.
19. NO FILL DIRT SHALL BE PLACED ON THE PROPERTY THAT MIGHT INTERFERE WITH DRAINAGE FLOW FROM ADJACENT PROPERTY.
20. NO CHANGES SHALL BE MADE TO THESE APPROVED PLANS WITHOUT THE ENGINEER OF RECORD BEING NOTIFIED BEFORE CHANGES ARE MADE.
21. THE STAGING AREA, CONTRACTOR'S ACCESS ROUTE FOR INGRESS AND EGRESS FROM THE AIRPORT, AND CONTRACTOR'S HAUL ROUTE SHALL BE AS SHOWN ON SHEET G-101 OR AS AGREED TO BY THE OWNER AT PRE-CONSTRUCTION MEETING.
22. CONTRACTOR'S STAGING AREA SHALL BE AS SHOWN ON SHEET G-101. THIS SITE SHALL BE USED FOR THE CONTRACTOR'S FIELD OFFICE, AS A SITE FOR PARKING CONSTRUCTION EQUIPMENT, AS AN AUTOMOBILE PARKING AREA FOR THE CONTRACTOR'S EMPLOYEES, AND IN GENERAL AS A BASE OF OPERATIONS FOR THE CONTRACTOR.
23. THE CONTRACTOR WILL CONFINE HIS ACTIVITIES TO THE ACCESS ROUTE, THE HAUL ROUTE, THE STAGING AREA, AND CONSTRUCTION AREA, AND WILL NOT PERMIT HIS EMPLOYEES OR EQUIPMENT TO ENTER OR CROSS ANY PORTION OF THE AIRPORT OPERATIONS AREA (RUNWAY, TAXIWAY, APRONS) AND SHALL NOT PERFORM ANY CONSTRUCTION WITHIN THIS AREA WITHOUT PRIOR PERMISSION FROM DESIGNATED AIRPORT REPRESENTATIVE.
24. UPON COMPLETION OF WORK THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS (OUTSIDE THE CONSTRUCTION LIMITS), INCLUDING THE ACCESS ROUTES AND STAGING AREAS, TO THEIR ORIGINAL CONDITION. THERE WILL BE NO SEPARATE PAY ITEM FOR THIS WORK.
25. ALL REQUIRED BARRICADES, SPECIAL MARKING, AND FLAGGING OF AIRPORT OPERATIONS AREAS, ETC. SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM TO THE REQUIREMENTS OF FAA ADVISORY CIRCULAR NO. 150/5370-2G, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION.
26. CONTRACTOR SHALL FOLLOW THE REQUIREMENTS OF FAA ADVISORY CIRCULAR NO. 150/5210-5D FOR PAINTING, MARKING, AND LIGHTING OF VEHICLES USED ON AIRPORT. FLASHING LIGHT SHALL BE REQUIRED FOR ALL VEHICLES USING CONTRACTOR'S HAUL ROUTE. ALL VEHICLES MUST BE PROVIDED WITH A FLAG ON A STAFF ATTACHED TO THE VEHICLE SO THAT THE FLAG WILL BE READILY VISIBLE. THE FLAG MUST BE AT LEAST A 3' BY 3' SQUARE HAVING A CHECKERED PATTERN OF INTERNATIONAL ORANGE AND WHITE SQUARES AT LEAST 1' ON EACH SIDE.
27. DURING NON-CONSTRUCTION PERIODS AND HOURS OF DARKNESS, THE CONTRACTOR SHALL RETURN ALL CONSTRUCTION EQUIPMENT TO THE STAGING AREA.
28. THE CONTRACTOR SHALL HAVE A RADIO AVAILABLE AND IN USE AT ALL TIMES WHILE WORKING ON THE AIRFIELD (FREQUENCY 122.975). TWO-WAY RADIO COMMUNICATION SHALL BE REQUIRED FOR ALL VEHICLES USING CONTRACTOR'S HAUL ROUTE.
29. ALL UNDERGROUND CABLES IN ALL CONSTRUCTION AREAS MUST BE LOCATED AND STAKED PRIOR TO CONSTRUCTION. CONTRACTOR IS TO PROTECT CABLES DURING CONSTRUCTION. ALL CABLES DAMAGED DURING CONSTRUCTION WILL BE REPAIRED OR REPLACED BY CONTRACTOR IMMEDIATELY AFTER DAMAGING. ALL REPAIRS TO DAMAGED CABLE ARE TO BE MADE IN THE PRESENCE OF EITHER AIRPORT MANAGER OR ENGINEER WHERE APPLICABLE. CONTRACTOR WITH AIRPORT REPRESENTATIVE SHALL VERIFY RUNWAY LIGHTING OPERATION PRIOR TO LEAVING THE SITE AT THE END OF EACH DAY.
30. THE AIRPORT MANAGER WILL ISSUE NOTAMS REGARDING CONSTRUCTION ACTIVITIES IF NEEDED AND IS TO BE KEPT INFORMED REGARDING AIRFIELD CONDITIONS DURING CONSTRUCTION. ACTIVITIES REQUIRING A NOTAM WILL REQUIRE AT LEAST 72 HOUR NOTICE TO AIRPORT MANAGEMENT BY THE CONTRACTOR.
31. CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND IDENTIFICATION OF ALL EXISTING UTILITIES OR PIPELINES IN THE CONSTRUCTION AREA. REPAIRS TO EXISTING UTILITIES OR PIPELINES (ON OR OFF AIRPORT PROPERTY) DAMAGED BY CONTRACTOR SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. NO REIMBURSEMENT WILL BE ALLOWED FOR UTILITY / PIPELINE REPAIR OR REPLACEMENT.
32. CONTRACTOR'S ATTENTION IS CALLED TO SAFETY PROVISIONS OF SPECIFICATIONS AND PARTICULAR TO SECTION 01030 (CONSTRUCTION SAFETY PLAN) THAT REFERS TO FAA ADVISORY CIRCULAR NO. 150/5370-2G (OR LATEST EDITION).
33. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFICATION AND LOCATIONS OF ALL SURVEY MARKERS IN THE CONSTRUCTION AREA. MARKERS DISTURBED BY THE CONSTRUCTION WILL BE REPLACED WITH AN EQUIVALENT OR A REPORT MADE TO THE ENGINEER AS TO WHY THE MARKER COULD NOT BE REPLACED.
34. CONTRACTOR TO REMOVE TRASH AND FOREIGN OBJECT DEBRIS (FOD) DAILY.
35. RUNWAY AND TAXIWAYS MUST BE CLOSED TO ACCOMPLISH ANY WORK WITHIN ASSOCIATED RUNWAY SAFETY AREAS AND TAXIWAY OBJECT FREE AREAS. PORTIONS OF THE TAXIWAYS MAY BE CLOSED, PROVIDED ACCESS IS MAINTAINED AROUND THE CLOSED SECTION AS TO NOT IMPEDE AIRPORT OPERATIONS.
36. THE SAFETY PHASING PLAN MUST BE SUBMITTED AND APPROVED BY FAA VIA THE OE/AAA SUBMITTAL WEBSITE PRIOR TO CONSTRUCTION.
37. THIS PROJECT UTILIZES GEORGIA STATE PLANE-EAST COORDINATES.
38. FOR THE UNCLASSIFIED EXCAVATION PAY ITEM, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING BEFORE AND AFTER CROSS SECTIONS OF THE PROJECT SITE IN A FORMAT SUITABLE FOR VERIFICATION OF IN-PLACE QUANTITIES BY THE GEORGIA DEPARTMENT OF TRANSPORTATION.

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- -229.5- EXISTING MINOR CONTOUR
- 230 EXISTING MAJOR CONTOUR
- XXXXXXXXXX BARRICADES
- BRL BUILDING RESTRICTION LINE
- RPZ RUNWAY PROTECTION ZONE
- ROFA RUNWAY OBJECT FREE AREA
- RSA RUNWAY SAFETY AREA
- TOFA TAXIWAY OBJECT FREE AREA
- TSA TAXIWAY SAFETY AREA
- CLEARING AND STRIPPING
- PAVEMENT REMOVAL
- PAVEMENT TRANSITION MILLING
- ITEM REMOVAL
- LOD LIMITS OF DISTURBANCE
- PROPOSED EDGE OF PAVEMENT
- 229.5 PROPOSED MINOR CONTOUR
- 230 PROPOSED MAJOR CONTOUR
- PROPOSED PAVEMENT
- PROPOSED CONCRETE SLAB
- PROPOSED HANGAR BUILDING
- FUTURE HANGAR BUILDING
- PROPOSED DRAINAGE SWALE
- PROP. STORM DRAIN PIPE
- UE PROPOSED UNDERGROUND ELECTRICAL LINE
- W PROPOSED WATER SERVICE LINE
- PROPOSED TAXIWAY POWER CABLE
- PROPOSED TAXIWAY COUNTERPOISE WIRE

24 HOUR CONTACT:
ANDREW WIERSMA
TEL: (706) 618-4384

CROY
200 NORTH COBB PARKWAY, BLDG. 400, SUITE 413
MARIETTA, GA 30062
PHONE: (770) 971-0620 FAX: (770) 971-5407

DALTON MUNICIPAL AIRPORT

APRON REHABILITATION PHASE II

CITY OF DALTON, WHITFIELD COUNTY, GEORGIA

NO.	REVISION REFERENCE	DATE
1	CONC STRENGHT AND QTYS	11-29-22

SEAL

GEORGIA PROFESSIONAL ENGINEER 38829 PATRICK T. LENTON

SHEET TITLE
GENERAL NOTES, LEGEND AND SUMMARY OF QUANTITIES

DRAWN BY	CHECKED BY
AAW	PTL
SCALE	ISSUE DATE
N/A	11/07/22

PROJECT NUMBER
2106.005

DRAWING NUMBER
G-001

SHEET 02 of 11

ISSUED FOR BID ONLY - NOT FOR CONSTRUCTION

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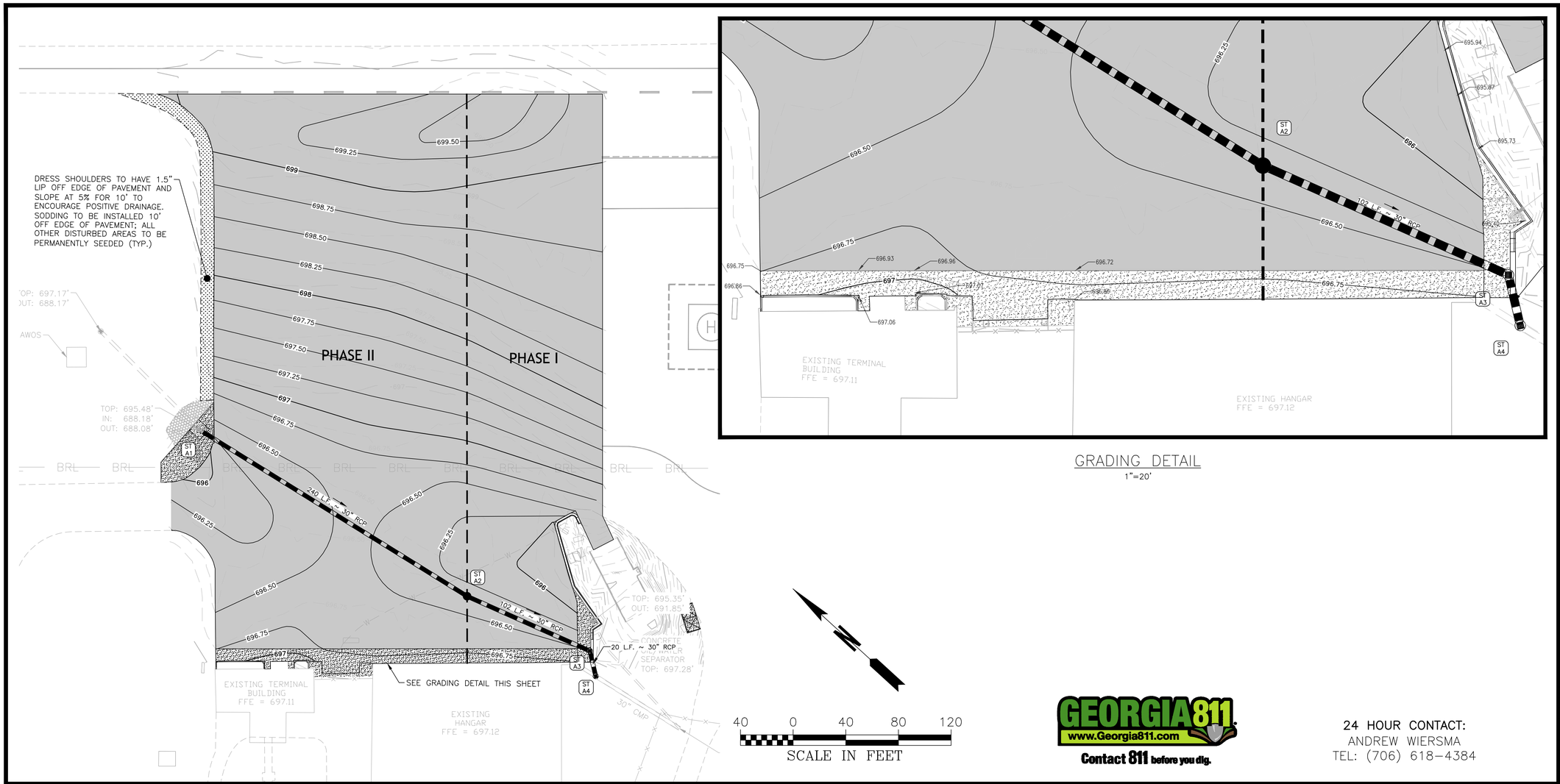
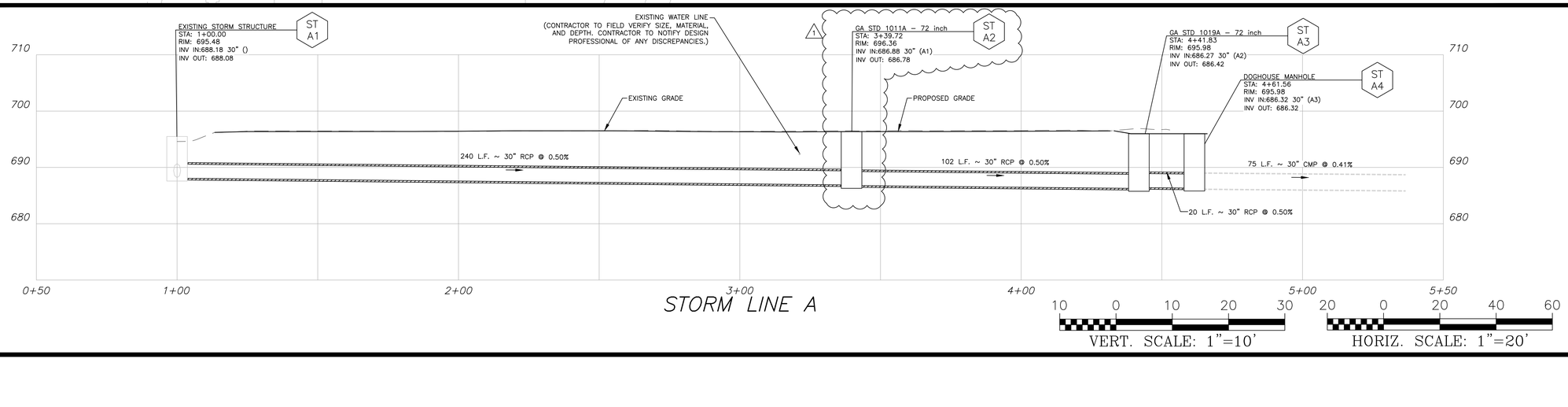


GRADING DETAIL
1"=20'

GEORGIA811
www.Georgia811.com
Contact 811 before you dig.

24 HOUR CONTACT:
ANDREW WIERSMA
TEL: (706) 618-4384



STORM LINE A

CROY
200 NORTH COBB PARKWAY, BLDG. 400, SUITE 413
MARIETTA, GA 30062
PHONE: (770) 971-0620
FAX: (770) 971-5407

DALTON MUNICIPAL AIRPORT

APRON REHABILITATION PHASE II

CITY OF DALTON, WHITFIELD COUNTY, GEORGIA

ISSUED FOR BID ONLY - NOT FOR CONSTRUCTION

NO.	REVISION REFERENCE	DATE
1	MOVED JB TO PHASE LINE	11-29-22

SEAL
GEORGIA PROFESSIONAL ENGINEER 38829 PATRICK T. LENTON

GSWCC CERT #58037

SHEET TITLE
GRADING PLAN AND DRAINAGE PROFILES

DRAWN BY	CHECKED BY
ORG	PTL
SCALE	ISSUE DATE
AS SHOWN	11/07/22

PROJECT NUMBER
2106.005

DRAWING NUMBER
C-200
SHEET 06 of 11

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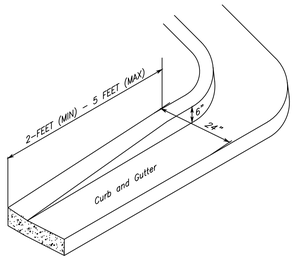
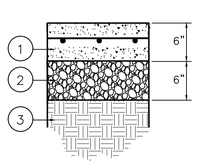
LEGEND

- PROPOSED PAVEMENT FULL DEPTH
- PROPOSED CONCRETE
- TRANSITIONAL MILLING



FLUSH CURB TRANSITION DETAIL

NOT TO SCALE

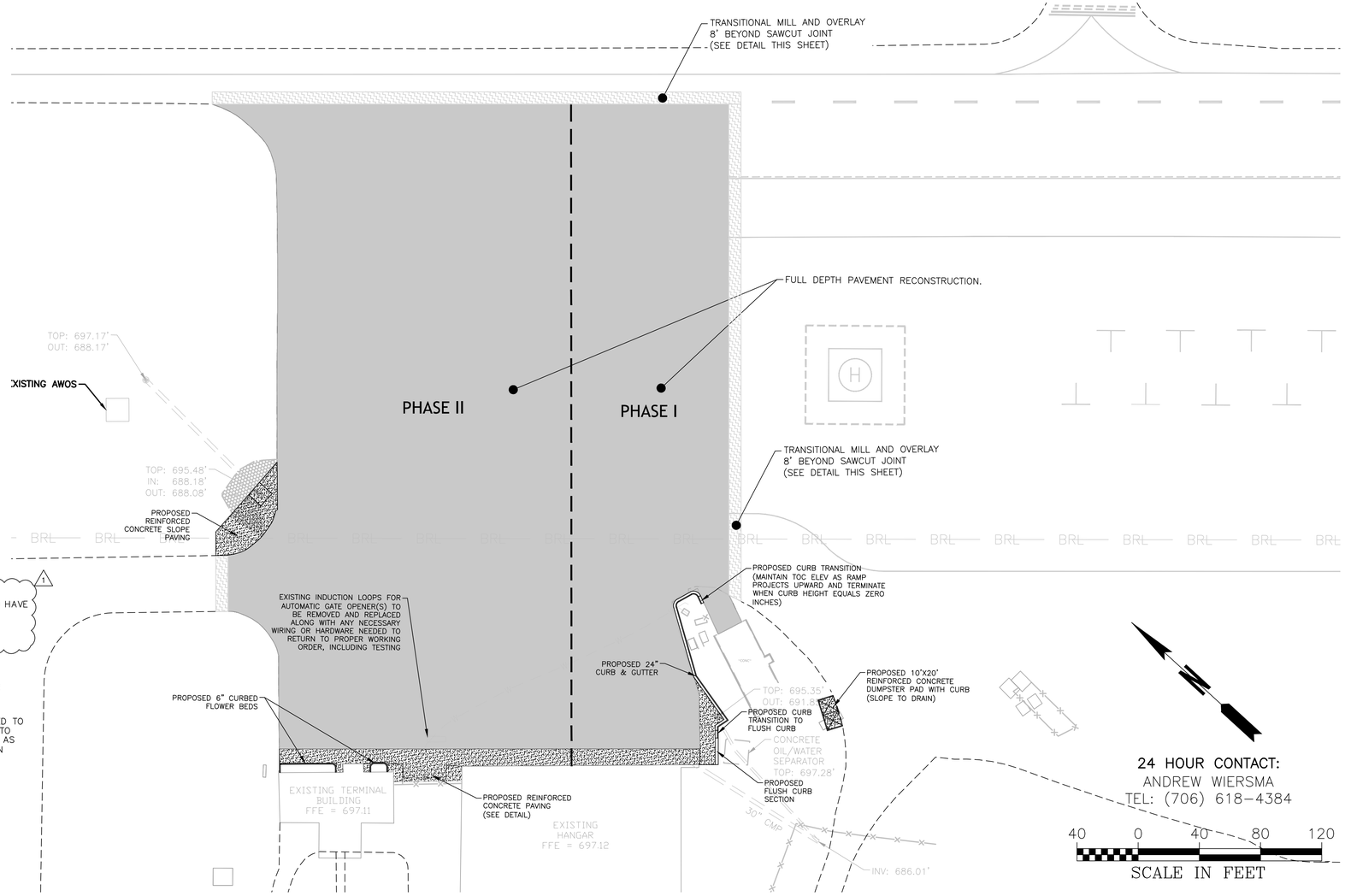


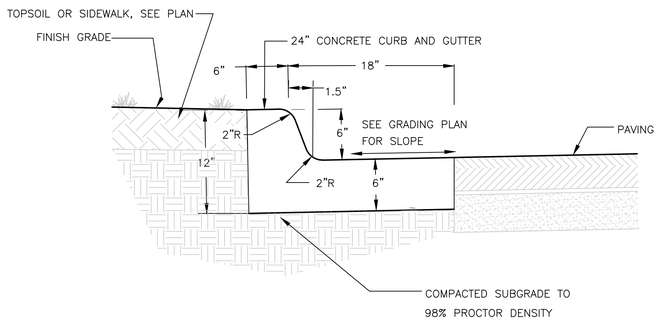
NOTES

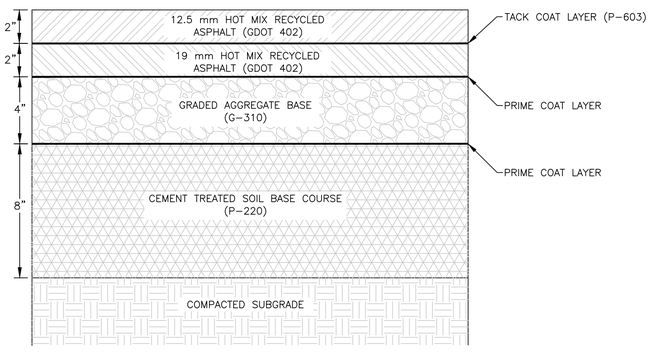
1. SURFACE TO HAVE 1" TROWLED EDGE @ ALL EDGES AND JOINTS W/ REMAINDER TO HAVE RECEIVED HEAVY BROOM FINISH. 3000 PSI CONCRETE @ 28 DAYS W/ #3 BARS @ 12" C-C BOTH WAYS OR 6X6 10/10 WELDED WIRE FABRIC
2. LAYER OF DENSE GRADED AGGREGATE COMPACTED TO 100% MAXIMUM DRY DENSITY, MODIFIED PROCTOR (ASTM-1557)
3. TOP 6" OF SUBGRADE IS TO BE COMPACTED TO 98% PROCTOR DENSITY, BELOW TOP 6" IS TO BE COMPACTED TO 95% PROCTOR DENSITY AS DETERMINED BY AASHTO T-99 COMPACTION TEST.

REINFORCED CONCRETE PAVING DETAIL

NOT TO SCALE





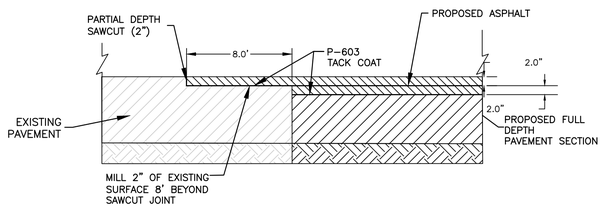


APRON RECONSTRUCTION TYPICAL SECTION

N.T.S.

NOTE:

GDOT SPECIAL PROVISION SECTION 828 REQUIRING REDUCED AIR VOIDS OF ASPHALT MIX IS APPLICABLE TO THIS PROJECT.



TRANSITIONAL MILL AND OVERLAY TYPICAL DETAIL

N.T.S.

CROY

200 NORTH COBB PARKWAY, BLDG. 400, SUITE 413
MARIETTA, GA 30062
PHONE: (770) 971-5407 FAX: (770) 971-0620

DALTON MUNICIPAL AIRPORT

APRON REHABILITATION PHASE II

CITY OF DALTON, WHITFIELD COUNTY, GEORGIA

ISSUED FOR BID ONLY - NOT FOR CONSTRUCTION

NO.	REVISION REFERENCE	DATE
1	ALL CONCRETE TO BE 3000 PSI	11-29-22

SEAL

GEORGIA PROFESSIONAL ENGINEER 38829 PATRICK T. LENTON

SHEET TITLE

PAVING PLAN

DRAWN BY	CHECKED BY
ORG	PTL
SCALE	ISSUE DATE
1"=40'	11/07/22

PROJECT NUMBER

2106.005

DRAWING NUMBER

C-300

SHEET 07 of 11

Plot Scale: 1"=40'. Drawing Rotation: 47.5°. Plot Style: Design.ctb. Plotted By: Patrick Lenton on 11/29/2022, 7:05 PM

Drawing Location: P:\Marietta\2106 Dalton Municipal Airport\2106.005 Dalton Apron Rehab Ph 2\Engineering\Design\2106.005 Paving.dwg

PRE-BID SIGN IN SHEET
APRON PAVEMENT REHABILITATION – PHASE 2

DALTON MUNICIPAL AIRPORT
DALTON, GEORGIA

CROY ENGINEERING PROJECT 2106.005

PRE-BID DATE: MONDAY, NOV 21, 2022, 2:00 P.M. EST

NAME	REPRESENTING, PHONE, FAX & E-MAIL
Heath Paige	Representing: CW Matthews Contr Phone: 770-422-[redacted]7520 EMAIL: hpaige@cwmatthews.com
Patrick Lenton	Representing: CROY Phone: 256-808-8477 EMAIL: plenton@croyeng.com
Andrew Wiersma	Representing: Dalton Municipal Airport Phone: EMAIL: awiersma@daltonga.gov
Damon Carr	Representing: GDOT - Aviation Phone: 470-715-5494 EMAIL: dacarr e dot.ga.gov
	Representing: Phone: EMAIL:

PRE-BID MEETING
APRON PAVEMENT REHABILITATION – PHASE 2
MINUTES

DALTON MUNICIPAL AIRPORT
DALTON, GEORGIA

CROY ENGINEERING PROJECT 2106.005

MONDAY, NOV 21, 2022, 2:00 P.M. EST

1. **INTRODUCTION**

2. **ATTENDEES**

    a. Patrick Lenton – Croy Engineering Project Manager
    b. Damon Carr – GDOT Aviation Project Manager
    c. Andrew Weirsma – Dalton Airport Manager
    d. Heath Paige – CW Matthews

3. **READING OF THE ADVERTISEMENT FOR BID**

4. **PROJECT OVERVIEW AND PLAN REVIEW**

5. **SITE WALK**

6. **QUESTIONS**

    a. Would there be a Pay Item to repair the access road(s) to the site damaged from the trucks and equipment?
        i. Response: This would need to be discussed further and will be address in Addendum.

REPORT OF GEOTECHNICAL EXPLORATION

Existing Apron Rehabilitation
Dalton Municipal Airport
Dalton, Georgia

Prepared For:
Croy Engineering
603 Madison Street
Huntsville, Alabama 35801

Prepared By:
K. S. Ware and Associates, L.L.C.
52 Lindsley Avenue, Suite 101
Nashville, Tennessee 37210

KSWA Project No. 300-22-0008

May 4, 2022

May 4, 2022

Mr. Patrick Lenton
Croy Engineering
603 Madison Street
Huntsville, Alabama 35801

Subject: **Report of Geotechnical Exploration**
Existing Apron Rehabilitation
Dalton Municipal Airport
Dalton, Georgia
KSWA Project No. 300-22-0008

Dear Mr. Lenton:

K. S. Ware and Associates, LLC (KSWA) is pleased to submit this report which provides the results of our geotechnical exploration for the referenced project. Our services were provided in general accordance with our proposal dated November 21, 2021, authorized by Croy Engineering on March 21, 2022.

The attached report summarizes the project information provided to us, describes the site and subsurface conditions encountered, and details our geotechnical recommendations for the project. The Appendices include figures, descriptions of our field-testing procedures, and our field and laboratory test results.

We appreciate the opportunity to be of service to you on this project. Please contact us if you have any questions regarding this report. We look forward to serving as your geotechnical consultant on the remainder of this project.

Respectfully submitted,

K. S. Ware and Associates, L.L.C.

GEORGIA REGISTERED No. PE20601 PROFESSIONAL ENGINEER DEREK L. HODNETT

Keaton Andrus, E.I.
Staff Professional

Derek L. Hodnett, P.E., P.G.
Senior Geotechnical Engineer

Enclosures: Report of Geotechnical Exploration

Distribution: File; Email to plenton@croyeng.com

52 Lindsley Ave., Suite 101 | Nashville, TN 37210
615.255.9702 phone | 615.256.5873 fax | info@kswarellc.com

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 PROJECT INFORMATION

In response to your email to Derek Hodnett on November 8, 2021, KSWA has performed a geotechnical exploration for the proposed apron rehabilitation project. The email included site plans showing the project limits and the requested borings locations.

We understand the Dalton Municipal Airport is planning to rehabilitate the existing asphalt-paved apron northeast of the terminal. The apron has a footprint of about 3 acres. Preferred rehabilitation methods include mill and overlay and complete reconstruction.

1.2 PURPOSE AND SCOPE OF EXPLORATION

The purpose of this exploration was to explore the existing pavement structure and underlying soils and provide pavement rehabilitation recommendations for the project site. Our scope of services was detailed in our proposal dated November 12, 2021. Our geotechnical exploration services did not include sampling and testing of the soil, rock, surface water, groundwater, or air for the presence of environmental contaminants.

2.0 SITE GEOLOGY

2.1 GEOLOGIC FORMATION

The site is located in Dalton, Georgia within the Ridge and Valley Physiographic Province. The Ridge and Valley is characterized by long, parallel ridges of sandstone overlooking wide valleys of limestone and shale. The elevation ranges from 700 to 1,600 feet above sea level.

The *Geology and Ground-Water Resources of Gordon, Whitefield, and Murray Counties, Georgia* (Environmental Protection Division, Georgia Department of Natural Resources, 1974) indicates the project site is underlain by portions of the Cambrian-aged Conasauga Formation that is dominated by shale and includes some limestone layers.

2.2 SOIL SURVEY

The United States Department of Agriculture (UDSA), Natural Resources Conservation Service (NRCS) web soil survey indicates the proposed site is underlain by channery Ultic Udarents. No additional data was provided by the web soil survey on this soil type.

2.3 POTENTIAL GEOLOGIC HAZARDS

Like all limestone formations, the carbonate rocks underlying the project site are susceptible to solution weathering and sinkhole development. We reviewed the Calhoun Northeast Quadrangle and Dalton South Quadrangle maps for additional sinkhole information.

We did not identify notable depressions within the vicinity of the project site on the referenced maps. We note the scale of the reviewed maps often excludes the mapping of smaller features. The Conasauga Formation is not noted to experience high levels of karst activity; therefore, we do not anticipate a high risk of sinkholes forming at the project site.

3.0 EXPLORATION PROCEDURES AND FINDINGS

3.1 GENERAL

We performed our geotechnical exploration on March 29, 2022. The exploration consisted of collecting asphalt core and underlying basestone samples and performing soil test borings at five locations (B-1 through B-5) within the footprint of the existing apron. Each boring was extended to approximately 10 feet below ground surface. The exploration locations were provided to us in a document titled "Boring Locations.pdf" and adjusted in the field due to site access issues where needed. The approximate site location and exploration locations are shown on the Site Vicinity Map and Sampling Location Plan in Appendix A.

3.2 SURFACE AND SUBSURFACE CONDITIONS

The project site is an approximately 3-acre asphalt-paved apron located northeast of the airport office building and main hangar. The site is low-relief, with only 1 to 2 feet of elevation change according to elevation data provided by Google Earth Pro. The project site is bound by an additional apron area to the southeast and grassed-areas and taxiways to the northeast and northwest. During our exploration, we observed widespread longitudinal and transverse cracking with less than 1 inch of dilation. Several of the cracks were repaired with sealant. The asphalt surface appeared to be moderately weathered.

3.2.1 SURFACE MATERIAL

Asphalt coring measurements indicate the apron is comprised of 4 to 6 ¾ inches of asphalt underlain by approximately 5 to 7 inches of basestone. Exact measurements of basestone may vary due to the tendency of basestone and underlying soil to mix during construction operations. Table 1 includes a summary of the pavement and basestone thicknesses encountered at each boring. Asphalt core photographs and measurements can be found in Appendix B.

Table 1 – Pavement and Basestone Thicknesses

Boring No.	Asphalt Thickness (in.)	Basestone Thickness (in.)	Total Thickness (in.)
B-1	4	6	10
B-2	4	6	10
B-3	6	5	11
B-4	6 ¾	7	13 ¾
B-5	5 ¾	5	10 ¾

3.2.2 NATIVE SOILS

Native soils were encountered below the surface material at each boring location. The native soils primarily consisted of firm to very-stiff lean clay and medium-dense silt, both with varying amounts of sand and gravel. Additionally, Boring B-2 encountered loose silty sand to approximately 6 feet below ground surface and Boring B-5 encountered stiff sandy fat clay to an approximately 6 feet below ground surface and loose elastic silt from approximately 8 ½ feet below ground surface to the termination depth of 10 feet. Detailed descriptions of soils encountered at each boring location can be found on the Test Boring Logs in Appendix B.

3.2.3 TERMINATION

Each of the borings were completed to the planned termination depth of 10 feet below ground surface without encountering refusal.

3.2.4 GROUNDWATER

Groundwater was not identified within the depth of exploration. Isolated perched conditions may exist between our borings, especially along the soil/bedrock interface. Groundwater levels will differ depending on the time of year, climatic conditions and the degree of construction activities. Each of the borings were backfilled with cuttings upon completion for safety and the asphalt section was filled with cold-mix asphalt patching material, therefore 24-hour groundwater readings were not taken.

4.0 LABORATORY TESTING

We performed laboratory testing on select samples collected during sampling. The testing included natural moisture content determinations, sieve analysis with No. 200 Wash, Atterberg Limits, soil moisture/density relationship with standard effort (Proctor), California Bearing Ratio (CBR), and unconfined strength of undisturbed samples. We performed the laboratory testing in accordance with ASTM procedures. Laboratory results are included in Appendix C. Table 2 summarizes the results of these tests.

Table 2 – Summary of Laboratory Testing Results

Boring	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	Grain Size			USCS Soil Classification
					Percent Gravel	Percent Sand	Percent Silt/Clay	
Bulk B-1*	1-5	40	23	17	4.8	26.2	68.9	Sandy Lean Clay (CL)
B-2	1-3	45	29	16	12.0	41.6	46.4	Silty Sand (SM)
B-3	1-3	42	26	16	8.7	37.4	53.9	Sandy Silt (ML)
B-4	1-3	27	19	8	10.7	26.0	63.3	Sandy Lean Clay (CL)
B-4	3.5-5	36	21	15	0.4	14.1	85.5	Lean Clay (CL)
Bulk B-5*	1-5	51	27	24	6.1	24.0	69.9	Sandy Fat Clay (CH)
B-5	8.5-10	53	31	22	1.1	16.3	82.6	Elastic Silt with Sand (MH)

* Composite sample of auger cuttings from upper 5 feet of boring.

A standard Proctor and CBR laboratory tests were performed on the combined bulk samples collected and identified in the table above. The Proctor test resulted in a maximum dry density of 103.5 pcf (pounds per cubic foot) and optimum water content of 19.2 percent. The CBR resulted in a value of 1.5 for soil compacted to 95% of the maximum dry density (ASTM D698).

5.0 PAVEMENT REHABILITATION RECOMMENDATIONS

Based upon an engineering reconnaissance of the site, the boring and laboratory data, visual-manual examination of the samples, and KSWA's understanding of the proposed construction and experience as geotechnical engineers, KSWA reached the conclusions and developed the recommendations provided herein. The conclusions and recommendations in this report have been derived by relating the general principles of the discipline of geotechnical engineering to the proposed construction outlined by the Project Information section of this report. Because changes in surface, subsurface, and climatic conditions can occur, the use of this report should be restricted to this specific project. Any changes or modifications which are made in the field during the construction phase which alter site grading, infrastructure, or other related site work, should also be reviewed by KSWA. If conditions which vary from the findings of this report are encountered during construction, the Geotechnical Engineer of Record should be contacted immediately to review the changed conditions in the field and make appropriate recommendations.

5.1 GEOTECHNICAL CONSIDERATIONS

Based upon the information provided to us, we anticipate the majority of the new pavements will be constructed within the footprint of the existing pavements, which are primarily underlain by firm to very-stiff lean clay and medium-dense silt with varying amounts of sand and gravel. Based upon observed site conditions and field and laboratory analysis of the soils, we believe the condition of the pavement (i.e., cracking and weathering) is typical for the age of the pavement and not a result of subgrade instability. For site conditions similar to this, we would typically recommend mill and overlay as our preferred rehabilitation method if loading conditions remain the same. However, we acknowledge that FAA AC No. 150/5320-6F Airport Pavement and Design Evaluation recommends subgrade improvements where a CBR value less than 3 is encountered, which is the case for this site. If subgrade improvement is preferred, or if loading conditions are expected to increase, we suggest removing and replacing the existing asphalt and using cement stabilization to improve the subgrade as the preferred method of rehabilitation. We have provided additional recommendations below for each rehabilitation option.

5.2 MILL AND OVERLAY

Our borings encountered between 4 and 6 ¾ inches of asphalt material within the existing apron. Additionally, the existing basestone thickness generally ranges from 5 to 7 inches. We believe partial milling and overlaying with new asphalt may be a suitable method for improving the pavement if loading conditions are to remain the same. The milled asphalt surface should be proofrolled to identify areas of soft and/or unsuitable soils. Where these soils are encountered, excavation to a depth sufficient to remove the soil and reconstruct the basestone section should be performed prior to repaving. Please note the selection of this method does not conform with FAA guidelines based on the CBR value for the site.

5.3 CEMENT STABILIZATION

In order to conform with FAA guidelines, or if pavement loads are expected to increase, cement stabilization can be used to improve the subgrade and rehabilitate the pavement. For this method, the existing asphalt should be removed to allow the basestone and subgrade material to be mixed in place with cement. The mixed material can be reshaped and elevations adjusted to match adjoining grades. Once compacted and allowed to cure, new asphalt paving may be applied directly on the stabilized layer. In areas where surface water drainage is poor, especially at the edge of the pavement, a relatively thin layer of basestone may be added to provide a capillary break. Also, some paving contractors prefer to place several inches of basestone to better shape the subgrade prior to paving, although it isn't structurally needed.

5.4 SUBGRADE PREPARATION AND PAVEMENT MAINTENANCE

The soils encountered at the site generally consists of clayey or silty sand or sandy, clayey silt. Portions of the soil were identified by testing to be highly plastic. Silt and highly plastic clays are moisture sensitive. These soil types are also not generally expected to be good for pavement support, which was indicated by the relatively low CBR value. Experience indicates there is typically extensive lag time between the time grading is completed and pavement construction occurs. Once grading has been performed, the subgrade may be disturbed throughout the construction process due to utility excavations, construction traffic, desiccation, or rainfall. As a result, the pavement subgrade may become unsuitable for pavement construction over time and corrective action may be required. The subgrade should be evaluated at the time of pavement construction by proofrolling with a heavily-loaded tandem-axle dump truck. Particular attention should be given to high traffic areas that display distress and to areas where backfilled trenches are located.

Design pavement section thicknesses are typically determined based on post-construction traffic loading conditions, which do not account for heavy construction traffic during early stages of development. A partially constructed structural section subjected to heavy construction traffic can result in pavement deterioration and premature failure. Our experience indicates this pavement construction practice can result in pavements which will not perform as intended. Considering this information, several alternatives are available to mitigate the impact of heavy construction traffic on the pavement construction. These include using thicker sections to account for construction traffic, using some method of stabilization to improve the support characteristics of the pavement subsurface, or by routing heavy construction traffic around paved areas using a "haul road" constructed for that purpose.

Maintenance is essential to good long-term performance of rigid and flexible pavements. Any distressed areas should be repaired promptly to prevent the failure from spreading due to loading and water infiltration.

6.0 QUALIFICATIONS OF RECOMMENDATIONS

The recommendations provided herein were developed in part using the subsurface information obtained from the borings advanced at the site. Borings depict the soil conditions only at the specific location and time at which they were made. The soil conditions at other locations on the site or at other times may differ from those occurring at the boring locations.

The scope of this geotechnical exploration did not include assessment or exploration for the presence or absence of hazardous or toxic materials in the soil, rock, groundwater, surface water, or air within or beyond the site. Any statements in this report or indicated on the test boring logs regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of KSWA's client.

KSWA's professional services were performed, findings obtained, and recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. KSWA is not responsible for the conclusions, opinions, or recommendations made by others based upon the data included herein.

KSWA's services include retaining the soil samples obtained during this study for 60 days after report submittal. Further storage or transfer of the samples can be made at the Client's expense upon a written request.

APPENDIX A

SITE VICINITY MAP

SAMPLING LOCATION PLAN

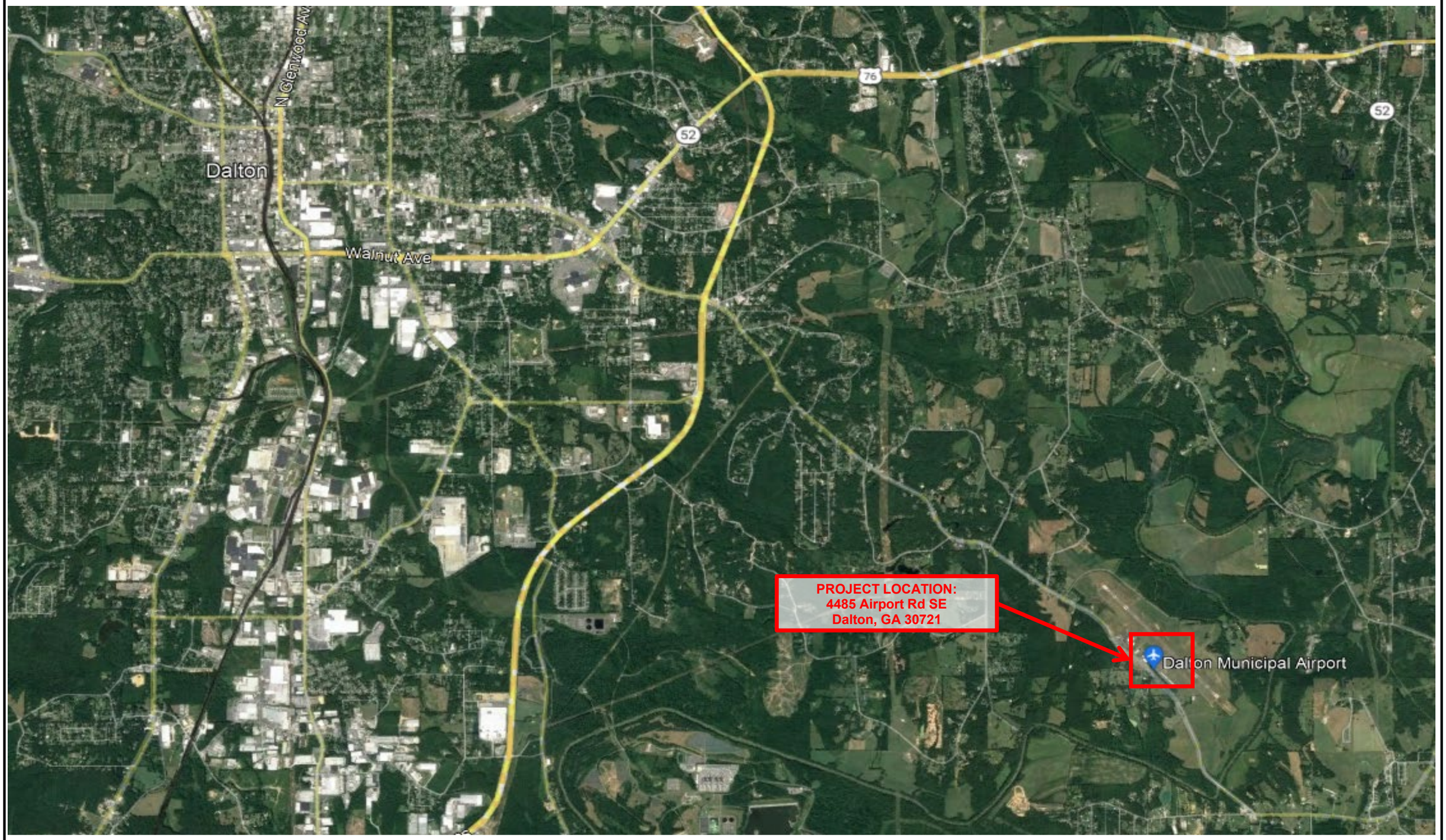


IMAGE SOURCE: Google Earth Aerial, 2019

N

NOT TO SCALE

JOB NO.: 300-22-0008

CLIENT: Croy Engineering

603 Madison Street
Huntsville, AL 35801

Date: 4/19/2022

Site Vicinity Map

Existing Apron Rehabilitation
Dalton Municipal Airport
Dalton, Georgia

DRAWN BY: K. Andrus

REVIEWED BY: D. Hodnett

LEGEND

Approximate Project Location

KSWA
[KS WARE & ASSOCIATES]

Figure 1

N

NOT TO SCALE

JOB NO.: 300-22-0008

CLIENT: Croy Engineering

603 Madison Street
Huntsville, AL 35801

Date: 4/19/2022

Sampling Location Plan

Existing Apron Rehabilitation
Dalton Municipal Airport
Dalton, Georgia

DRAWN BY: K. Andrus

REVIEWED BY: D. Hodnett

LEGEND

Approximate Sampling Location

KSWA
[KS WARE & ASSOCIATES]

Figure 2

APPENDIX B

FIELD TESTING PROCEDURES

FIELD CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

PAVEMENT CORE LOGS

TEST BORING LOGS

FIELD TESTING PROCEDURES

Drilling, sampling, and testing were conducted in general accordance with methods of the American Society for Testing and Materials (ASTM) or other widely-accepted geotechnical engineering standards. Descriptions of the procedures used during this exploration are provided below.

BORING AND CORE HOLE LOCATIONS AND ELEVATIONS

The boring locations were selected by the Client prior to beginning our exploration. We located the exploration locations on the Boring Location Plan by estimating distances and angles relative to on-site features. Surveying of boring and core coordinates was beyond the scope of our exploration and was performed by others.

PAVEMENT CORES

Pavement cores were advanced using a mechanical coring machine. Six-inch diameter core barrels were used. We measured the thickness of the recovered asphalt cores and extended the core holes through the base stone using hand-held tools. After penetrating the base materials, our representative measured the base course thickness. Upon completion, we backfilled the core holes with asphalt cold patch.

TEST BORINGS
ASTM D 1586

Test Borings were advanced using auger drilling techniques. At regular intervals, soil samples were obtained with a standard 1.4-inch I.D., 2.0-inch O.D., split-barrel sampler. The sampler was initially seated 6 inches to penetrate any loose cuttings and then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot is the *standard penetration resistance.* Standard penetration resistance, when properly evaluated, is an index to the soil's strength and density. The criteria used during this exploration are presented on the Field Classification System sheet in this appendix.

REFUSAL MATERIALS

Soil drilling and sampling equipment may not be capable of penetrating hard cemented or very dense soils, thin rock seams, large boulders, waste materials, weathered rock, or sound continuous rock. Refusal is the term applied to materials that cannot be penetrated with soil drilling equipment or where the standard penetration resistance exceeds 100 blows per foot. Core drilling is needed to determine the character and continuity of the refusal materials.

FIELD TESTING PROCEDURES CONTINUED

TEST BORING LOGS

The soil samples obtained during the drilling were visually classified using the Unified Soil Classification System (USCS) as a guide (reference Soil Classification Chart in Appendix B). The Test Boring Logs in Appendix B provide the soil descriptions and represent our interpretation of the conditions encountered at each boring location. The depths indicated on the boring records represent the approximate boundaries between material types, but these transitions may be gradual. The Test Boring Logs were prepared based on the field logs and review of the laboratory classification test results. The USCS designations indicated on the Test Boring Logs are based on visual-manual evaluation of the samples unless otherwise defined by laboratory testing.

FIELD CLASSIFICATION SYSTEM

Sands and Gravels

No. of Blows	Relative Density
0-5	Very Loose
6-10	Loose
11-30	Medium dense
31-50	Dense
51+	Very Dense

Silts and Clays

No. of Blows	Relative Consistency
0-2	Very Soft
3-4	Soft
5-9	Firm
10-15	Stiff
16-30	Very Stiff
31+	Hard

Particle Size Identification

Boulders:	8-inch diameter or larger
Cobbles:	3- to 8-inch diameter
Gravel:	
Coarse:	1- to 3-inch
Medium:	0.50- to 1-inch
Fine:	0.25- to 0.50-inch
Sand:	
Coarse:	2.00-mm to 0.25-inch (diameter of pencil lead)
Medium:	0.074-mm to 2.00-mm (diameter of broom straw)
Fine:	0.042-mm to 0.074-mm (diameter of human hair)
Silt:	0.002-mm to 0.042-mm (Cannot see particles)
Clay:	<0.002-mm

Relative Proportions

Descriptive Term	Percent
Trace	1-10
Little	11-20
Some	21-35
And	36-50

Relative Quality of Rock Cores

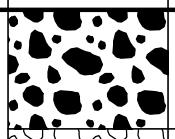
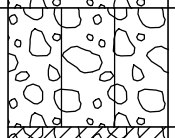
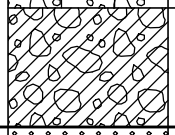
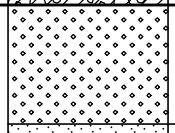
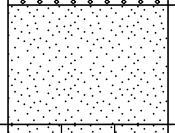
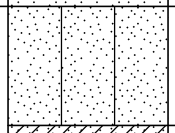
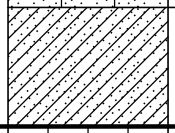
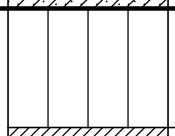
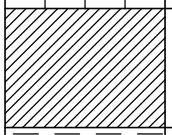
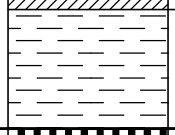
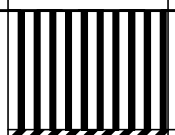
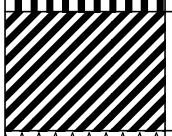
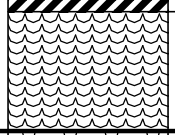
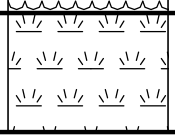
Quality	RQD
Very Poor	0-25%
Poor	25-50%
Fair	50-75%
Good	75-90%
Excellent	90-100%

$$\text{RQD} = \frac{\text{Total length of core recovered in pieces 4 inches long or longer} \times 100\%}{\text{Total length of core run}}$$

Rock Hardness

Very Soft	Rock disintegrates or easily compresses to touch; can be hard to very hard soil
Soft	Rock is coherent but breaks easily to thumb pressure at sharp edges and crumbles with firm hand pressure
Moderately Hard	Small pieces can be broken off along sharp edges by considerable hard thumb pressure; can be broken by light hammer blows
Hard	Rock cannot be broken by thumb pressure, but can be broken by moderate hammer blows
Very Hard	Rock can be broken by heavy hammer blows

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Pavement Core Log

Project:	Existing Apron Rehabilitation	**Boring No.:**	B-1
Site Location:	Dalton Municipal Airport	**Logged By:**	J. Giraldo
Project No.:	300-22-0008	**Date:**	3/29/2022
Client:	Croy Engineering	**Boring Location:**	See Location Plan
Asphalt Thickness:	4"	**Basestone Thickness:**	6"

Pavement Core Log

Project:	Existing Apron Rehabilitation	**Boring No.:**	B-2
Site Location:	Dalton Municipal Airport	**Logged By:**	J. Giraldo
Project No.:	300-22-0008	**Date:**	3/29/2022
Client:	Croy Engineering	**Boring Location:**	See Location Plan
Asphalt Thickness:	4"	**Basestone Thickness:**	6"

Pavement Core Log

Project:	Existing Apron Rehabilitation	**Boring No.:**	B-3
Site Location:	Dalton Municipal Airport	**Logged By:**	J. Giraldo
Project No.:	300-22-0008	**Date:**	3/29/2022
Client:	Croy Engineering	**Boring Location:**	See Location Plan
Asphalt Thickness:	6"	**Basestone Thickness:**	5"

Pavement Core Log

Project:	Existing Apron Rehabilitation	**Boring No.:**	B-4
Site Location:	Dalton Municipal Airport	**Logged By:**	J. Giraldo
Project No.:	300-22-0008	**Date:**	3/29/2022
Client:	Croy Engineering	**Boring Location:**	See Location Plan
Asphalt Thickness:	6 ¾"	**Basestone Thickness:**	7"

Pavement Core Log

Project:	Existing Apron Rehabilitation	**Boring No.:**	B-5
Site Location:	Dalton Municipal Airport	**Logged By:**	J. Giraldo
Project No.:	300-22-0008	**Date:**	3/29/2022
Client:	Croy Engineering	**Boring Location:**	See Location Plan
Asphalt Thickness:	5 ¾"	**Basestone Thickness:**	5"

KSWA BORING LOG

KSWA [KS WARE & ASSOCIATES]

BORING NO. B-1

PROJECT NAME: Apron Rehabilitation - Dalton Municipal Airport

LOCATION: Dalton, Georgia

PROJECT NO.: 300-22-0008

Approx. Surface El. (feet, MSL):

Location: See Boring Plan

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Recovery (%)	RQD (%)	SPT Values	N-Value	Pocket Pen (tsf)	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
		ASPHALT (4 inches)										
		0.3 BASESTONE (6 inches)										
		0.8 SANDY LEAN CLAY (CL), yellowish brown, stiff, moist		100		2-4-6	10		23.6			
		3.5 LEAN CLAY (CL), with rock fragments, yellowish brown, red and white spots, stiff to firm, moist		100		3-5-8	13		27.0			
4				100		3-4-6	10		40.0			
8				100		3-4-5	9		55.9			
		10.0 BORING TERMINATED AT 10 FBGS										
12												

Completion Depth (ft.): **10.0**
Date Started: **3/29/22**
Date Completed: **3/29/22**
Drilled By: **TSD**
Logged By: **KSWA/Giraldo**

Remarks: **Groundwater was NOT encountered during soil drilling. Borehole backfilled with auger cuttings upon completion. Diedrich D-50 track mounted w/autohammer, 3 1/4 I.D., HSA, AWJ split-spoon.**

KSWA BORING LOG

KSWA [KS WARE & ASSOCIATES]

BORING NO. B-2

PROJECT NAME: Apron Rehabilitation - Dalton Municipal Airport

LOCATION: Dalton, Georgia

PROJECT NO.: 300-22-0008

Approx. Surface El. (feet, MSL):

Location: See Boring Plan

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Recovery (%)	RQD (%)	SPT Values	N-Value	Pocket Pen (tsf)	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
		ASPHALT (4 inches)										
		0.3 BASESTONE (6 inches)										
		0.8 SILTY SAND (SM), yellowish brown, loose, moist		54						45	29	16
4				89		3-4-5	9		28.3			
		6.0 SILT (ML), trace rock fragments, yellowish brown, medium dense, moist		100		3-6-10	16		25.3			
8				100		4-6-8	14		27.6			
		10.0 BORING TERMINATED AT 10 FBGS										
12												

Completion Depth (ft.): **10.0**
Date Started: **3/29/22**
Date Completed: **3/29/22**
Drilled By: **TSD**
Logged By: **KSWA/Giraldo**

Remarks: **Groundwater was NOT encountered during soil drilling. Borehole backfilled with auger cuttings upon completion. Diedrich D-50 track mounted w/autohammer, 3 1/4 I.D., HSA, AWJ split-spoon.**

KSWA BORING LOG

KSWA
[KS WARE & ASSOCIATES]

BORING NO. B-3

PROJECT NAME: Apron Rehabilitation - Dalton Municipal Airport

LOCATION: Dalton, Georgia

PROJECT NO.: 300-22-0008

Approx. Surface El. (feet, MSL):

Location: See Boring Plan

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Recovery (%)	RQD (%)	SPT Values	N-Value	Pocket Pen (tsf)	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
		ASPHALT (6 inches)										
		0.5										
		BASESTONE (5 inches)										
		0.9										
		SANDY SILT (ML), some clay, red to yellowish brown, medium dense, moist		80						42	26	16
4				100		3-5-7	12		33.9			
				100		4-5-8	13		35.4			
8				100		4-7-14	21		27.5			
		10.0										
		BORING TERMINATED AT 10 FBGS										
12												

Completion Depth (ft.): **10.0**
Date Started: **3/29/22**
Date Completed: **3/29/22**
Drilled By: **TSD**
Logged By: **KSWA/Giraldo**

Remarks: **Groundwater was NOT encountered during soil drilling. Borehole backfilled with auger cuttings upon completion. Diedrich D-50 track mounted w/autohammer, 3 1/4 I.D., HSA, AWJ split-spoon.**

KSWA BORING LOG

KSWA [KS WARE & ASSOCIATES]

BORING NO. B-4

PROJECT NAME: Apron Rehabilitation - Dalton Municipal Airport

LOCATION: Dalton, Georgia

PROJECT NO.: 300-22-0008

Approx. Surface El. (feet, MSL):

Location: See Boring Plan

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Recovery (%)	RQD (%)	SPT Values	N-Value	Pocket Pen (tsf)	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
		ASPHALT (6.75 inches)										
		0.6										
		BASESTONE (7 inches)										
		1.1										
		SANDY LEAN CLAY (CL), grayish brown, firm, moist		94						27	19	8
4				100		3-3-4	7		18.5	36	21	15
		6.0										
		LEAN CLAY (CL), yellowish brown, white spots, firm to very stiff, moist		100		3-3-5	8		39.5			
8				100		3-6-10	16		25.2			
		10.0										
		BORING TERMINATED AT 10 FBGS										
12												

Completion Depth (ft.): **10.0**
Date Started: **3/29/22**
Date Completed: **3/29/22**
Drilled By: **TSD**
Logged By: **KSWA/Giraldo**

Remarks: **Groundwater was NOT encountered during soil drilling. Borehole backfilled with auger cuttings upon completion. Diedrich D-50 track mounted w/autohammer, 3 1/4 I.D., HSA, AWJ split-spoon.**

KSWA BORING LOG

KSWA [KS WARE & ASSOCIATES]

BORING NO. B-5

PROJECT NAME: Apron Rehabilitation - Dalton Municipal Airport

LOCATION: Dalton, Georgia

PROJECT NO.: 300-22-0008

Approx. Surface El. (feet, MSL):

Location: See Boring Plan

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Recovery (%)	RQD (%)	SPT Values	N-Value	Pocket Pen (tsf)	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
		ASPHALT (5.75 inches)										
		0.5										
		BASESTONE (5 inches)										
		0.9										
		SANDY FAT CLAY (CH), reddish brown, stiff, moist		100		2-4-6	10		25.9			
4				100		3-5-8	13		22.0			
		6.0										
		LEAN CLAY (CL), reddish brown to red, stiff, moist		100		3-4-6	10		29.9			
8												
		8.5										
		ELASTIC SILT (MH), with sand, red, loose, moist		100		3-4-5	9		76.0	53	31	22
		10.0										
		BORING TERMINATED AT 10 FBGS										
12												

Completion Depth (ft.): **10.0**
Date Started: **3/29/22**
Date Completed: **3/29/22**
Drilled By: **TSD**
Logged By: **KSWA/Giraldo**

Remarks: **Groundwater was NOT encountered during soil drilling. Borehole backfilled with auger cuttings upon completion. Diedrich D-50 track mounted w/autohammer, 3 1/4 I.D., HSA, AWJ split-spoon.**

APPENDIX C

LABORATORY TEST RESULTS

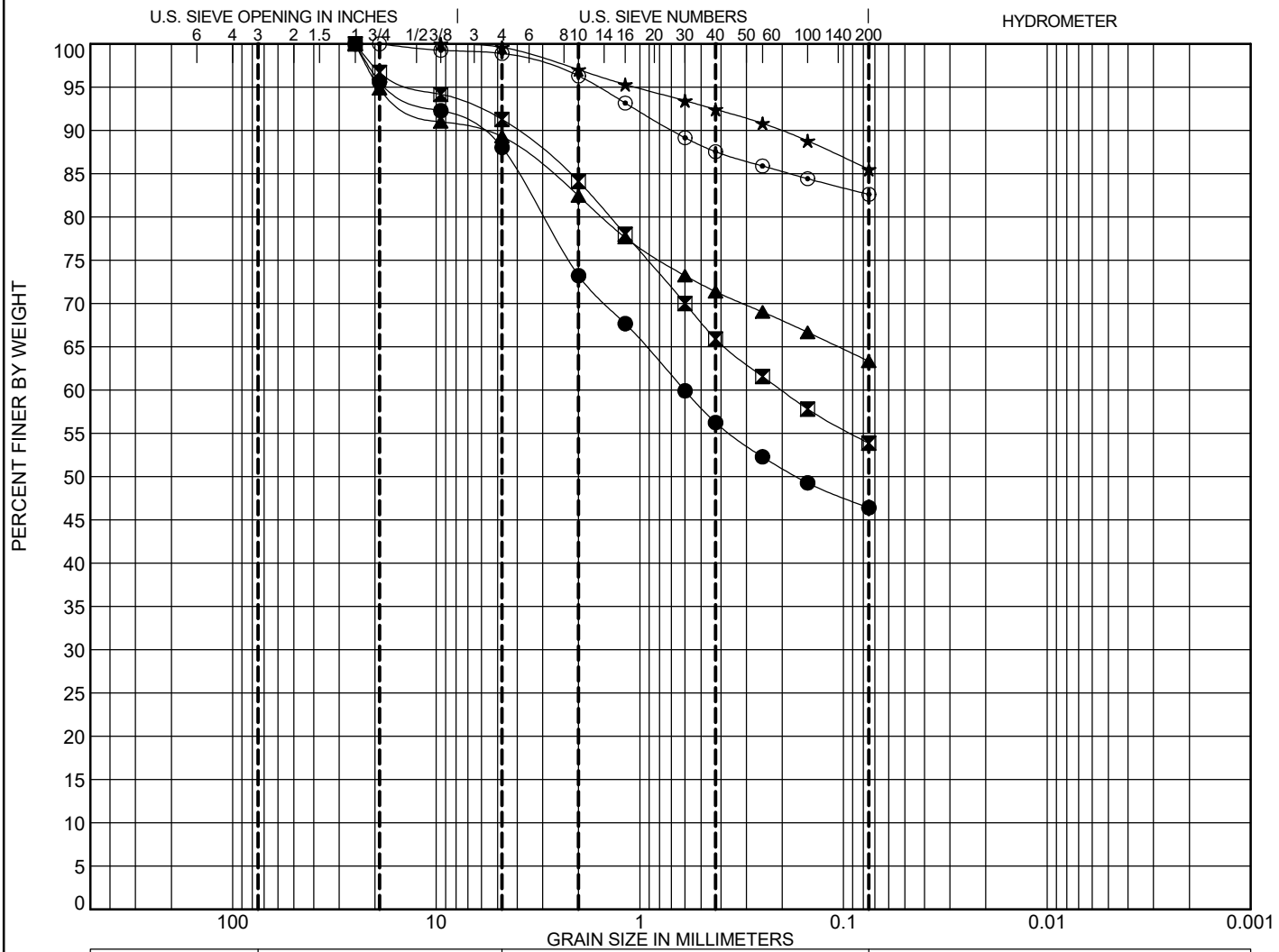
KSWA
[KS WARE & ASSOCIATES]
52 Lindsley Avenue, Suite 101
Nashville,Tennessee 37210
Phone: (615) 255-9702
Fax: (615) 256-5873

GRAIN SIZE DISTRIBUTION
ASTM D6913 - COARSE GRAIN SIZE
ASTM D7928 - FINE GRAIN SIZE

CLIENT: Croy Engineering **PROJECT NAME:** Apron Rehabilitation - Dalton Municipal Airport

PROJECT NUMBER 300-22-0008 **PROJECT LOCATION:** Dalton, Georgia

SOIL DESCRIPTION:



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	Spec. Grav.	LL	PL	PI	Cc	Cu
●	B-2, 1'	SILTY SAND(SM)		45	29	16		
⊠	B-3, 1'	SANDY SILT(ML)		42	26	16		
▲	B-4, 1'	SANDY LEAN CLAY(CL)		27	19	8		
★	B-4, 3.5'	LEAN CLAY(CL)		36	21	15		
⊙	B-5, 8.5'	ELASTIC SILT with SAND(MH)		53	31	22		

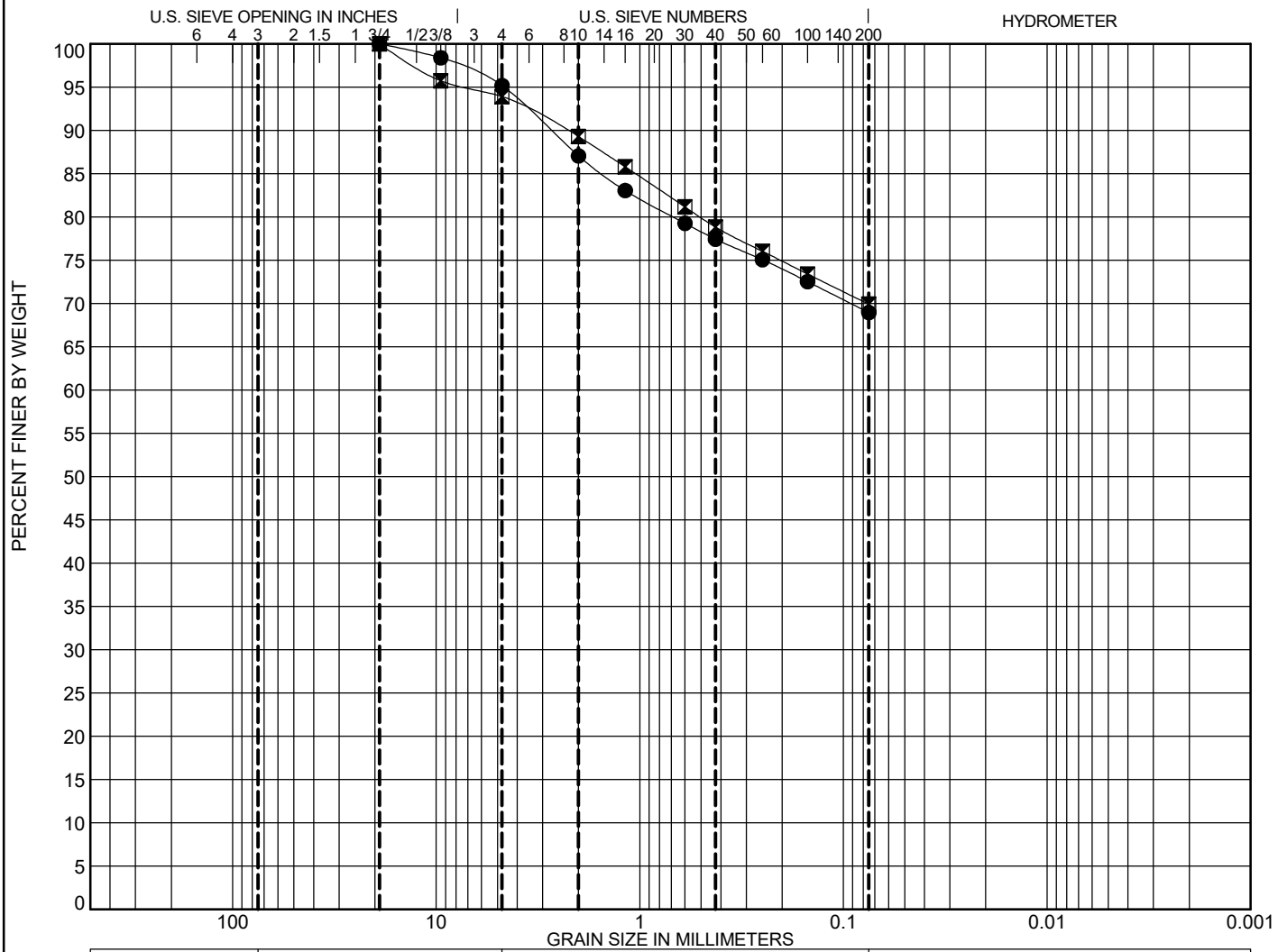
Specimen Identification		D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silts	%Clays
●	B-2, 1'	25	0.605			12.0	41.6	46.4	
⊠	B-3, 1'	25	0.202			8.7	37.4	53.9	
▲	B-4, 1'	25				10.7	26.0	63.3	
★	B-4, 3.5'	9.5				0.4	14.1	85.5	
⊙	B-5, 8.5'	19				1.1	16.3	82.6	

TESTED BY: S. Krikorian **TEST DATE**: 4/18/2022 **REVIEWED BY**: K. Andrus **DATE**: 4/19/2022

KSWA
[KS WARE & ASSOCIATES]
52 Lindsley Avenue, Suite 101
Nashville,Tennessee 37210
Phone: (615) 255-9702
Fax: (615) 256-5873

GRAIN SIZE DISTRIBUTION
ASTM D6913 - COARSE GRAIN SIZE
ASTM D7928 - FINE GRAIN SIZE

CLIENT: Croy Engineering
PROJECT NAME: Apron Rehabilitation - Dalton Municipal Airport
PROJECT NUMBER 300-22-0008
PROJECT LOCATION: Dalton, Georgia
SOIL DESCRIPTION:



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	Spec. Grav.	LL	PL	PI	Cc	Cu
●	**Bulk B-1**	**SANDY LEAN CLAY(CL)**		**40**	**23**	**17**		
⊠	**Bulk B-5**	**SANDY FAT CLAY(CH)**		**51**	**27**	**24**		

	Specimen Identification	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silts	%Clays
●	**Bulk B-1**	**19**				**4.8**	**26.2**	**68.9**	
⊠	**Bulk B-5**	**19**				**6.1**	**24.0**	**69.9**	

TESTED BY: S. Krikorian **TEST DATE**: 4/18/2022 **REVIEWED BY**: K. Andrus **DATE**: 4/19/2022

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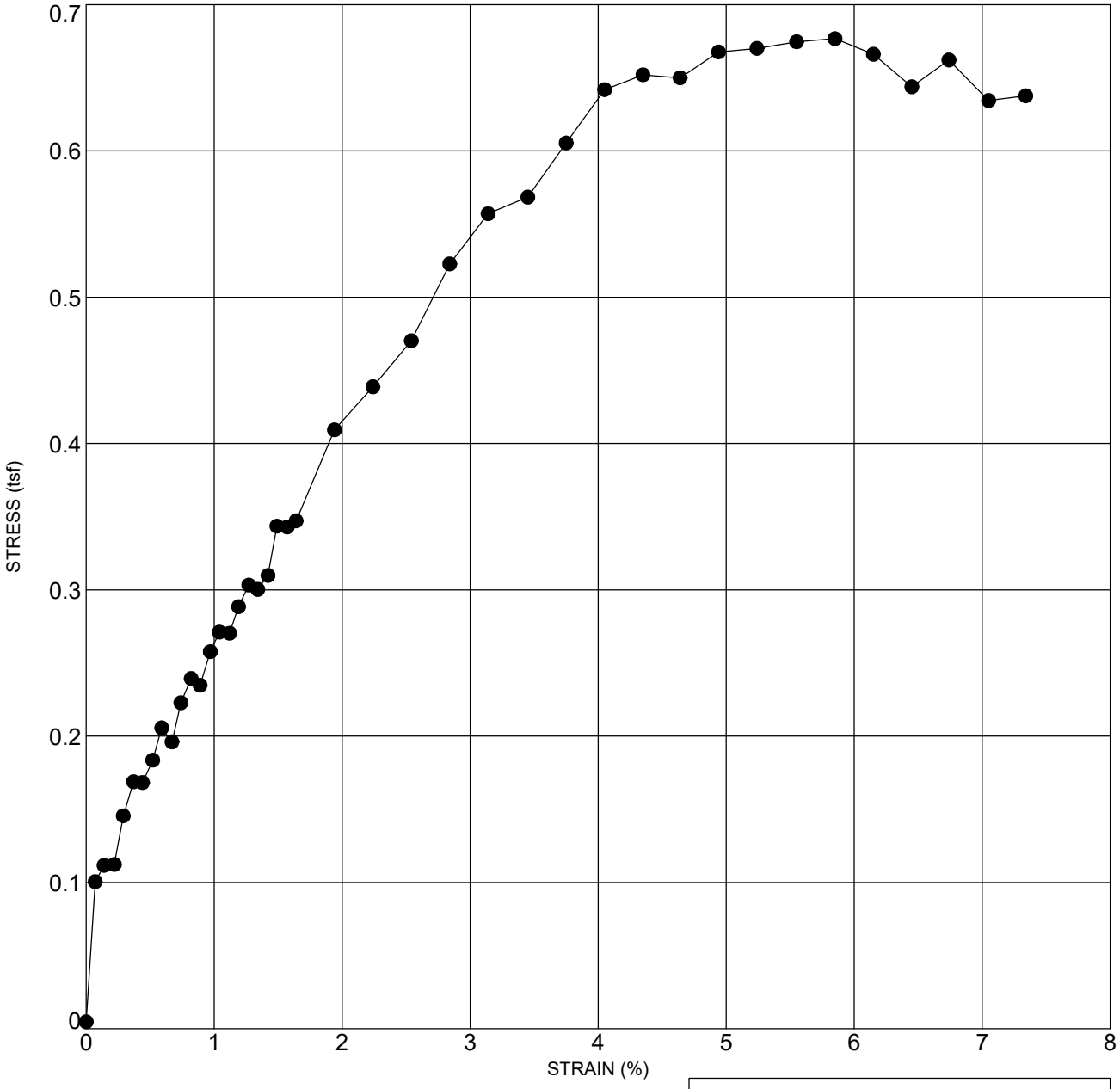
UNCONFINED COMPRESSIVE STRENGTH TEST
COHESIVE SOIL (ASTM D2166)

CLIENT: Croy Engineering
PROJECT NAME: Apron Rehabilitation - Dalton Municipal Airport
PROJECT NUMBER 300-22-0008
PROJECT LOCATION: Dalton, Georgia
SOIL DESCRIPTION: Silty Sand(SM)
SAMPLE RECEIVED: 4/1/2022



SAMPLE: B-2 1'

Diameter (in): 2.86
Height (in): 5.73
Ratio (h/d): 2.00
LL: 45
PL: 29

Strain at Failure (%): 5.85
Strength (tsf): 0.68
Dry Density (pcf): 102.10
Water Content (%): 23.75806
Rate of Strain to Failure (%/min): 1

-Specimen was taken from Shelby Tube sample
-

TESTED BY: S. Krikorian
REVIEWED BY: K. Andrus
TEST DATE: 4/18/2022
APPROVED DATE: 4/19/2022

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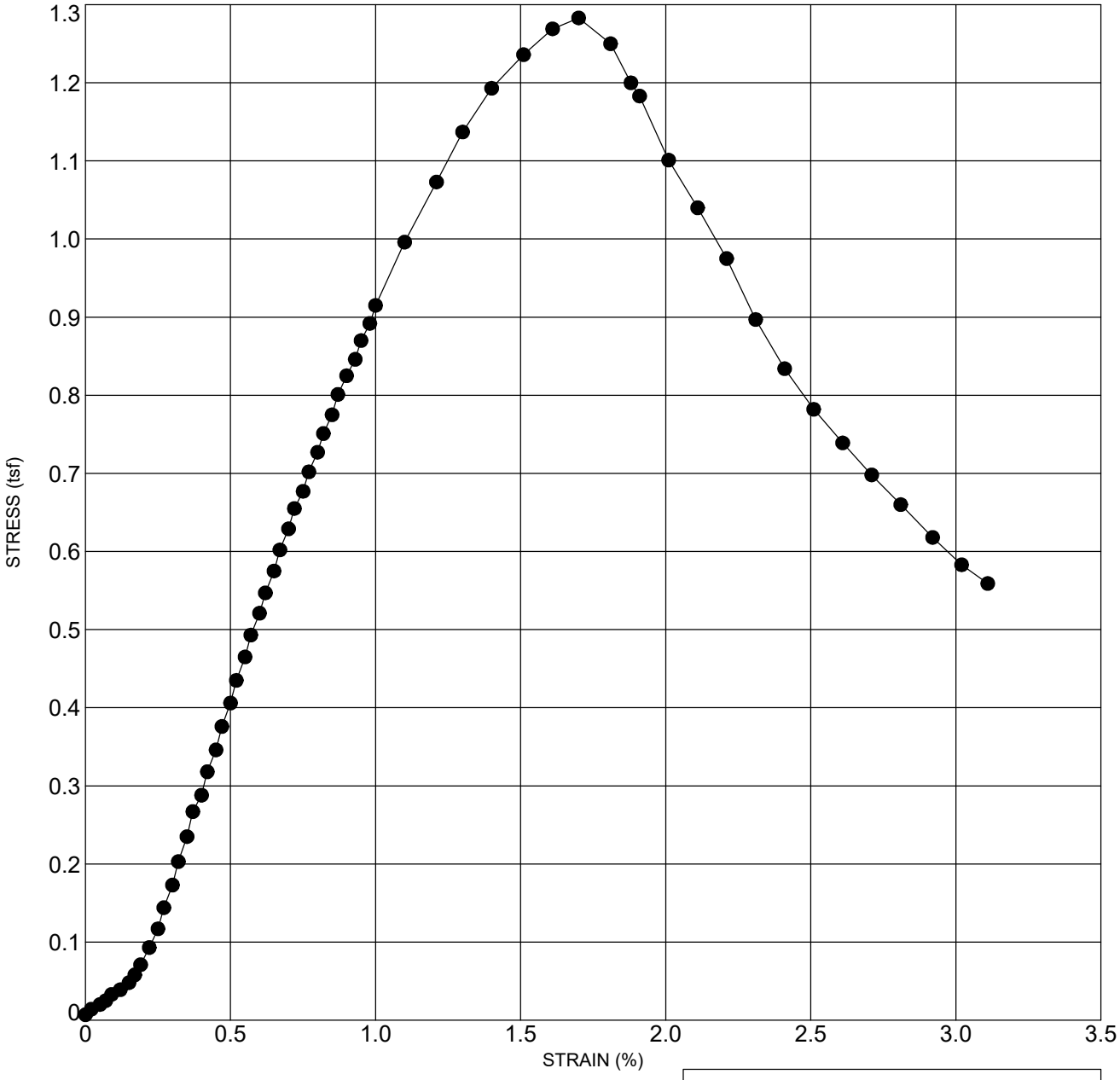
UNCONFINED COMPRESSIVE STRENGTH TEST
COHESIVE SOIL (ASTM D2166)

CLIENT: Croy Engineering
PROJECT NAME: Apron Rehabilitation - Dalton Municipal Airport
PROJECT NUMBER 300-22-0008
PROJECT LOCATION: Dalton, Georgia
SOIL DESCRIPTION: Sandy Silt(ML)
SAMPLE RECEIVED: 4/1/2022



SAMPLE: B-3 1'

Diameter (in): 2.87
Height (in): 5.76
Ratio (h/d): 2.01
LL: 42
PL: 26

Strain at Failure (%): 1.70
Strength (tsf): 1.28
Dry Density (pcf): 91.60
Water Content (%): 29.81713
Rate of Strain to Failure (%/min): 1

-Specimen was taken from Shelby Tube sample
-

TESTED BY: S. Krikorian
REVIEWED BY: K. Andrus
TEST DATE: 4/18/2022
APPROVED DATE: 4/19/2022

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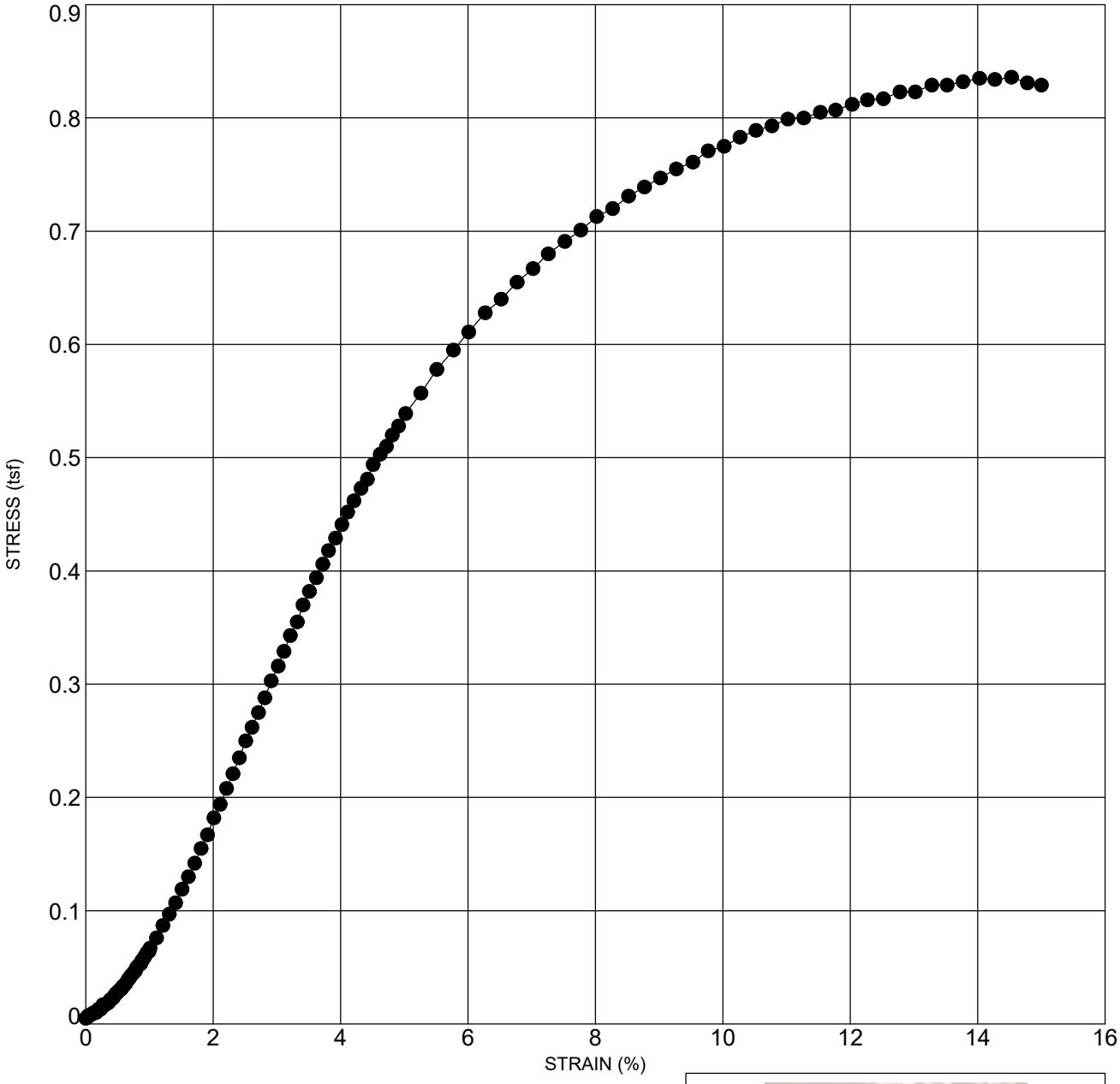
UNCONFINED COMPRESSIVE STRENGTH TEST
COHESIVE SOIL (ASTM D2166)

CLIENT: Croy Engineering
PROJECT NAME: Apron Rehabilitation - Dalton Municipal Airport
PROJECT NUMBER 300-22-0008
PROJECT LOCATION: Dalton, Georgia
SOIL DESCRIPTION: Sandy Lean Clay(CL)
SAMPLE RECEIVED: 4/1/2022



SAMPLE: B-4 1'

Diameter (in): 2.85
Height (in): 5.66
Ratio (h/d): 1.99
LL: 27
PL: 19

Strain at Failure (%): 14.53
Strength (tsf): 0.84
Dry Density (pcf): 111.00
Water Content (%): 19.33957
Rate of Strain to Failure (%/min): 1

-Specimen was taken from Shelby Tube sample
-

TESTED BY: S. Krikorian
REVIEWED BY: K. Andrus
TEST DATE: 4/18/2022
APPROVED DATE: 4/19/2022

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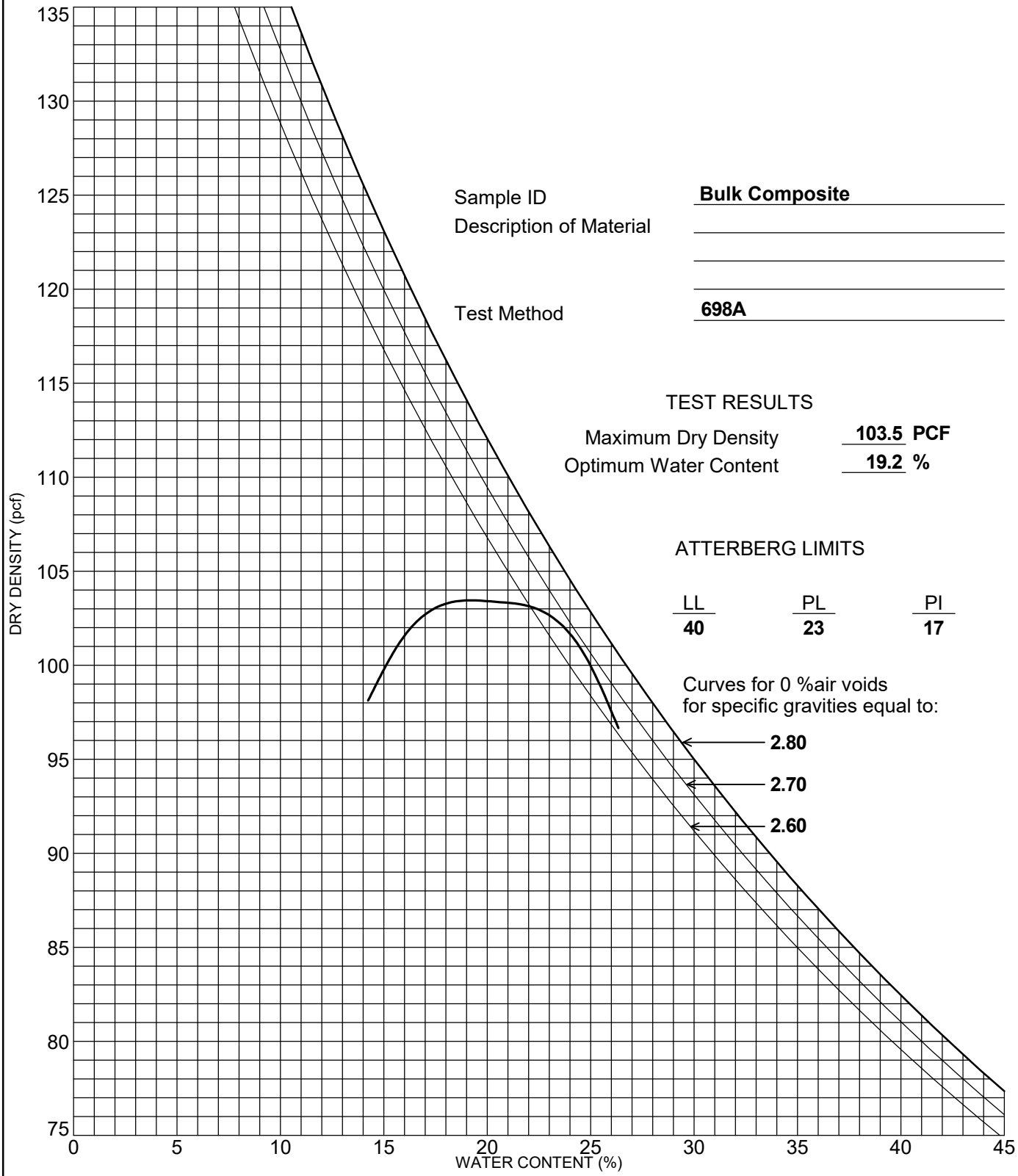
STANDARD PROCTOR (ASTM D698)

CLIENT: Croy Engineering
PROJECT NAME: Apron Rehabilitation - Dalton Municipal Airport
PROJECT NUMBER 300-22-0008
PROJECT LOCATION: Dalton, Georgia
EQUIPMENT USED: Standard Hammer, 4 inch Mold, Ohaus 3 kilogram Scale, Oven, Ohaus 8 kilogram Scale



Sample ID: **Bulk Composite**
Description of Material:
Test Method: **698A**

TEST RESULTS

Maximum Dry Density	**103.5**	**PCF**
Optimum Water Content	**19.2**	**%**

ATTERBERG LIMITS

LL	PL	PI
40	**23**	**17**

Curves for 0 %air voids
for specific gravities equal to:
2.80
2.70
2.60

TESTED BY: S. Krikorian
REVIEWED BY: K. Andrus
TEST DATE: 4/7/2022
DATE: 4/7/2022
SAMPLE RECEIVED: 4/1/2022

KSWA
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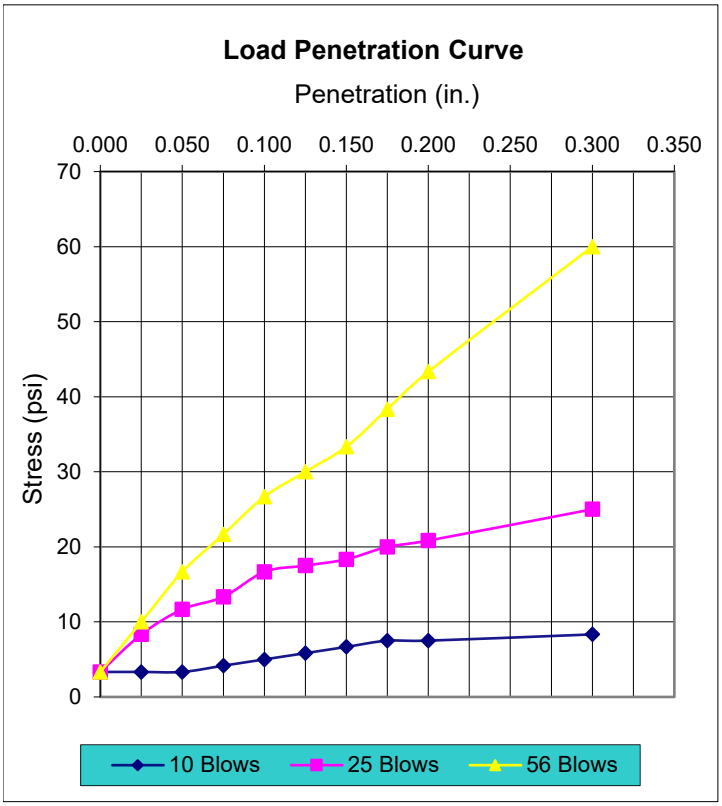
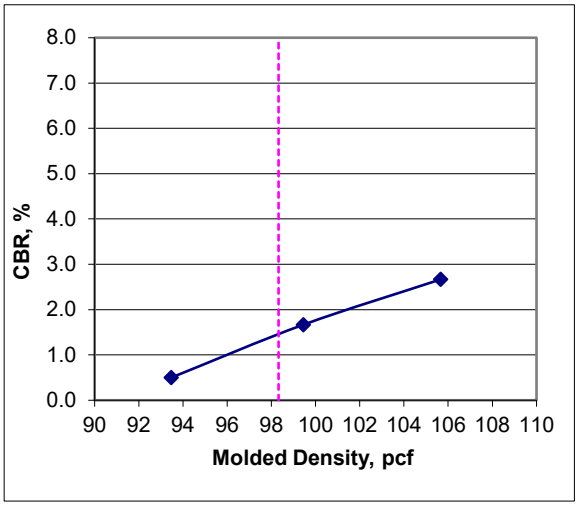
Report of California Bearing Ratio Test (ASTM D1883)

Project Name:	Dalton Municipal Airport	Proctor Type:	Standard
Project Number:	300-22-0008	Maximum Dry Density:	103.5
Sample ID:	Bulk Composite	Optimum Moisture:	19.2
Date Received:	4/1/2022		
Sample Description:			

Test	Pre-Test			Post-Test			CBR, %		Line	%
# Blows	DD	% Max	%m	DD	% Max	%m	0.1"	0.2"	Corr.	Swell
15	93.5	90.3	19.5	92.5	89.4	29.7	0.5	0.5	0	1.876
30	99.4	96.1	19.6	99.2	95.9	27.0	1.7	1.4	0	3.599
65	105.7	102.1	19.4	104.2	100.6	25.0	2.7	2.9	0	3.076





CBR* = 1.5

* for 95% max DD and
0.1 in. penetration

Submitted By:	S. Krikorian	Date:	4/18/2022
Reviewed By:	K. Andrus	Date:	4/19/2022

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