

PROJECT: 32572.1.FS10 REFERENCE: A-0009CC

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<u>SHEET NO.</u>	<u>DESCRIPTION</u>
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY GRAHAM
PROJECT DESCRIPTION UPGRADE NC 143 FROM 0.5
MILES NORTH OF APPALACHIAN TRAIL TO NC 28
AND UPGRADE NC 28 FROM 0.2 MILES WEST OF
NC 143 TO 0.3 MILES EAST OF SR 1235 (GUNTERS
GAP RD)
SITE DESCRIPTION RETAINING WALL #21:
SOIL NAIL WALL WITH ARCHITECTURAL FORM
LINER FINISH ON -L- FROM 420+39 TO 436+65

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A-0009CC	1	52

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1919 T07-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:

- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
- BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

BRECCIA

CG2 EXPLORATION

M. BREWER

S. BRAUN

C. PIERCEY

INVESTIGATED BY CG2

DRAWN BY M. BREWER, P.E.

CHECKED BY R. KRAL, P.E.

SUBMITTED BY M. BREWER, P.E.

DATE JULY 2022

Prepared in the Office of:
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DocuSigned by:

D. Matthew Brewer

7/9/2022

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SIGNATURE

DATE

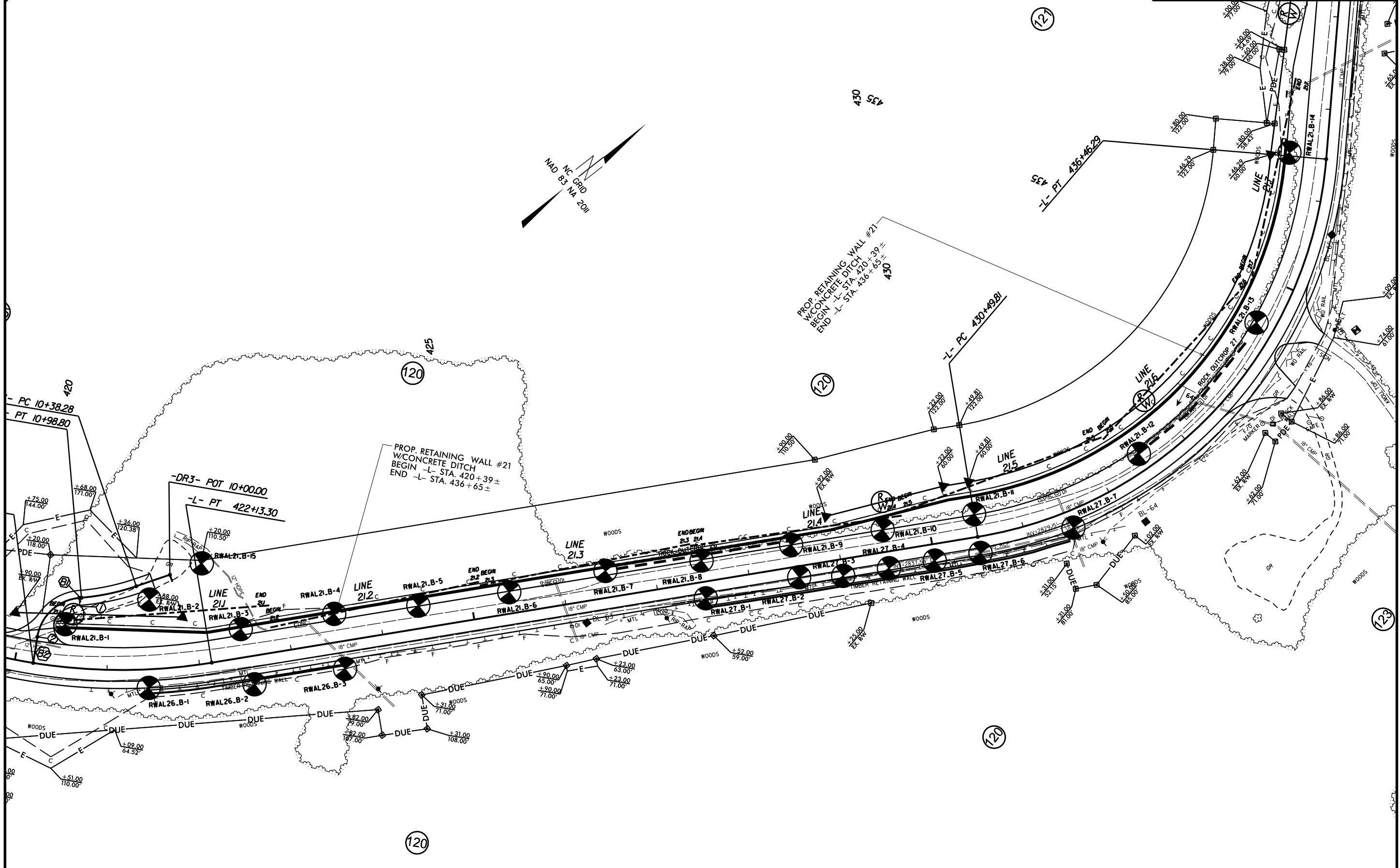
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																																																																																																								
<p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i></p>										<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.</p>										<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p>										<p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOADED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																								
<p style="text-align: center;">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>GENERAL CLASS.</th> <th colspan="5">GRANULAR MATERIALS (≤ 35% PASSING #200)</th> <th colspan="5">SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th colspan="5">ORGANIC MATERIALS</th> </tr> <tr> <th>GROUP CLASS.</th> <th>A-1</th> <th>A-3</th> <th>A-2</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</th> <th>A-1, A-2</th> <th>A-3</th> <th>A-4, A-5</th> <th>A-6, A-7</th> <th colspan="5"></th> </tr> <tr> <th>SYMBOL</th> <td colspan="5">[Pattern]</td> <td colspan="5">[Pattern]</td> <td colspan="5">[Pattern]</td> </tr> <tr> <th>% PASSING #10 #40 #200</th> <td>50 MX 30 MX 15 MX</td> <td>50 MX 25 MX 10 MX</td> <td>51 MN 35 MX 35 MX 35 MX</td> <td>36 MN 36 MN 36 MN</td> <td>36 MN 36 MN 36 MN</td> <td>36 MN 36 MN 36 MN</td> <td>36 MN 36 MN 36 MN</td> <td>GRANULAR SOILS</td> <td>SILT-CLAY SOILS</td> <td colspan="5">MUCK, PEAT</td> </tr> <tr> <th>MATERIAL PASSING #40 LL PI</th> <td colspan="5">-</td> <td>40 MX 41 MN 40 MX 41 MN 40 MX 41 MN</td> <td>40 MX 41 MN 40 MX 41 MN</td> <td colspan="5">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> <td colspan="5">HIGHLY ORGANIC SOILS</td> </tr> <tr> <th>GROUP INDEX</th> <td colspan="5">0</td> <td>0</td> <td>4 MX</td> <td>8 MX</td> <td>12 MX</td> <td>16 MX</td> <td>NO MX</td> <td colspan="5"></td> </tr> <tr> <th>USUAL TYPES OF MAJOR MATERIALS</th> <td colspan="2">STONE FRAGS. 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ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</p>										<p style="text-align: center;">WEATHERING</p> <p>FRESH: ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p> <p>VERY SLIGHT (IV SLI.): ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.</p> <p>SLIGHT (SLI.): ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.</p> <p>MODERATE (MOD.): SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.</p> <p>MODERATELY SEVERE (MOD. SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i></p> <p>SEVERE (SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF</i></p> <p>VERY SEVERE (IV SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</i></p> <p>COMPLETE: ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.</p>									
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<p style="text-align: center;">TEXTURE OR GRAIN SIZE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>U.S. STD. SIEVE SIZE OPENING (MM)</th> <td>4</td> <td>10</td> <td>40</td> <td>60</td> <td>200</td> <td>270</td> </tr> <tr> <td></td> <td>4.75</td> <td>2.00</td> <td>0.42</td> <td>0.25</td> <td>0.075</td> <td>0.053</td> </tr> <tr> <th>BOULDER (BLDR.)</th> <th>COBBLE (COB.)</th> <th>GRAVEL (GR.)</th> <th>COARSE SAND (CSE. SD.)</th> <th>FINE SAND (F SD.)</th> <th>SILT (SL.)</th> <th>CLAY (CL.)</th> </tr> <tr> <td>GRAIN SIZE</td> <td>MM 305 IN. 12</td> <td>75 3</td> <td>2.0</td> <td>0.25</td> <td>0.05</td> <td>0.005</td> </tr> </table>										U.S. STD. SIEVE SIZE OPENING (MM)	4	10	40	60	200	270		4.75	2.00	0.42	0.25	0.075	0.053	BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)	GRAIN SIZE	MM 305 IN. 12	75 3	2.0	0.25	0.05	0.005	<p style="text-align: center;">RECOMMENDATION SYMBOLS</p> <p>UNDERCUT</p> <p>SHALLOW UNDERCUT</p> <p>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</p> <p>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</p> <p>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</p>										<p style="text-align: center;">ROCK HARDNESS</p> <p>VERY HARD: CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</p> <p>HARD: CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</p> <p>MODERATELY HARD: CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.</p> <p>MEDIUM HARD: CAN BE GROUDED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.</p> <p>SOFT: CAN BE GROUDED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.</p> <p>VERY SOFT: CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.</p>																																																																																																																																						
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<p style="text-align: center;">INDURATION</p> <p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <p>FRIABLE: RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>MODERATELY INDURATED: GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>INDURATED: GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>EXTREMELY INDURATED: SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>										<p style="text-align: center;">NOTES:</p> <p>SURVEY AND ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 04/28/2022</p> <p>SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF BORE HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE.</p>																																																																																																																																																																												
<p style="text-align: center;">COLOR</p> <p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-BROWN). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>										<p style="text-align: center;">BENCH MARK: N/A</p> <p style="text-align: right;">ELEVATION: FEET</p>																																																																																																																																																																												

PC 11+01.23
PT 11+67.51

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	3
SITE PLAN	
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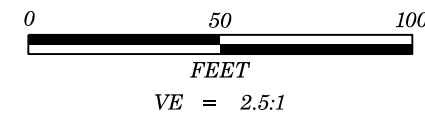




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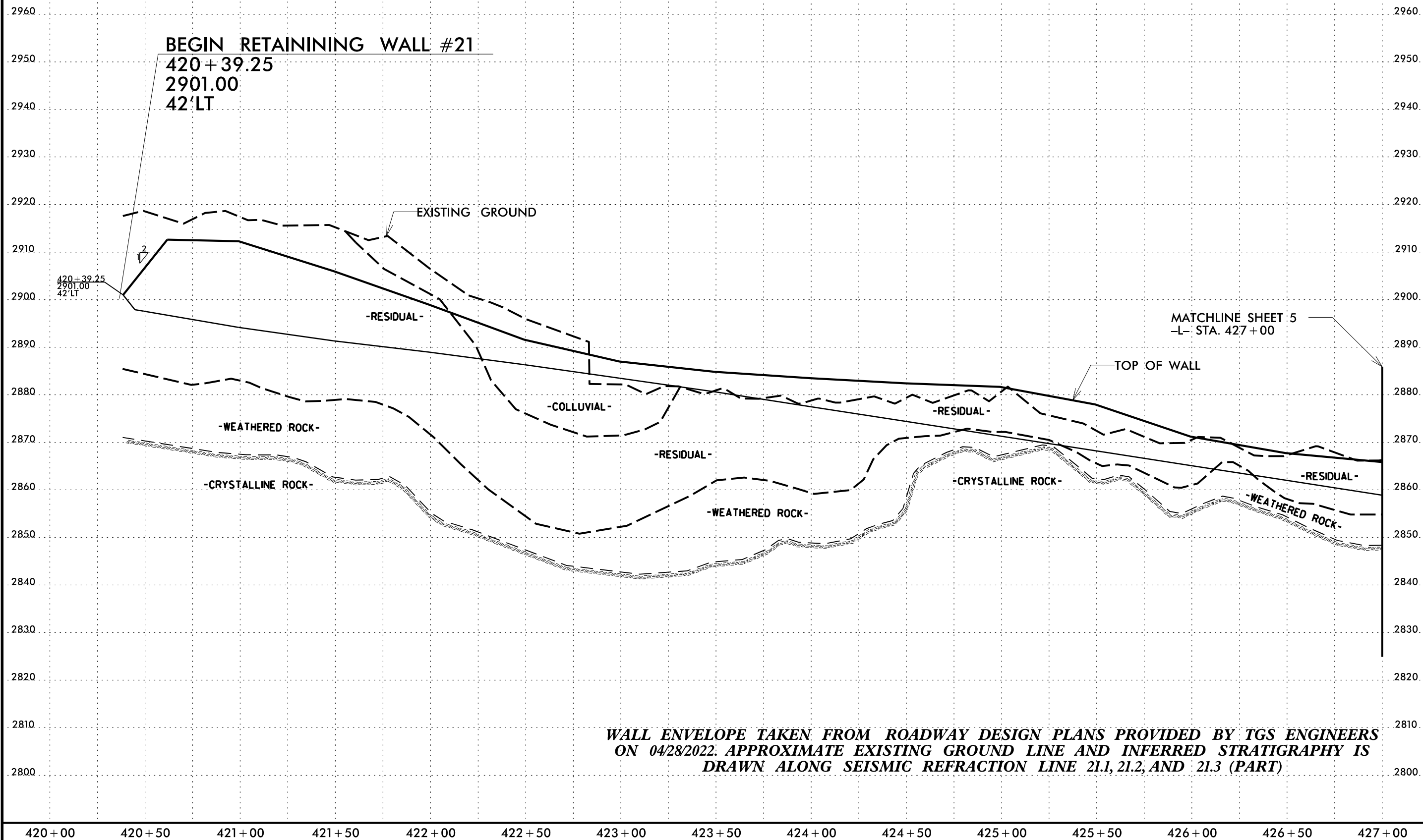
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A-0009CC

4

RETAINING WALL #21:
SEISMIC REFRACTION LINE 21.1, 21.2, & 21.3 (PART)
PROJECTED ALONG WALL ENVELOPE

NOTE:
SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK
LINES ARE BASED ON AN INTERPRETATION OF
BORE HOLE AND SEISMIC REFRACTION DATA AND
SHALL BE CONSIDERED AS APPROXIMATE.



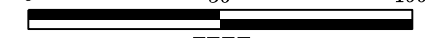


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CAROLINAS
GEOTECHNICAL
GROUP

0 50 100



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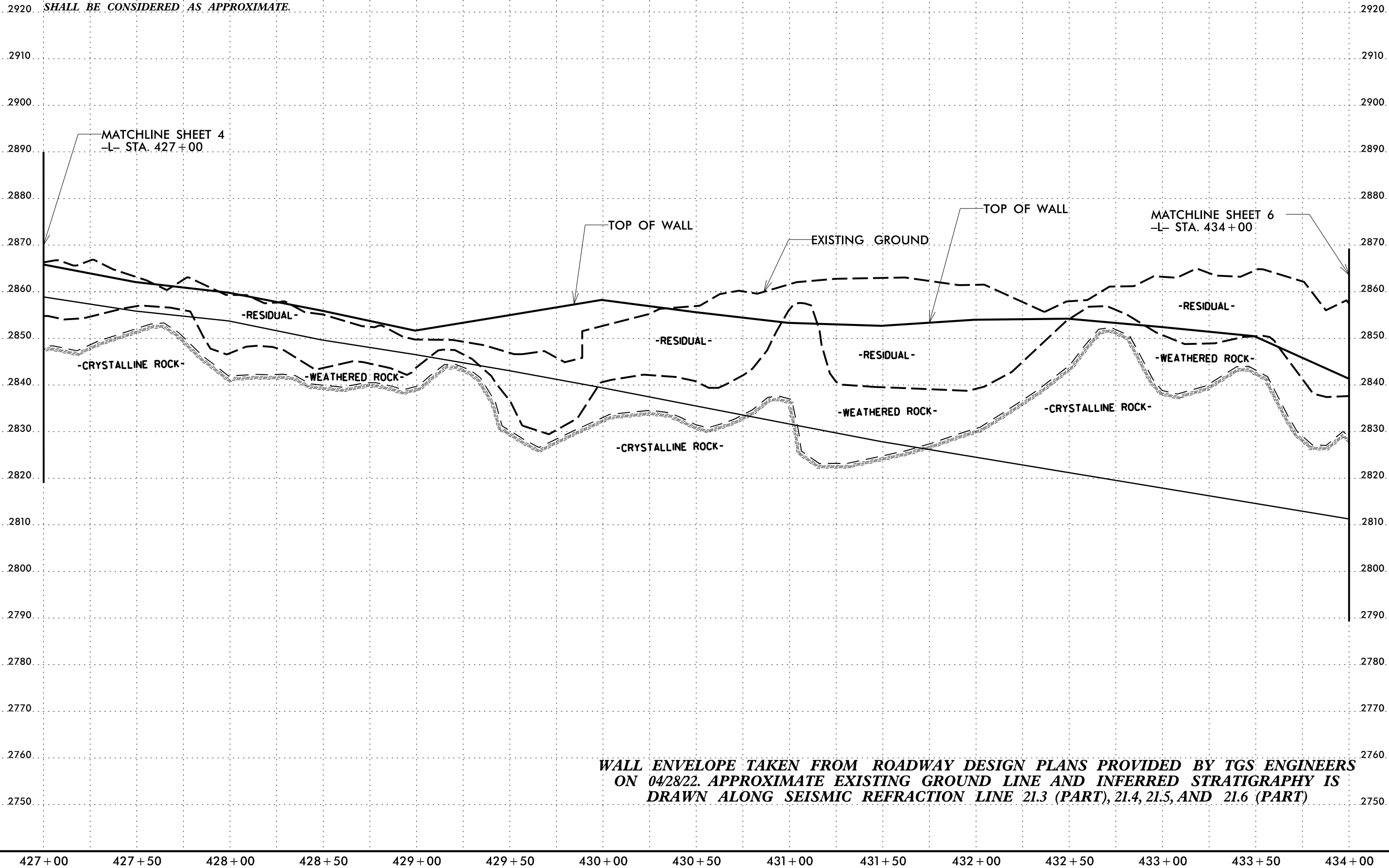
PROJECT REFERENCE NO. SHEET NO.

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5

RETAINING WALL #21:
SEISMIC REFRACTION LINE 21.3 (PART) 21.4, 21.5,
& 21.6 (PART) PROJECTED ALONG WALL ENVELOPE

NOTE:
SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK
LINES ARE BASED ON AN INTERPRETATION OF
BORE HOLE AND SEISMIC REFRACTION DATA AND
SHALL BE CONSIDERED AS APPROXIMATE.

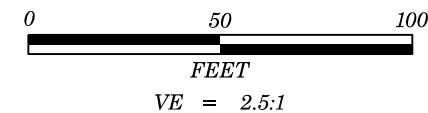




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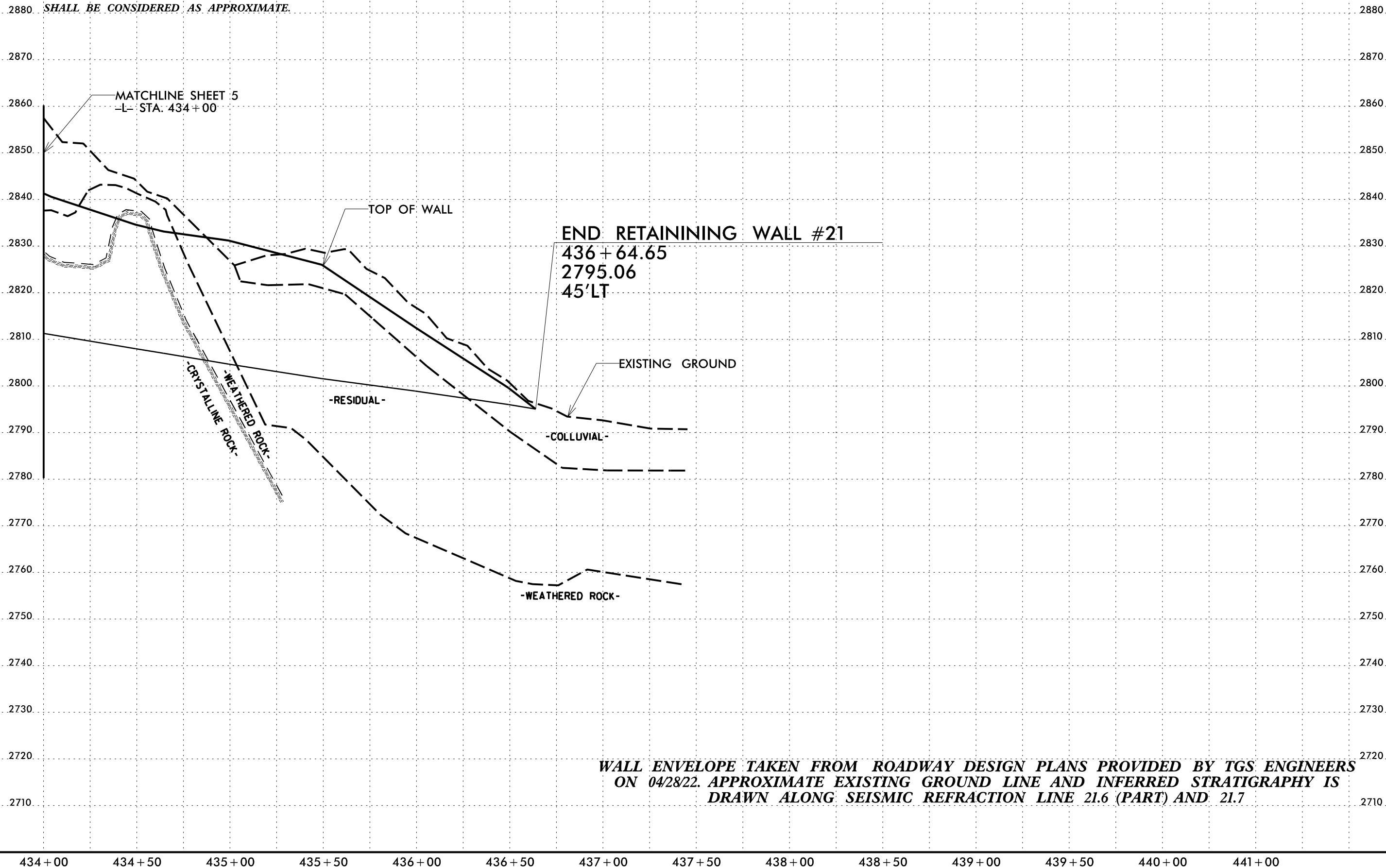
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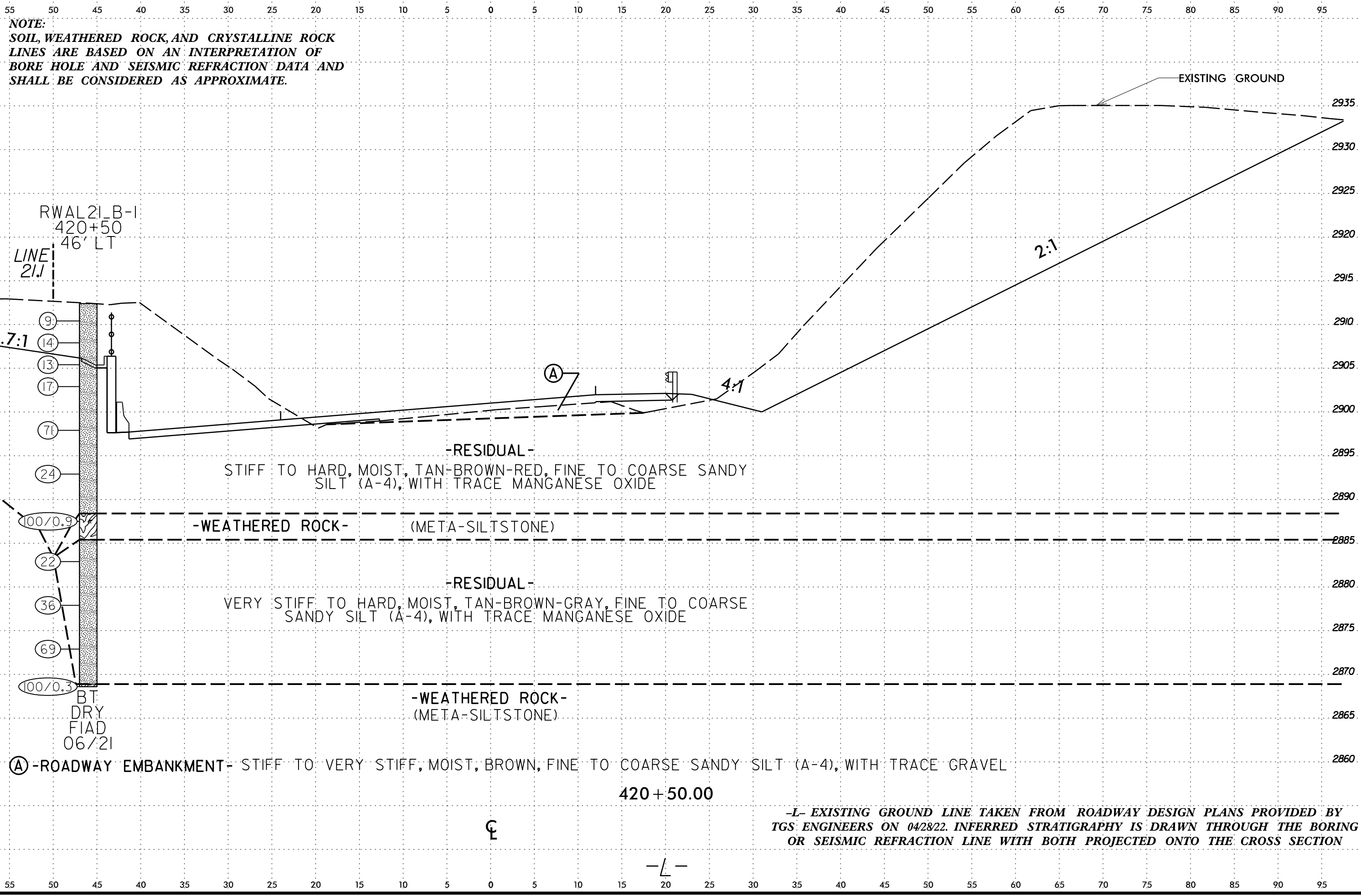
6

RETAINING WALL #21:
SEISMIC REFRACTION LINE 21.6 (PART) & 21.7
PROJECTED ALONG WALL ENVELOPE

NOTE:
SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK
LINES ARE BASED ON AN INTERPRETATION OF
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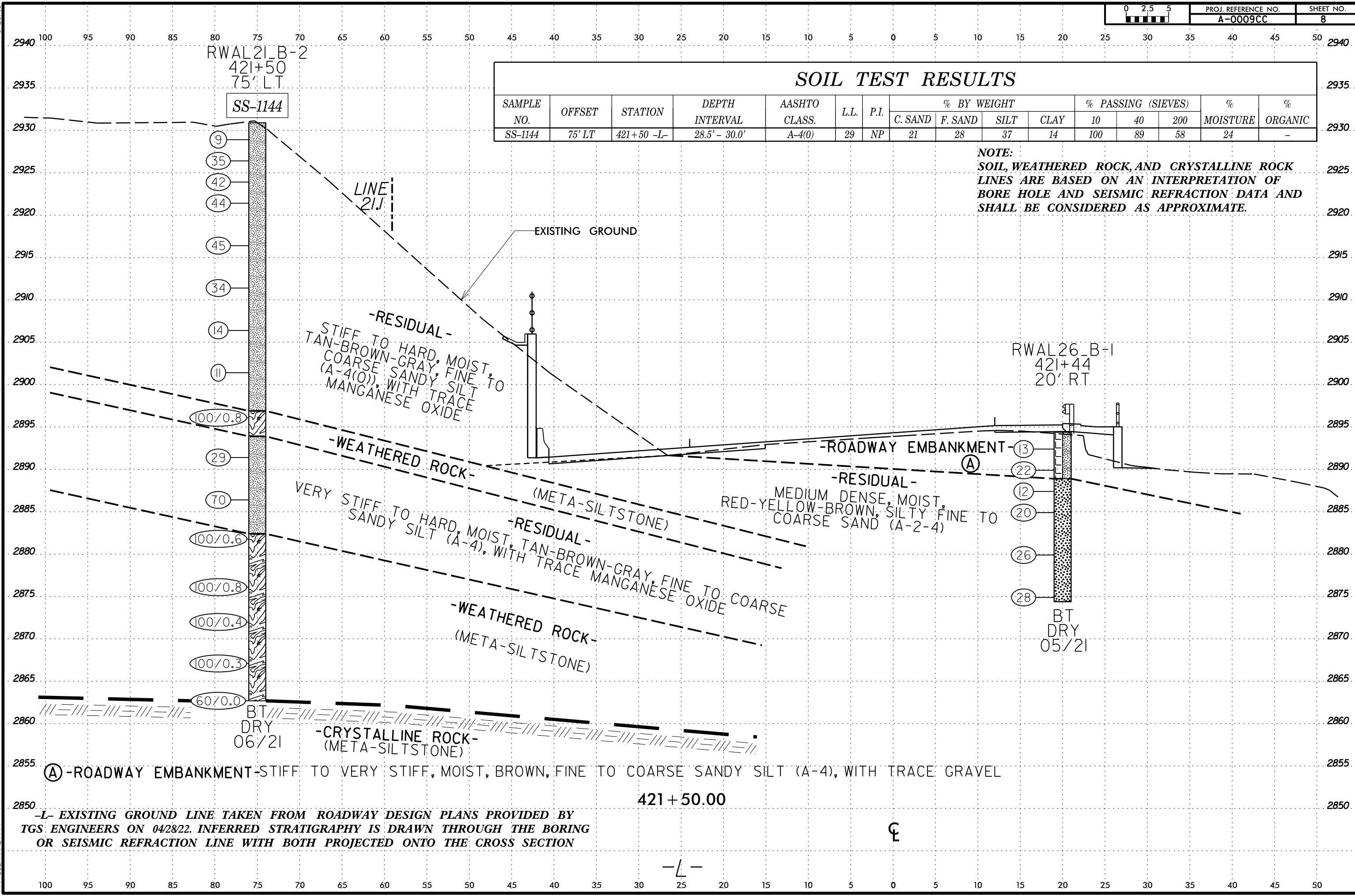
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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C. SAND	F. SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-1144	75' LT	421+50 -L-	28.5' - 30.0'	A-4(0)	29	NP	21	28	37	14	100	89	58	24	-

NOTE:
 SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF BORE HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE.



A -ROADWAY EMBANKMENT-STIFF TO VERY STIFF, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL

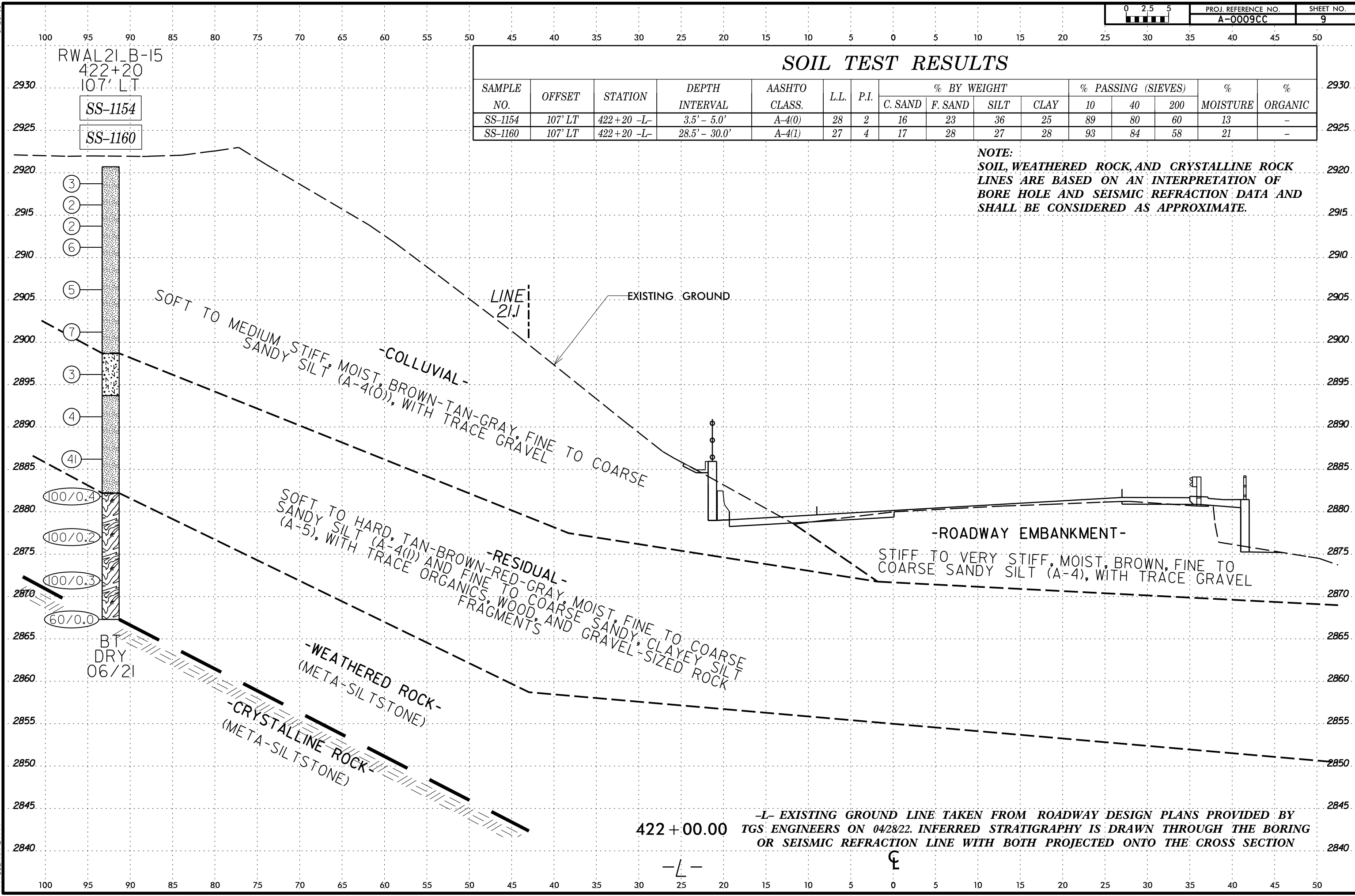
-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY TGS' ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING OR SEISMIC REFRACTION LINE WITH BOTH PROJECTED ONTO THE CROSS SECTION

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-1154	107' LT	422+20 -L-	3.5' - 5.0'	A-4(0)	28	2	16	23	36	25	89	80	60	13	-
SS-1160	107' LT	422+20 -L-	28.5' - 30.0'	A-4(1)	27	4	17	28	27	28	93	84	58	21	-

NOTE:
 SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF BORE HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE.



RWAL21_B-15
 422+20
 107' LT
 SS-1154
 SS-1160

SOFT TO MEDIUM STIFF, MOIST, BROWN-TAN-GRAY, FINE TO COARSE SANDY SILT (A-4(0)), WITH TRACE GRAVEL
 -COLLUVIAL-

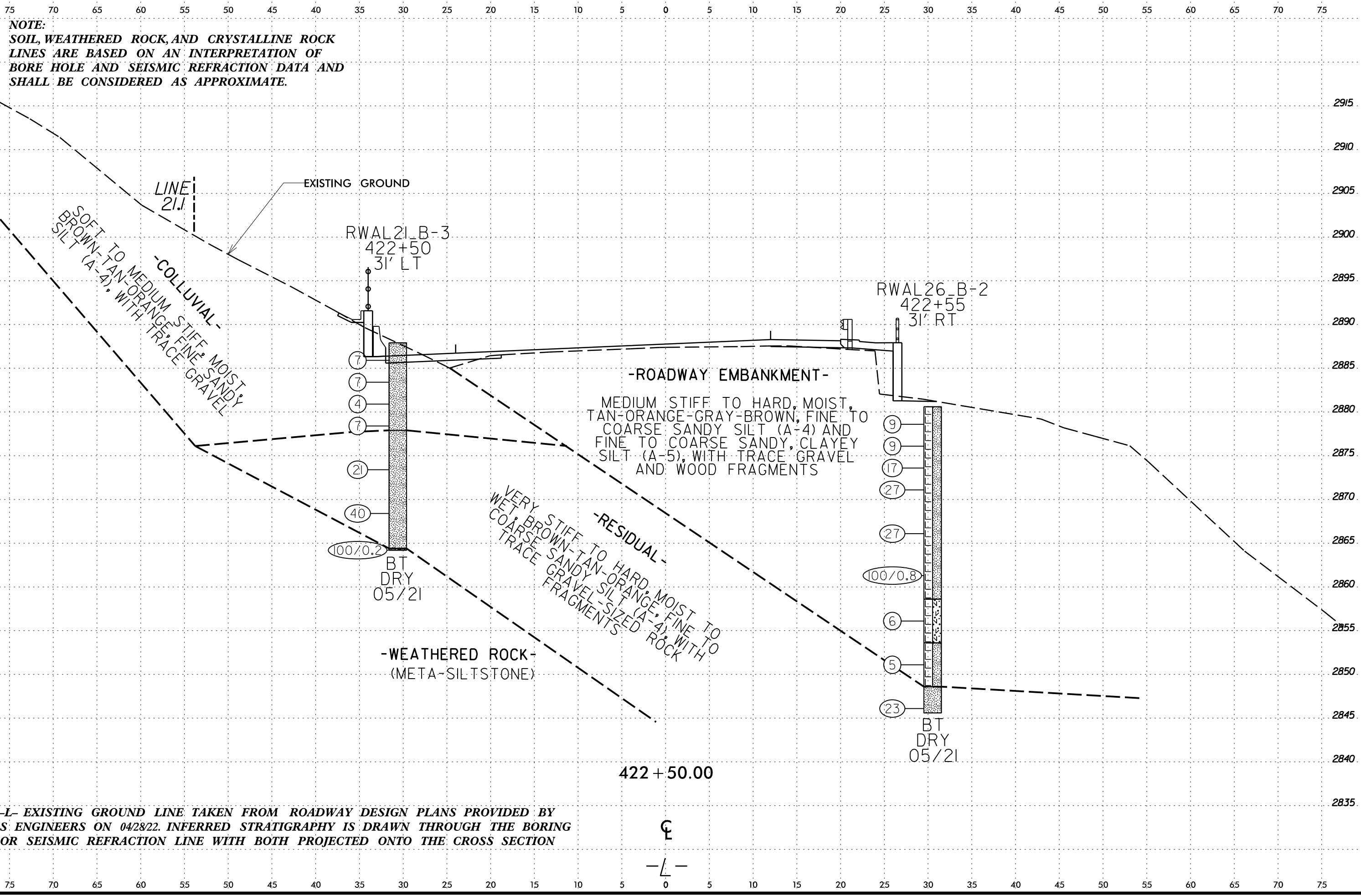
SOFT TO HARD, TAN-BROWN-RED-GRAY, MOIST, FINE TO COARSE SANDY SILT (A-4(1)) AND FINE TO COARSE SANDY, CLAYEY SILT (A-5), WITH TRACE ORGANICS, WOOD, AND GRAVEL-SIZED ROCK FRAGMENTS
 -RESIDUAL-

WEATHERED ROCK (META-SILTSTONE)
 CRYSTALLINE ROCK (META-SILTSTONE)

-ROADWAY EMBANKMENT-
 STIFF TO VERY STIFF, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL

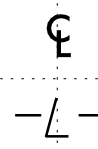
422 + 00.00
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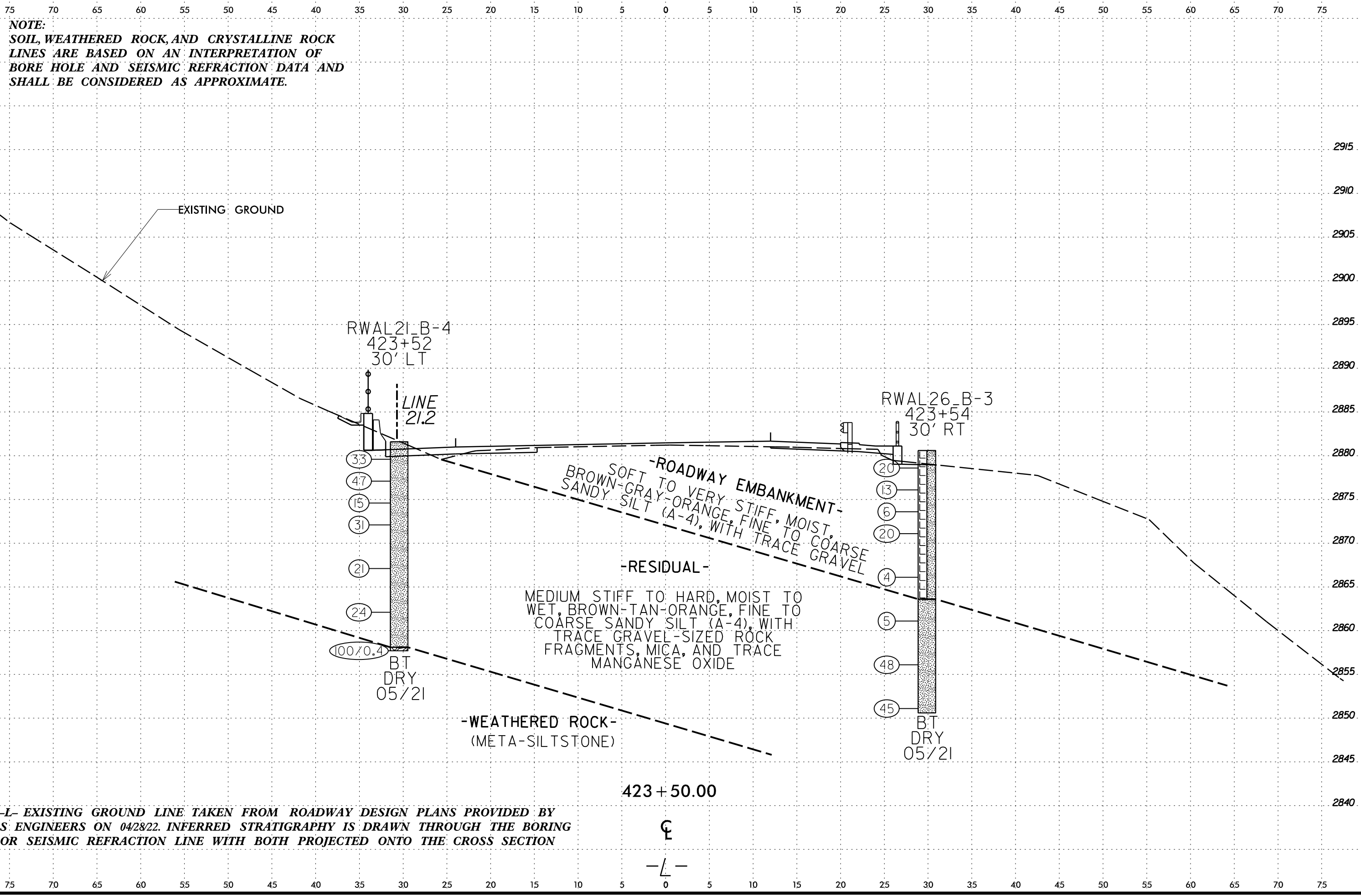


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 BORE HOLE AND SEISMIC REFRACTION DATA AND
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-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY
 TGS' ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING
 OR SEISMIC REFRACTION LINE WITH BOTH PROJECTED ONTO THE CROSS SECTION



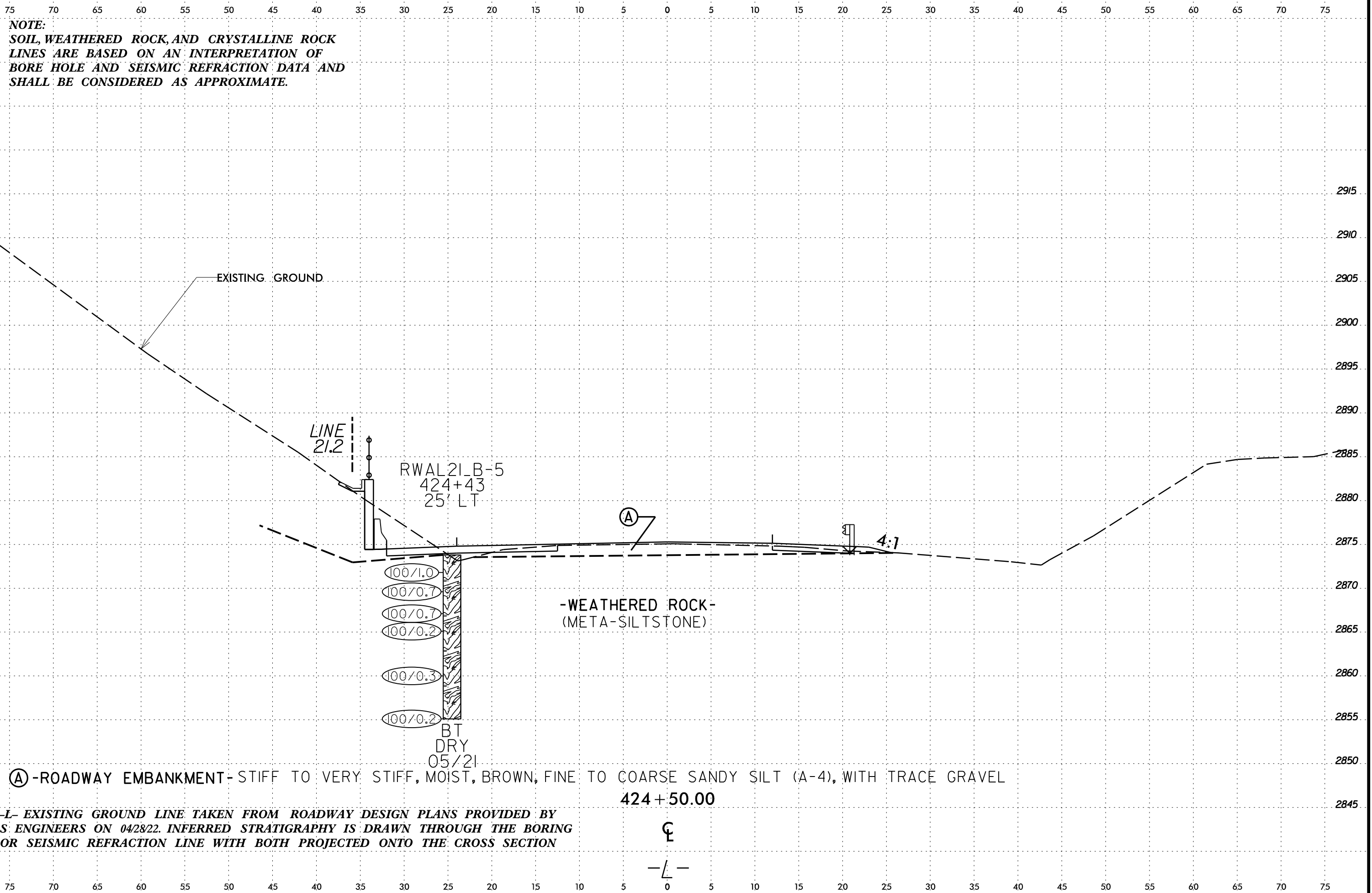
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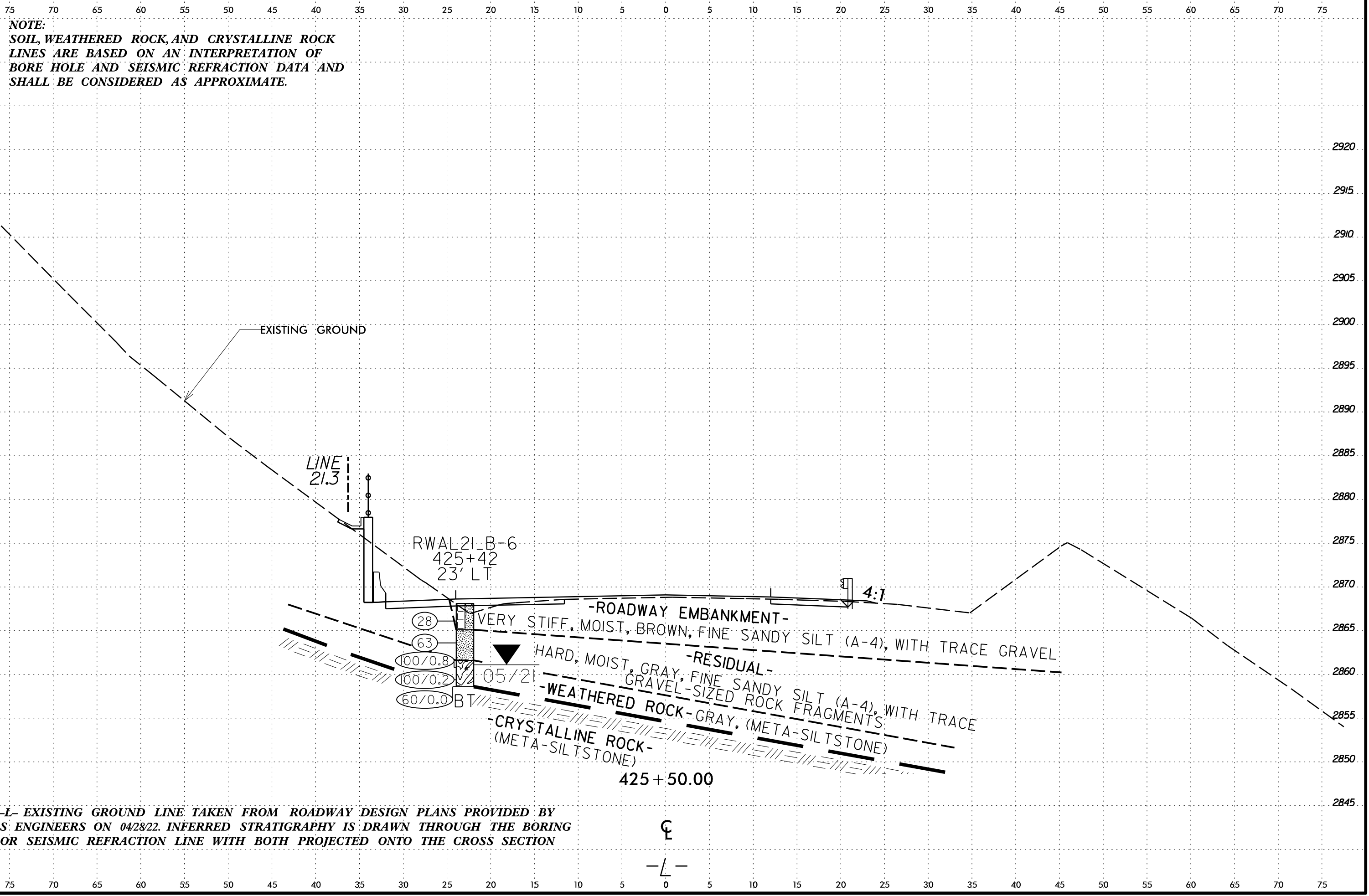


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-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY
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6/23/16





NOTE:
SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK
LINES ARE BASED ON AN INTERPRETATION OF
BORE HOLE AND SEISMIC REFRACTION DATA AND
SHALL BE CONSIDERED AS APPROXIMATE.

EXISTING GROUND

LINE
21.3

RWAL21-B-6
 425+42
 23' LT

4:1

(28)
 (63)
 (100/0.8)
 (100/0.2)
 (60/0.0) BT

VERY STIFF, MOIST, BROWN, FINE SANDY SILT (A-4), WITH TRACE GRAVEL

-ROADWAY EMBANKMENT-

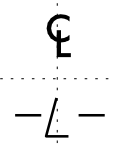
RESIDUAL -
 HARD, MOIST, GRAY, FINE SANDY SILT (A-4), WITH TRACE
 GRAVEL-SIZED ROCK FRAGMENTS

WEATHERED ROCK - GRAY, (META-SILTSTONE)

CRYSTALLINE ROCK -
 (META-SILTSTONE)

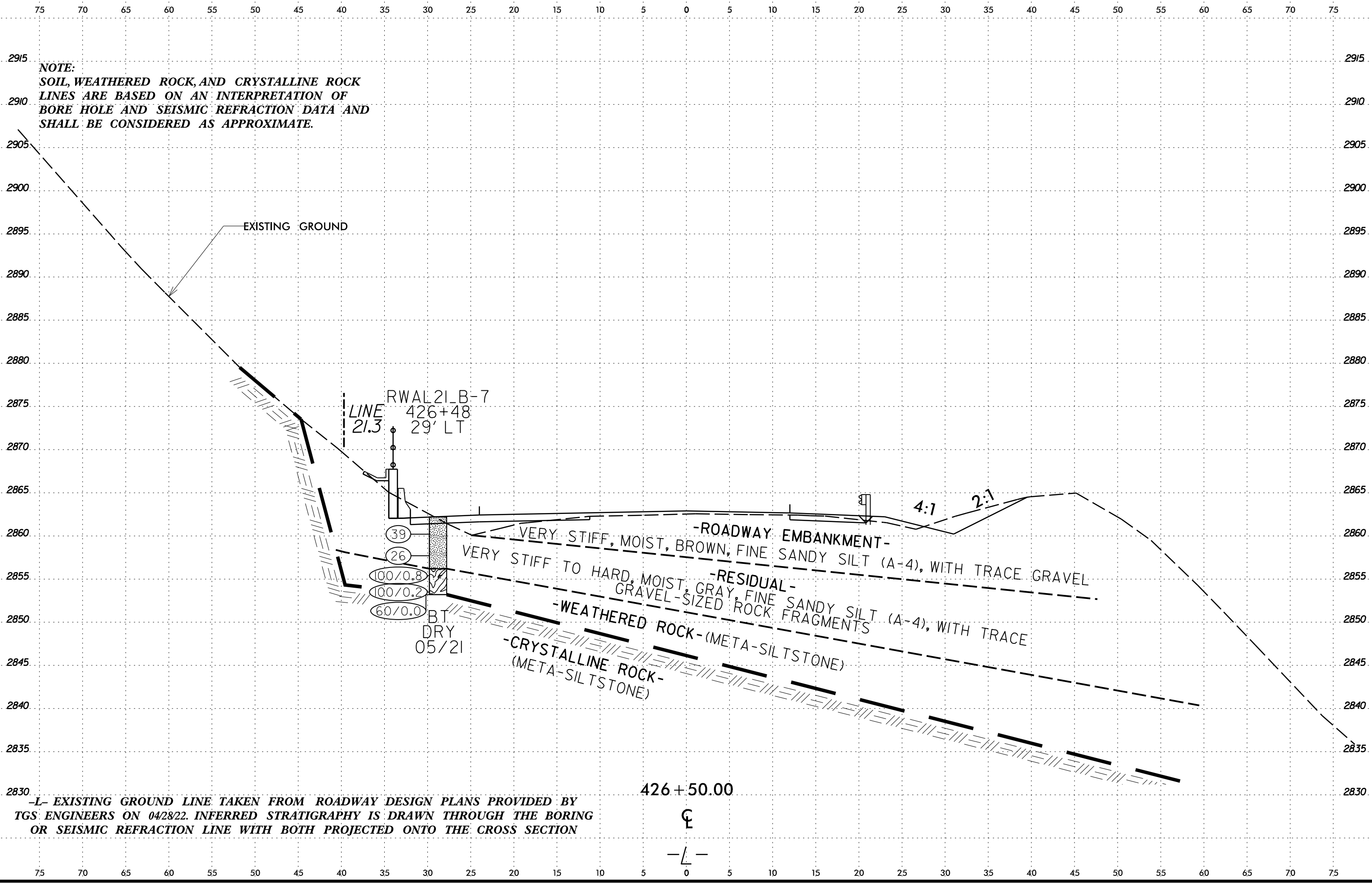
425 + 50.00

-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY
 TGS' ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING
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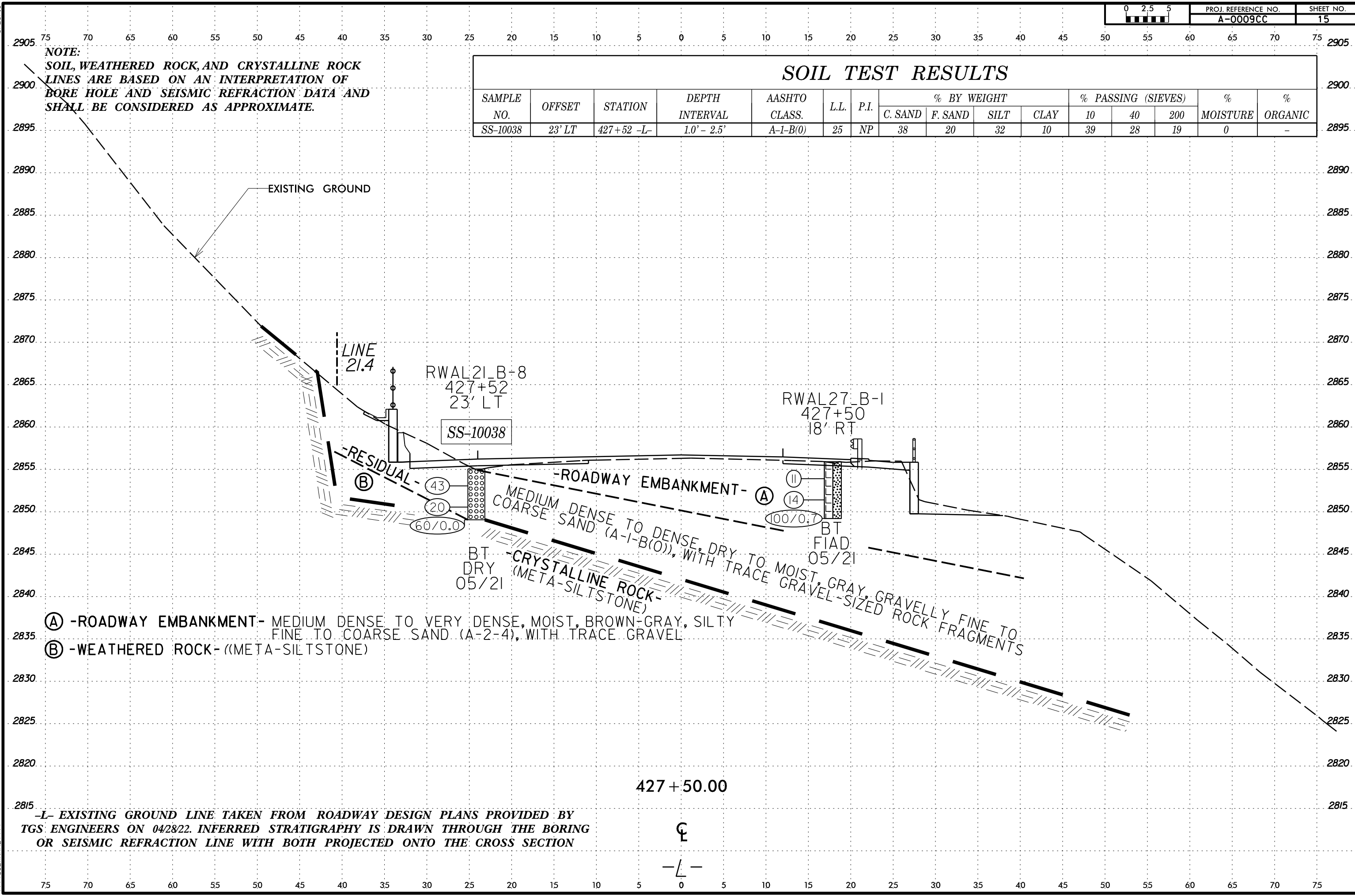
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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-10038	23' LT	427+52 -L-	1.0' - 2.5'	A-1-B(0)	25	NP	38	20	32	10	39	28	19	0	-

NOTE:
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EXISTING GROUND

LINE 21.4

RWAL21_B-8
 427+52
 23' LT

SS-10038

RWAL27_B-1
 427+50
 18' RT

-RESIDUAL-
 (B)

-ROADWAY EMBANKMENT-
 (A)

MEDIUM DENSE TO DENSE, DRY TO MOIST, BROWN-GRAY, SILTY
 COARSE SAND (A-2-4), WITH TRACE GRAVEL

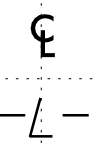
BT DRY (META-SILTSTONE)
 05/21

BT FIAD 05/21
 MOIST, GRAY, GRAVELLY FINE TO
 GRAVEL-SIZED ROCK FRAGMENTS

(A) -ROADWAY EMBANKMENT- MEDIUM DENSE TO VERY DENSE, MOIST, BROWN-GRAY, SILTY
 FINE TO COARSE SAND (A-2-4), WITH TRACE GRAVEL

(B) -WEATHERED ROCK- ((META-SILTSTONE))

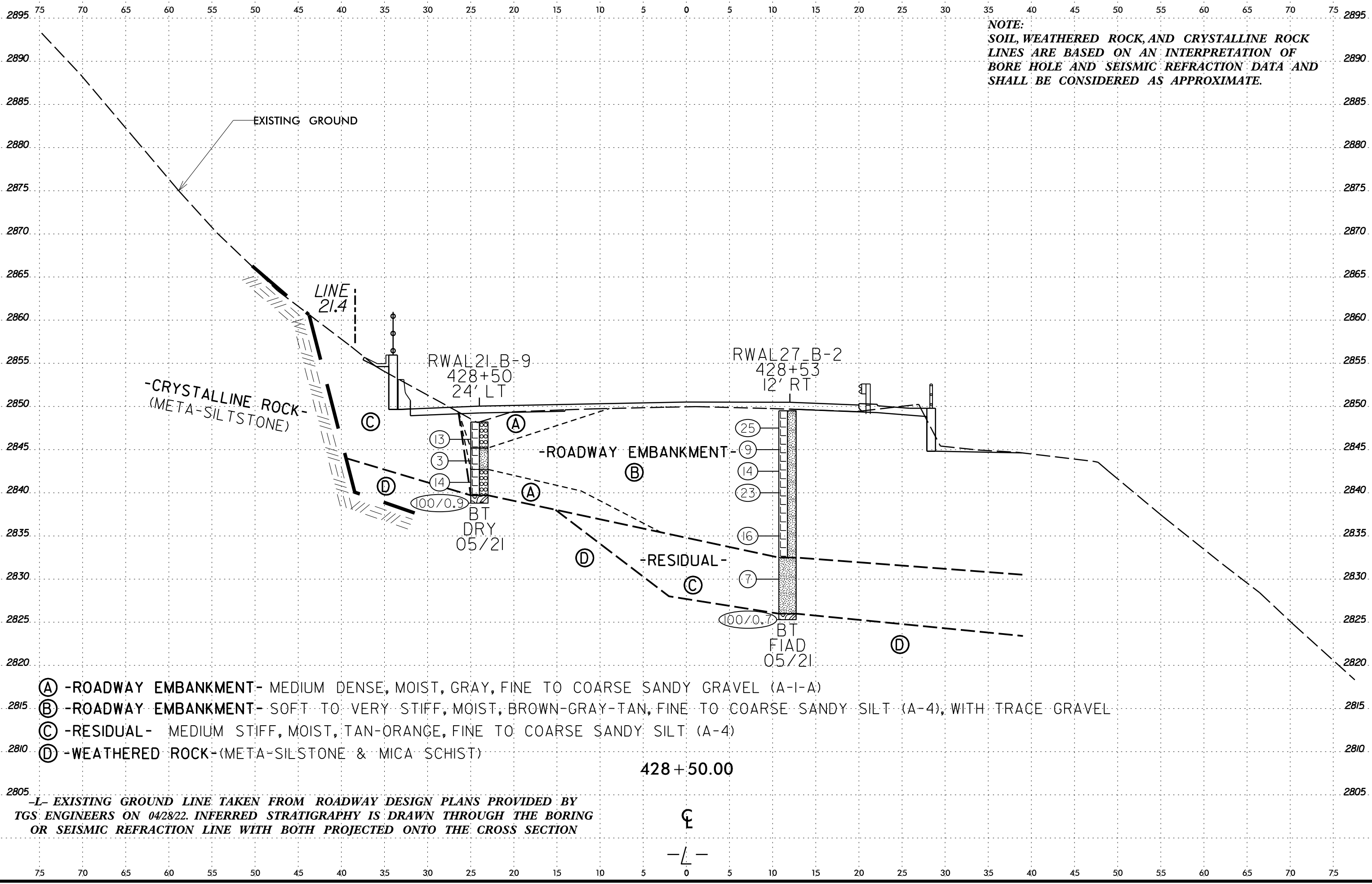
427 + 50.00



-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY
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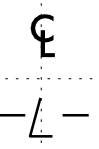
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NOTE:
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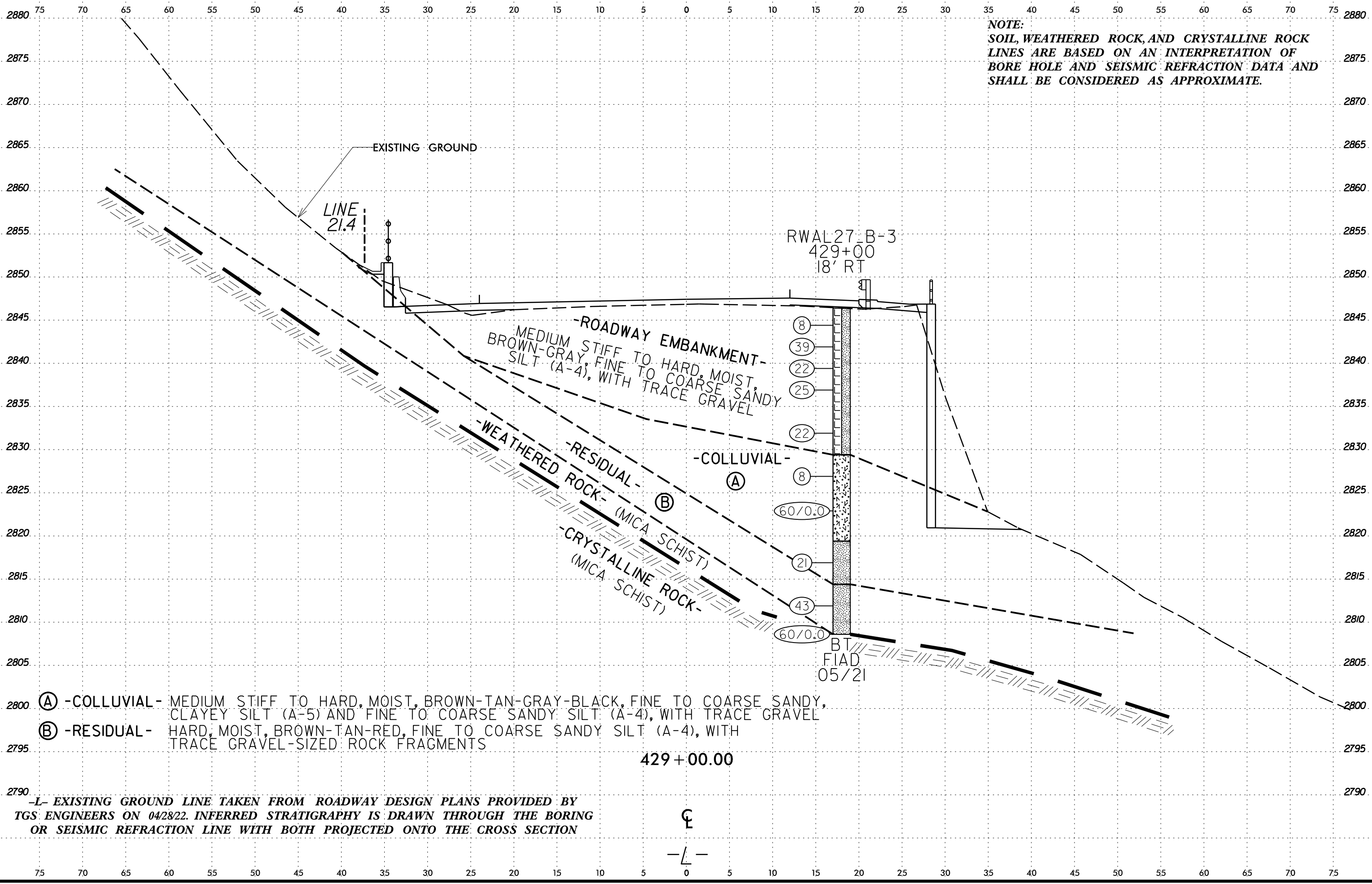
- (A) -ROADWAY EMBANKMENT- MEDIUM DENSE, MOIST, GRAY, FINE TO COARSE SANDY GRAVEL (A-I-A)
- (B) -ROADWAY EMBANKMENT- SOFT TO VERY STIFF, MOIST, BROWN-GRAY-TAN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL
- (C) -RESIDUAL- MEDIUM STIFF, MOIST, TAN-ORANGE, FINE TO COARSE SANDY SILT (A-4)
- (D) -WEATHERED ROCK-(META-SILTSTONE & MICA SCHIST)

428 + 50.00



-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY
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NOTE:
SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF BORE HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE.

LINE 21.4

RWAL27-B-3
429+00
18' RT

-ROADWAY EMBANKMENT-
MEDIUM STIFF TO HARD, MOIST, BROWN-GRAY, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL

-WEATHERED ROCK-
-RESIDUAL- (MICA SCHIST)

-CRYSTALLINE ROCK- (MICA SCHIST)

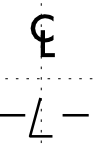
-COLLUVIAL-

- (8)
- (39)
- (22)
- (25)
- (22)
- (8)
- (60/0.0)
- (21)
- (43)
- (60/0.0)

BT
FIAD
05/21

- (A) -COLLUVIAL- MEDIUM STIFF TO HARD, MOIST, BROWN-TAN-GRAY-BLACK, FINE TO COARSE SANDY, CLAYEY SILT (A-5) AND FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL
- (B) -RESIDUAL- HARD, MOIST, BROWN-TAN-RED, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL-SIZED ROCK FRAGMENTS

429 + 00.00

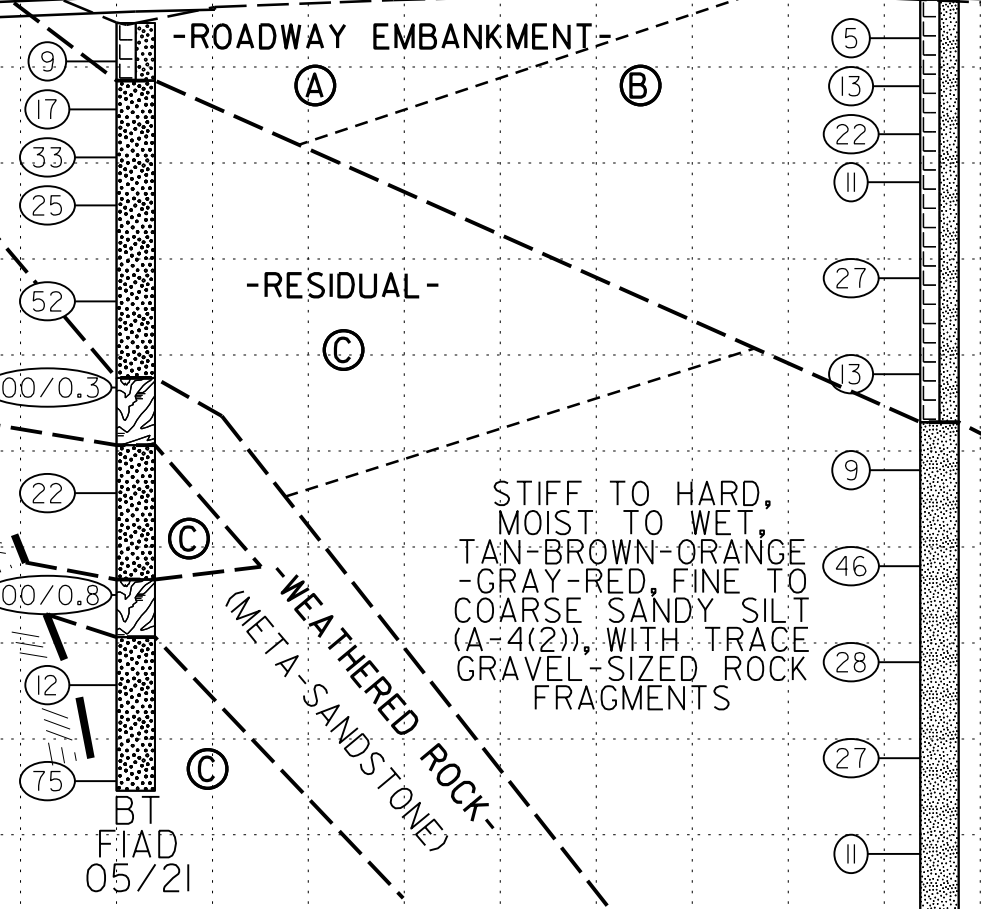
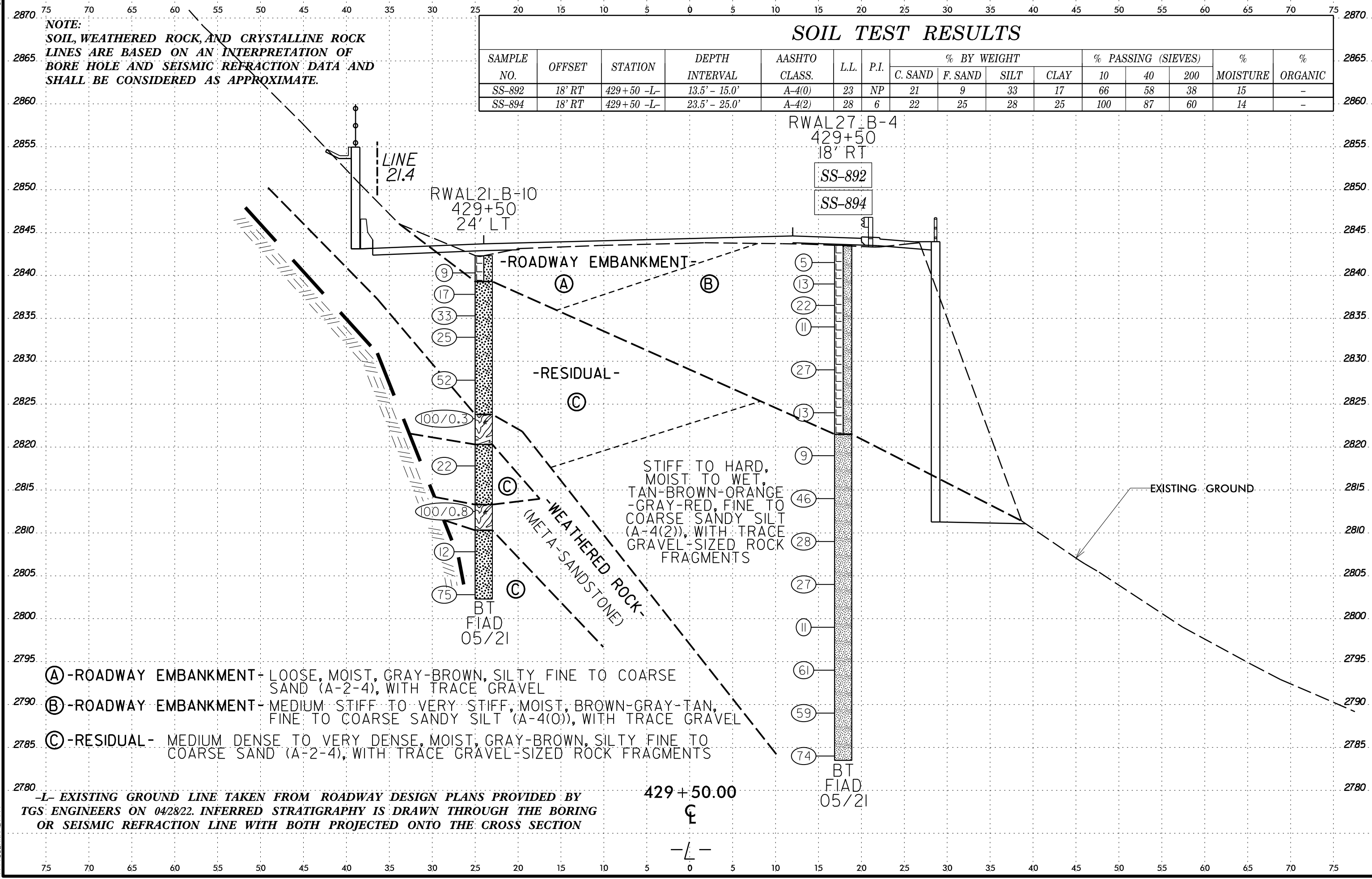


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NOTE:
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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-892	18' RT	429+50 -L-	13.5' - 15.0'	A-4(0)	23	NP	21	9	33	17	66	58	38	15	-
SS-894	18' RT	429+50 -L-	23.5' - 25.0'	A-4(2)	28	6	22	25	28	25	100	87	60	14	-

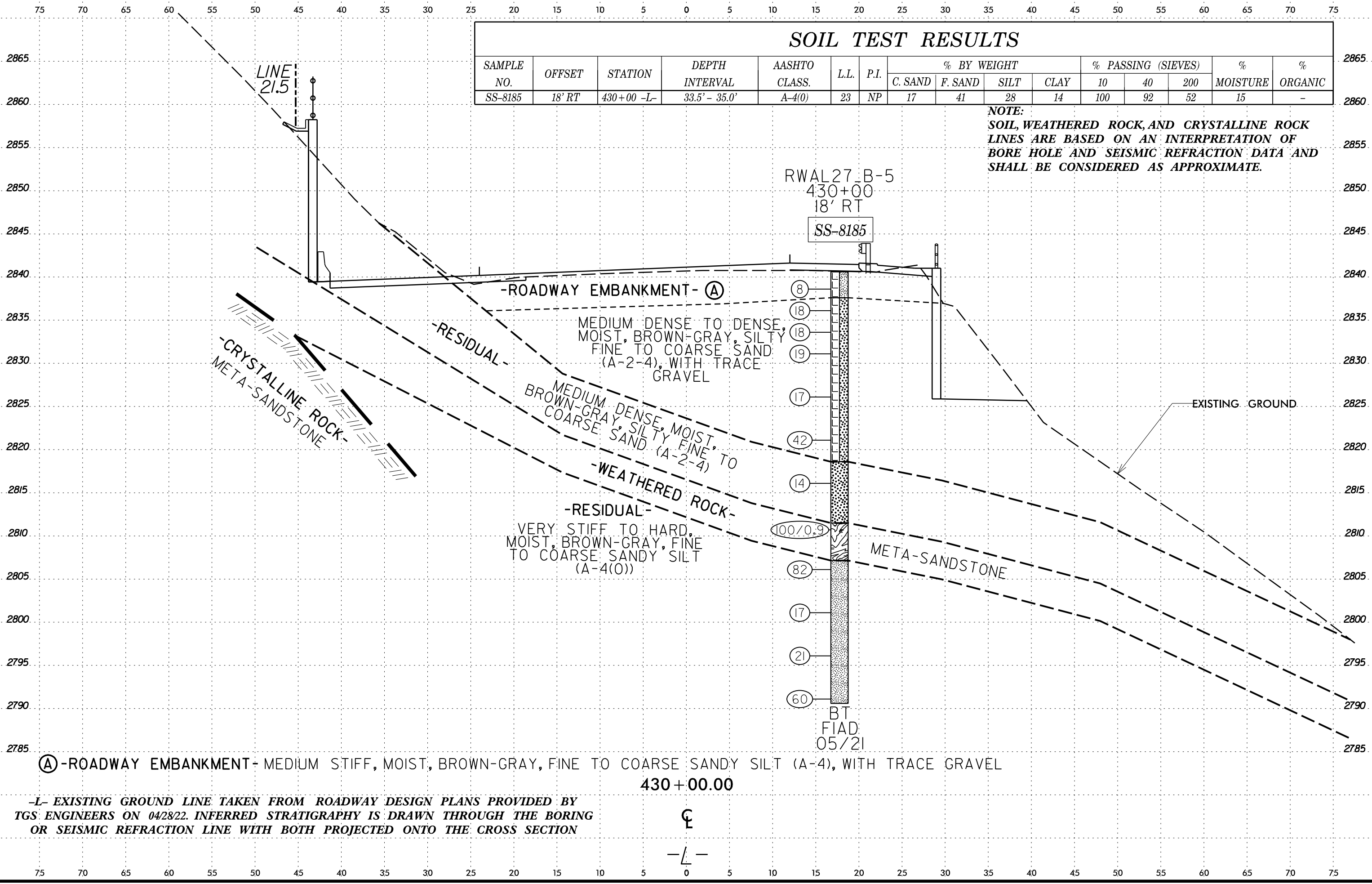


- (A) -ROADWAY EMBANKMENT- LOOSE, MOIST, GRAY-BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE GRAVEL
- (B) -ROADWAY EMBANKMENT- MEDIUM STIFF TO VERY STIFF, MOIST, BROWN-GRAY-TAN, FINE TO COARSE SANDY SILT (A-4(0)), WITH TRACE GRAVEL
- (C) -RESIDUAL- MEDIUM DENSE TO VERY DENSE, MOIST, GRAY-BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE GRAVEL-SIZED ROCK FRAGMENTS

-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY TGS' ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING OR SEISMIC REFRACTION LINE WITH BOTH PROJECTED ONTO THE CROSS SECTION

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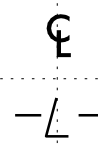


SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-8185	18' RT	430+00 -L-	33.5' - 35.0'	A-4(0)	23	NP	17	41	28	14	100	92	52	15	-

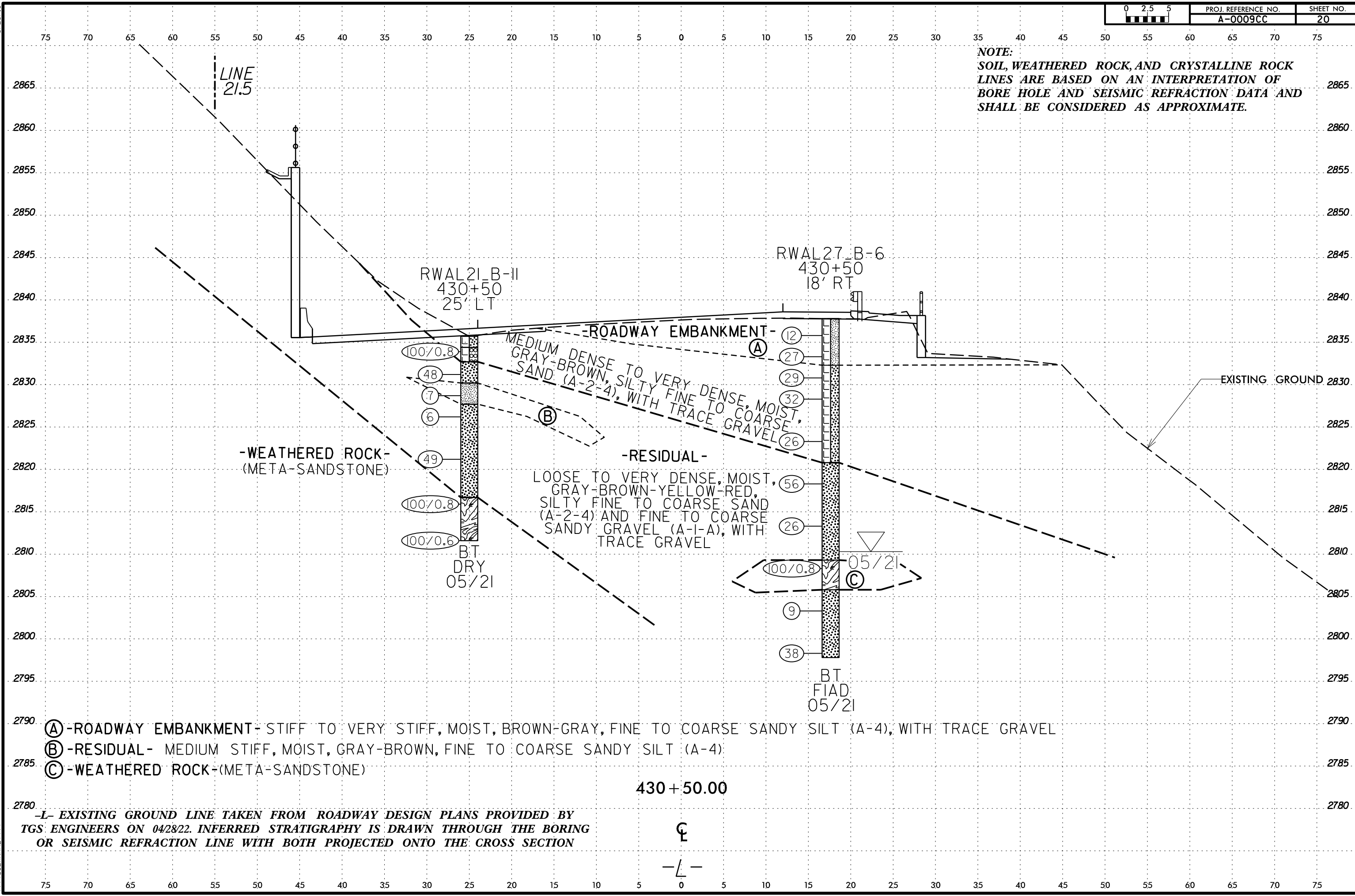
NOTE:
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(A) -ROADWAY EMBANKMENT- MEDIUM STIFF, MOIST, BROWN-GRAY, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL
 430+00.00

-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY TGS ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING OR SEISMIC REFRACTION LINE WITH BOTH PROJECTED ONTO THE CROSS SECTION



NOTE:
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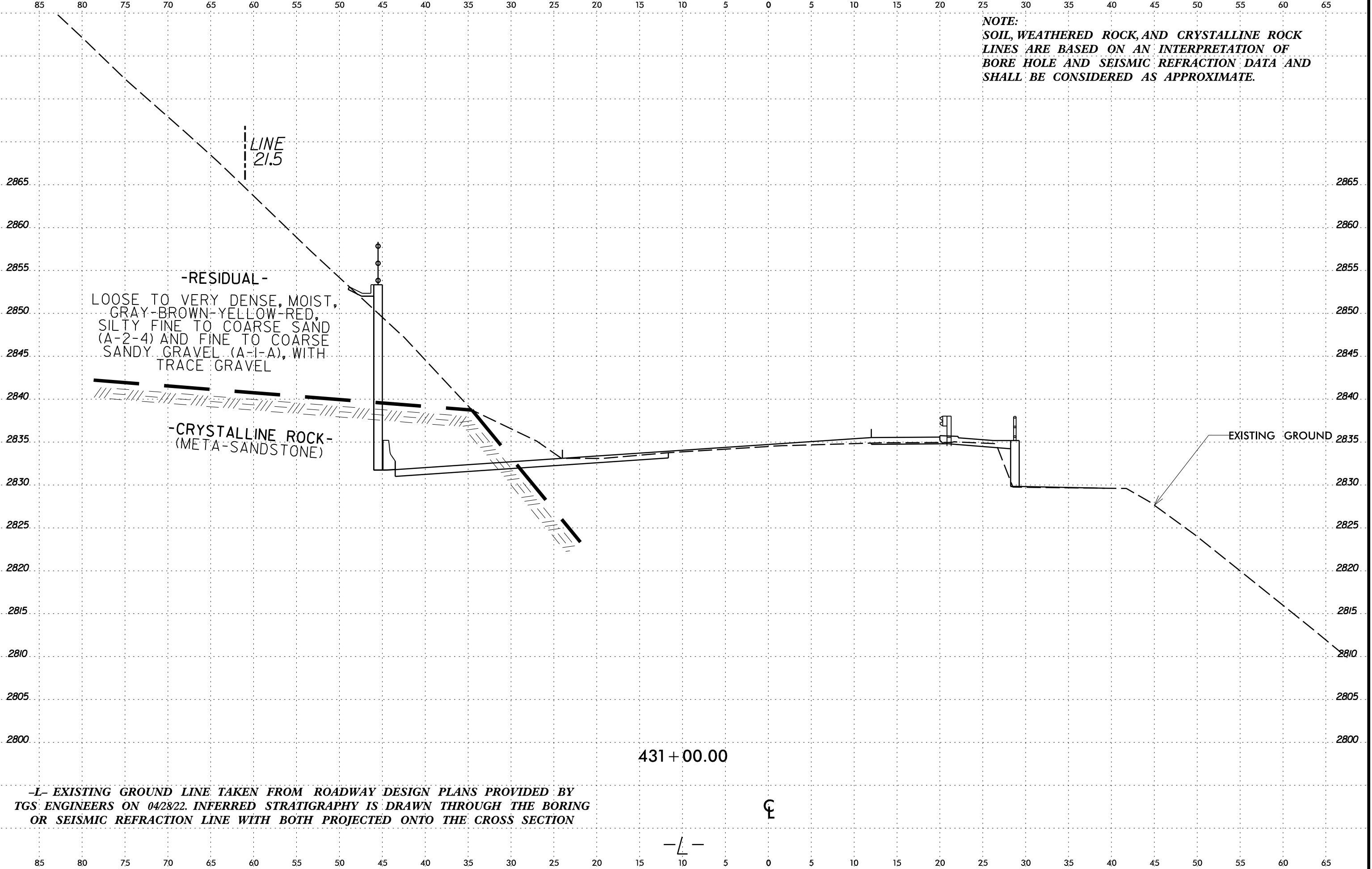
- (A) -ROADWAY EMBANKMENT- STIFF TO VERY STIFF, MOIST, BROWN-GRAY, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL
- (B) -RESIDUAL- MEDIUM STIFF, MOIST, GRAY-BROWN, FINE TO COARSE SANDY SILT (A-4)
- (C) -WEATHERED ROCK-(META-SANDSTONE)

430 + 50.00



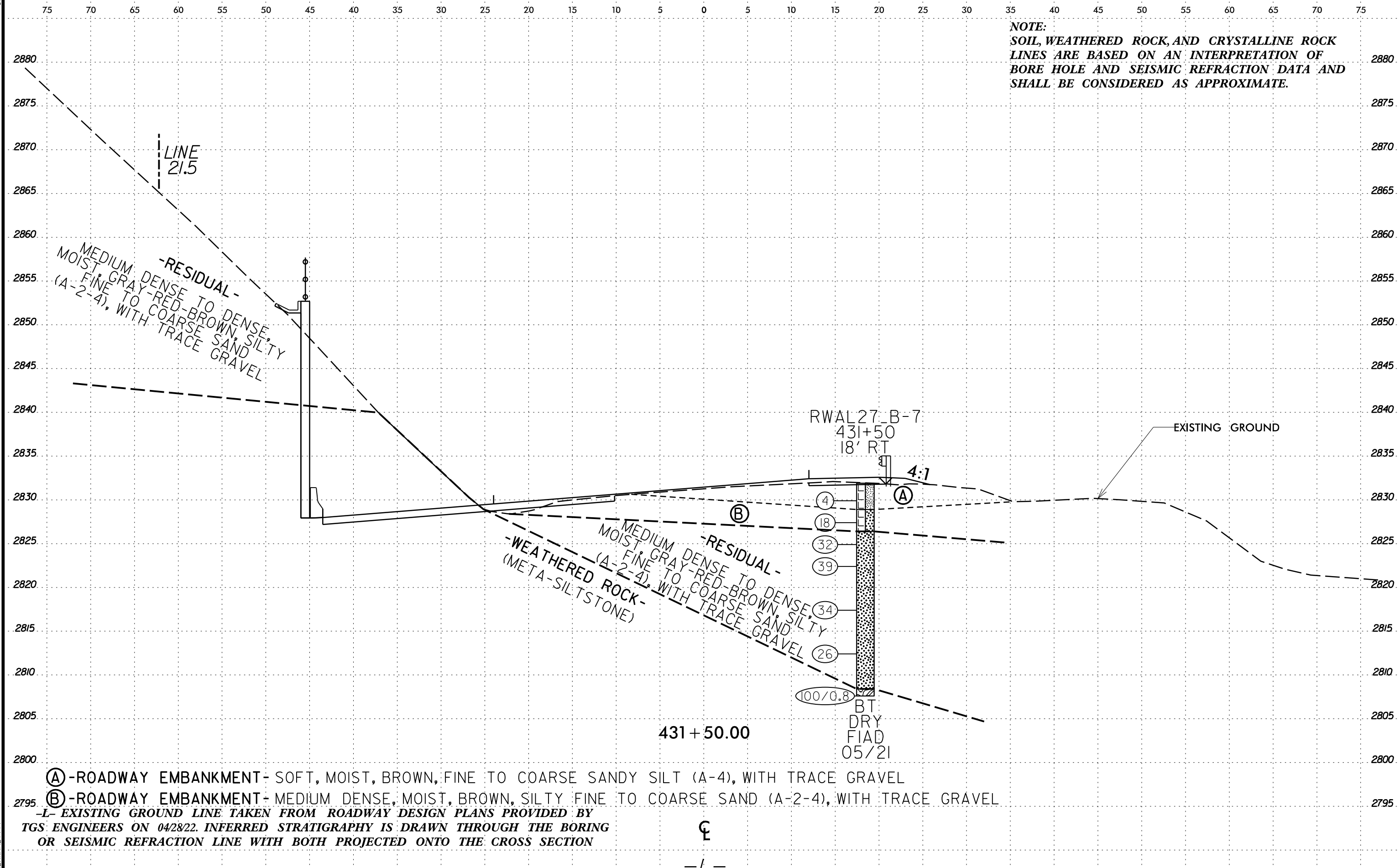
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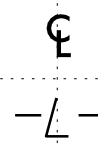


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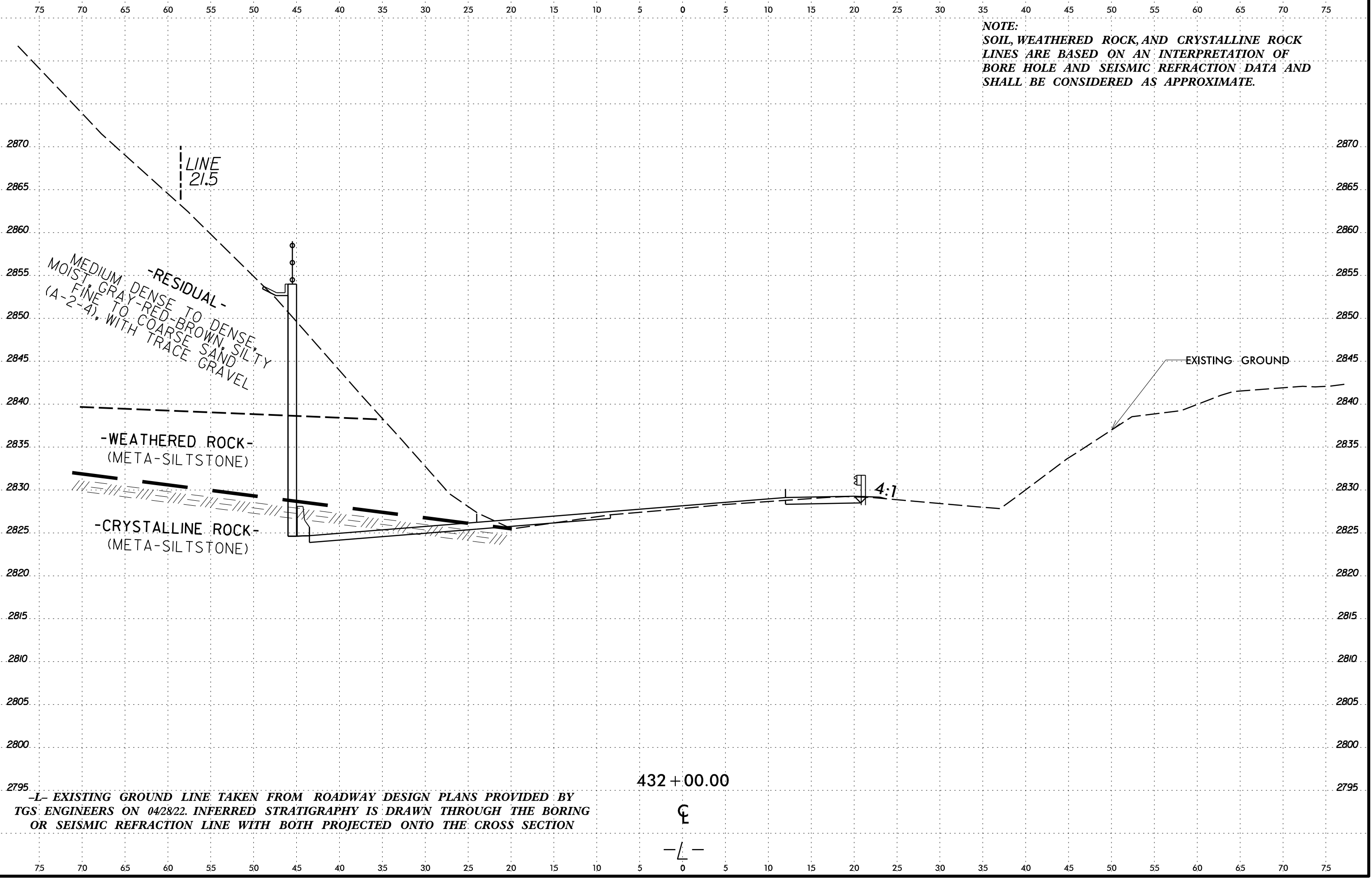
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- Ⓐ - ROADWAY EMBANKMENT - SOFT, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL
- Ⓑ - ROADWAY EMBANKMENT - MEDIUM DENSE, MOIST, BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE GRAVEL
- L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY TGS ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING OR SEISMIC REFRACTION LINE WITH BOTH PROJECTED ONTO THE CROSS SECTION

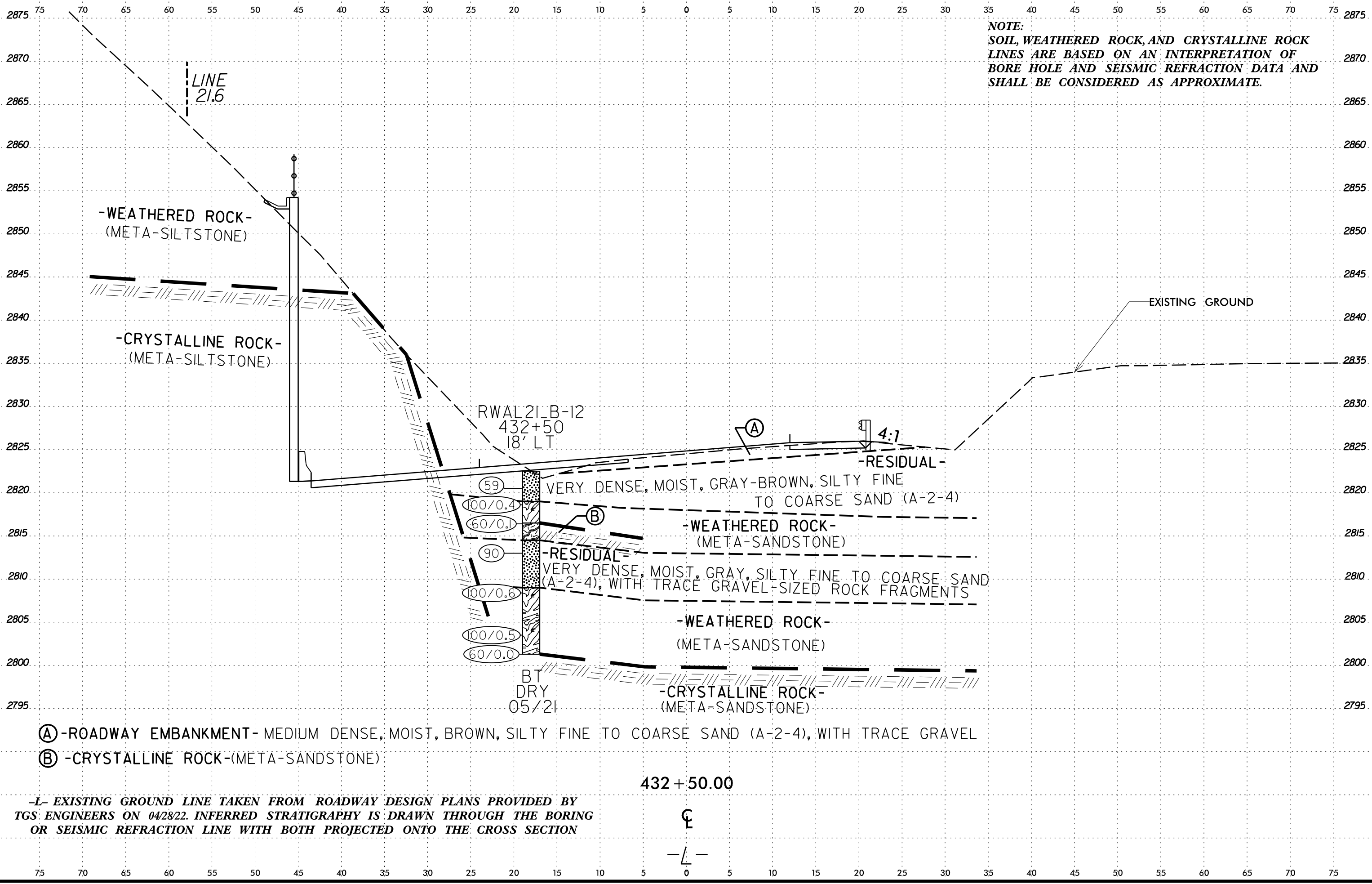


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-WEATHERED ROCK-
 (META-SILTSTONE)

-CRYSTALLINE ROCK-
 (META-SILTSTONE)

RWAL21_B-12
 432+50
 18' LT

EXISTING GROUND

-RESIDUAL-

VERY DENSE, MOIST, GRAY-BROWN, SILTY FINE
 TO COARSE SAND (A-2-4)

-WEATHERED ROCK-
 (META-SANDSTONE)

-RESIDUAL-
 VERY DENSE, MOIST, GRAY, SILTY FINE TO COARSE SAND
 (A-2-4), WITH TRACE GRAVEL-SIZED ROCK FRAGMENTS

-WEATHERED ROCK-
 (META-SANDSTONE)

-CRYSTALLINE ROCK-
 (META-SANDSTONE)

BT
 DRY
 05/21

(A) -ROADWAY EMBANKMENT- MEDIUM DENSE, MOIST, BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE GRAVEL

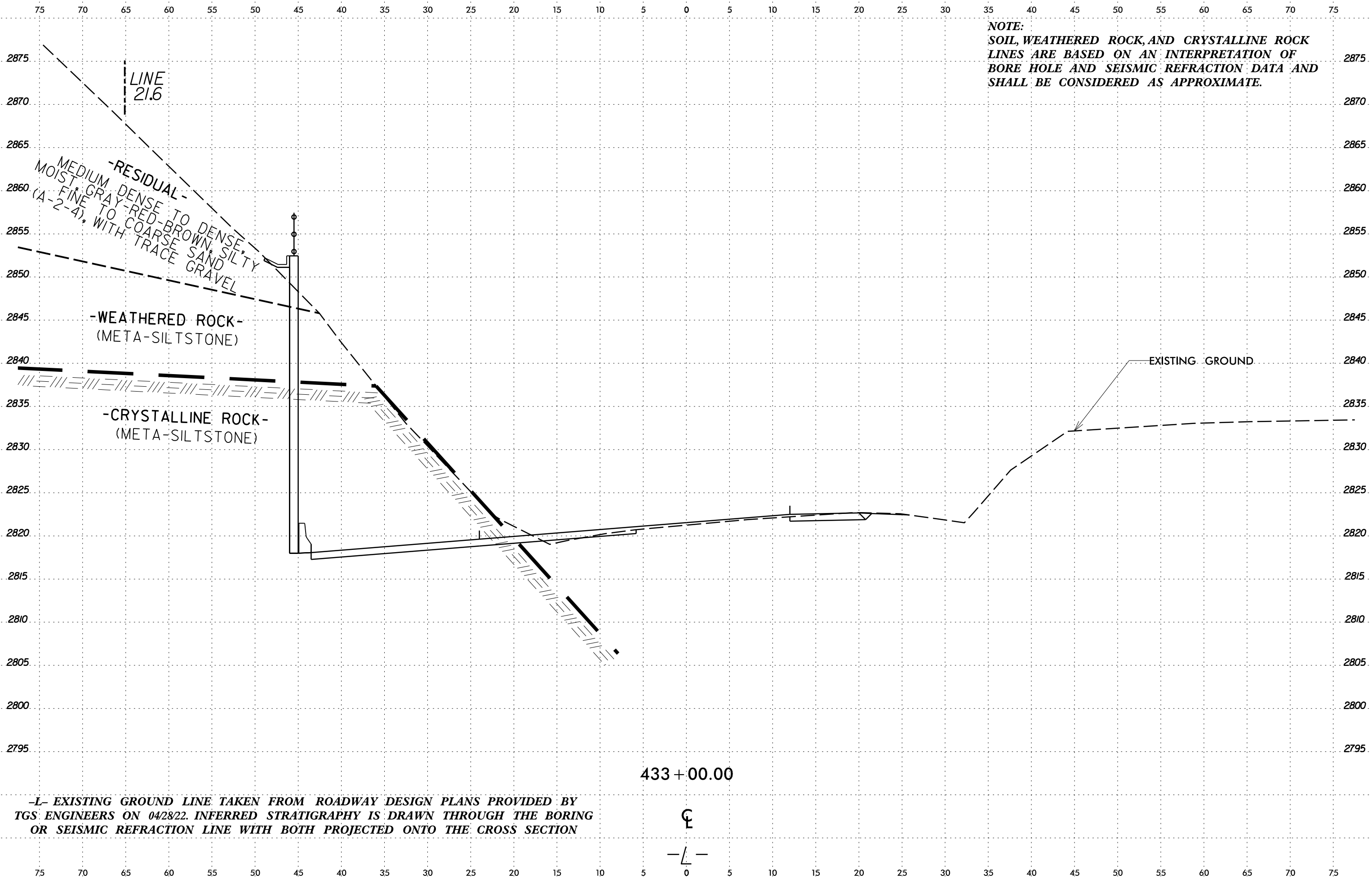
(B) -CRYSTALLINE ROCK-(META-SANDSTONE)

432 + 50.00



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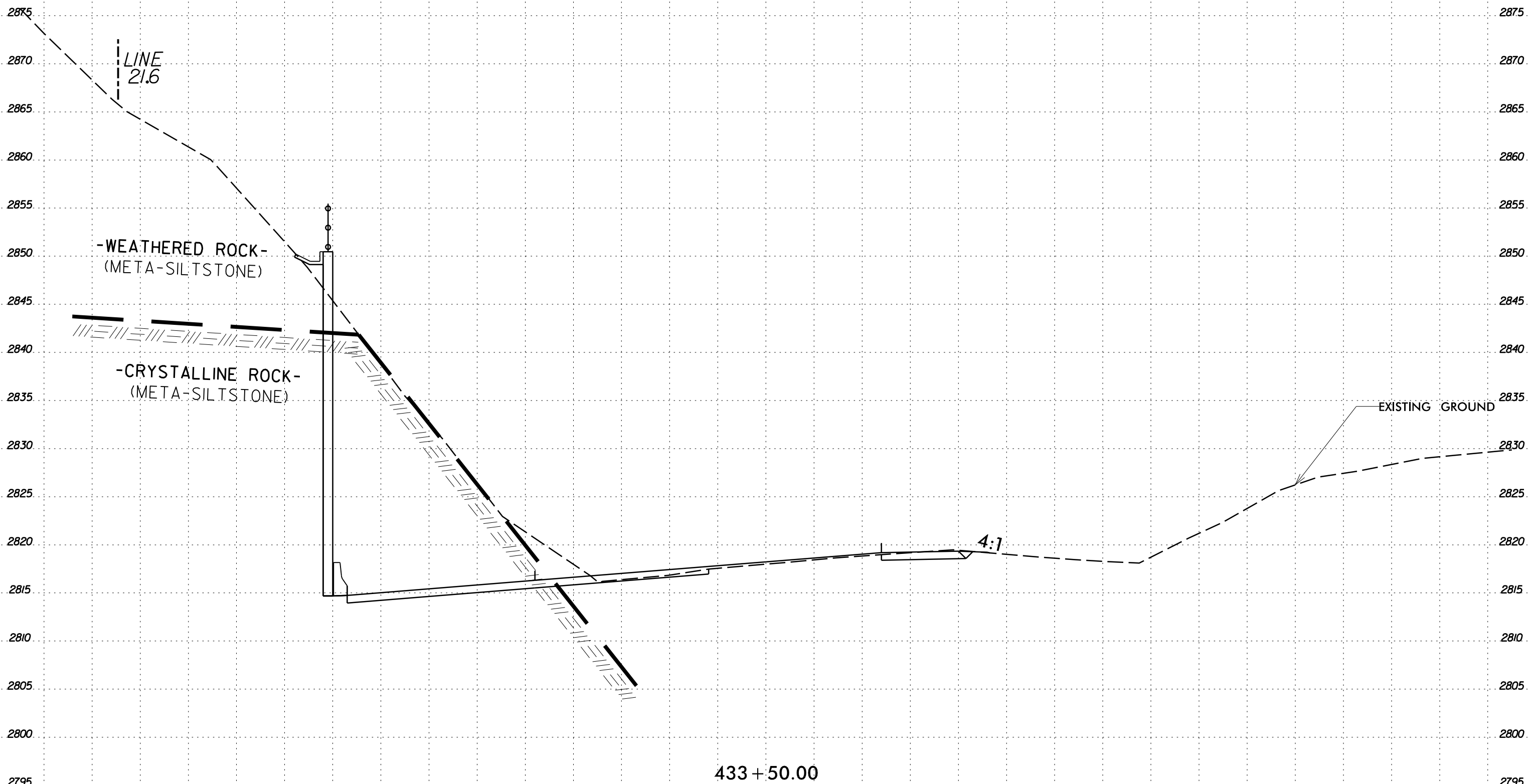
433 + 00.00



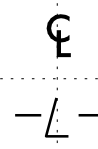
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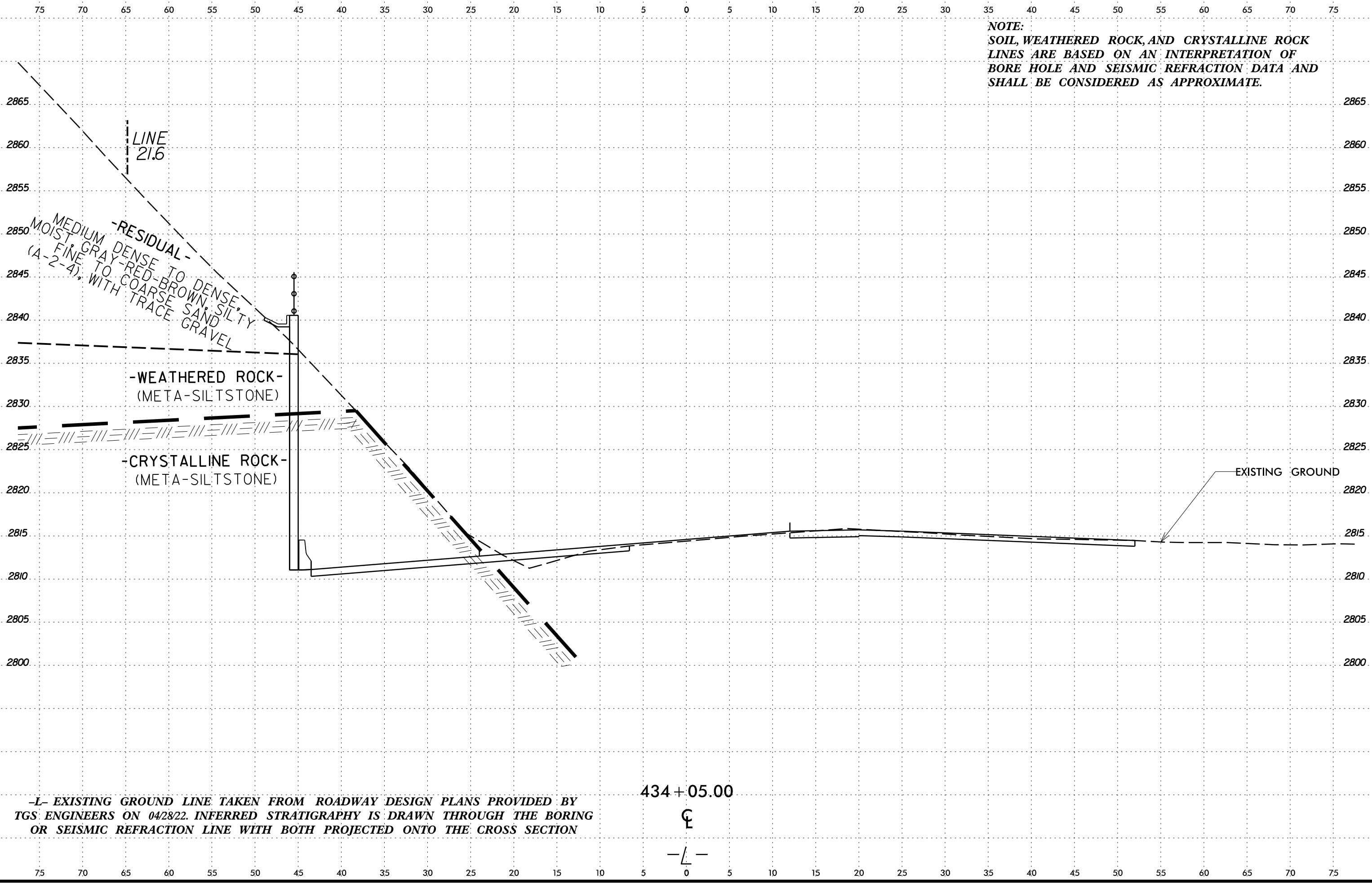
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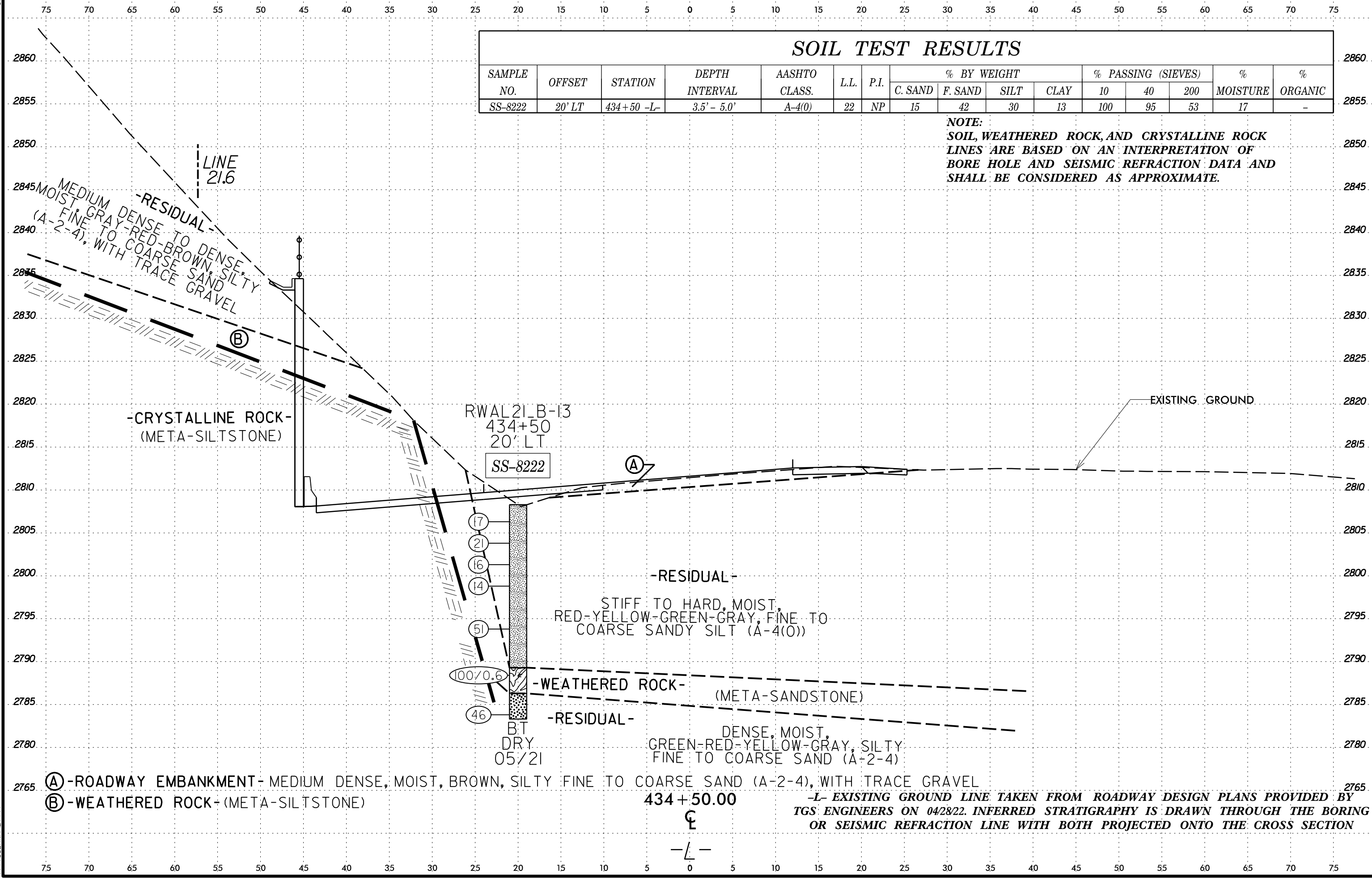
-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY
TGS' ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING
OR SEISMIC REFRACTION LINE WITH BOTH PROJECTED ONTO THE CROSS SECTION

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-8222	20' LT	434+50 -L-	3.5' - 5.0'	A-4(0)	22	NP	15	42	30	13	100	95	53	17	-

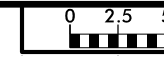
NOTE:
 SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF BORE HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE.



(A) - ROADWAY EMBANKMENT - MEDIUM DENSE, MOIST, BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE GRAVEL
 (B) - WEATHERED ROCK - (META-SILTSTONE)

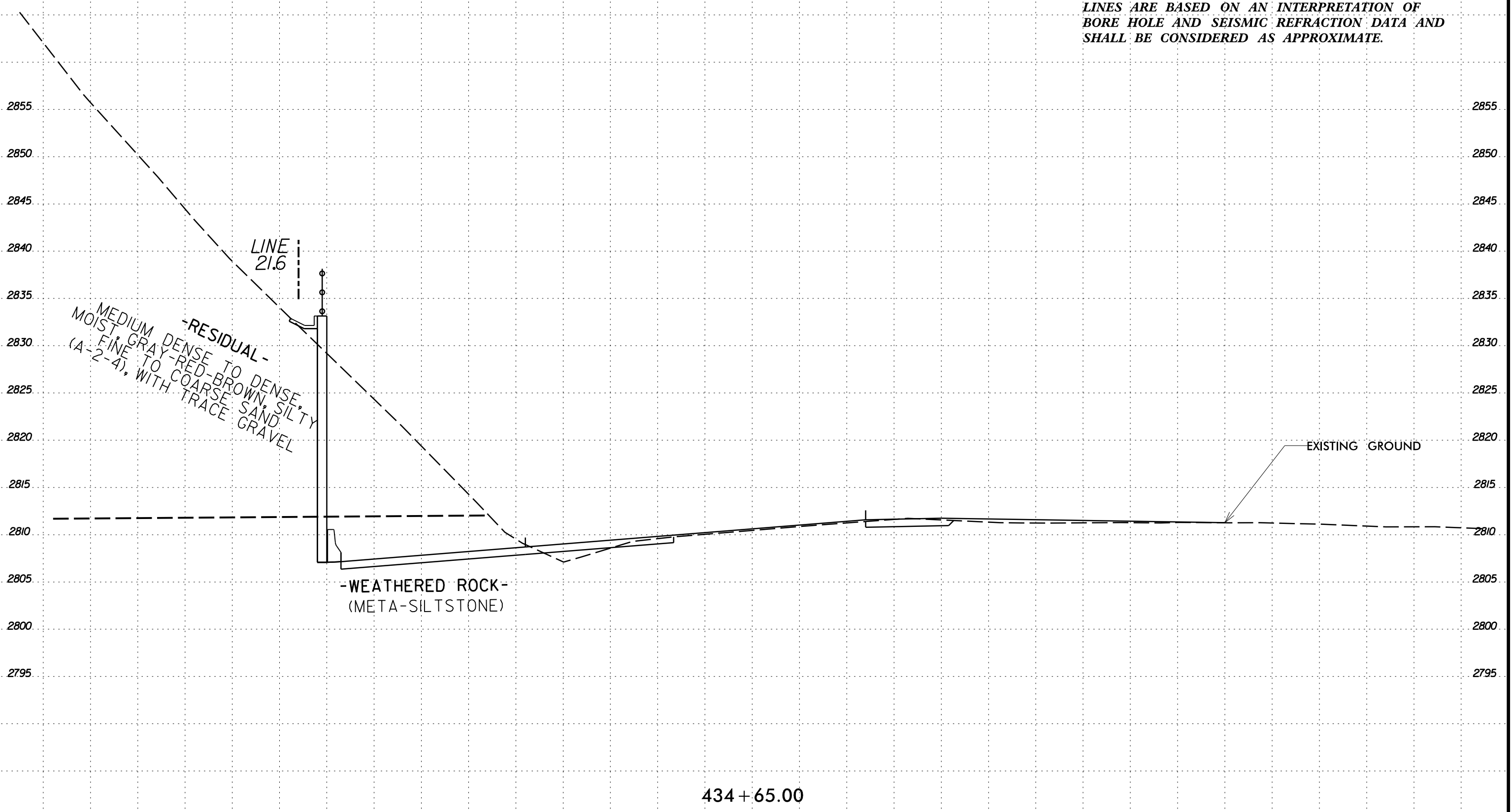
-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY TGS ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING OR SEISMIC REFRACTION LINE WITH BOTH PROJECTED ONTO THE CROSS SECTION

434 + 50.00
 ☉
 -L-



75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

NOTE:
SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK
LINE ARE BASED ON AN INTERPRETATION OF
BORE HOLE AND SEISMIC REFRACTION DATA AND
SHALL BE CONSIDERED AS APPROXIMATE.



434 + 65.00



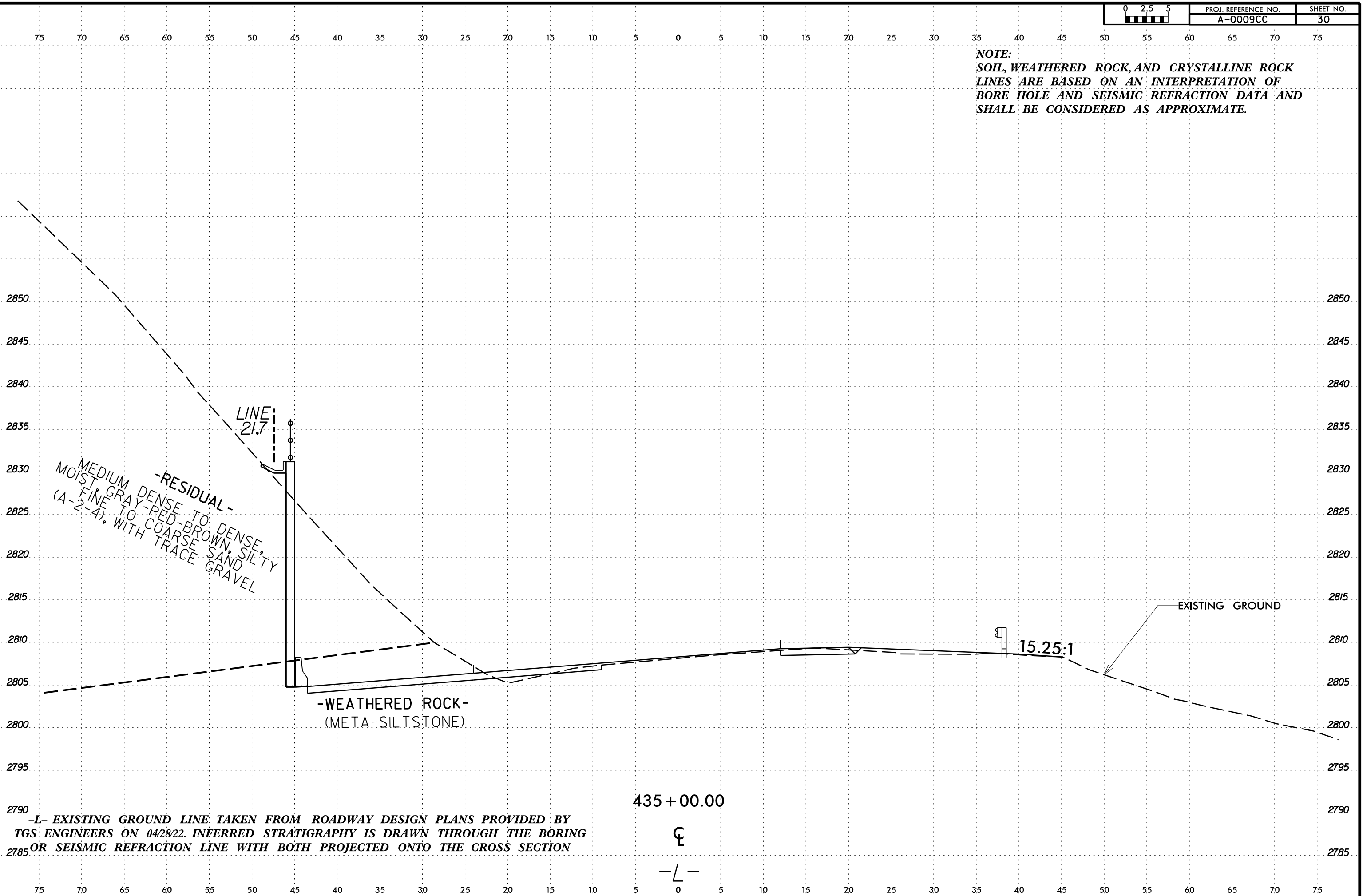
-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY TGS ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING OR SEISMIC REFRACTION LINE WITH BOTH PROJECTED ONTO THE CROSS SECTION

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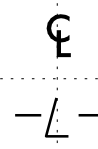
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NOTE:
SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK
LINES ARE BASED ON AN INTERPRETATION OF
BORE HOLE AND SEISMIC REFRACTION DATA AND
SHALL BE CONSIDERED AS APPROXIMATE.

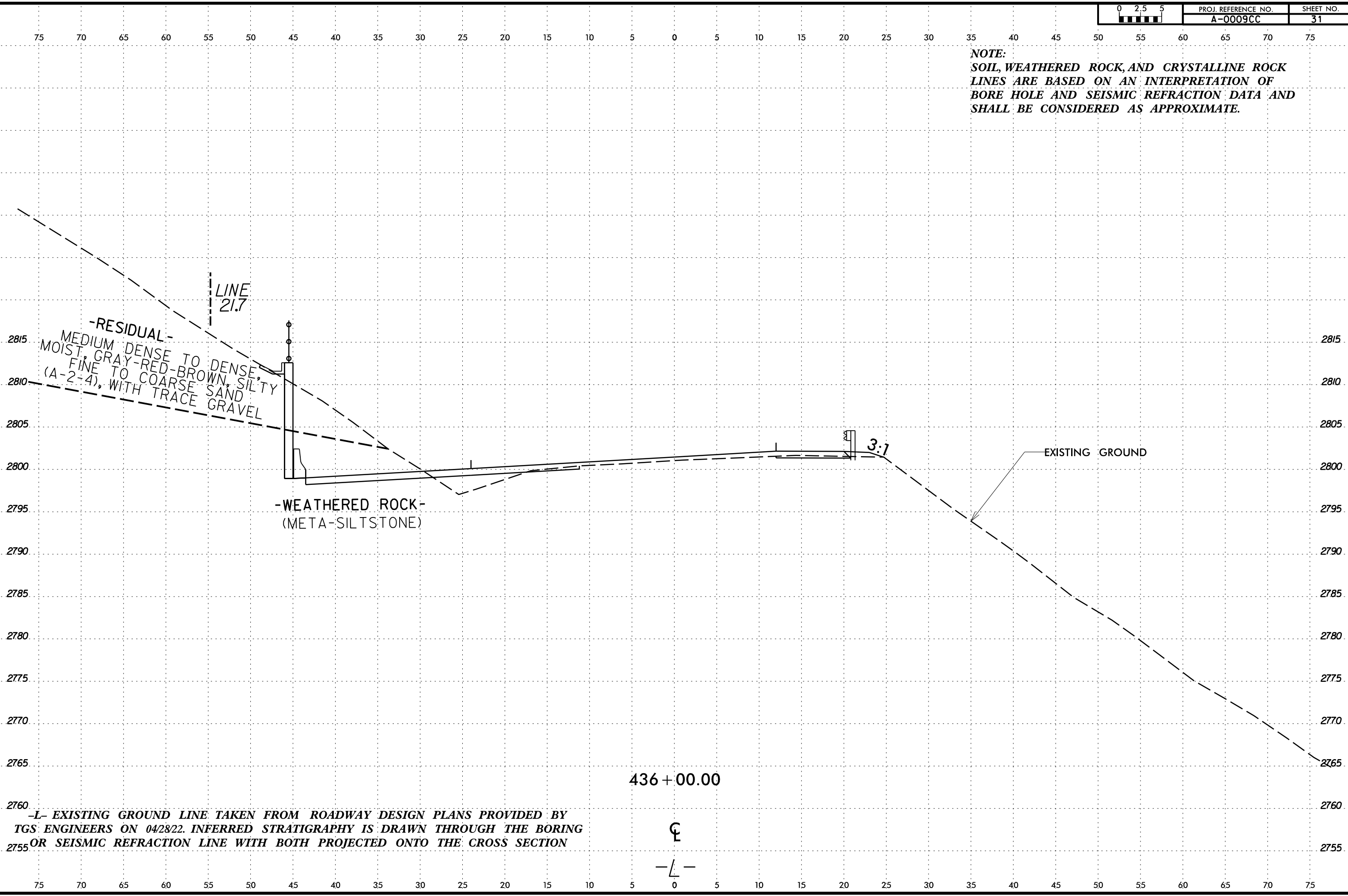


-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY
TGS' ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING
OR SEISMIC REFRACTION LINE WITH BOTH PROJECTED ONTO THE CROSS SECTION



6/23/16
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NOTE:
SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK
LINES ARE BASED ON AN INTERPRETATION OF
BORE HOLE AND SEISMIC REFRACTION DATA AND
SHALL BE CONSIDERED AS APPROXIMATE.

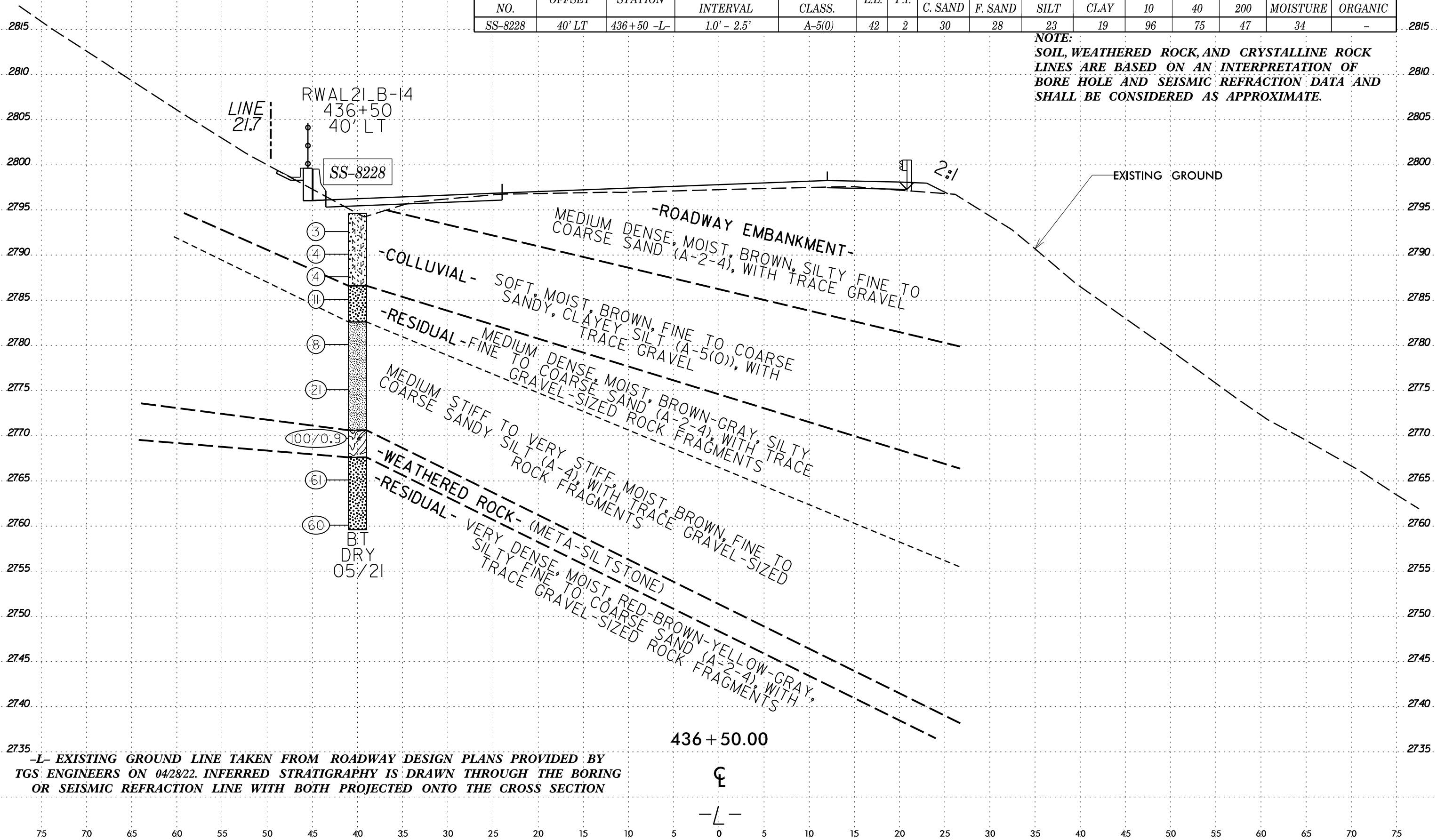


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SOIL TEST RESULTS

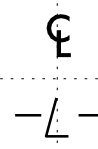
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-8228	40' LT	436+50 -L-	1.0' - 2.5'	A-5(0)	42	2	30	28	23	19	96	75	47	34	-

NOTE:
 SOIL, WEATHERED ROCK, AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF BORE HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE.



-L- EXISTING GROUND LINE TAKEN FROM ROADWAY DESIGN PLANS PROVIDED BY TGS ENGINEERS ON 04/28/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING OR SEISMIC REFRACTION LINE WITH BOTH PROJECTED ONTO THE CROSS SECTION

436 + 50.00



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST S. Braun										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235						GROUND WTR (ft)										
BORING NO. RWAL21_B-1		STATION 420+50		OFFSET 46 ft LT		ALIGNMENT L										
COLLAR ELEV. 2,912.4 ft		TOTAL DEPTH 43.8 ft		NORTHING 621,249		EASTING 596,108										
DRILL RIGHAMMER EFF./DATE FIVE9553 CME-550X 80% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Phillips		START DATE 06/09/21		COMP. DATE 06/10/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2915																
2910	2,911.4	1.0	3	4	5											
	2,908.9	3.5	5	7	7											
	2,906.4	6.0	5	5	8											
2905	2,903.9	8.5	6	7	10											
	2,898.9	13.5	18	29	42											
2895	2,893.9	18.5	9	11	13											
	2,888.9	23.5	19	32	68/0.4											
2885	2,883.9	28.5	7	9	13											
	2,878.9	33.5	4	12	24											
2875	2,873.9	38.5	30	32	37											
2870	2,868.9	43.5	100/0.3													

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST C. Piercey										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235						GROUND WTR (ft)										
BORING NO. RWAL26_B-1		STATION 421+44		OFFSET 20 ft RT		ALIGNMENT L										
COLLAR ELEV. 2,894.4 ft		TOTAL DEPTH 20.0 ft		NORTHING 621,277		EASTING 596,218										
DRILL RIGHAMMER EFF./DATE FIVE9553 CME-550X 80% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Phillips		START DATE 05/06/21		COMP. DATE 05/06/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2895																
	2,893.4	1.0	4	6	7											
2890	2,890.9	3.5	10	10	12											
	2,888.4	6.0	4	5	7											
2885	2,885.9	8.5	6	9	11											
	2,880.9	13.5	10	12	14											
2875	2,875.9	18.5	8	14	14											

NCDOT BORE DOUBLE A-0009CC_GEO_RDY_GTM.GPJ_NC_DOT.GDT 7/2/22

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST M. Brewer											
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235						GROUND WTR (ft)											
BORING NO. RWAL21_B-3		STATION 422+50		OFFSET 31 ft LT		ALIGNMENT L											
COLLAR ELEV. 2,887.9 ft		TOTAL DEPTH 23.7 ft		NORTHING 621,395		EASTING 596,229											
DRILL RIGHAMMER EFF./DATE CG29473 CME-550 79% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER J. Estep		START DATE 05/10/21		COMP. DATE 05/10/21		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
2890															2,887.9	GROUND SURFACE	0.0
2885	2,886.9	1.0	5	3	4								W			COLLUVIAL Soft to Medium Stiff, Brown-Tan-Orange, Fine Sandy SILT (A-4), with trace gravel	
	2,884.4	3.5	3	4	3								M				
	2,881.9	6.0	3	2	2								M				
2880	2,879.4	8.5	2	3	4								W				
2875	2,874.4	13.5	4	9	12								M			RESIDUAL Very Stiff to Hard, Brown-Tan-Orange, Fine Sandy SILT (A-4), with trace gravel-sized rock fragments	10.0
2870	2,869.4	18.5	15	17	23								M				
2865	2,864.4	23.5	100/0.2													WEATHERED ROCK Brown, (META-SILTSTONE) Boring Terminated at Elevation 2,864.2 ft In Weathered Rock (META-SILTSTONE)	23.5 23.7

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST S. Braun											
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235						GROUND WTR (ft)											
BORING NO. RWAL26_B-2		STATION 422+55		OFFSET 31 ft RT		ALIGNMENT L											
COLLAR ELEV. 2,880.6 ft		TOTAL DEPTH 35.0 ft		NORTHING 621,370		EASTING 596,285											
DRILL RIGHAMMER EFF./DATE CG20446 Diedrich D50 83% 06/16/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER J. Estep		START DATE 05/06/21		COMP. DATE 05/06/21		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
2885															2,880.6	GROUND SURFACE	0.0
2880	2,879.6	1.0	3	4	5								M			ROADWAY EMBANKMENT Stiff to Hard, Tan-Orange-Gray, Fine to Coarse Sandy SILT (A-4), with trace gravel	
	2,877.1	3.5	4	4	5								M				
2875	2,874.6	6.0	6	8	9								M				
2870	2,872.1	8.5	9	11	16								M				
	2,867.1	13.5	5	16	11								M				
2865	2,862.1	18.5	70	30/0.3									M				
2860	2,857.1	23.5	3	3	3								M			Medium Stiff, Brown-Gray, Fine to Coarse Sandy, Clayey SILT (A-5), with trace gravel	22.0
2855	2,852.1	28.5	3	2	3								M			Medium Stiff, Brown-Gray, Fine to Coarse Sandy SILT (A-4), with trace gravel and wood fragments	27.0
2850	2,847.1	33.5	7	11	12								M			RESIDUAL Very Stiff, Brown-Tan, Fine to Coarse Sandy SILT (A-4) Boring Terminated at Elevation 2,845.6 ft In Residual Sandy Silt (A-4)	32.0 35.0

NCDOT BORE DOUBLE A-0009CC_GEO_RDY_GTM.GPJ_NC_DOT.GDT 7/2/22

GEOTECHNICAL BORING REPORT BORE LOG

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST M. Brewer									
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)								
BORING NO. RWAL21_B-4		STATION 423+52		OFFSET 30 ft LT		ALIGNMENT L									
COLLAR ELEV. 2,881.6 ft		TOTAL DEPTH 23.9 ft		NORTHING 621,484		EASTING 596,278									
DRILL RIGHAMMER EFF./DATE CG29473 CME-550 79% 03/12/2021			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER J. Estep		START DATE 05/10/21		COMP. DATE 05/10/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2885															
2880	2,880.6	1.0	7	13	20									2,881.6	0.0
	2,878.1	3.5	10	25	22										
2875	2,875.6	6.0	8	8	7										
	2,873.1	8.5	12	12	19										
2870	2,868.1	13.5	5	8	13										
2865	2,863.1	18.5	6	9	15										
2860	2,858.1	23.5	100/0.4											2,858.1	23.5
														2,857.7	23.9

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST S. Braun									
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)								
BORING NO. RWAL26_B-3		STATION 423+54		OFFSET 30 ft RT		ALIGNMENT L									
COLLAR ELEV. 2,880.6 ft		TOTAL DEPTH 30.0 ft		NORTHING 621,457		EASTING 596,332									
DRILL RIGHAMMER EFF./DATE CG20446 Diedrich D50 83% 06/16/2020			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER J. Estep		START DATE 05/06/21		COMP. DATE 05/06/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2885															
2880	2,879.6	1.0	7	12	8									2,880.6	0.0
	2,877.1	3.5	5	6	7										
2875	2,874.6	6.0	5	3	3										
	2,872.1	8.5	15	15	5										
2870	2,867.1	13.5	4	2	2										
2865	2,862.1	18.5	3	3	2									2,863.6	17.0
2860	2,857.1	23.5	64	30	18										
2855	2,852.1	28.5	17	22	23									2,850.6	30.0

NCDOT BORE DOUBLE A-0009CC_GEO_RDY_GTM.GPJ_NC_DOT.GDT 7/2/22

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST M. Brewer										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)									
BORING NO. RWAL21_B-5		STATION 424+43		OFFSET 25 ft LT		ALIGNMENT L										
COLLAR ELEV. 2,873.8 ft		TOTAL DEPTH 18.7 ft		NORTHING 621,561		EASTING 596,327										
DRILL RIGHAMMER EFF./DATE CG29473 CME-550 79%03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Estep		START DATE 05/10/21		COMP. DATE 05/10/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2875	2,872.8	1.0	33	67	0.5									2,873.8	0.0	GROUND SURFACE
																WEATHERED ROCK
																Gray-Brown, (META-SILTSTONE)
2870	2,870.3	3.5	60	40	0.2											
	2,867.8	6.0	49	51	0.2											
2865	2,865.3	8.5	100	0.2												
2860	2,860.3	13.5	100	0.3												
	2,855.3	18.5	100	0.2										2,855.1	18.7	Boring Terminated at Elevation 2,855.1 ft In Weathered Rock (META-SILTSTONE)

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST M. Brewer										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)									
BORING NO. RWAL21_B-6		STATION 425+42		OFFSET 23 ft LT		ALIGNMENT L										
COLLAR ELEV. 2,868.1 ft		TOTAL DEPTH 9.5 ft		NORTHING 621,647		EASTING 596,376										
DRILL RIGHAMMER EFF./DATE CG29473 CME-550 79%03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Estep		START DATE 05/10/21		COMP. DATE 05/10/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2870	2,867.1	1.0	8	16	12									2,868.1	0.0	GROUND SURFACE
																ROADWAY EMBANKMENT
																Very Stiff, Brown, Fine Sandy SILT (A-4), with trace gravel
2865	2,864.6	3.5	5	4	59									2,865.1	3.0	RESIDUAL
																Hard, Gray, Fine Sandy SILT (A-4), with trace gravel-sized rock fragments
2860	2,859.6	8.5	21	41	59	0.3								2,861.6	6.5	WEATHERED ROCK
																Gray, (META-SILTSTONE)
	2,858.6	9.5	60	0.0										2,858.6	9.5	Boring Terminated with Standard Penetration Test Refusal at Elevation 2,858.6 ft On Crystalline Rock (META-SILTSTONE)

NCDOT BORE DOUBLE A-0009CC_GEO_RDY_GTM.GPJ NC_DOT.GDT 7/2/22

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST M. Brewer									
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)								
BORING NO. RWAL21_B-7		STATION 426+48		OFFSET 29 ft LT		ALIGNMENT L									
COLLAR ELEV. 2,862.2 ft		TOTAL DEPTH 9.0 ft		NORTHING 621,743		EASTING 596,422									
DRILL RIGHAMMER EFF./DATE CG29473 CME-550 79% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER J. Estep		START DATE 05/10/21		COMP. DATE 05/10/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2865															
2860	2,861.2	1.0	37	19	20									2,862.2	0.0
	2,858.7	3.5	12	12	14										
2855	2,856.2	6.0	36	64/0.3										2,856.2	6.0
	2,853.7	8.5												2,853.2	9.0
	2,853.2	9.0	100/0.2												
			60/0.0												

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST C. Piercey									
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)								
BORING NO. RWAL27_B-1		STATION 427+50		OFFSET 18 ft RT		ALIGNMENT L									
COLLAR ELEV. 2,855.9 ft		TOTAL DEPTH 6.7 ft		NORTHING 621,810		EASTING 596,512									
DRILL RIGHAMMER EFF./DATE FME9553 CME-550X 80% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER J. Phillips		START DATE 05/07/21		COMP. DATE 05/07/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2860															
2855	2,854.9	1.0	8	6	5									2,855.9	0.0
	2,852.4	3.5	8	8	6										
2850	2,849.9	6.0	23	77/0.2										2,849.2	6.7
	2,849.2	6.7	60/0.0												

NCDOT BORE DOUBLE A-0009CC_GEO_RDY_GTM.GPJ_NC_DOT.GDT 7/2/22

Notes -
Boulders and Auger Refusal encountered at boring termination.

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST M. Brewer										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)									
BORING NO. RWAL21_B-8		STATION 427+52		OFFSET 23 ft LT		ALIGNMENT L										
COLLAR ELEV. 2,855.0 ft		TOTAL DEPTH 6.0 ft		NORTHING 621,831		EASTING 596,477										
DRILL RIGHAMMER EFF./DATE CG29473 CME-550 79% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Estep		START DATE 05/11/21		COMP. DATE 05/11/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2860																
2855	2,854.0	1.0	24	22	21										2,855.0	0.0
	2,851.5	3.5	7	13	7											
2850	2,849.0	6.0													2,849.0	6.0
Boring Terminated with Standard Penetration Test Refusal at Elevation 2,849.0 ft On Crystalline Rock (META-SILTSTONE)																

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST C. Piercey										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)									
BORING NO. RWAL21_B-9		STATION 428+50		OFFSET 24 ft LT		ALIGNMENT L										
COLLAR ELEV. 2,848.2 ft		TOTAL DEPTH 9.4 ft		NORTHING 621,917		EASTING 596,523										
DRILL RIGHAMMER EFF./DATE FVE9553 CME-550X 80% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Phillips		START DATE 05/10/21		COMP. DATE 05/10/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2850																
	2,847.2	1.0	2	6	7										2,848.2	0.0
2845	2,844.7	3.5	1	1	2										2,845.2	3.0
	2,842.2	6.0	1	2	12										2,842.7	5.5
2840	2,839.7	8.5													2,839.7	8.5
	2,838.8	9.4	57	43	0.4										2,838.8	9.4
ROADWAY EMBANKMENT Medium Dense, Gray, Fine to Coarse Sandy GRAVEL (A-1-a) Soft, Brown, Fine to Coarse Sandy SILT (A-4), with trace gravel Medium Dense, Gray, Fine to Coarse Sandy GRAVEL (A-1-a) WEATHERED ROCK Gray, (META-SILTSTONE) Boring Terminated with Standard Penetration Test Refusal at Elevation 2,838.8 ft On Crystalline Rock (META-SILTSTONE)																

NCDOT BORE DOUBLE A-0009CC_GEO_RDY_GTM.GPJ NC_DOT.GDT 7/2/22

GEOTECHNICAL BORING REPORT BORE LOG

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST S. Braun										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)									
BORING NO. RWAL27_B-4		STATION 429+50		OFFSET 18 ft RT		ALIGNMENT L										
						0 HR. Dry										
COLLAR ELEV. 2,843.5 ft		TOTAL DEPTH 60.0 ft		NORTHING 621,985		EASTING 596,608										
						24 HR. FIAD										
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 83%/06/16/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Estep		START DATE 05/07/21		COMP. DATE 05/07/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2845														2,843.5	0.0	GROUND SURFACE
	2,842.5	1.0	3	3	2							M	ROADWAY EMBANKMENT			
2840	2,840.0	3.5	5	6	7							M	Medium Stiff to Very Stiff, Brown-Gray-Tan, Fine to Coarse Sandy SILT (A-4(0)), with trace gravel			
	2,837.5	6.0	14	11	11							M				
2835	2,835.0	8.5	4	5	6							M				
												M				
2830	2,830.0	13.5	4	12	15							M				
											SS-892	15%				
2825	2,825.0	18.5	5	9	4							M				
												M				
2820	2,820.0	23.5	3	4	5							M	RESIDUAL	22.0		
											SS-894	14%	Stiff to Hard, Tan-Brown-Orange-Gray-Red, Fine to Coarse Sandy SILT (A-4(2)), with trace gravel-sized rock fragments			
2815	2,815.0	28.5	21	27	19							M				
												M				
2810	2,810.0	33.5	6	6	22							M				
												M				
2805	2,805.0	38.5	16	12	15							M				
												M				
2800	2,800.0	43.5	5	4	7							W				
												M				
2795	2,795.0	48.5	34	35	26							M				
												M				
2790	2,790.0	53.5	25	28	31							M				
												M				
2785	2,785.0	58.5	26	33	41							W				
												W				
													Boring Terminated at Elevation 2,783.5 ft In Residual Sandy Silt (A-4)	60.0		

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST C. Piercey										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)									
BORING NO. RWAL21_B-10		STATION 429+50		OFFSET 24 ft LT		ALIGNMENT L										
						0 HR. Dry										
COLLAR ELEV. 2,842.3 ft		TOTAL DEPTH 40.0 ft		NORTHING 622,005		EASTING 596,571										
						24 HR. Dry										
DRILL RIG/HAMMER EFF./DATE FVE9553 CME-550X 80% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Phillips		START DATE 05/10/21		COMP. DATE 05/10/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2845														2,842.3	0.0	GROUND SURFACE
	2,841.3	1.0	3	4	5							M	ROADWAY EMBANKMENT			
2840	2,838.8	3.5	5	9	8							M	Loose, Gray-Brown, Silty Fine to Coarse SAND (A-2-4), with trace gravel	3.0		
	2,836.3	6.0	9	15	18							M	RESIDUAL			
2835	2,833.8	8.5	6	11	14							M	Medium Dense to Very Dense, Gray-Brown, Silty Fine to Coarse SAND (A-2-4), with trace gravel-sized rock fragments			
												M				
2830	2,828.8	13.5	15	20	32							M				
												M				
2825	2,823.8	18.5	100/0.5									M	WEATHERED ROCK	18.5		
												M	Gray, (META-SANDSTONE)			
2820	2,818.8	23.5	4	11	11							M	RESIDUAL	22.0		
												M	Medium Dense, Light Brown, Silty Fine to Coarse SAND (A-2-4)			
2815	2,813.8	28.5	20	38	62/0.3							M	WEATHERED ROCK	29.0		
												M	Light Brown, (META-SANDSTONE)			
2810	2,808.8	33.5	4	6	6							M	RESIDUAL	32.0		
												M	Medium Dense to Very Dense, Brown-Gray, Silty Fine to Coarse SAND (A-2-4)			
2805	2,803.8	38.5	8	16	59							M				
												M				
													Boring Terminated at Elevation 2,802.3 ft In Residual Silty Sand (A-2-4)	40.0		

NCDOT BORE DOUBLE A-0009CC_GEO_RDY_GTM.GPJ NC_DOT.GDT 7/12/22

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 32572.1.FS10	TIP A-0009CC	COUNTY GRAHAM	GEOLOGIST C. Piercey
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235			GROUND WTR (ft)
BORING NO. RWAL27_B-5	STATION 430+00	OFFSET 18 ft RT	ALIGNMENT L
COLLAR ELEV. 2,840.6 ft	TOTAL DEPTH 50.0 ft	NORTHING 622,029	EASTING 596,632
DRILL RIGHAMMER EFF./DATE FIVE9553 CME-550X 80% 03/12/2021		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2845																
2840	2,839.6	1.0														
	2,837.1	3.5	4	4	4											
2835	2,834.6	6.0	2	6	12											
	2,832.1	8.5	7	7	11											
2830			9	6	13											
	2,827.1	13.5	5	4	13											
2825			5	28	14											
	2,822.1	18.5														
2820			4	4	10											
	2,817.1	23.5														
2815			9	25	75/0.4											
	2,812.1	28.5														
2810			11	17	65											
	2,807.1	33.5														
2805			5	8	9											
	2,802.1	38.5														
2800			10	10	11											
	2,797.1	43.5														
2795			12	17	43											
	2,792.1	48.5														

SS-8185 15%

Boring Terminated at Elevation 2,790.6 ft In Residual Silty Sand (A-2-4)

Notes -
Boulders and/or Hard Drilling encountered infrequently at the following depths:
29.0-29.9 ft

WBS 32572.1.FS10	TIP A-0009CC	COUNTY GRAHAM	GEOLOGIST C. Piercey
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235			GROUND WTR (ft)
BORING NO. RWAL21_B-11	STATION 430+50	OFFSET 25 ft LT	ALIGNMENT L
COLLAR ELEV. 2,835.7 ft	TOTAL DEPTH 24.1 ft	NORTHING 622,093	EASTING 596,619
DRILL RIGHAMMER EFF./DATE FIVE9553 CME-550X 80% 03/12/2021		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2840																
2835	2,834.7	1.0														
	2,832.2	3.5	3	97/0.3												
2830			24	14	34											
	2,829.7	6.0	5	3	4											
	2,827.2	8.5	1	3	3											
2825			12	23	26											
	2,822.2	13.5														
2820			25	53	47/0.3											
	2,817.2	18.5														
2815			75	25/0.1												
	2,812.2	23.5														

Boring Terminated at Elevation 2,811.6 ft In Weathered Rock (META-SANDSTONE)

NCDOT BORE DOUBLE A-0009CC_GEO_RDY_GTM.GPJ NC_DOT.GDT 7/2/22

GEOTECHNICAL BORING REPORT BORE LOG

WBS 32572.1.FS10	TIP A-0009CC	COUNTY GRAHAM	GEOLOGIST C. Piercey
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235			GROUND WTR (ft)
BORING NO. RWAL27_B-6	STATION 430+50	OFFSET 18 ft RT	ALIGNMENT L
COLLAR ELEV. 2,837.8 ft	TOTAL DEPTH 40.0 ft	NORTHING 622,073	EASTING 596,656
DRILL RIGHAMMER EFF./DATE FIVE9553 CME-550X 80% 03/12/2021		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2840													GROUND SURFACE	0.0
	2,836.8	1.0	9	6	6								ROADWAY EMBANKMENT Stiff to Very Stiff, Brown-Gray, Fine to Coarse Sandy SILT (A-4), with trace gravel	
2835	2,834.3	3.5	4	10	17									
	2,831.8	6.0	8	12	17									
2830	2,829.3	8.5	23	22	10								Medium Dense to Dense, Gray-Brown, Silty Fine to Coarse SAND (A-2-4), with trace gravel	
	2,824.3	13.5	23	16	10									
2825	2,819.3	18.5	24	35	21									
2820	2,814.3	23.5	10	13	13									
2815	2,809.3	28.5	57	43/0.3										100/0.8
2810	2,804.3	33.5	2	3	6								WEATHERED ROCK Gray-Brown, (META-SANDSTONE)	28.5
2805	2,804.3	33.5	2	3	6								RESIDUAL Loose to Dense, Gray-Brown-Yellow-Red, Silty Fine to Coarse SAND (A-2-4)	32.0
2800	2,799.3	38.5	9	16	22									40.0
Boring Terminated at Elevation 2,797.8 ft In Residual Silty Sand (A-2-4) Notes - Boulders and/or Hard Drilling encountered infrequently at the following depths: 28.5-29.3 ft														

WBS 32572.1.FS10	TIP A-0009CC	COUNTY GRAHAM	GEOLOGIST C. Piercey
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235			GROUND WTR (ft)
BORING NO. RWAL27_B-7	STATION 431+50	OFFSET 18 ft RT	ALIGNMENT L
COLLAR ELEV. 2,831.9 ft	TOTAL DEPTH 24.3 ft	NORTHING 622,169	EASTING 596,696
DRILL RIGHAMMER EFF./DATE FIVE9553 CME-550X 80% 03/12/2021		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2835													GROUND SURFACE	0.0
	2,830.9	1.0	3	2	2								ROADWAY EMBANKMENT Soft, Brown, Fine to Coarse Sandy SILT (A-4), with trace gravel	
2830	2,828.4	3.5	3	4	14								Medium Dense, Brown, Silty Fine to Coarse SAND (A-2-4), with trace gravel	3.0
	2,825.9	6.0	7	9	23								RESIDUAL Medium Dense to Dense, Gray-Red-Brown, Silty Fine to Coarse SAND (A-2-4), with trace gravel-sized rock fragments	5.5
2825	2,823.4	8.5	18	19	20									
	2,818.4	13.5	11	14	20									
2820	2,813.4	18.5	5	11	15									
2815	2,808.4	23.5	58	42/0.3										100/0.8
2810													WEATHERED ROCK Brown-Gray, (META-SILTSTONE)	23.5
Boring Terminated at Elevation 2,807.6 ft In Weathered Rock (META-SILTSTONE)														

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST C. Piercey										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)									
BORING NO. RWAL21_B-12		STATION 432+50		OFFSET 18 ft LT		ALIGNMENT L										
COLLAR ELEV. 2,822.5 ft		TOTAL DEPTH 21.2 ft		NORTHING 622,273		EASTING 596,677										
DRILL RIGHAMMER EFF./DATE FIVE9553 CME-550X 80% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Phillips		START DATE 05/10/21		COMP. DATE 05/10/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2825																
2820	2,821.5	1.0	3	17	42											2,822.5 GROUND SURFACE 0.0
	2,819.0	3.5	100/0.4													2,819.0 RESIDUAL Very Dense, Gray-Brown, Silty Fine to Coarse SAND (A-2-4) 3.5
	2,816.5	6.0	60/0.1													2,816.5 WEATHERED ROCK Gray-Brown, (META-SANDSTONE) 6.0
2815	2,814.0	8.5	34	53	37											2,814.5 CRYSTALLINE ROCK Gray-Brown, (META-SANDSTONE) 8.0
2810	2,809.0	13.5	74	26/0.1												2,809.0 RESIDUAL Very Dense, Gray, Silty Fine to Coarse SAND (A-2-4), with trace gravel-sized rock fragments 13.5
2805	2,804.0	18.5	100/0.5													2,809.0 WEATHERED ROCK Gray-Brown, (META-SANDSTONE)
	2,801.3	21.2	60/0.0													2,801.3 Boring Terminated with Standard Penetration Test Refusal at Elevation 2,801.3 ft On Crystalline Rock (META-SANDSTONE) 21.2

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST C. Piercey										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)									
BORING NO. RWAL21_B-13		STATION 434+50		OFFSET 20 ft LT		ALIGNMENT L										
COLLAR ELEV. 2,808.3 ft		TOTAL DEPTH 25.0 ft		NORTHING 622,460		EASTING 596,644										
DRILL RIGHAMMER EFF./DATE FIVE9553 CME-550X 80% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Phillips		START DATE 05/11/21		COMP. DATE 05/11/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2810																
	2,807.3	1.0	15	10	7											2,808.3 GROUND SURFACE 0.0
2805	2,804.8	3.5	4	6	15											2,804.8 RESIDUAL Stiff to Hard, Red-Yellow-Green-Gray, Fine to Coarse Sandy SILT (A-4(0)) 3.5
	2,802.3	6.0	8	7	9											2,802.3 WEATHERED ROCK Gray-Brown, (META-SANDSTONE) 6.0
2800	2,799.8	8.5	4	4	10											2,814.5 CRYSTALLINE ROCK Gray-Brown, (META-SANDSTONE) 8.0
	2,794.8	13.5	11	26	25											2,809.0 RESIDUAL Very Dense, Gray, Silty Fine to Coarse SAND (A-2-4), with trace gravel-sized rock fragments 13.5
2795	2,789.8	18.5	13	31	69/0.4											2,809.0 WEATHERED ROCK Gray-Brown, (META-SANDSTONE)
2790	2,784.8	23.5	12	20	26											2,801.3 Boring Terminated with Standard Penetration Test Refusal at Elevation 2,801.3 ft On Crystalline Rock (META-SANDSTONE) 21.2
	2,783.3	25.0														2,783.3 WEATHERED ROCK Red-Yellow-Green-Gray, (META-SANDSTONE) 22.0
	2,783.3	25.0														2,783.3 RESIDUAL Dense, Green-Red-Yellow-Gray, Silty Fine to Coarse SAND (A-2-4) 25.0
																Boring Terminated at Elevation 2,783.3 ft In Residual Silty Sand (A-2-4)

NCDOT BORE DOUBLE A-0009CC_GEO_RDY_GTM.GPJ_NC_DOT.GDT 7/2/22

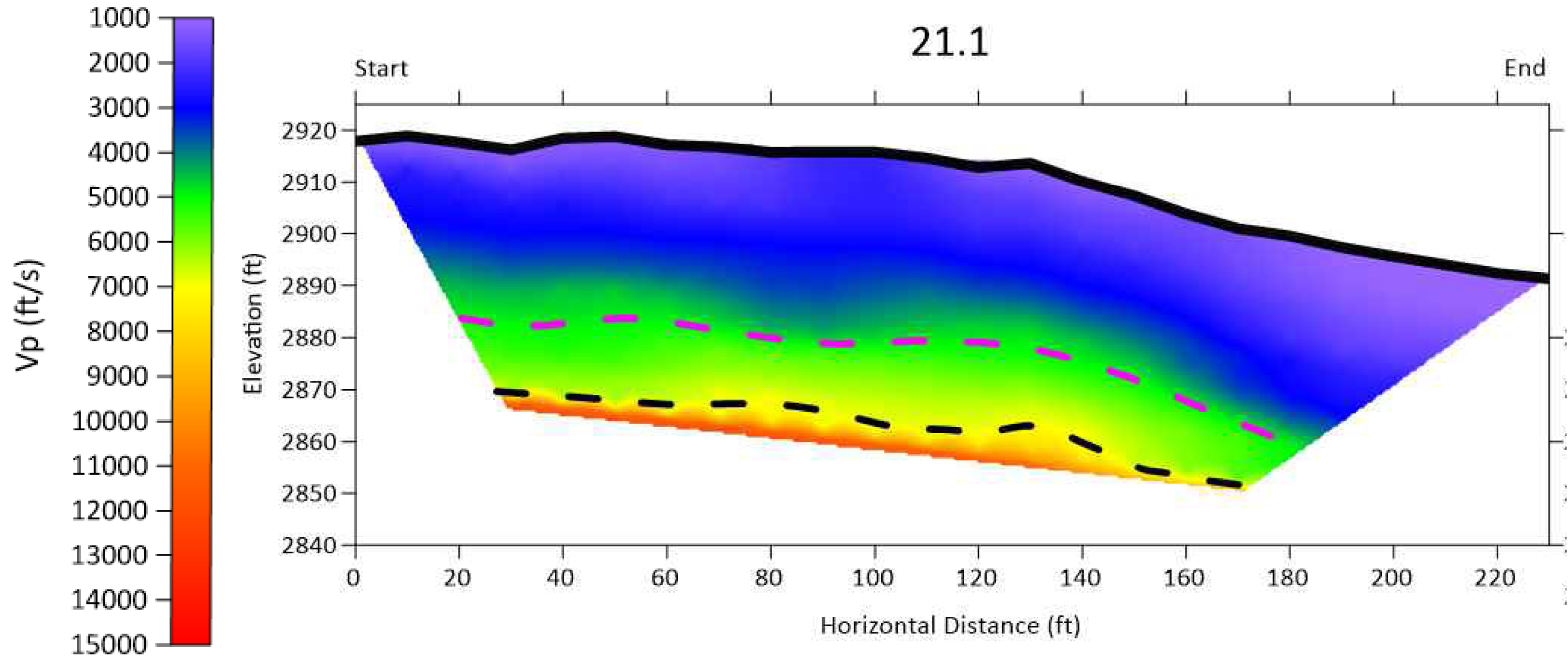
GEOTECHNICAL BORING REPORT

BORE LOG

WBS 32572.1.FS10		TIP A-0009CC		COUNTY GRAHAM		GEOLOGIST C. Piercey										
SITE DESCRIPTION NC 143 from 0.5 Mi. North of AT to NC 28 & NC 28 from 0.2 Mi. West of NC 143 to 0.3 Mi. East of SR 1235							GROUND WTR (ft)									
BORING NO. RWAL21_B-14		STATION 436+50		OFFSET 40 ft LT		ALIGNMENT L										
COLLAR ELEV. 2,794.6 ft		TOTAL DEPTH 35.0 ft		NORTHING 622,601		EASTING 596,522										
DRILL RIGHAMMER EFF./DATE FIVE9553 CME-550X 80% 03/12/2021				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Phillips		START DATE 05/11/21		COMP. DATE 05/11/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
2795														2,794.6	0.0	GROUND SURFACE
	2,793.6	1.0	2	1	2											COLLUVIAL Soft to Medium Stiff, Brown, Fine to Coarse Sandy, Clayey SILT (A-5(0)), with trace gravel
2790	2,791.1	3.5	3	2	2											
	2,788.6	6.0	2	2	2											RESIDUAL Medium Dense, Brown-Gray, Silty Fine to Coarse SAND (A-2-4), with trace gravel-sized rock fragments
2785	2,786.1	8.5	1	2	9									2,786.6	8.0	
	2,782.6	12.0												2,782.6	12.0	RESIDUAL Medium Stiff to Very Stiff, Brown, Fine to Coarse Sandy SILT (A-4), with trace gravel-sized rock fragments
2780	2,781.1	13.5	2	2	6											
	2,776.1	18.5	5	8	13											WEATHERED ROCK Red-Yellow-Gray, (META-SILTSTONE)
2775																
	2,771.1	23.5	32	52	48/0.4									2,770.6	24.0	
2770																RESIDUAL Very Dense, Red-Brown-Yellow-Gray, Silty Fine to Coarse SAND (A-2-4), with trace gravel-sized rock fragments
	2,767.6	27.0												2,767.6	27.0	
2765	2,766.1	28.5	11	25	36											
	2,761.1	33.5	15	25	35											Boring Terminated at Elevation 2,759.6 ft In Residual Silty Sand (A-2-4)
2760														2,759.6	35.0	

NCDOT BORE DOUBLE A-0009CC_GEO_RDY_GTM.GPJ NC_DOT.GDT 7/2/22

GEOPHYSICAL TEST RESULTS – SEISMIC REFRACTION LINE 21.1

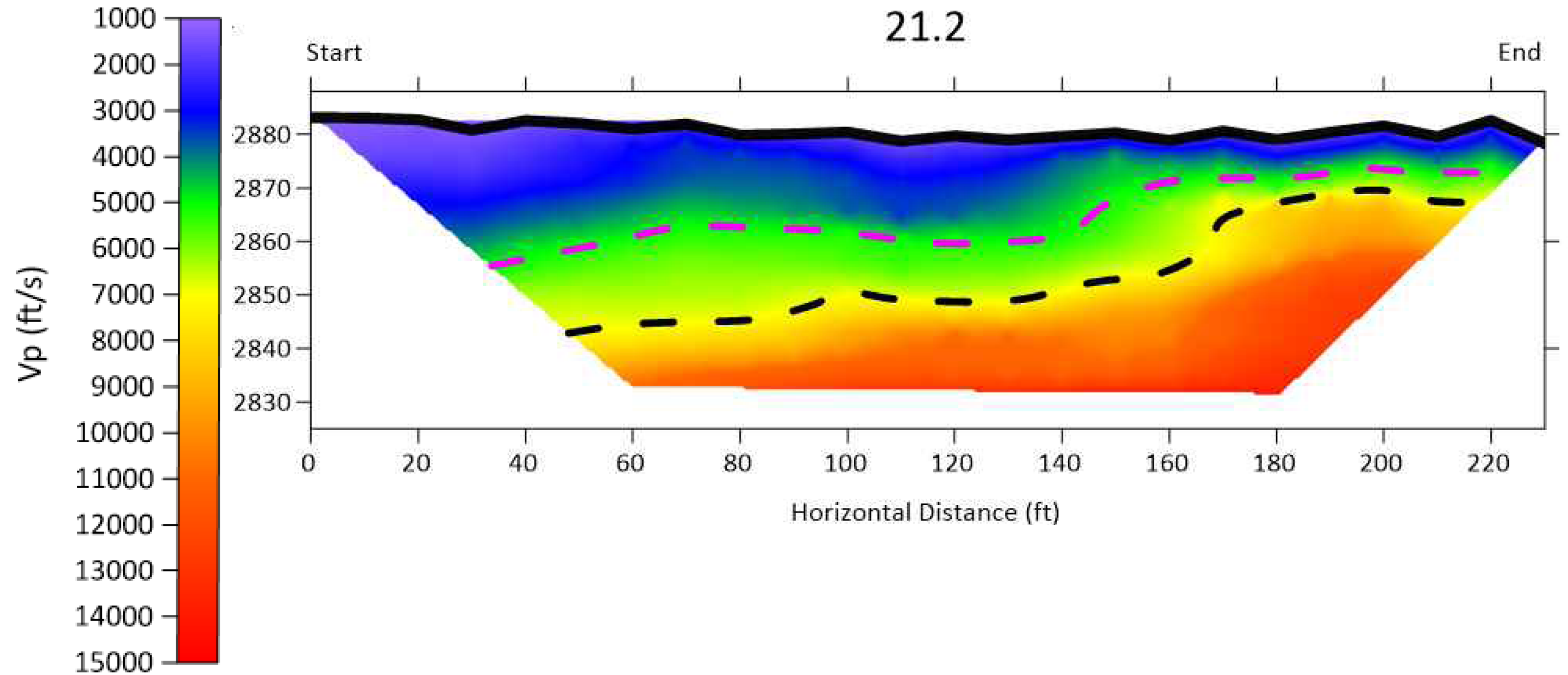


GEOPHYSICAL TESTING PERFORMED BY GEL SOLUTIONS. REFERENCE "SEISMIC REFRACTION SURVEY FOR EVALUATION OF ROCK" DATED 10/01/2021

CG2 ESTIMATED WAVE SPEED FOR WEATHERED ROCK: 4,500 FT/SEC

CG2 ESTIMATED WAVE SPEED FOR CRYSTALLINE ROCK: 7,500 FT/SEC

GEOPHYSICAL TEST RESULTS – SEISMIC REFRACTION LINE 21.2

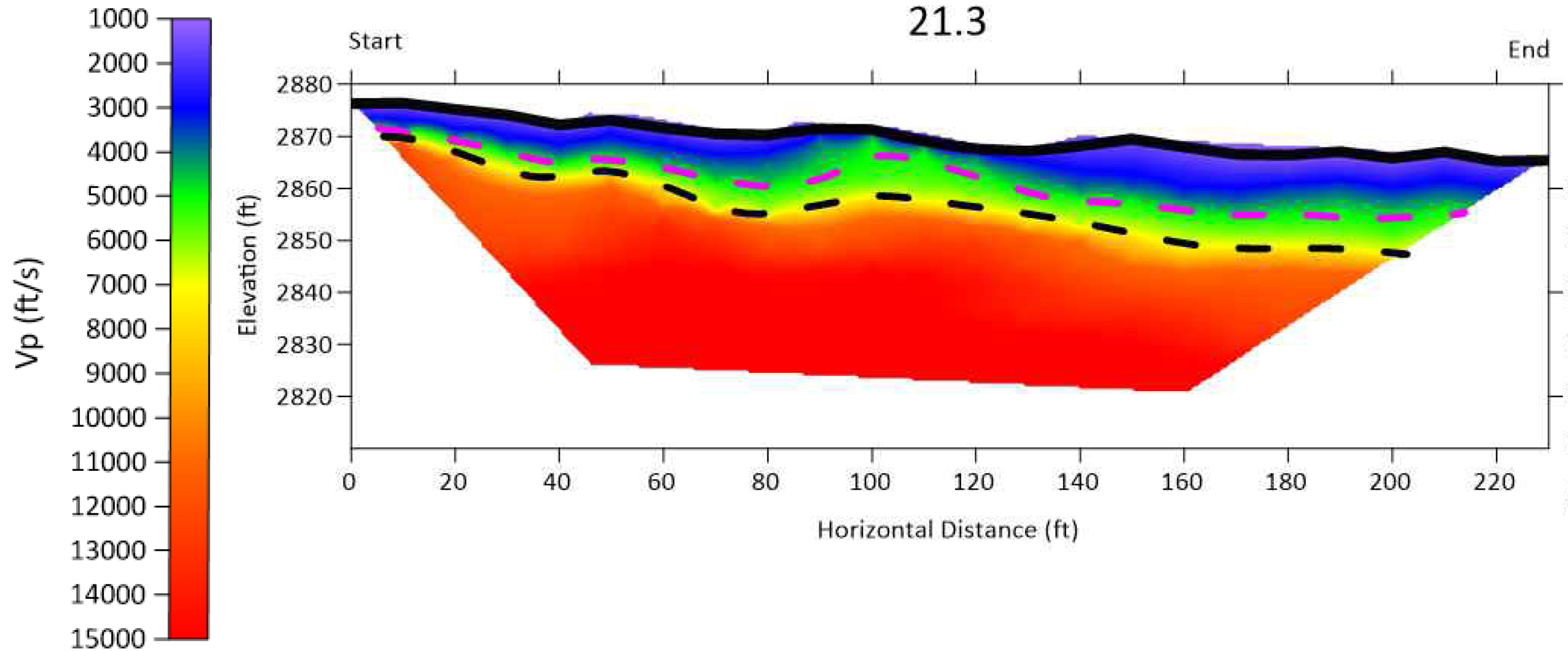


GEOPHYSICAL TESTING PERFORMED BY GEL SOLUTIONS. REFERENCE "SEISMIC REFRACTION SURVEY FOR EVALUATION OF ROCK" DATED 10/01/2021

CG2 ESTIMATED WAVE SPEED FOR WEATHERED ROCK: 4,500 FT/SEC

CG2 ESTIMATED WAVE SPEED FOR CRYSTALLINE ROCK: 7,500 FT/SEC

GEOPHYSICAL TEST RESULTS – SEISMIC REFRACTION LINE 21.3

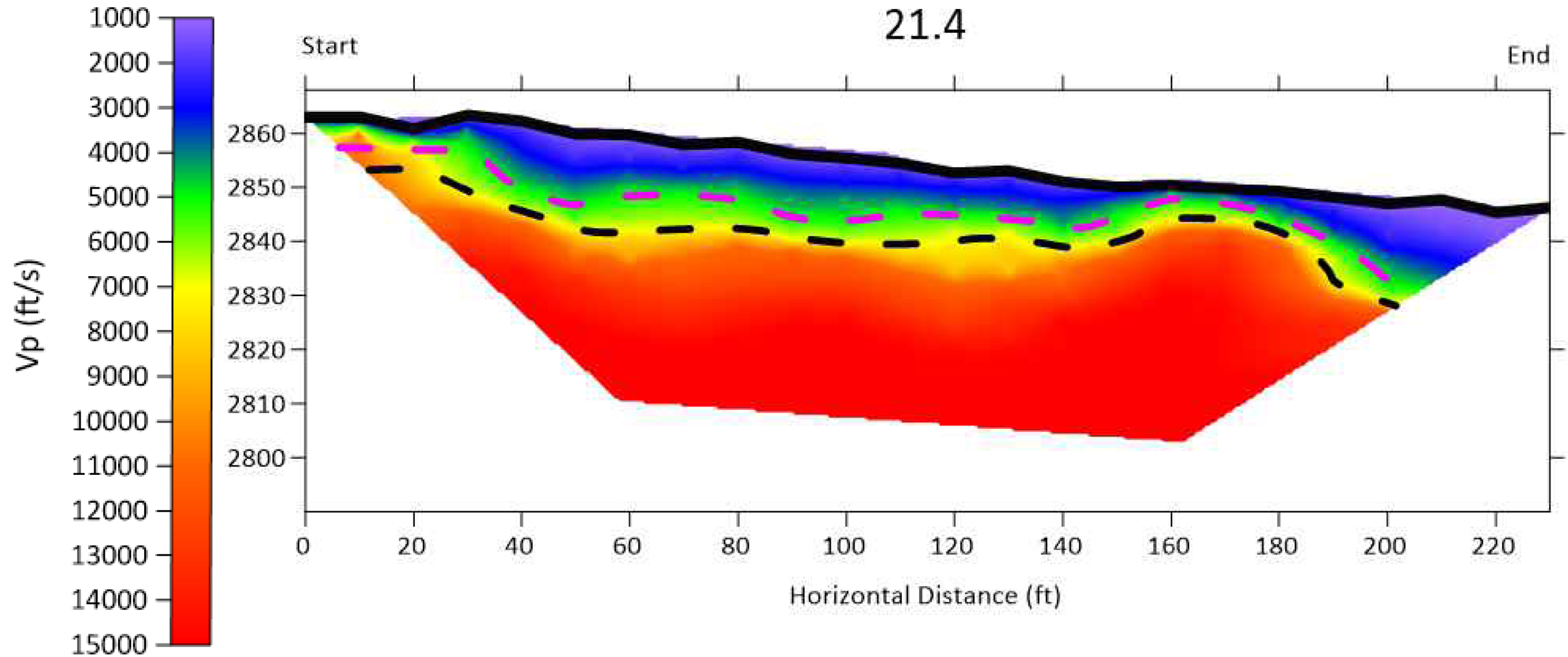


GEOPHYSICAL TESTING PERFORMED BY GEL SOLUTIONS. REFERENCE "SEISMIC REFRACTION SURVEY FOR EVALUATION OF ROCK" DATED 10/01/2021

CG2 ESTIMATED WAVE SPEED FOR WEATHERED ROCK: 4,500 FT/SEC

CG2 ESTIMATED WAVE SPEED FOR CRYSTALLINE ROCK: 7,500 FT/SEC

GEOPHYSICAL TEST RESULTS – SEISMIC REFRACTION LINE 21.4

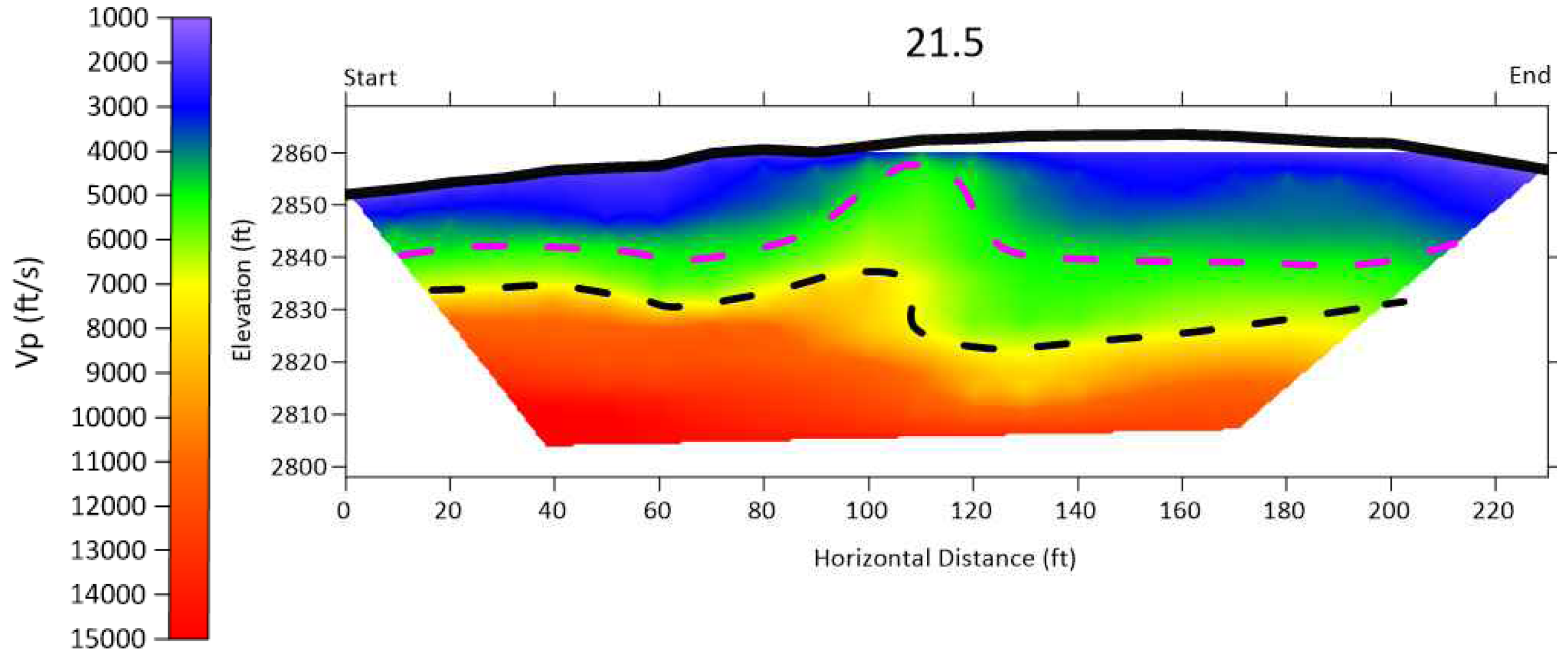


GEOPHYSICAL TESTING PERFORMED BY GEL SOLUTIONS. REFERENCE "SEISMIC REFRACTION SURVEY FOR EVALUATION OF ROCK" DATED 10/01/2021

CG2 ESTIMATED WAVE SPEED FOR WEATHERED ROCK: 4,500 FT/SEC

CG2 ESTIMATED WAVE SPEED FOR CRYSTALLINE ROCK: 7,500 FT/SEC

GEOPHYSICAL TEST RESULTS – SEISMIC REFRACTION LINE 21.5

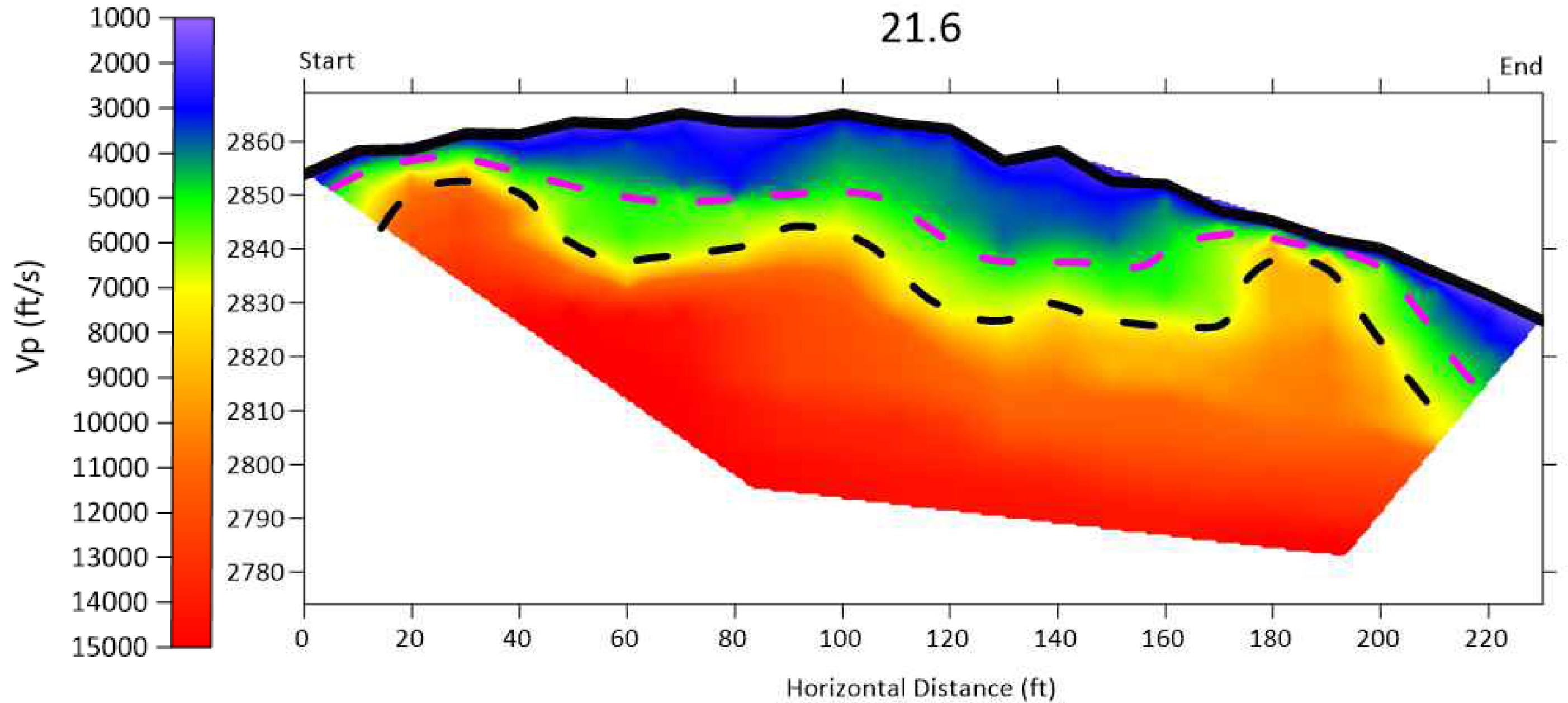


GEOPHYSICAL TESTING PERFORMED BY GEL SOLUTIONS. REFERENCE "SEISMIC REFRACTION SURVEY FOR EVALUATION OF ROCK" DATED 10/01/2021

CG2 ESTIMATED WAVE SPEED FOR WEATHERED ROCK: 4,500 FT/SEC

CG2 ESTIMATED WAVE SPEED FOR CRYSTALLINE ROCK: 7,500 FT/SEC

GEOPHYSICAL TEST RESULTS – SEISMIC REFRACTION LINE 21.6

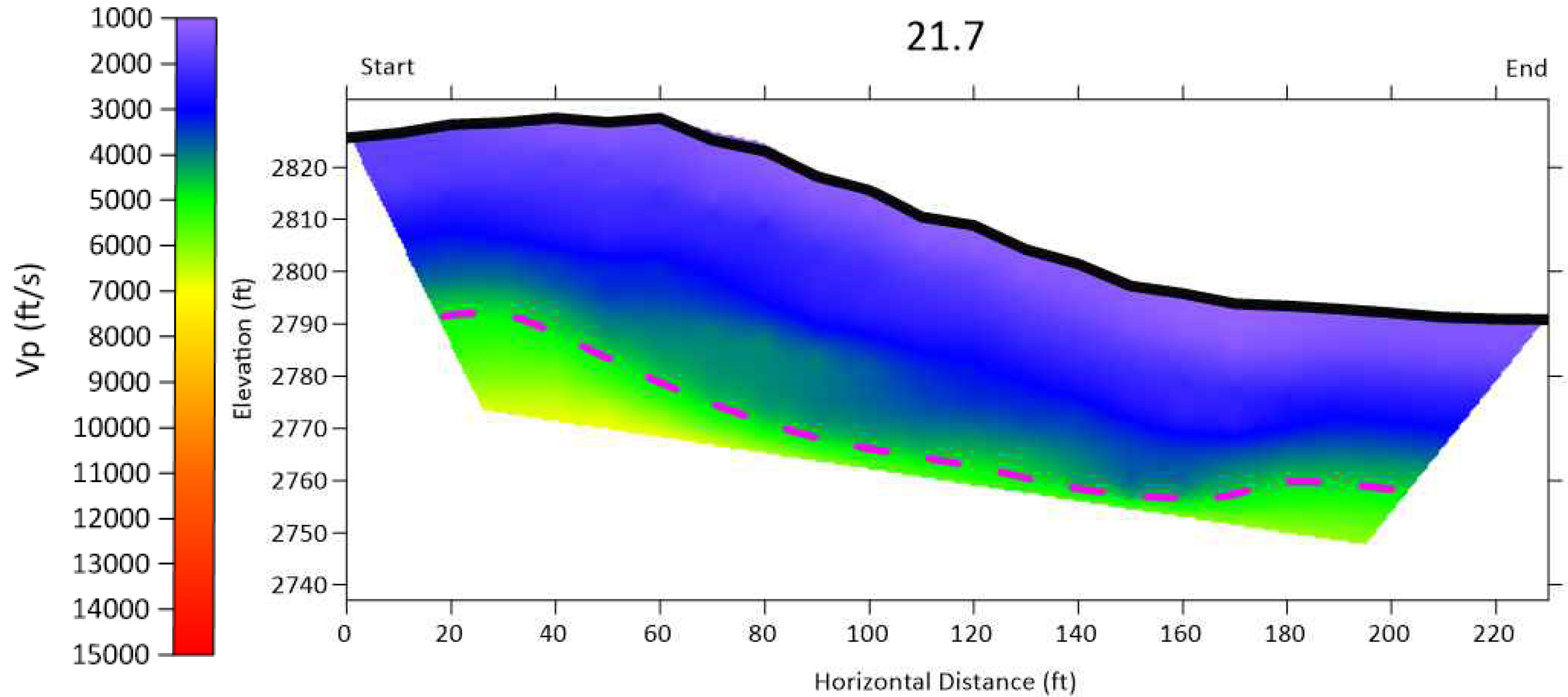


GEOPHYSICAL TESTING PERFORMED BY GEL SOLUTIONS. REFERENCE "SEISMIC REFRACTION SURVEY FOR EVALUATION OF ROCK" DATED 10/01/2021

CG2 ESTIMATED WAVE SPEED FOR WEATHERED ROCK: 4,500 FT/SEC

CG2 ESTIMATED WAVE SPEED FOR CRYSTALLINE ROCK: 7,500 FT/SEC

GEOPHYSICAL TEST RESULTS – SEISMIC REFRACTION LINE 21.7



GEOPHYSICAL TESTING PERFORMED BY GEL SOLUTIONS. REFERENCE "SEISMIC REFRACTION SURVEY FOR EVALUATION OF ROCK" DATED 10/01/2021

CG2 ESTIMATED WAVE SPEED FOR WEATHERED ROCK: 4,500 FT/SEC

CG2 ESTIMATED WAVE SPEED FOR CRYSTALLINE ROCK: 7,500 FT/SEC