

REFERENCE: P-5705B

PROJECT: 44475

SEE SHEET 3 FOR PLAN SHEET LAYOUT  
AT TIME OF INVESTIGATION

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**STATE OF NORTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL ENGINEERING UNIT**

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**ROADWAY**

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**SUBSURFACE INVESTIGATION**

COUNTY MECKLENBURG  
PROJECT DESCRIPTION CHARLOTTE GATEWAY  
STATION AND TRACK AND SAFETY  
IMPROVEMENTS

**INVENTORY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5705B	1	60

**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 707-6850. 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**

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<u>EKLUND, M. A.</u>	<u>MASHBURN, S. R.</u>
<u>STUDNICKY, R. T.</u>	<u>COGAR, T. E.</u>

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SUBMITTED BY TERRACON CONSULTANTS  
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5228073BB8 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

<p><b>SOIL DESCRIPTION</b></p> <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 208, 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><b>GRADATION</b></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><b>ANGULARITY OF GRAINS</b></p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>	<p><b>ROCK DESCRIPTION</b></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>WEATHERED ROCK (WR) - NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES &gt; 100 BLOWS PER FOOT IF TESTED.</p> <p>CRYSTALLINE ROCK (CR) - FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</p> <p>NON-CRYSTALLINE ROCK (NCR) - FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLITE, SLATE, SANDSTONE, ETC.</p> <p>COASTAL PLAIN SEDIMENTARY ROCK (CP) - COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>	<p><b>TERMS AND DEFINITIONS</b></p> <p><b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. <b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA. <b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. <b>ARGILLACEOUS</b> - 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. <b>ARTESIAN</b> - 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. <b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. <b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. <b>CORE RECOVERY (REC.)</b> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. <b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. <b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. <b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. <b>FAULT</b> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. <b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. <b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL. <b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. <b>FORMATION (FM)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. <b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. <b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. <b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. <b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. <b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIUOUS STRATUM. <b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. <b>ROCK QUALITY DESIGNATION (RQD)</b> - 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. <b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. <b>SILL</b> - 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. <b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. <b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - 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. <b>STRATA CORE RECOVERY (SREC.)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. <b>STRATA ROCK QUALITY DESIGNATION (SROD)</b> - 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. <b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																														
<p><b>SOIL LEGEND AND AASHTO CLASSIFICATION</b></p> <table border="1"> <tr> <th rowspan="2">GENERAL CLASS.</th> <th colspan="6">GRANULAR MATERIALS (<math>\leq 35\%</math> PASSING #200)</th> <th colspan="6">SILT-CLAY MATERIALS (<math>&gt; 35\%</math> PASSING #200)</th> <th colspan="3">ORGANIC MATERIALS</th> </tr> <tr> <th>A-1</th> <th>A-3</th> <th>A-2</th> <th>A-2</th> <th>A-2</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-4, A-5</th> <th>A-6, A-7</th> <th></th> <th></th> <th></th> </tr> <tr> <th>GROUP CLASS.</th> <th>A-1-a</th> <th>A-1-b</th> <th>A-2-4</th> <th>A-2-5</th> <th>A-2-6</th> <th>A-2-7</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-4, A-5</th> <th>A-6, A-7</th> <th></th> <th></th> <th></th> </tr> <tr> <th>SYMBOL</th> <td colspan="6">[Patterns]</td> <td colspan="6">[Patterns]</td> <td colspan="3">[Patterns]</td> </tr> <tr> <th>% PASSING</th> <td>50 MX</td> <td>30 MX</td> <td>50 MX</td> <td>51 MN</td> <td>35 MX</td> <td>35 MX</td> <td>35 MX</td> <td>35 MX</td> <td>35 MX</td> <td>35 MN</td> <td>36 MN</td> <td>36 MN</td> <td>36 MN</td> <td>GRANULAR SOILS</td> <td>SILT-CLAY SOILS</td> <td>MUCK, PEAT</td> </tr> <tr> <th>MATERIAL PASSING #40</th> <td></td> <td></td> <td>40 MX</td> <td>41 MN</td> <td>40 MX</td> <td>41 MN</td> <td>40 MX</td> <td>41 MN</td> <td>40 MX</td> <td>41 MN</td> <td>40 MX</td> <td>41 MN</td> <td>41 MN</td> <td></td> <td></td> <td></td> </tr> <tr> <th>GROUP INDEX</th> <td>0</td> <td>0</td> <td>0</td> <td>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></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</p> <p>HIGHLY ORGANIC SOILS</p>	GENERAL CLASS.	GRANULAR MATERIALS ( $\leq 35\%$ PASSING #200)						SILT-CLAY MATERIALS ( $> 35\%$ PASSING #200)						ORGANIC MATERIALS			A-1	A-3	A-2	A-2	A-2	A-2	A-4	A-5	A-6	A-7	A-1, A-2	A-4, A-5	A-6, A-7				GROUP CLASS.	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7	A-1, A-2	A-4, A-5	A-6, A-7				SYMBOL	[Patterns]						[Patterns]						[Patterns]			% PASSING	50 MX	30 MX	50 MX	51 MN	35 MX	35 MX	35 MX	35 MX	35 MX	35 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT	MATERIAL PASSING #40			40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	41 MN				GROUP INDEX	0	0	0	0	0	4 MX	8 MX	12 MX	16 MX	NO MX							<p><b>MINERALOGICAL COMPOSITION</b></p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p><b>COMPRESSIBILITY</b></p> <p>SLIGHTLY COMPRESSIBLE LL &lt; 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL &gt; 50</p> <p><b>PERCENTAGE OF MATERIAL</b></p> <table border="1"> <tr> <th></th> <th>GRANULAR SOILS</th> <th>SILT - CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>&gt; 10%</td> <td>&gt; 20%</td> <td>HIGHLY</td> </tr> <tr> <td></td> <td></td> <td></td> <td>35% AND ABOVE</td> </tr> </table> <p><b>GROUND WATER</b></p> <p>WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING</p> <p>STATIC WATER LEVEL AFTER 24 HOURS</p> <p>PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA</p> <p>SPRING OR SEEP</p>		GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	HIGHLY ORGANIC	> 10%	> 20%	HIGHLY				35% AND ABOVE	<p><b>WEATHERING</b></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 &gt; 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 &lt; 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>	<p><b>MISCELLANEOUS SYMBOLS</b></p> <table border="1"> <tr> <td>ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</td> <td>25/025 DIP &amp; DIP DIRECTION OF ROCK STRUCTURES</td> <td>SLOPE INDICATOR INSTALLATION</td> </tr> <tr> <td>SOIL SYMBOL</td> <td>SPT TEST BORING</td> <td>CONE PENETROMETER TEST</td> </tr> <tr> <td>ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT</td> <td>AUGER BORING</td> <td>SOUNDING ROD</td> </tr> <tr> <td>INFERRED SOIL BOUNDARY</td> <td>CORE BORING</td> <td>TEST BORING WITH CORE</td> </tr> <tr> <td>INFERRED ROCK LINE</td> <td>MONITORING WELL</td> <td>SPT N-VALUE</td> </tr> <tr> <td>ALLUVIAL SOIL BOUNDARY</td> <td>PIEZOMETER INSTALLATION</td> <td></td> </tr> </table>	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION	25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES	SLOPE INDICATOR INSTALLATION	SOIL SYMBOL	SPT TEST BORING	CONE PENETROMETER TEST	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT	AUGER BORING	SOUNDING ROD	INFERRED SOIL BOUNDARY	CORE BORING	TEST BORING WITH CORE	INFERRED ROCK LINE	MONITORING WELL	SPT N-VALUE	ALLUVIAL SOIL BOUNDARY	PIEZOMETER INSTALLATION	
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TIP PROJECT: P-5705BA

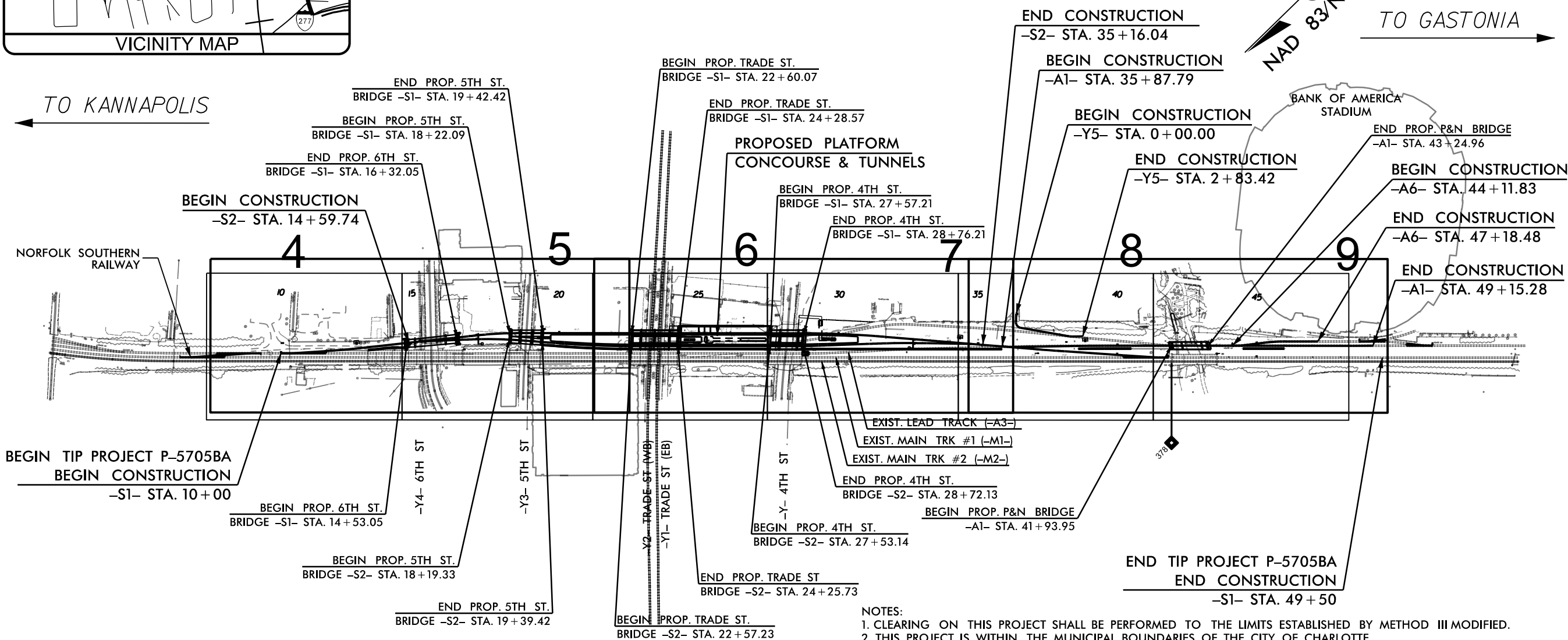
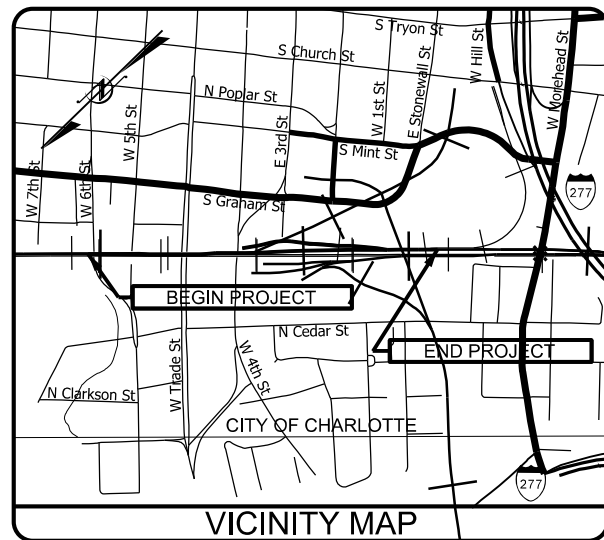
CONTRACT: C204058

STATE OF NORTH CAROLINA  
RAIL DIVISION

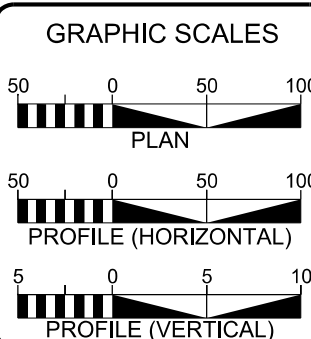
# MECKLENBURG COUNTY

LOCATION: CHARLOTTE GATEWAY STATION - TRACK, STRUCTURE AND SIGNALS  
TYPE OF WORK: DRAINAGE, PAVING, GRADING, STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5705BA	3	60
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
44475.1.2		P.E. / UTIL P.E. / ROW	
44475.3.2		CONST./UTIL CONST.	



NOTES:  
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III MODIFIED.  
2. THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF CHARLOTTE



PROJECT LENGTH	
LENGTH OF RAIL TIP PROJECT	0.612 MILES
LENGTH OF STRUCTURES TIP PROJECT	0.136 MILES
TOTAL LENGTH OF RAIL TIP PROJECT	0.748 MILES
LENGTH MEASURED ALONG -S1-	
NCDOT CONTACT:	MATTHEW SIMMONS, P.E. NCDOT PROJECT MANAGER

**HNTB** HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
N/A

LETTING DATE:  
FEBRUARY 20, 2018

COREY VERNIER, P.E.  
RAIL PROJECT ENGINEER

DAVID HAWKINS, P.E.  
STRUCTURE PROJECT ENGINEER

JAMES BYRD, P.E.  
HYDRAULICS PROJECT ENGINEER

ERIC SECKINGER, P.E.  
ROADWAY PROJECT ENGINEER

MATTHEW SIMMONS, P.E.  
NCDOT PROJECT MANAGER

RAIL ENGINEER                      HYDRAULICS ENGINEER

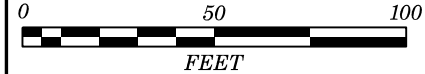
**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

**SUBMITTAL: 90%**  
**DATE: AUGUST 9, 2017**

SIGNATURE: \_\_\_\_\_ P.E.                      SIGNATURE: \_\_\_\_\_ P.E.

NC DEPARTMENT OF TRANSPORTATION  
**RAIL DIVISION**  
DESIGN AND CONSTRUCTION



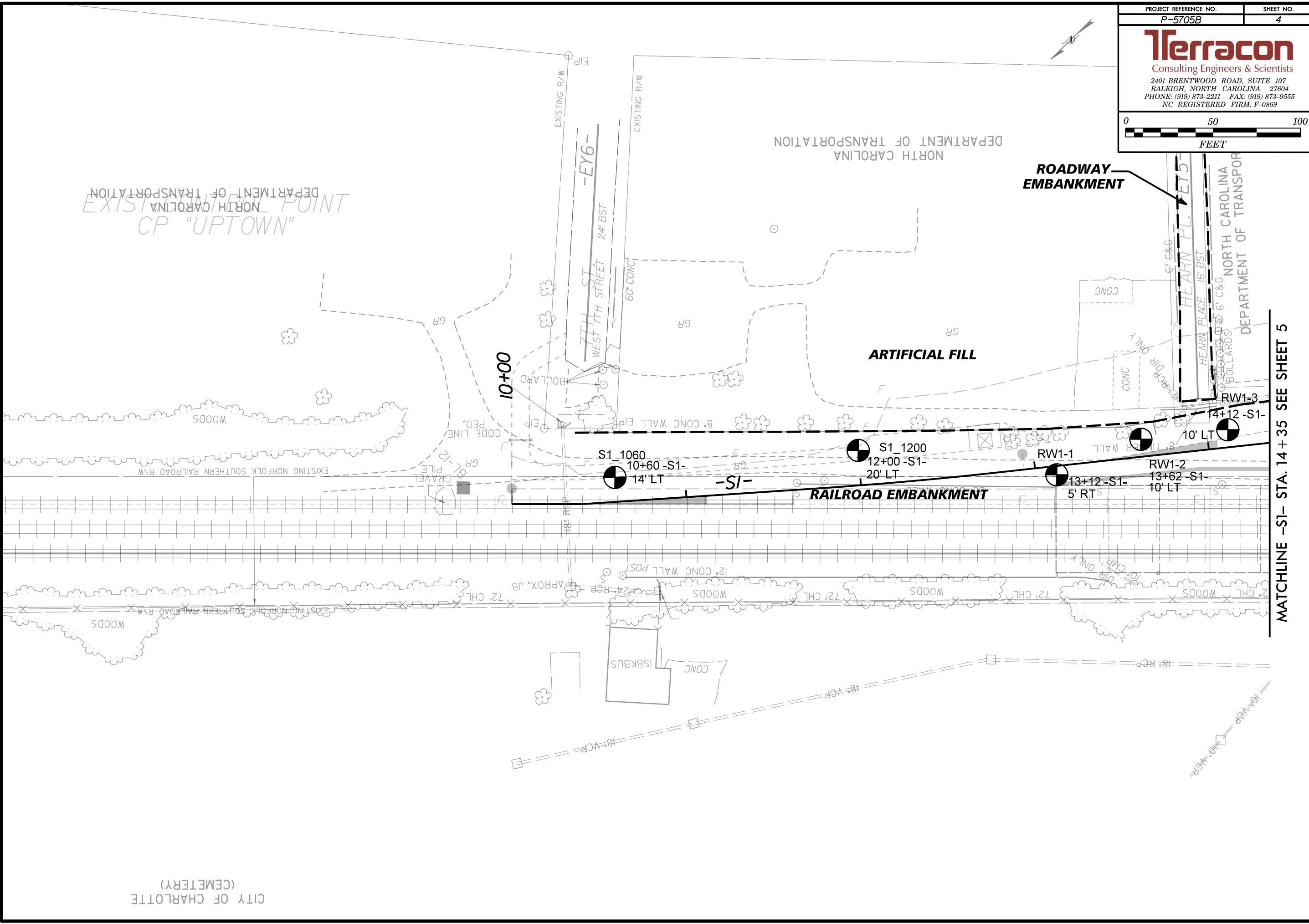
EXISTING POINT  
CP "UPTOWN"  
DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF TRANSPORTATION  
NORTH CAROLINA

**ROADWAY  
EMBANKMENT**

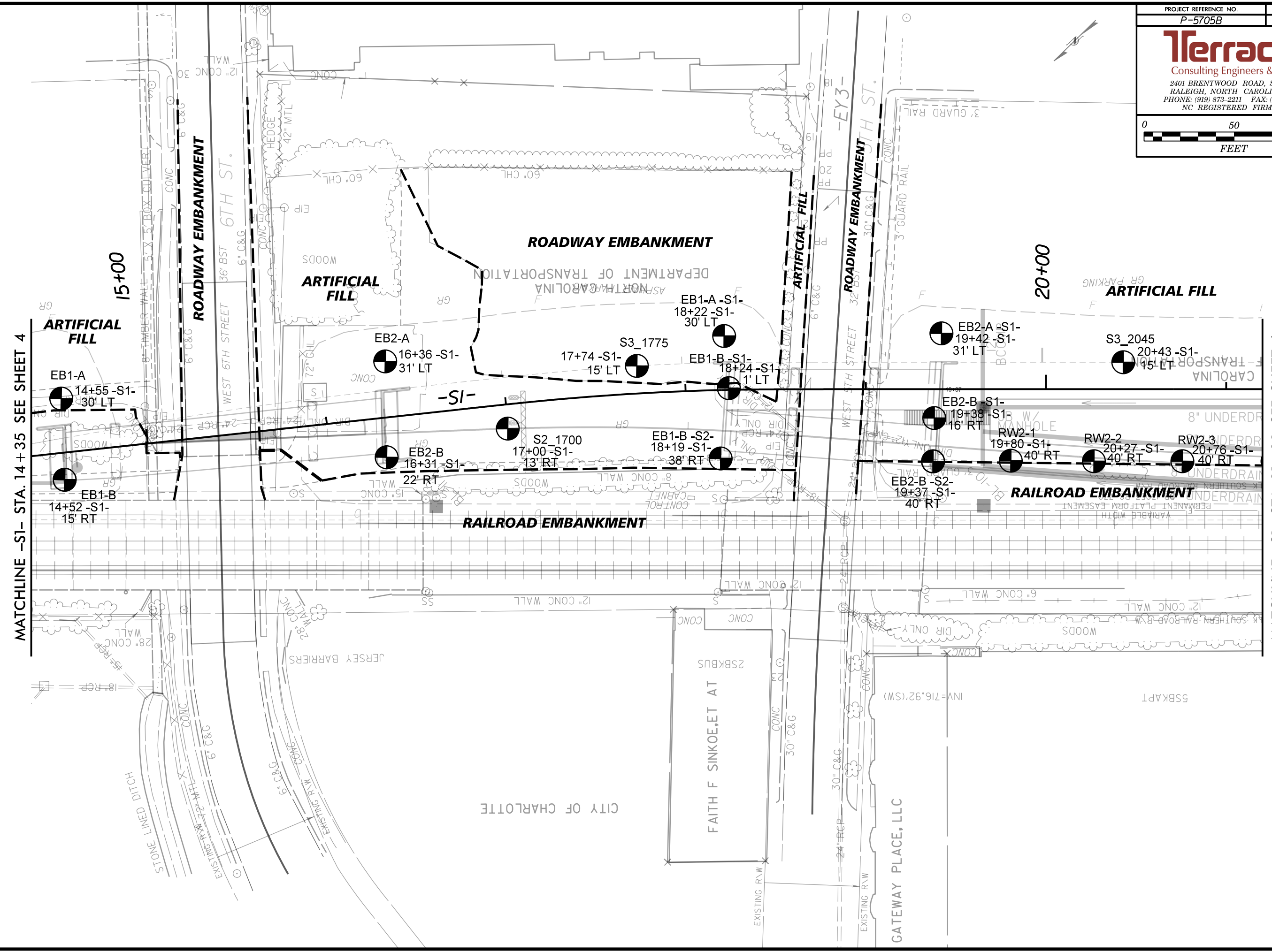
**ARTIFICIAL FILL**

MATCHLINE -SI- STA. 14 + 35 SEE SHEET 5



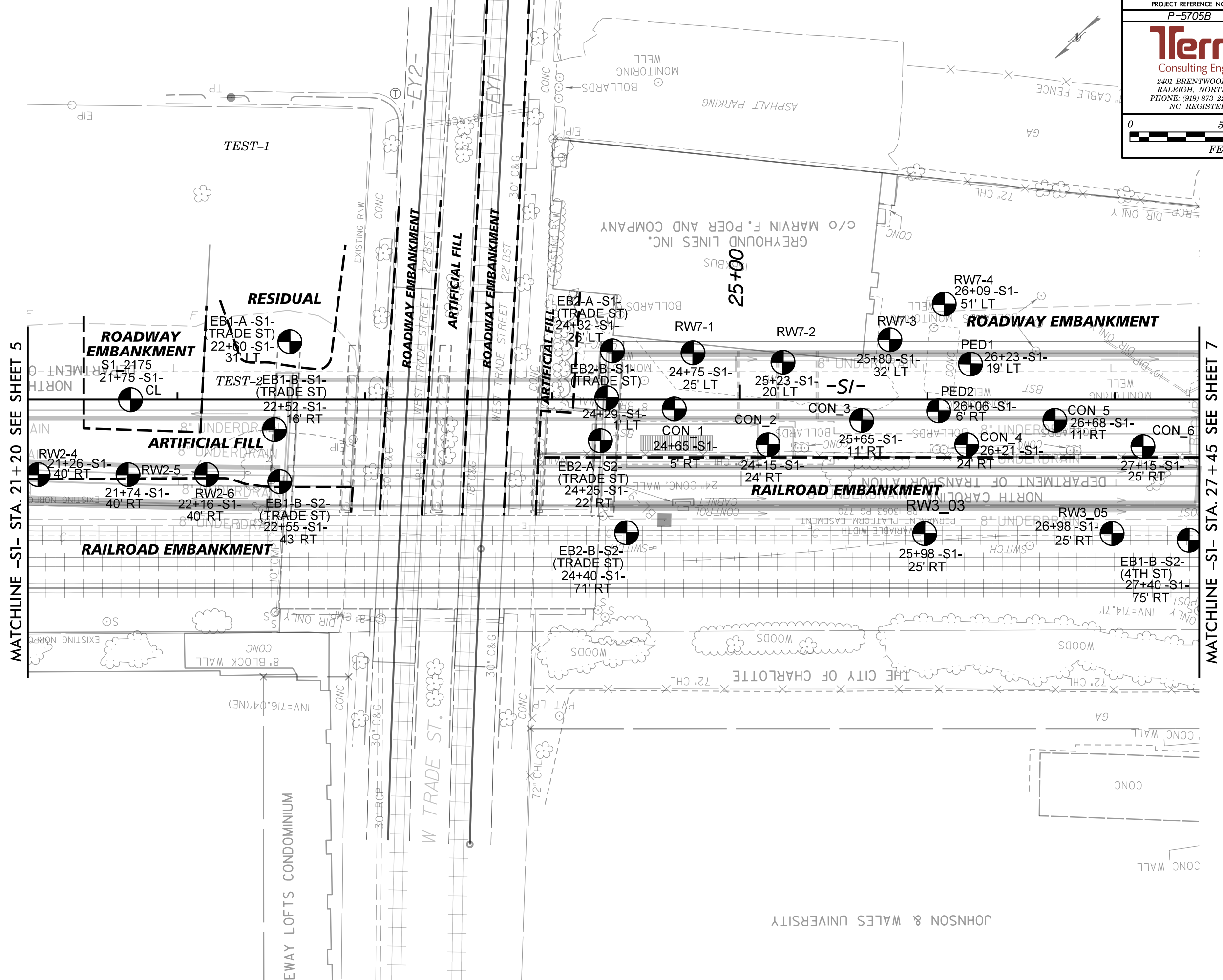
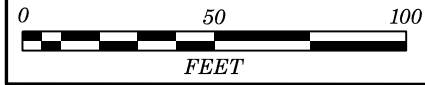
CITY OF CHARLOTTE  
(CEMETERY)

PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>5</b>
<b>Terracon</b>	
Consulting Engineers & Scientists	
2401 BRENTWOOD ROAD, SUITE 107 RALEIGH, NORTH CAROLINA 27604 PHONE: (919) 873-2211 FAX: (919) 873-9555 NC REGISTERED FIRM: P-0869	
0 50 100 FEET	



MATCHLINE -SI- STA. 14 + 35 SEE SHEET 4

MATCHLINE -SI- STA. 21 + 20 SEE SHEET 6



MATCHLINE -S1- STA. 21 + 20 SEE SHEET 5

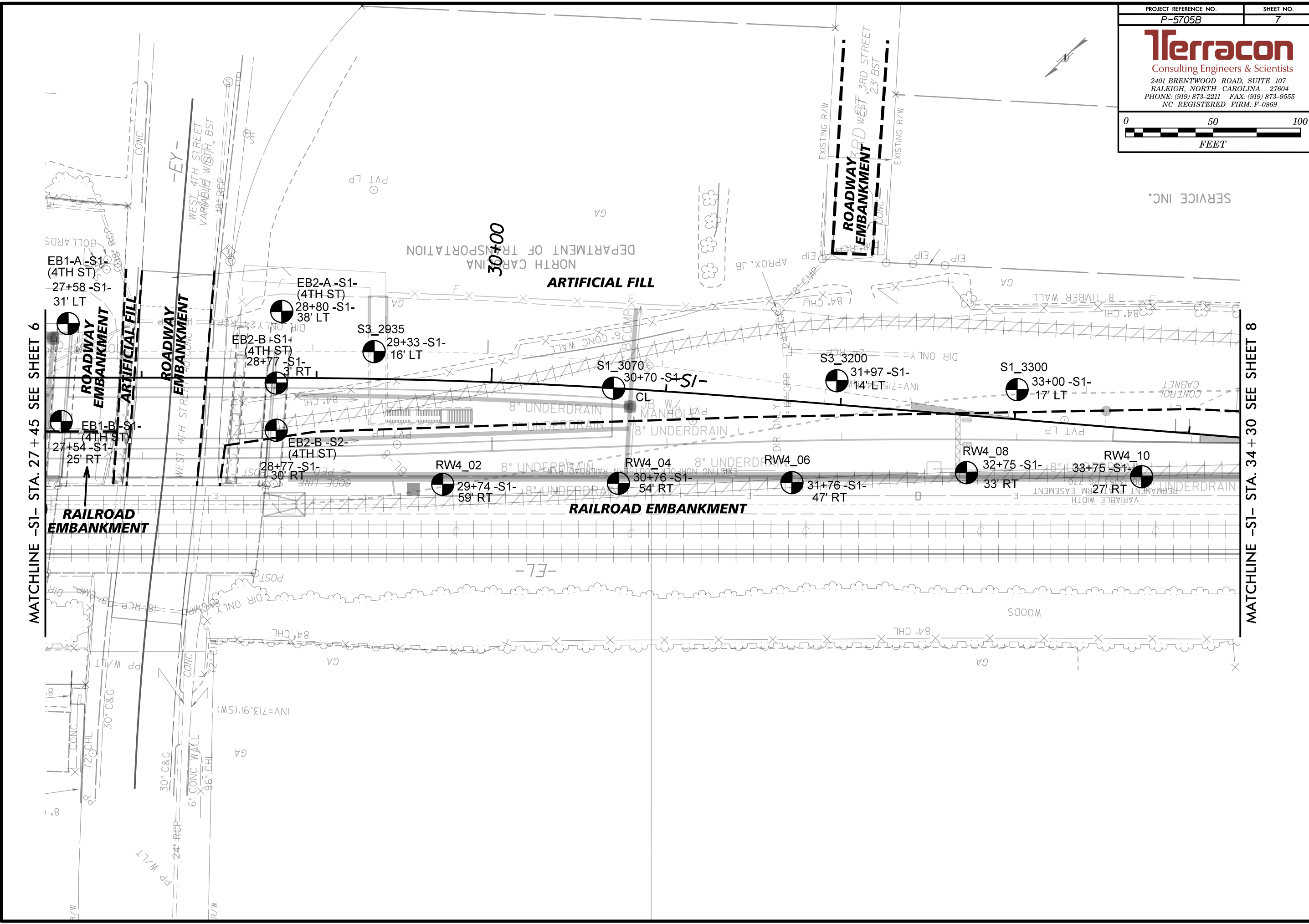
MATCHLINE -S1- STA. 27 + 45 SEE SHEET 7

JOHNSON & WALES UNIVERSITY

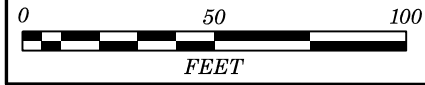
PROJECT REFERENCE NO. P-5705B	SHEET NO. 7
<b>Terracon</b>	
Consulting Engineers & Scientists	
2401 BRENTWOOD ROAD, SUITE 107 RALEIGH, NORTH CAROLINA 27604 PHONE: (919) 873-2211 FAX: (919) 873-9555 NC REGISTERED FIRM: P-0869	
0 50 100 FEET	

MATCHLINE -S1- STA. 27 + 45 SEE SHEET 6

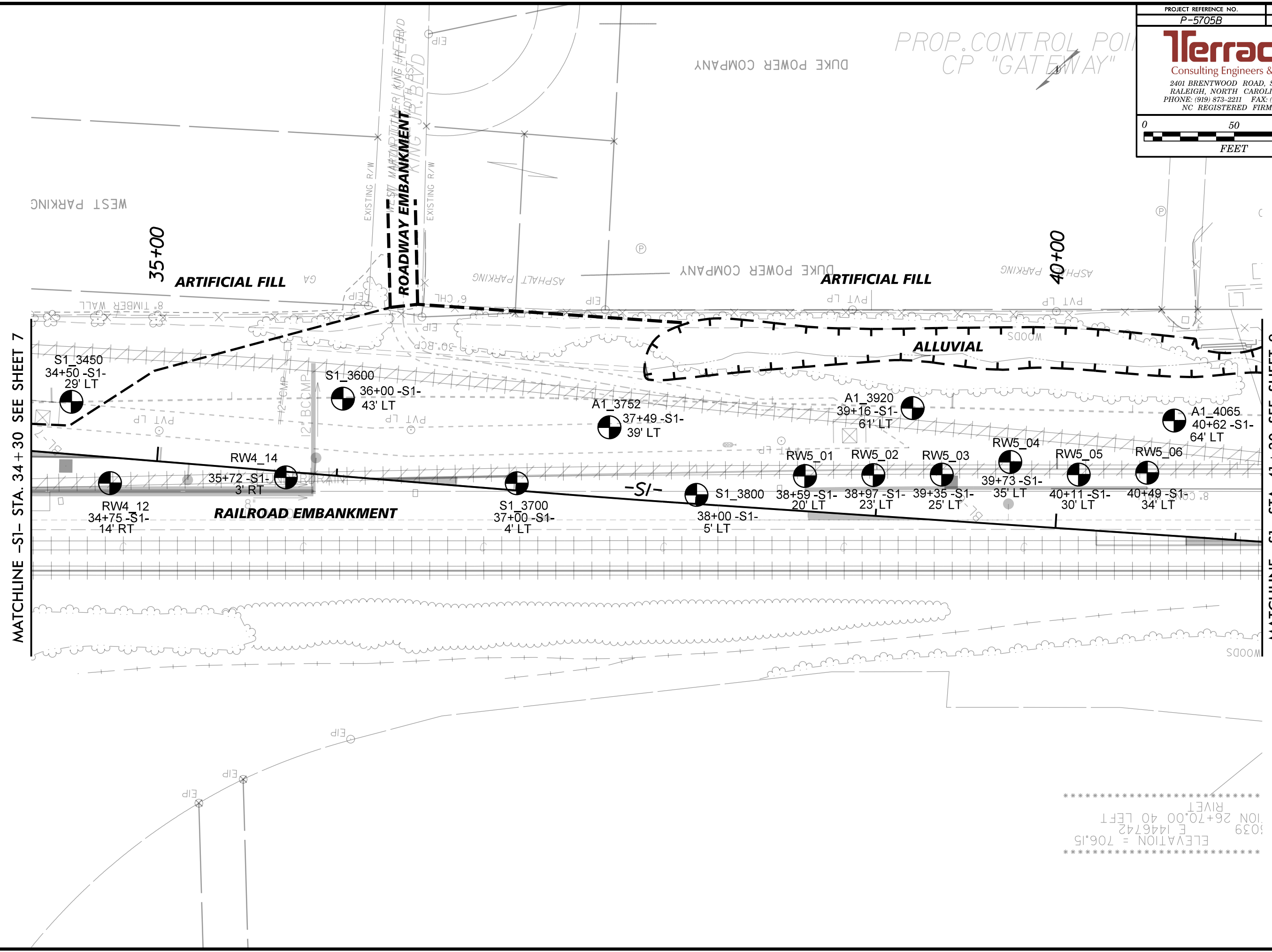
MATCHLINE -S1- STA. 34 + 30 SEE SHEET 8



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RALEIGH, NORTH CAROLINA 27604  
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NC REGISTERED FIRM: P-0869



PROP. CONTROL POINT  
CP "GATEWAY"



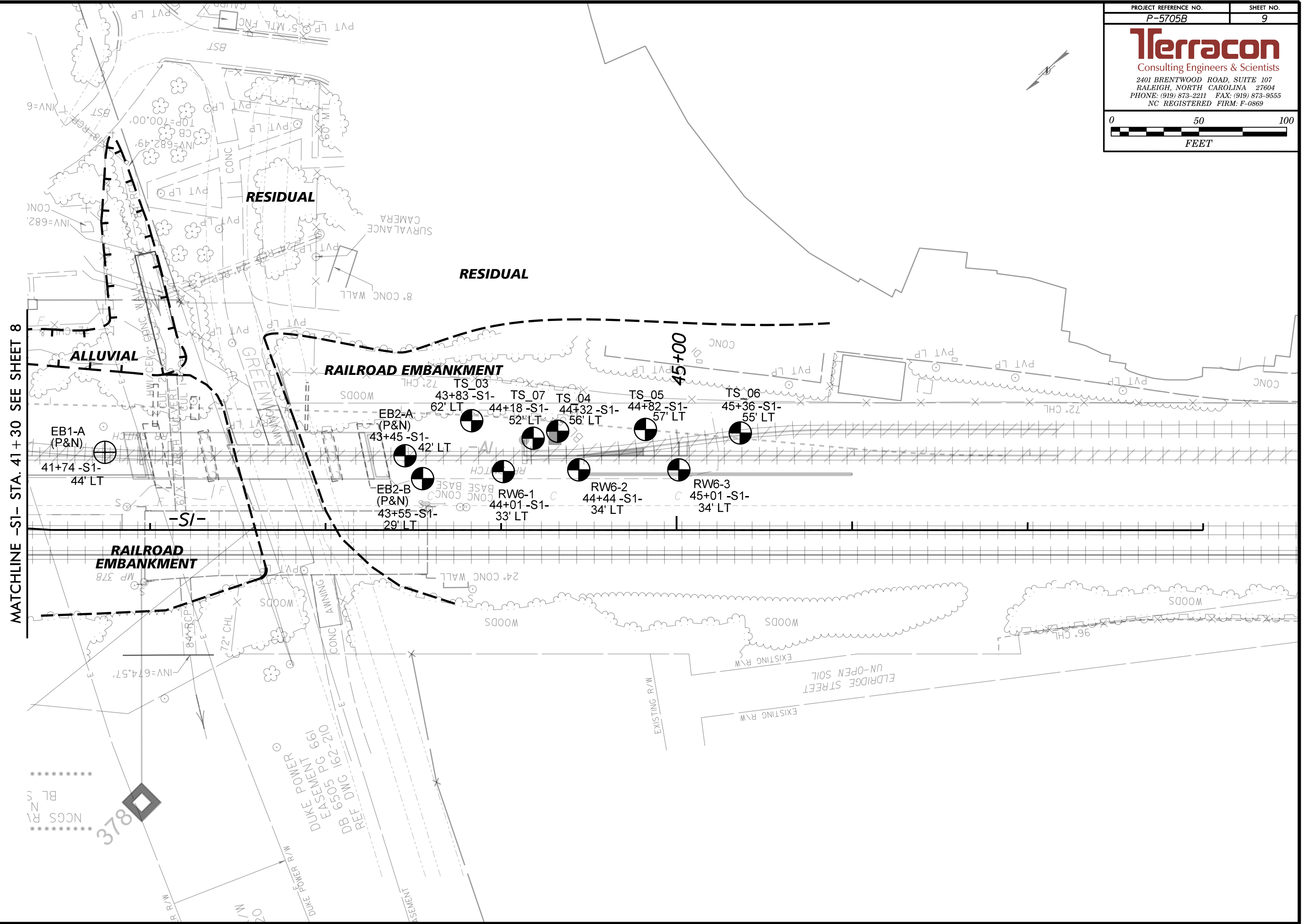
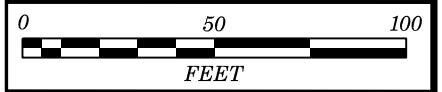
MATCHLINE -S1- STA. 34 + 30 SEE SHEET 7

MATCHLINE -S1- STA. 41 + 30 SEE SHEET 9

\*\*\*\*\*  
ELEVATION = 706.15  
E 1446742  
ION 26+70.00 40 LEFT  
RIVER  
\*\*\*\*\*



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 RALEIGH, NORTH CAROLINA 27604  
 PHONE: (919) 873-2211 FAX: (919) 873-9555  
 NC REGISTERED FIRM: P-0869

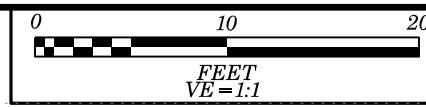


MATCHLINE -S1- STA. 41+30 SEE SHEET 8

\*\*\*\*\*  
 NCGS RI  
 BL S  
 \*\*\*\*\*

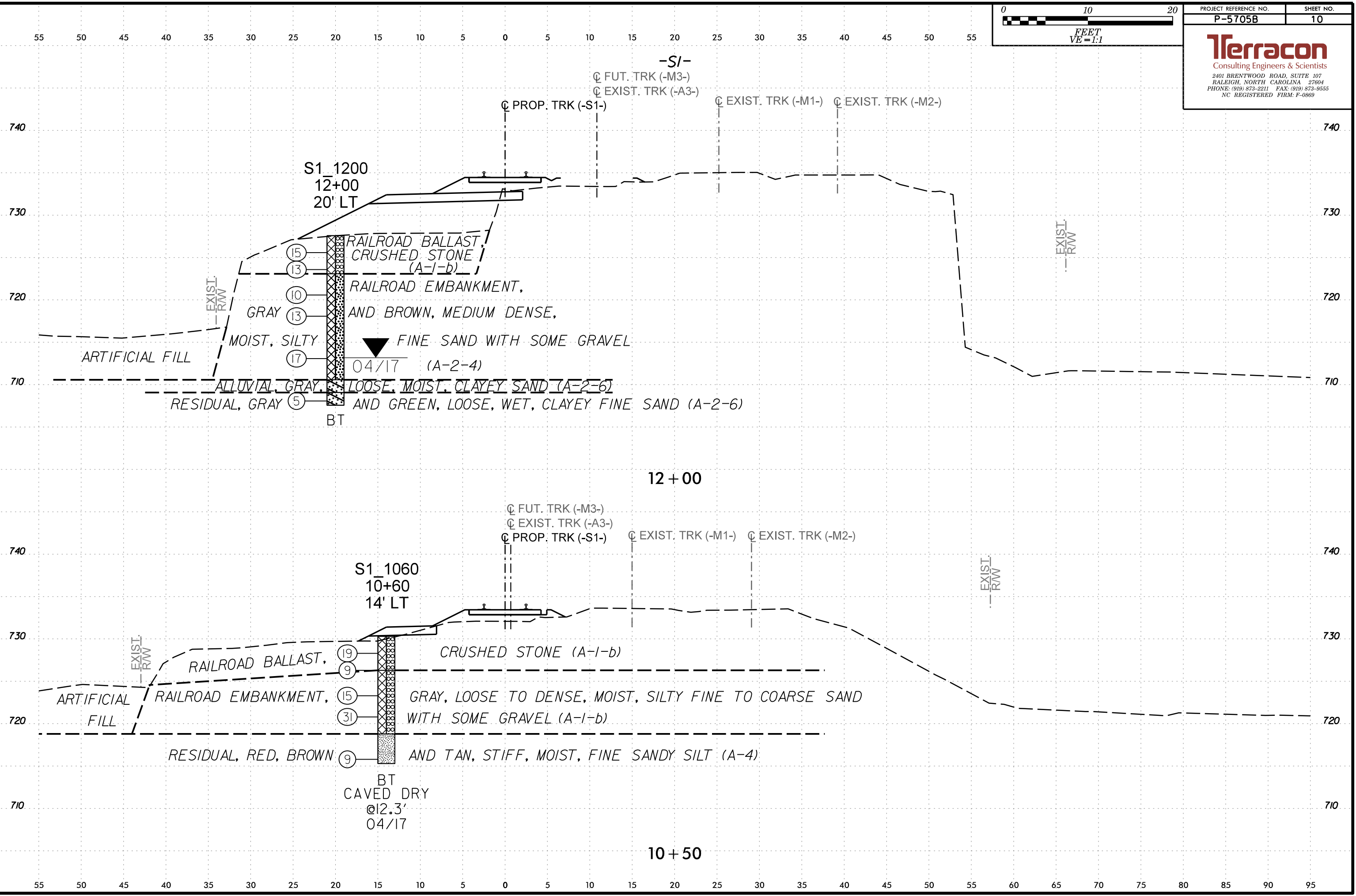
378

DUKE POWER  
 EASEMENT  
 0161  
 5059  
 2-22-29  
 DB D MC G

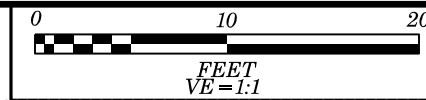


PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>10</b>
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Consulting Engineers & Scientists  
2401 BRENTWOOD ROAD, SUITE 107  
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PHONE: (919) 873-2211 FAX: (919) 873-9555  
NC REGISTERED FIRM: P-0869

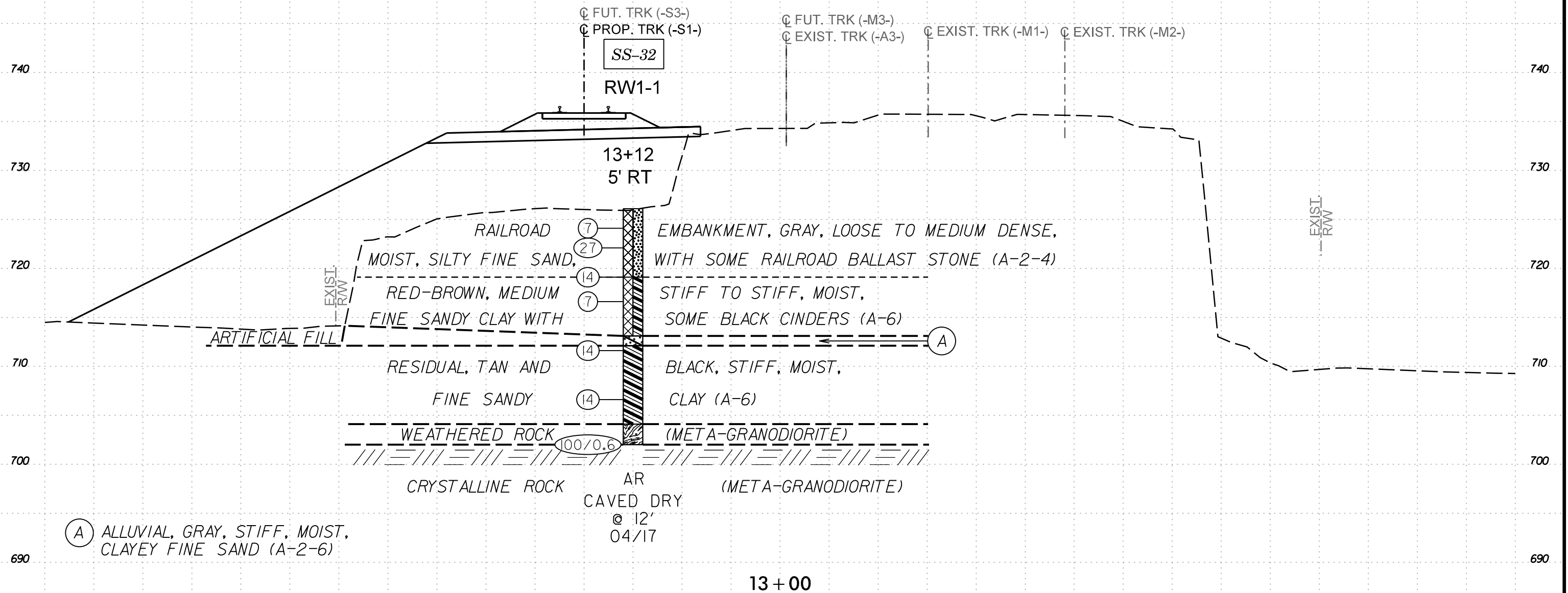


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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>11</b>
Consulting Engineers & Scientists 2401 BRENTWOOD ROAD, SUITE 107 RALEIGH, NORTH CAROLINA 27604 PHONE: (919) 873-2211 FAX: (919) 873-9555 NC REGISTERED FIRM: P-0869	

-S1-



(A) ALLUVIAL, GRAY, STIFF, MOIST,  
CLAYEY FINE SAND (A-2-6)

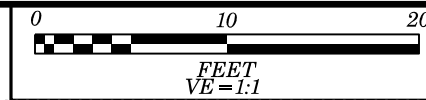
AR  
CAVED DRY  
@ 12'  
04/17

13+00

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 80 85 90 95

0012DEL\_P28

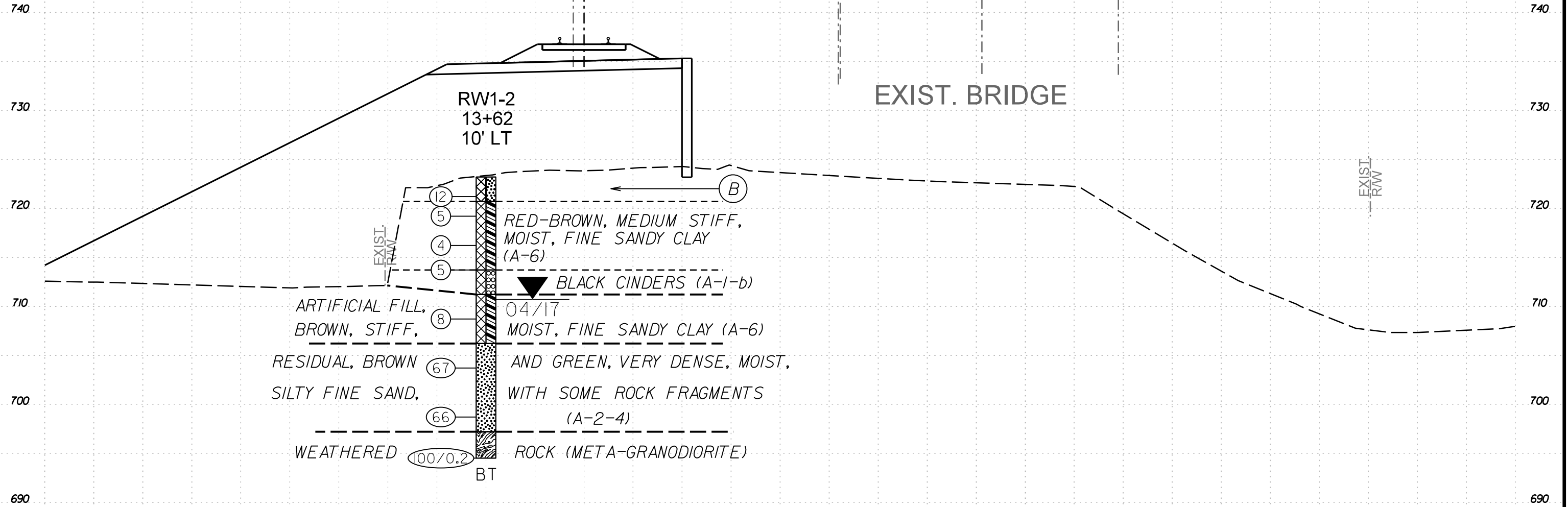
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>12</b>
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**Terracon**  
Consulting Engineers & Scientists  
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PHONE: (919) 873-2211 FAX: (919) 873-9555  
NC REGISTERED FIRM: P-0869

-S1-



RW1-2  
13+62  
10' LT

EXIST. BRIDGE

☐ FUT. TRK (-S3-)  
☐ PROP. TRK (-S1-)

☐ FUT. TRK (-M3-)  
☐ EXIST. TRK (-A3-)  
☐ EXIST. TRK (-M1-)  
☐ EXIST. TRK (-M2-)

EXIST. R/W

EXIST. R/W

- ⑫ RED-BROWN, MEDIUM STIFF, MOIST, FINE SANDY CLAY (A-6)
- ④
- ⑤
- ▲ BLACK CINDERS (A-1-b)
- ⑧ ARTIFICIAL FILL, BROWN, STIFF, 04/17 MOIST, FINE SANDY CLAY (A-6)
- ⑥7 RESIDUAL, BROWN AND GREEN, VERY DENSE, MOIST, SILTY FINE SAND, WITH SOME ROCK FRAGMENTS (A-2-4)
- ⑥6 WEATHERED 100/0.2 ROCK (META-GRANODIORITE)

ⓑ

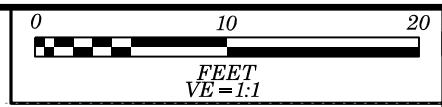
13 + 50

ⓑ RAILROAD EMBANKMENT, BROWN-GRAY, MEDIUM DENSE, MOIST, SILTY FINE SAND WITH SOME RAILROAD BALLAST STONE (A-2-4)

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 80 85 90 95

0012DEL\_P28

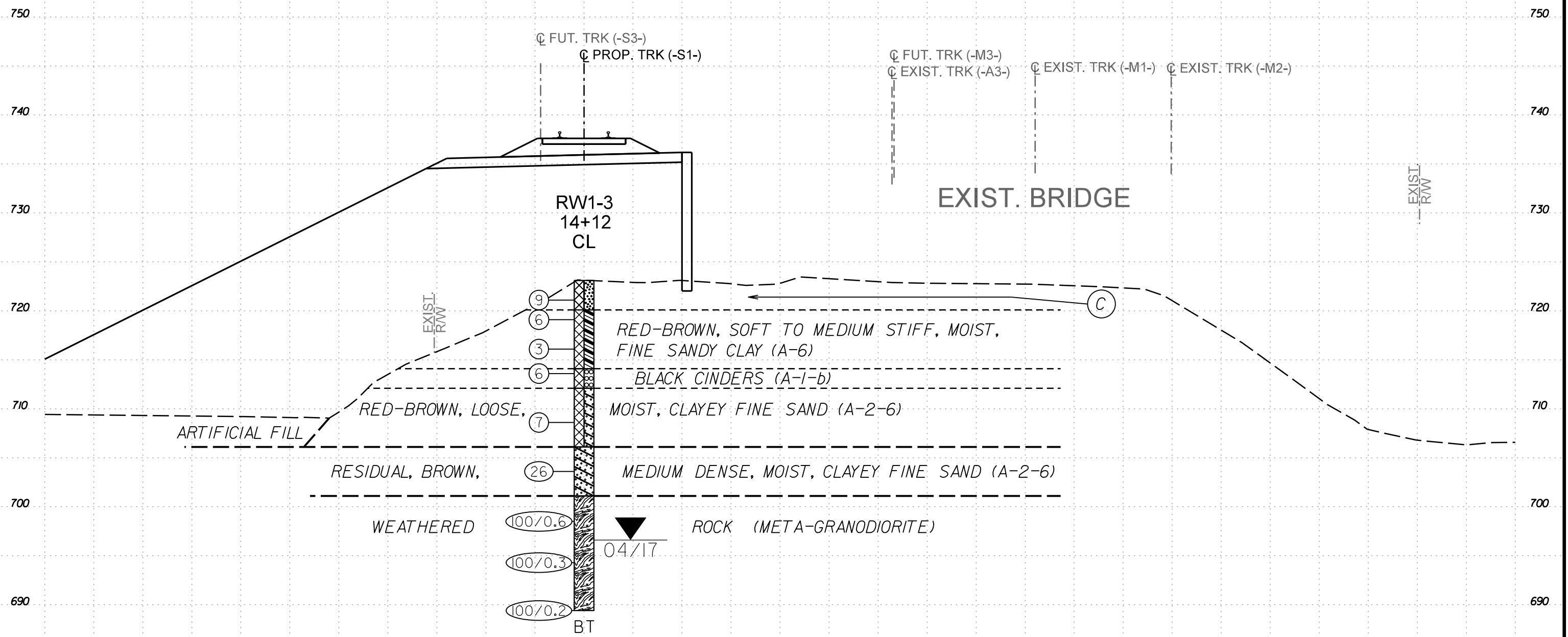
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>13</b>
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NC REGISTERED FIRM: P-0869

-S1-



RW1-3  
14+12  
CL

EXIST. BRIDGE

ARTIFICIAL FILL

RED-BROWN, LOOSE, MOIST, CLAYEY FINE SAND (A-2-6)

RED-BROWN, SOFT TO MEDIUM STIFF, MOIST, FINE SANDY CLAY (A-6)

BLACK CINDERS (A-1-b)

RESIDUAL, BROWN, WEATHERED

MEDIUM DENSE, MOIST, CLAYEY FINE SAND (A-2-6)

ROCK (META-GRANODIORITE)

- 9
- 6
- 3
- 6
- 7
- 26
- 100/0.6
- 100/0.3
- 100/0.2

BT

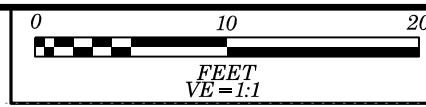
04/17

14+00

(C) RAILROAD EMBANKMENT, BROWN-GRAY, LOOSE, MOIST, SILTY FINE SAND WITH SOME RAILROAD BALLAST (A-2-4)

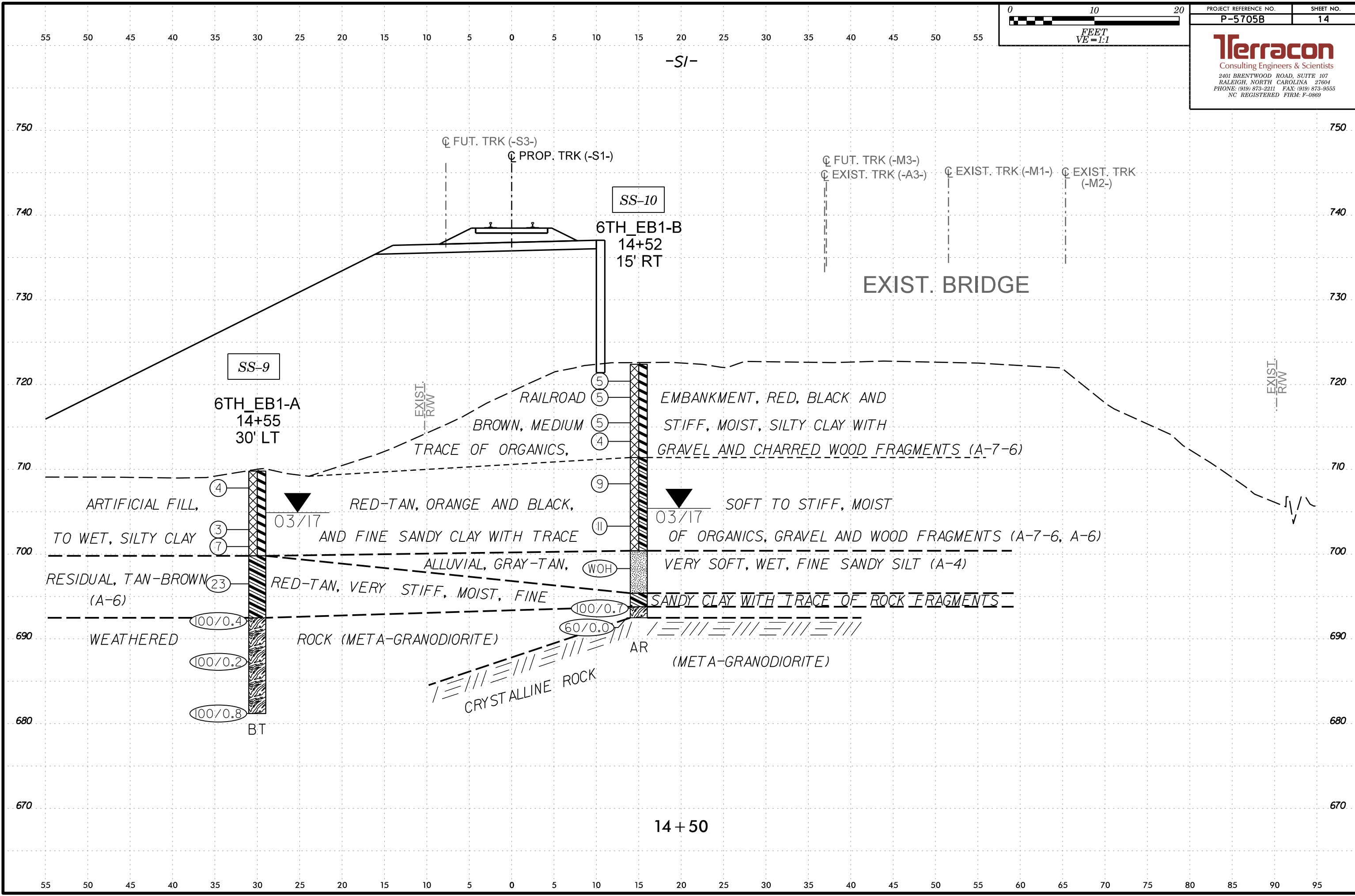
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0012DEL\_P28

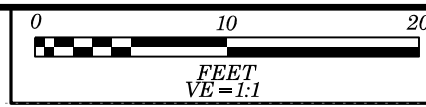


PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>14</b>
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NC REGISTERED FIRM: P-0869

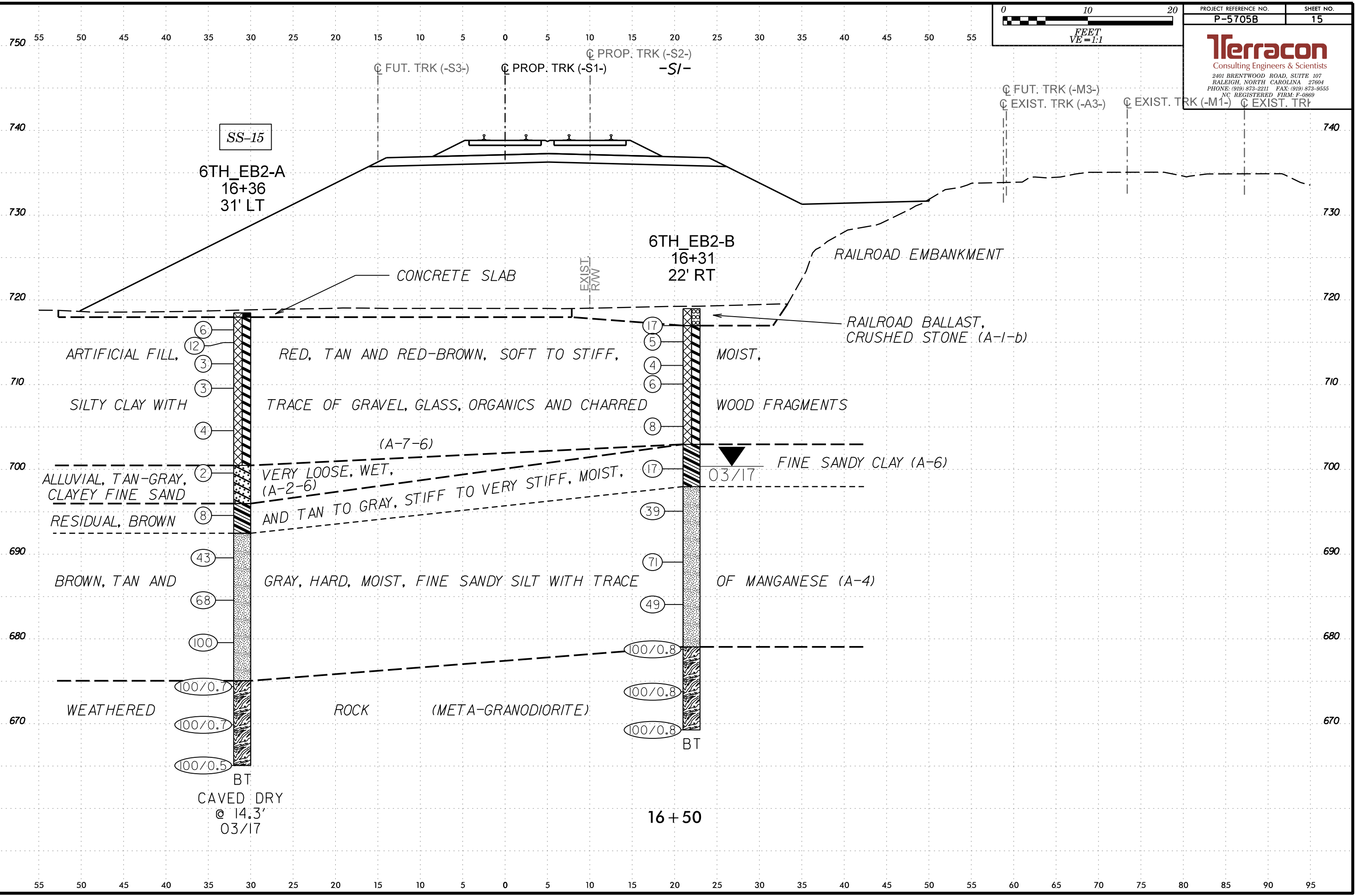


0012DEL\_P28



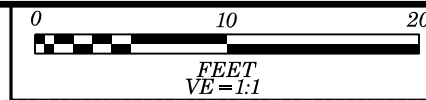
PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>15</b>
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Consulting Engineers & Scientists  
2401 BRENTWOOD ROAD, SUITE 107  
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NC REGISTERED FIRM: P-0869



0012DEL\_P28

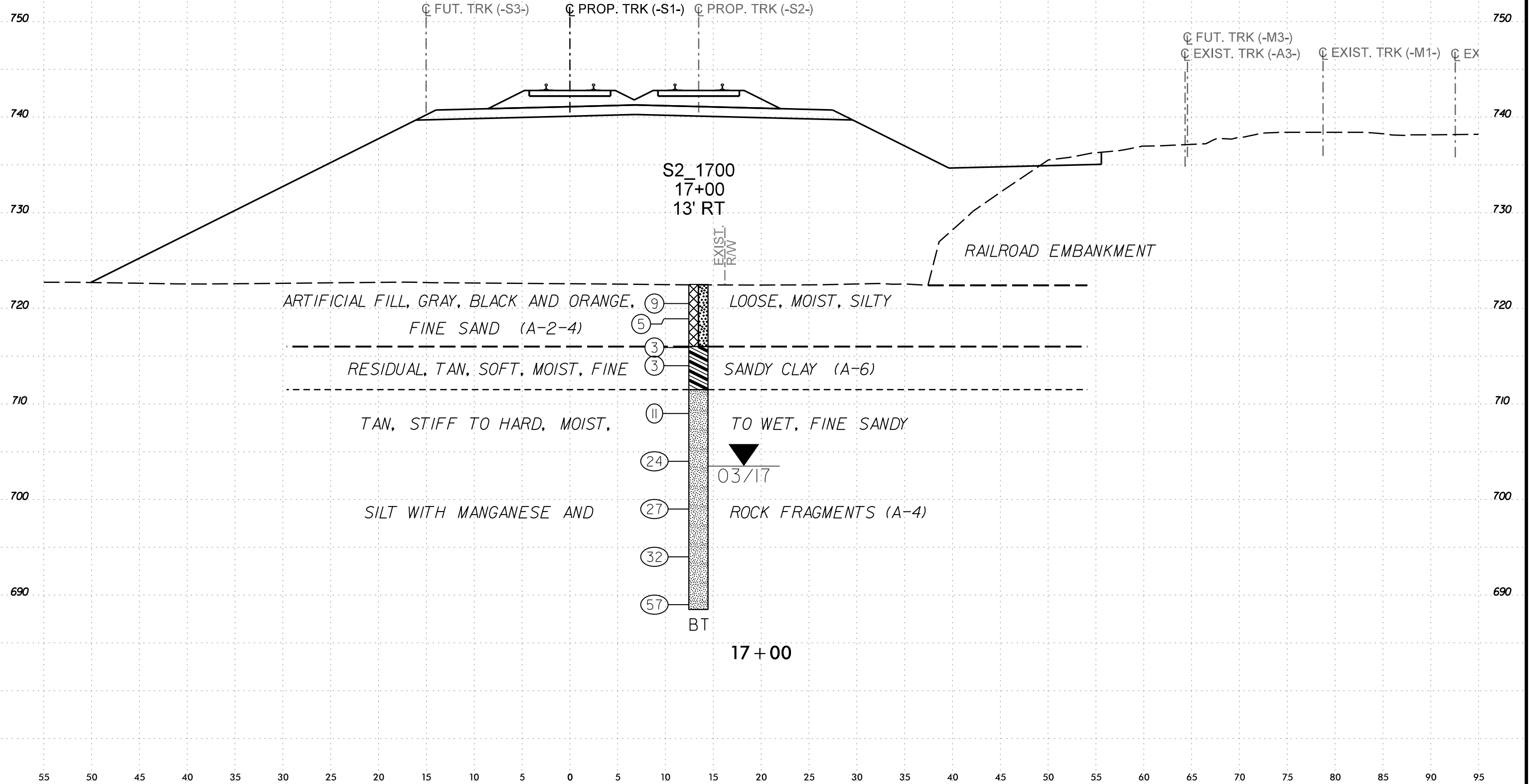
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>16</b>
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**Terracon**  
Consulting Engineers & Scientists  
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RALEIGH, NORTH CAROLINA 27604  
PHONE: (919) 873-2211 FAX: (919) 873-9555  
NC REGISTERED FIRM: P-0869

-S1-



S2\_1700  
17+00  
13' RT

EXIST. R/W

RAILROAD EMBANKMENT

ARTIFICIAL FILL, GRAY, BLACK AND ORANGE,  
FINE SAND (A-2-4)

9  
5

LOOSE, MOIST, SILTY

RESIDUAL, TAN, SOFT, MOIST, FINE

3  
3

SANDY CLAY (A-6)

TAN, STIFF TO HARD, MOIST,

11

TO WET, FINE SANDY

24

03/17

SILT WITH MANGANESE AND

27

ROCK FRAGMENTS (A-4)

32

57

BT

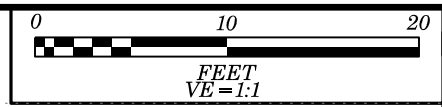
17+00

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 80 85 90 95



0012DEL\_P28

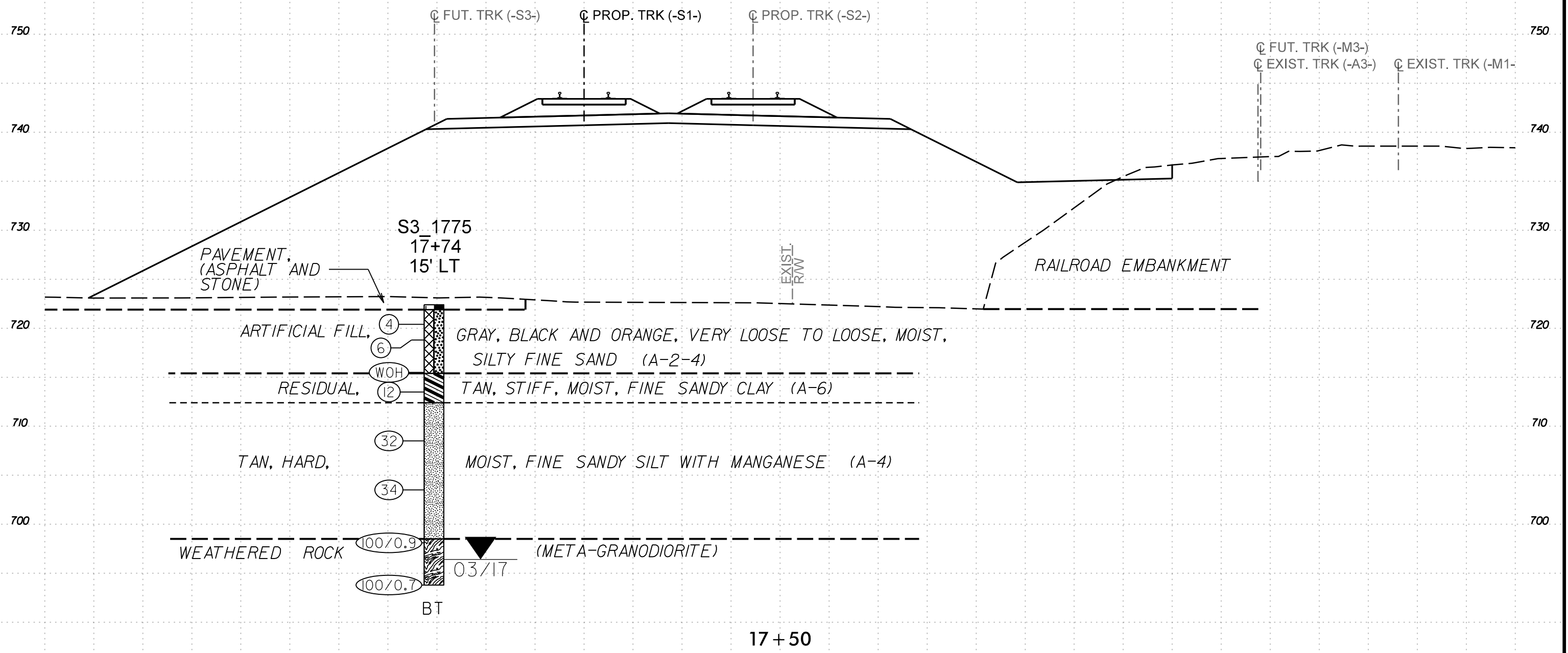
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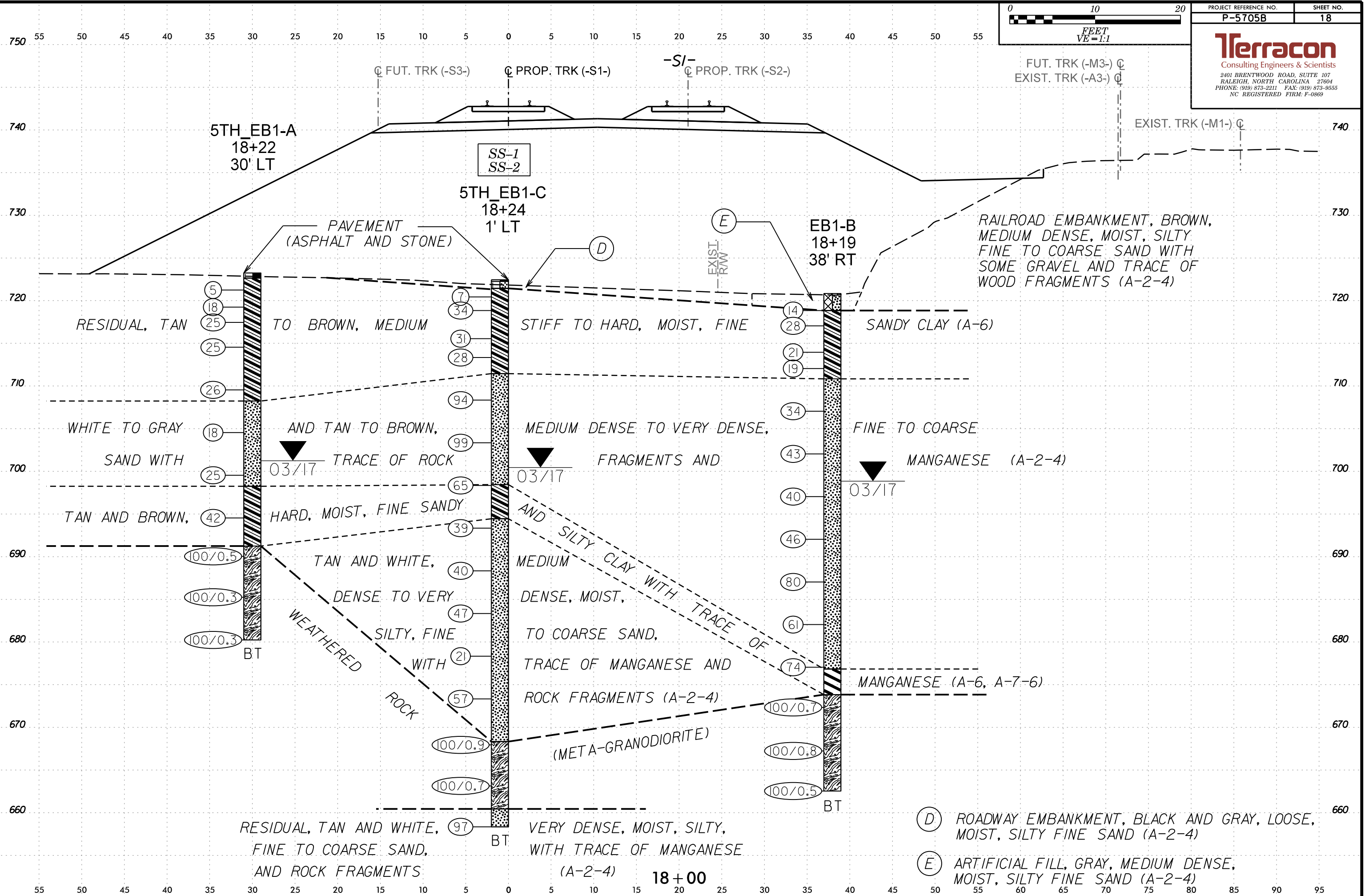
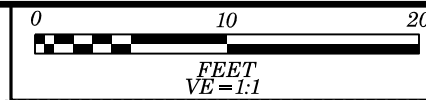


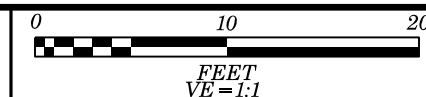
PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>17</b>
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Consulting Engineers & Scientists  
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RALEIGH, NORTH CAROLINA 27604  
PHONE: (919) 873-2211 FAX: (919) 873-9555  
NC REGISTERED FIRM: P-0869

-S1-

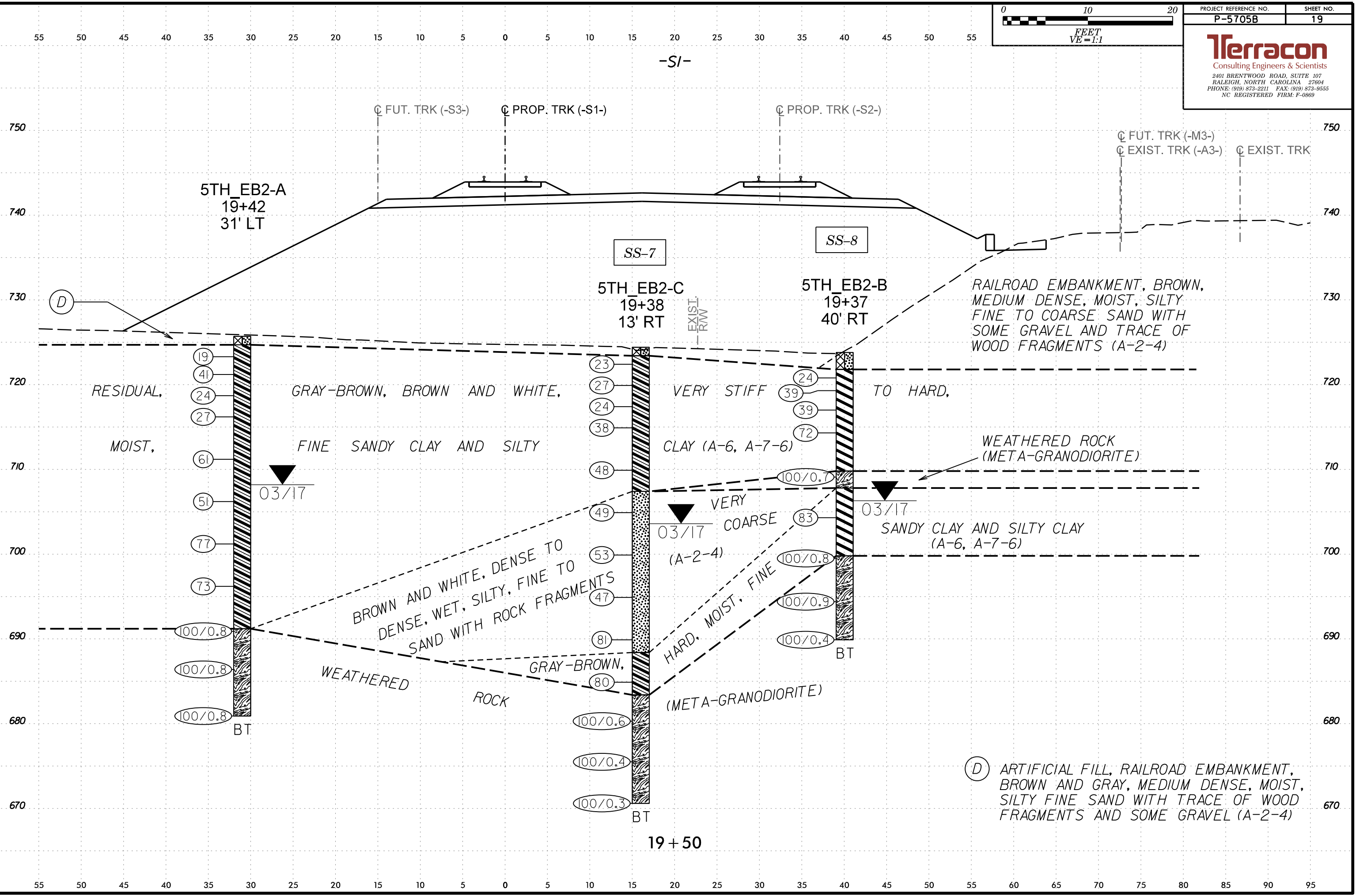






PROJECT REFERENCE NO.	SHEET NO.
P-5705B	19

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 Consulting Engineers & Scientists  
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 RALEIGH, NORTH CAROLINA 27604  
 PHONE: (919) 873-2211 FAX: (919) 873-9555  
 NC REGISTERED FIRM: P-0869

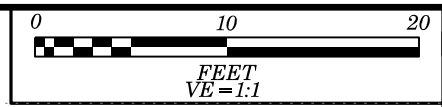


(D) ARTIFICIAL FILL, RAILROAD EMBANKMENT, BROWN AND GRAY, MEDIUM DENSE, MOIST, SILTY FINE SAND WITH TRACE OF WOOD FRAGMENTS AND SOME GRAVEL (A-2-4)

19+50

0012DEL\_P28

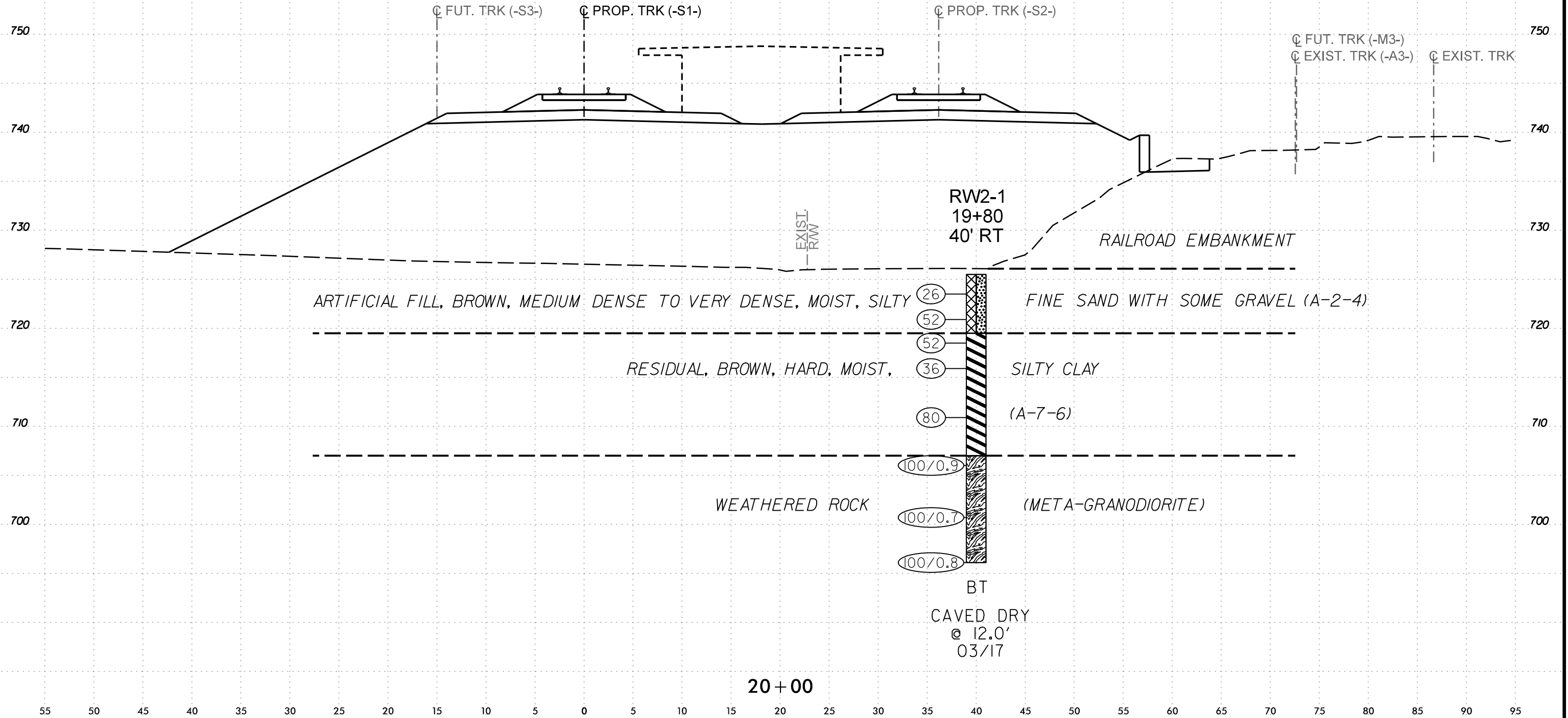
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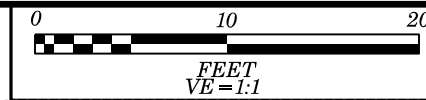
PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>20</b>
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Consulting Engineers & Scientists  
2401 BRENTWOOD ROAD, SUITE 107  
RALEIGH, NORTH CAROLINA 27604  
PHONE: (919) 873-2211 FAX: (919) 873-9555  
NC REGISTERED FIRM: P-0869

-S1-



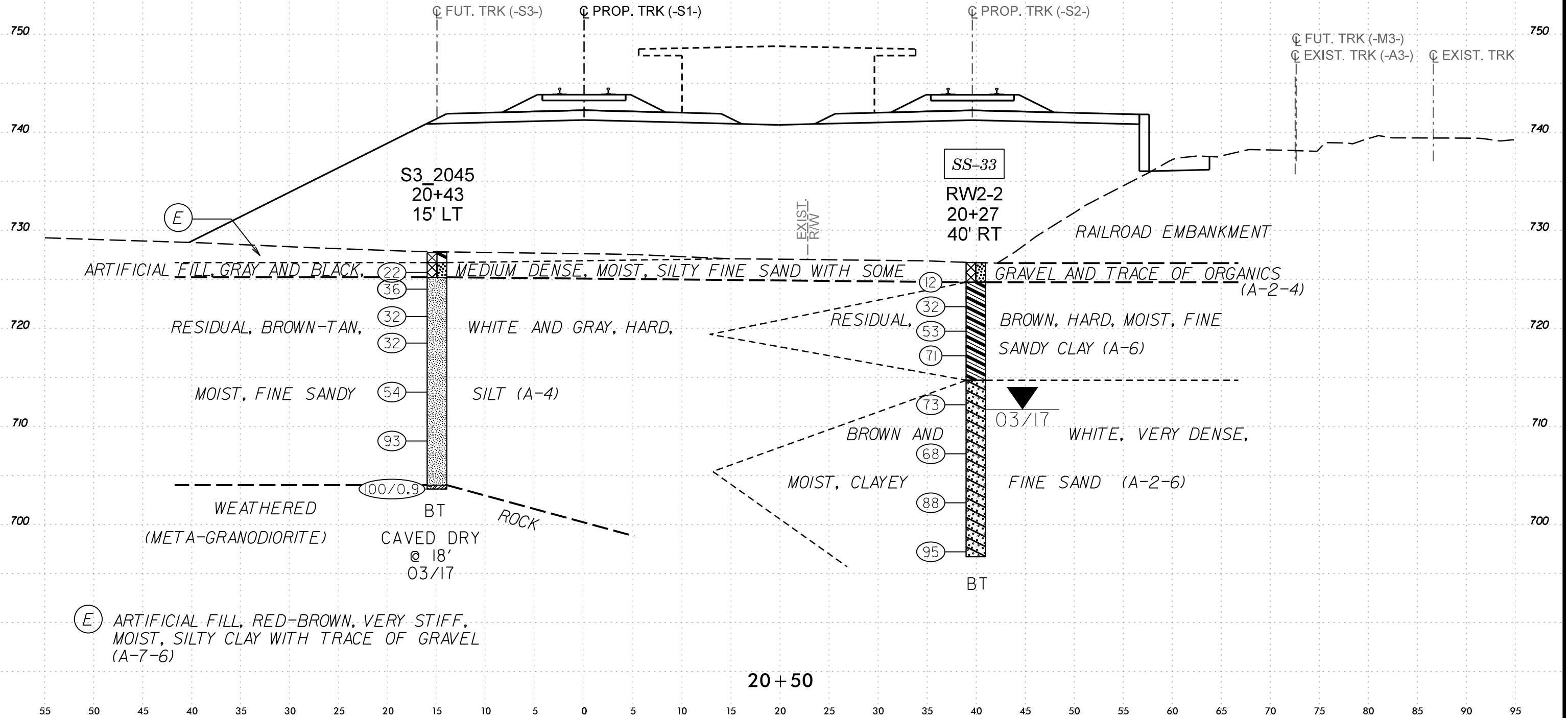
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>21</b>
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Consulting Engineers & Scientists  
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NC REGISTERED FIRM: P-0869

-S1-

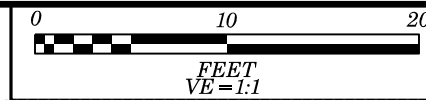


(E) ARTIFICIAL FILL, RED-BROWN, VERY STIFF, MOIST, SILTY CLAY WITH TRACE OF GRAVEL (A-7-6)

0012DEL\_P28

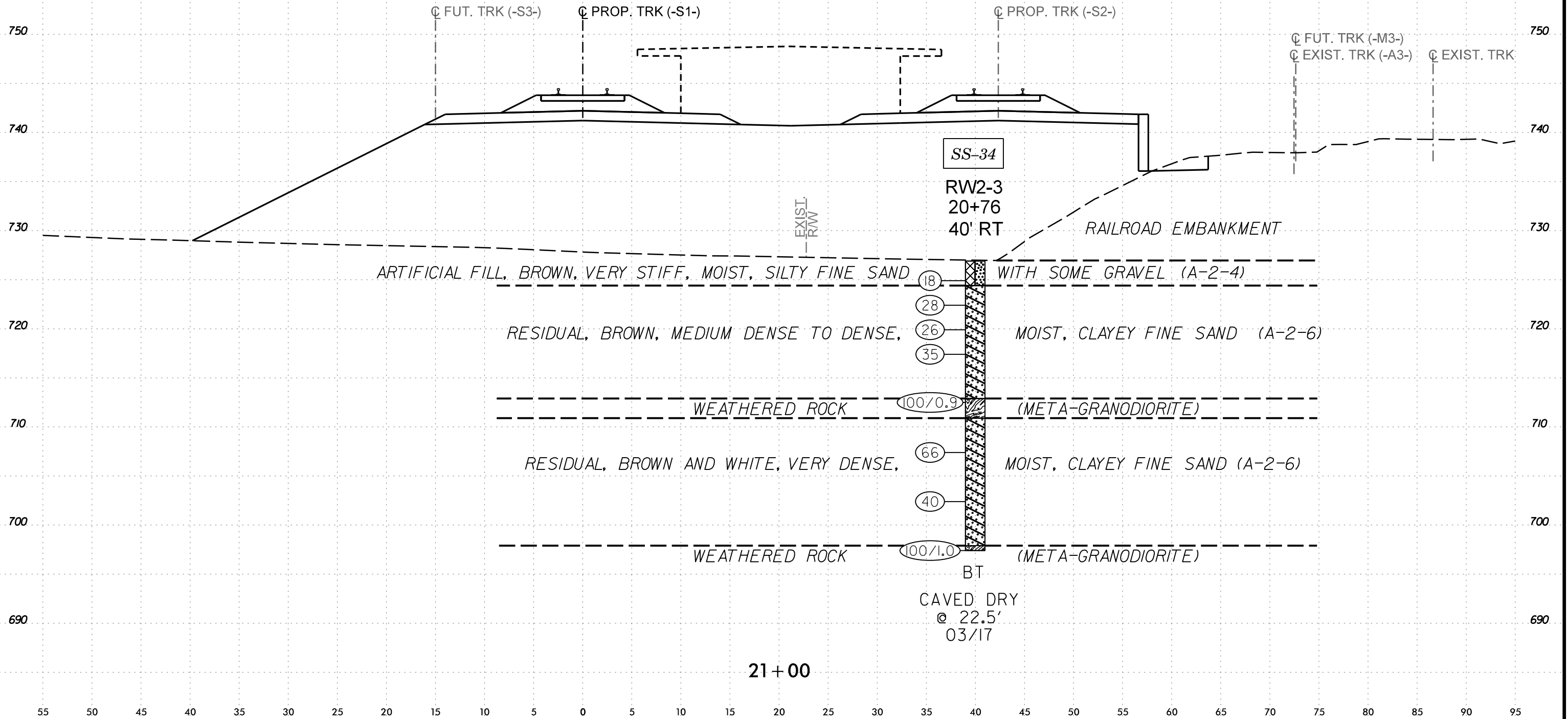
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-S1-



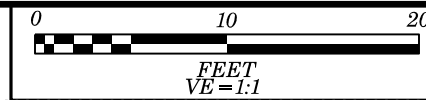
PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>22</b>
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**Terracon**  
Consulting Engineers & Scientists  
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PHONE: (919) 873-2211 FAX: (919) 873-9555  
NC REGISTERED FIRM: P-0869



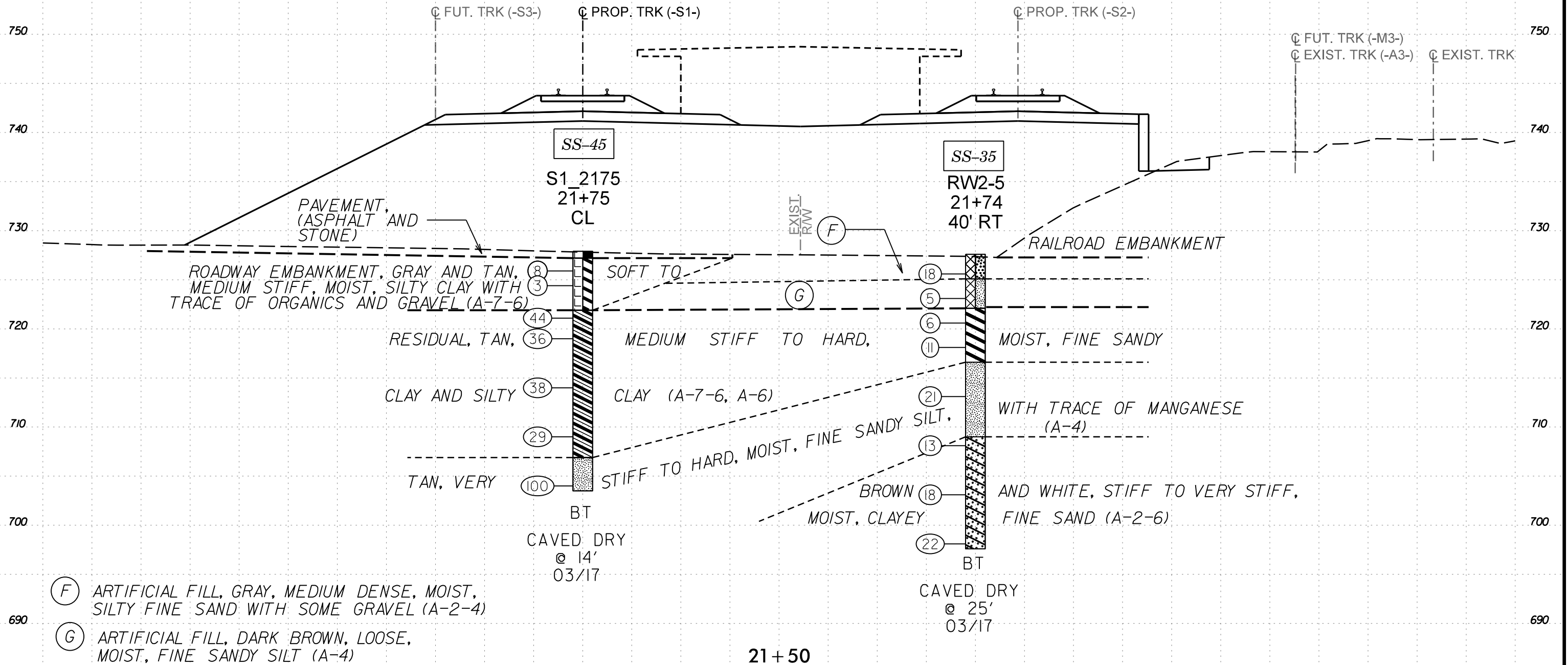
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-S1-



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>23</b>
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Consulting Engineers & Scientists  
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PHONE: (919) 873-2211 FAX: (919) 873-9555  
NC REGISTERED FIRM: P-0869



690

690

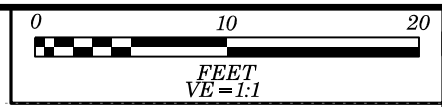
21+50

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0012DEL\_P28

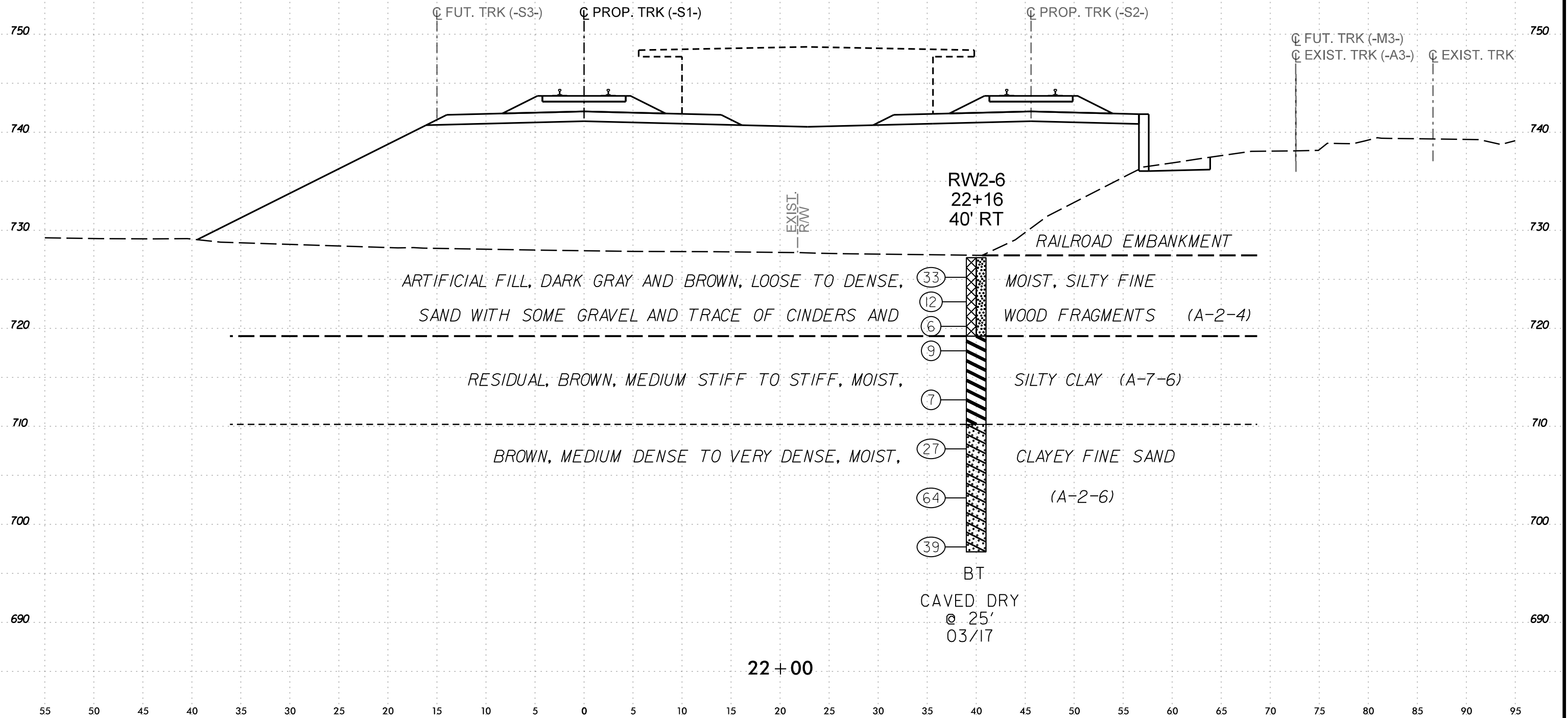
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-S1-



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>24</b>
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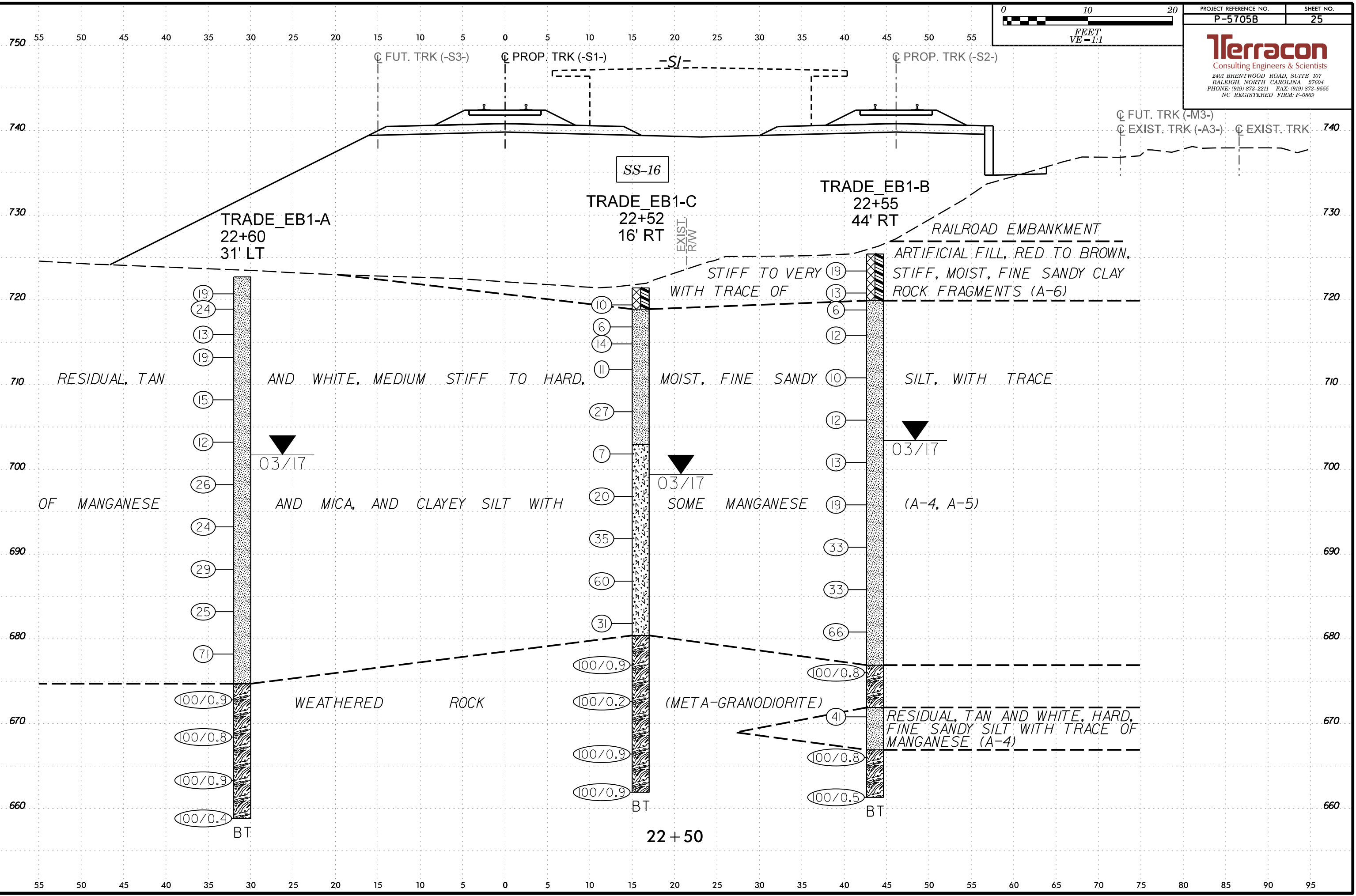
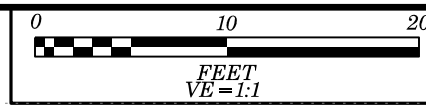
**Terracon**  
Consulting Engineers & Scientists  
2401 BRENTWOOD ROAD, SUITE 107  
RALEIGH, NORTH CAROLINA 27604  
PHONE: (919) 873-2211 FAX: (919) 873-9555  
NC REGISTERED FIRM: P-0869

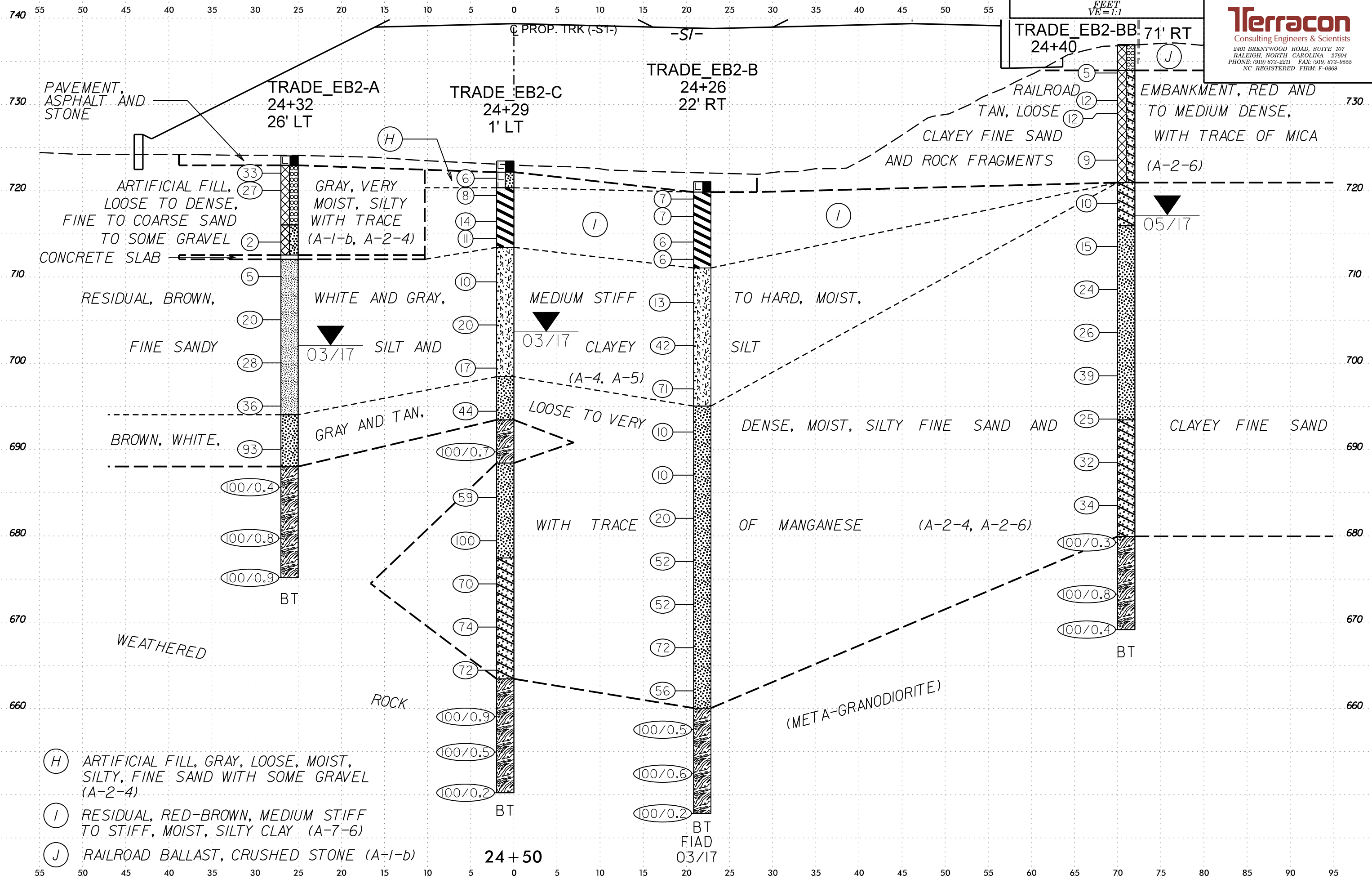
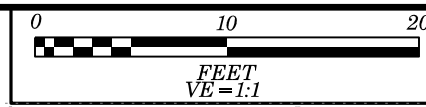


22 + 00

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 80 85 90 95

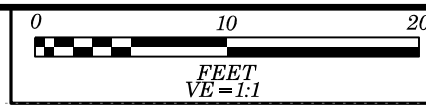






0012DEL\_P28

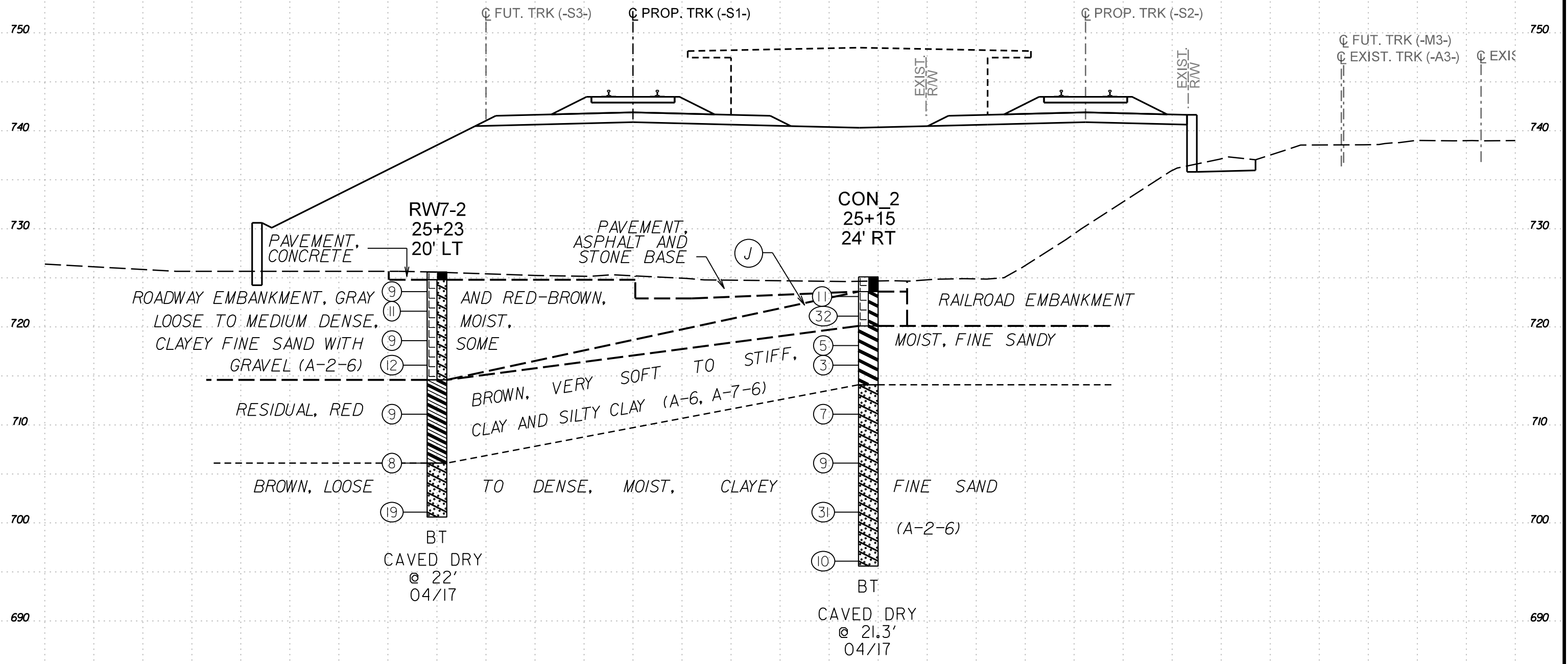
55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>27</b>
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NC REGISTERED FIRM: P-0869

-S1-



750  
740  
730  
720  
710  
700  
690

750  
740  
730  
720  
710  
700  
690

RW7-2  
25+23  
20' LT

CON\_2  
25+15  
24' RT

BT  
CAVED DRY  
@ 22'  
04/17

BT  
CAVED DRY  
@ 21.3'  
04/17

25+00

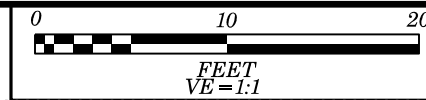
(J) ROADWAY EMBANKMENT, RED BROWN, STIFF TO HARD, MOIST, SILTY CLAY WITH SOME GRAVEL (A-7-6)

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 80 85 90

0012DEL\_P28

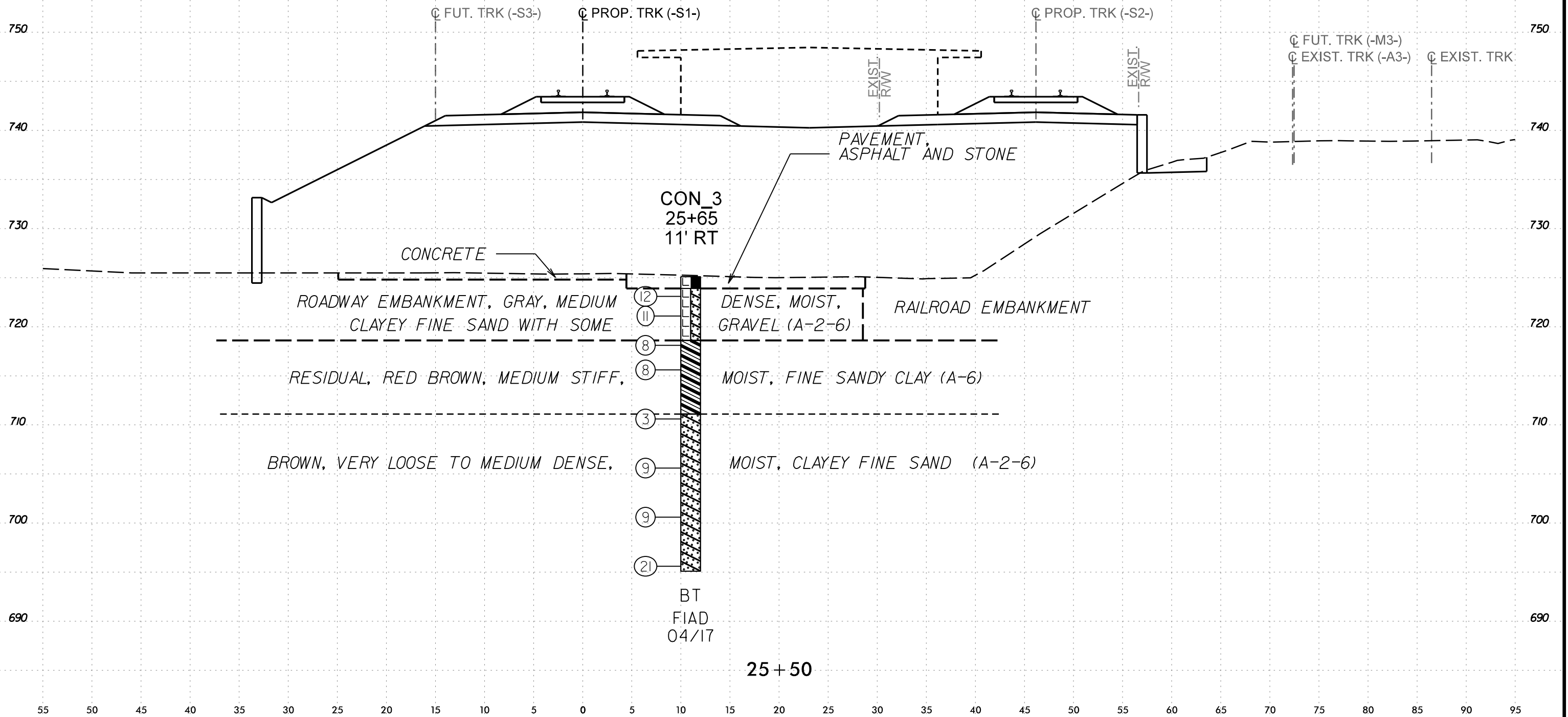
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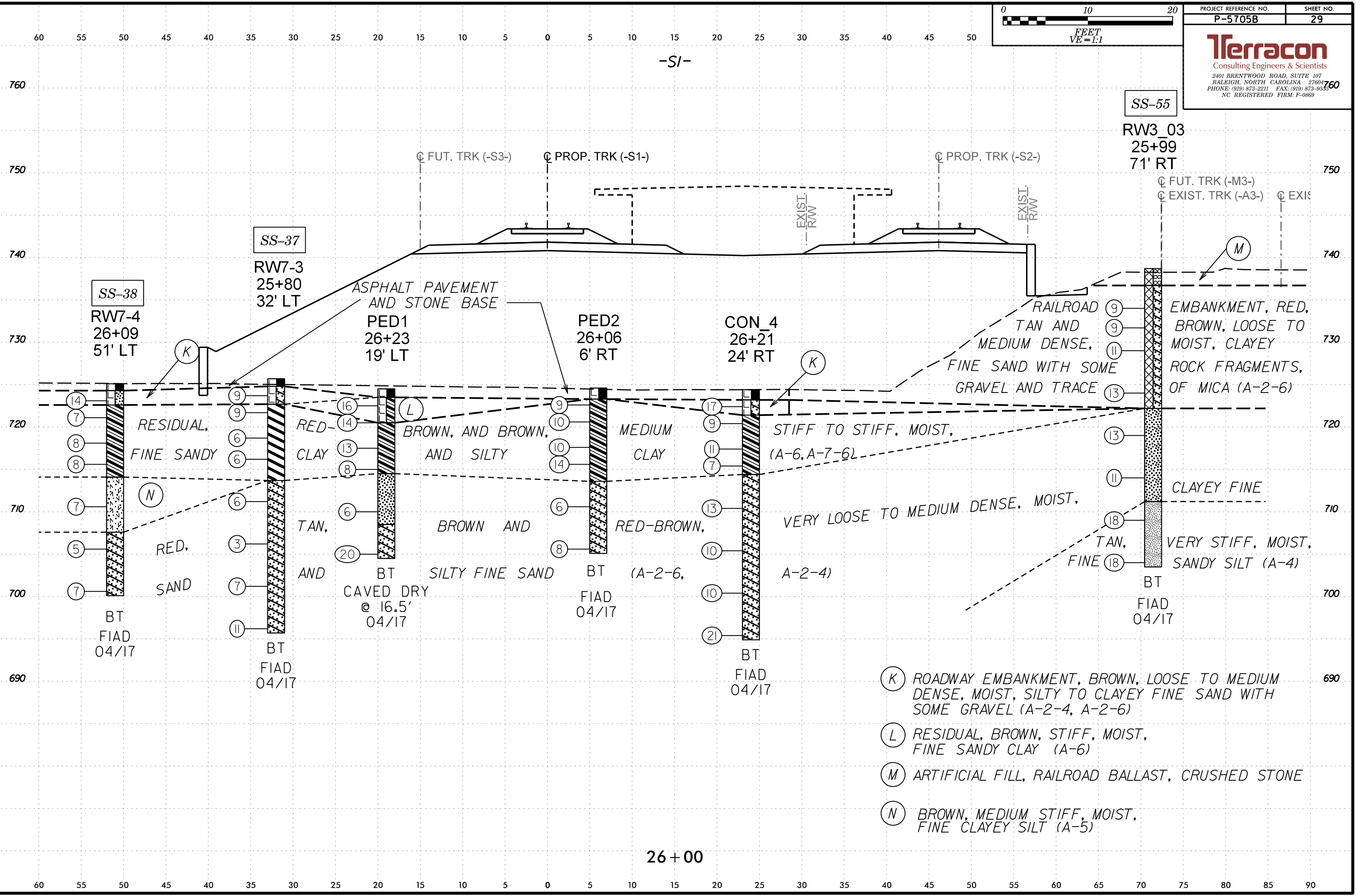
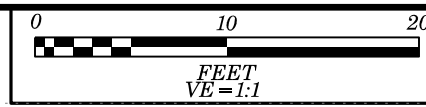
-S1-



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>28</b>
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NC REGISTERED FIRM: P-0869





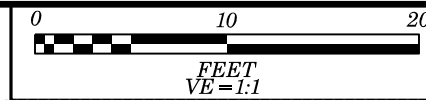
26 + 00

- (K) ROADWAY EMBANKMENT, BROWN, LOOSE TO MEDIUM DENSE, MOIST, SILTY TO CLAYEY FINE SAND WITH SOME GRAVEL (A-2-4, A-2-6)
- (L) RESIDUAL, BROWN, STIFF, MOIST, FINE SANDY CLAY (A-6)
- (M) ARTIFICIAL FILL, RAILROAD BALLAST, CRUSHED STONE
- (N) BROWN, MEDIUM STIFF, MOIST, FINE CLAYEY SILT (A-5)

0012DEL\_P28

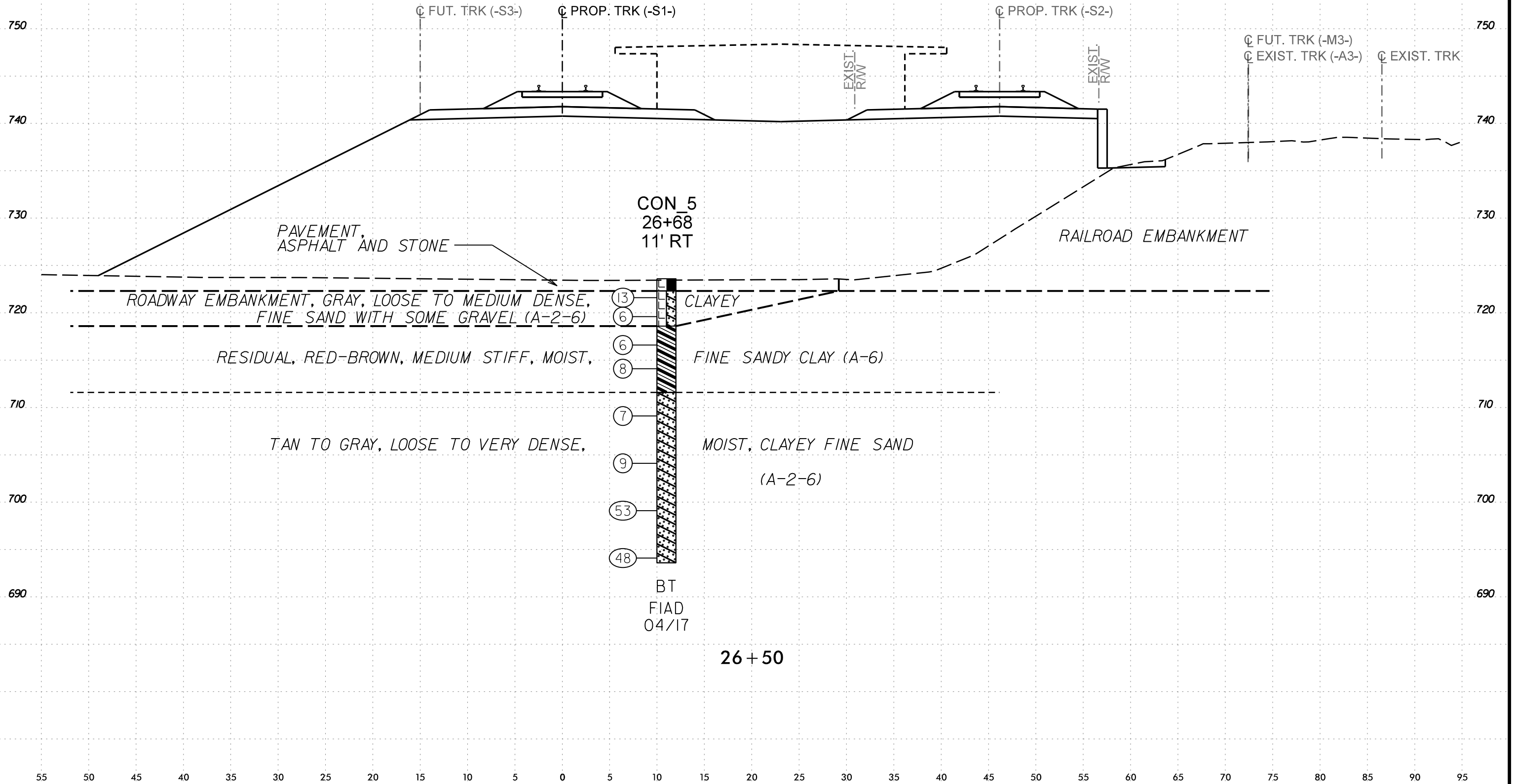
55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55

-S/-



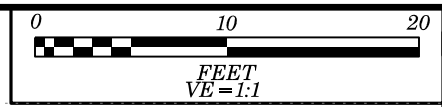
PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>30</b>
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NC REGISTERED FIRM: P-0869



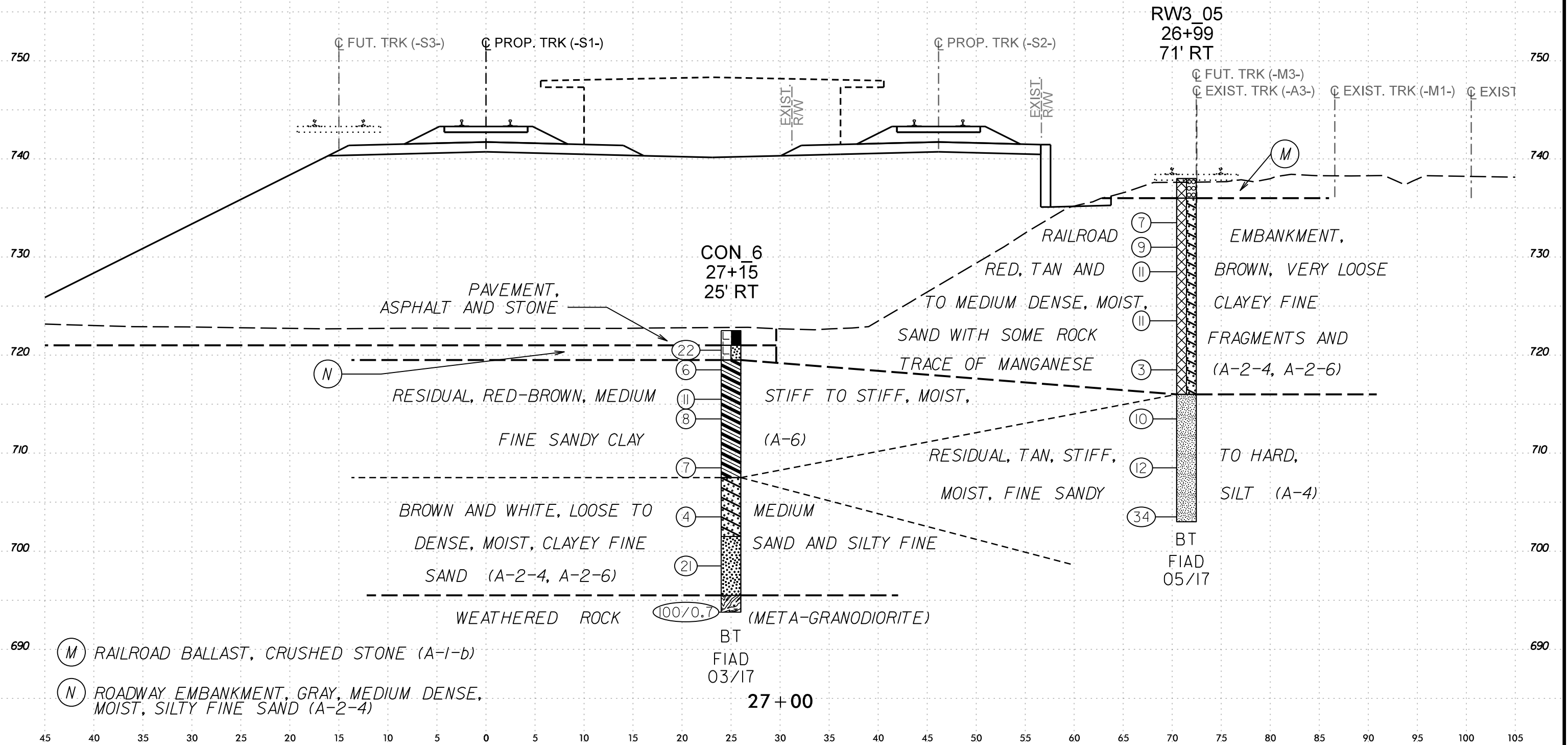
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-S1-

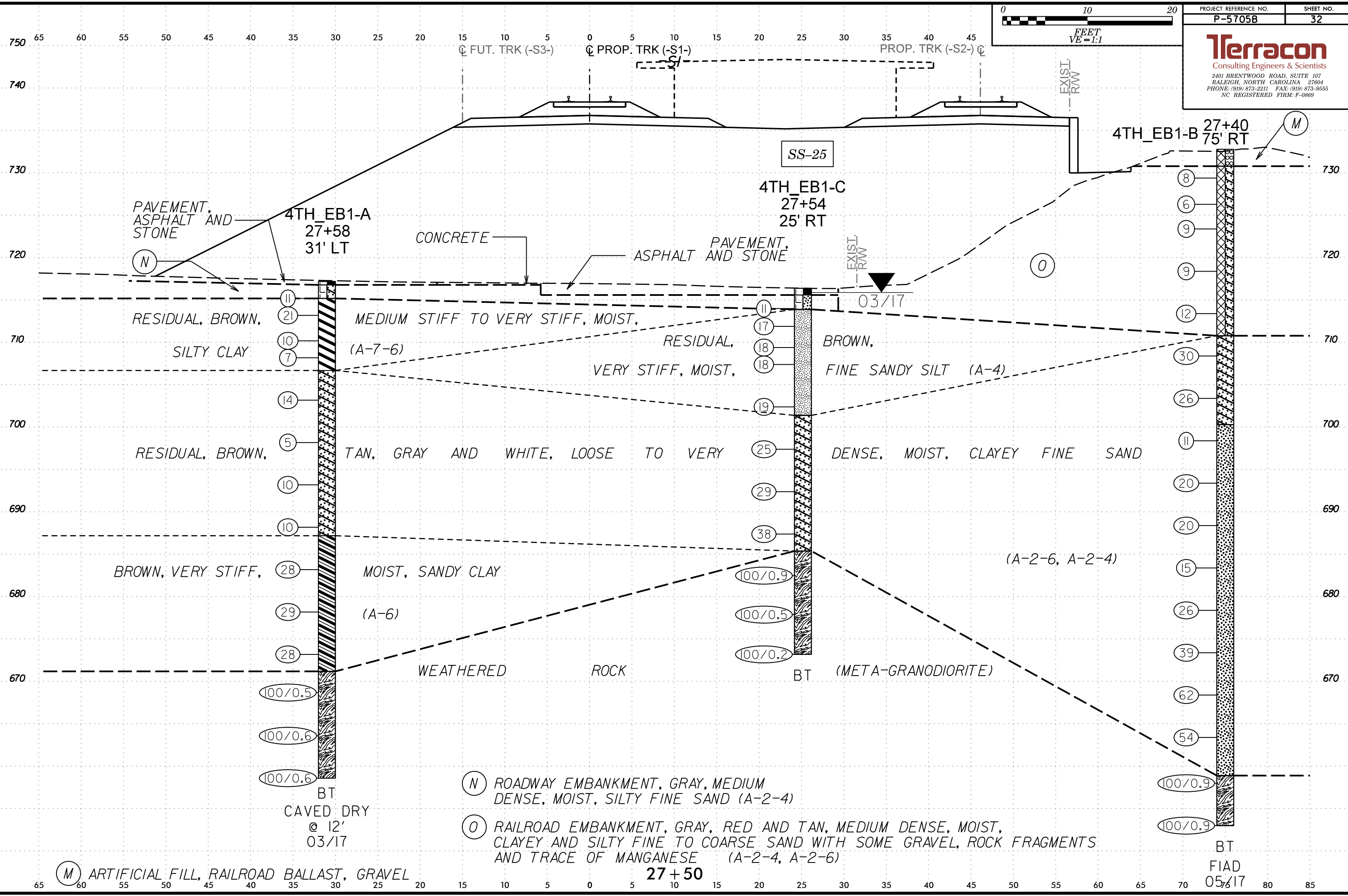


PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>31</b>
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NC REGISTERED FIRM: P-0869



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 80 85 90 95 100 105



PAVEMENT,  
ASPHALT AND  
STONE

4TH\_EB1-A  
27+58  
31' LT

CONCRETE

PAVEMENT,  
ASPHALT AND STONE

4TH\_EB1-C  
27+54  
25' RT

4TH\_EB1-B  
27+40  
75' RT

RESIDUAL, BROWN,  
SILTY CLAY

MEDIUM STIFF TO VERY STIFF, MOIST,  
(A-7-6)

RESIDUAL,  
VERY STIFF, MOIST,

BROWN,  
FINE SANDY SILT (A-4)

RESIDUAL, BROWN,

TAN, GRAY AND WHITE, LOOSE TO VERY

DENSE, MOIST, CLAYEY FINE SAND

BROWN, VERY STIFF,

MOIST, SANDY CLAY

WEATHERED  
ROCK

BT (META-GRANODIORITE)

BT  
CAVED DRY  
@ 12'  
03/17

(N) ROADWAY EMBANKMENT, GRAY, MEDIUM  
DENSE, MOIST, SILTY FINE SAND (A-2-4)

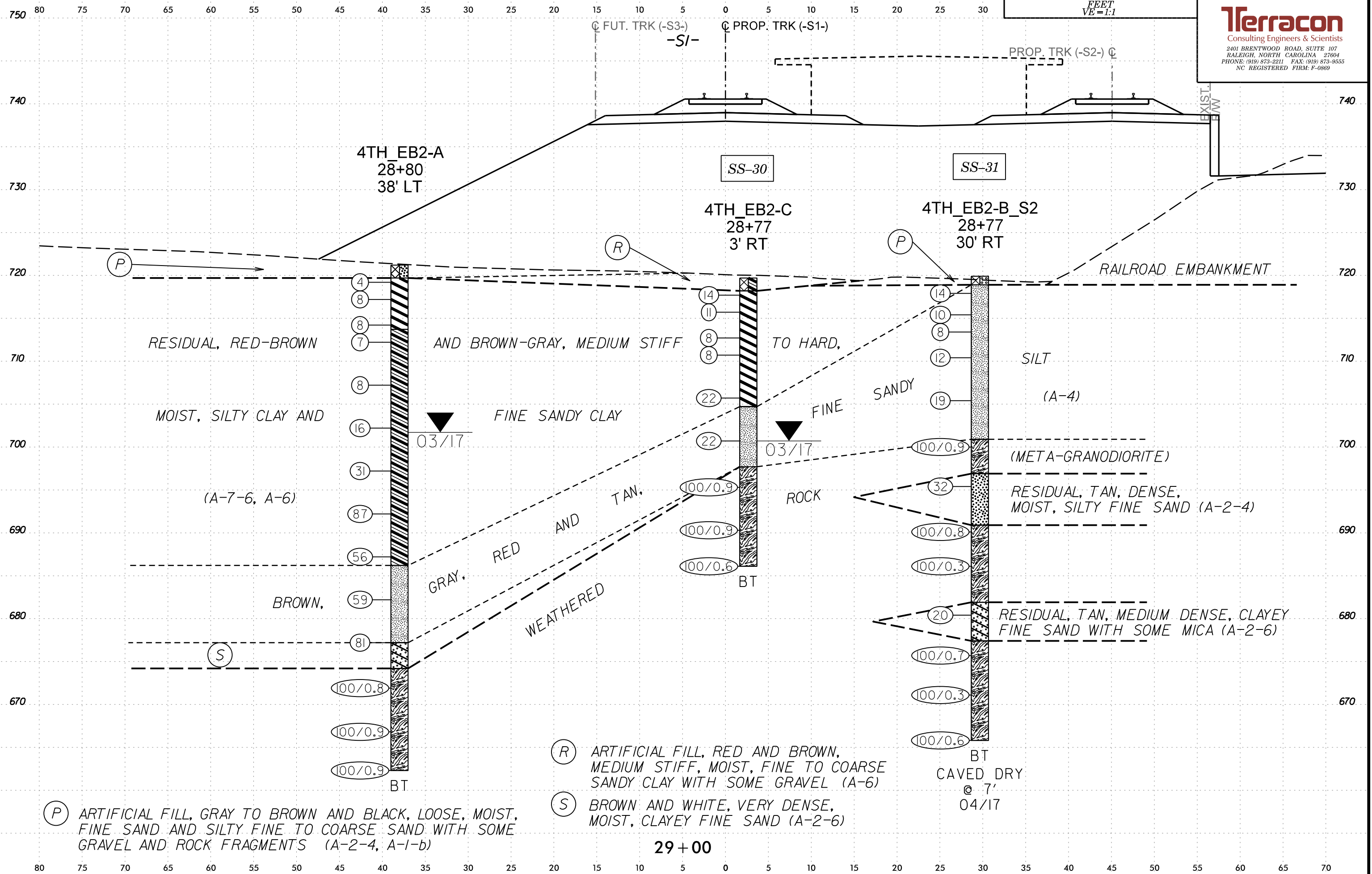
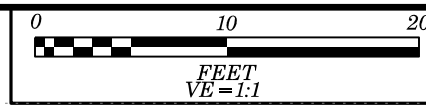
(O) RAILROAD EMBANKMENT, GRAY, RED AND TAN, MEDIUM DENSE, MOIST,  
CLAYEY AND SILTY FINE TO COARSE SAND WITH SOME GRAVEL, ROCK FRAGMENTS  
AND TRACE OF MANGANESE (A-2-4, A-2-6)

(M) ARTIFICIAL FILL, RAILROAD BALLAST, GRAVEL

27+50

BT  
FIAD  
05/17





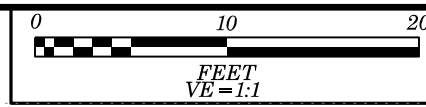
(P) ARTIFICIAL FILL, GRAY TO BROWN AND BLACK, LOOSE, MOIST, FINE SAND AND SILTY FINE TO COARSE SAND WITH SOME GRAVEL AND ROCK FRAGMENTS (A-2-4, A-1-b)

(R) ARTIFICIAL FILL, RED AND BROWN, MEDIUM STIFF, MOIST, FINE TO COARSE SANDY CLAY WITH SOME GRAVEL (A-6)

(S) BROWN AND WHITE, VERY DENSE, MOIST, CLAYEY FINE SAND (A-2-6)

29+00

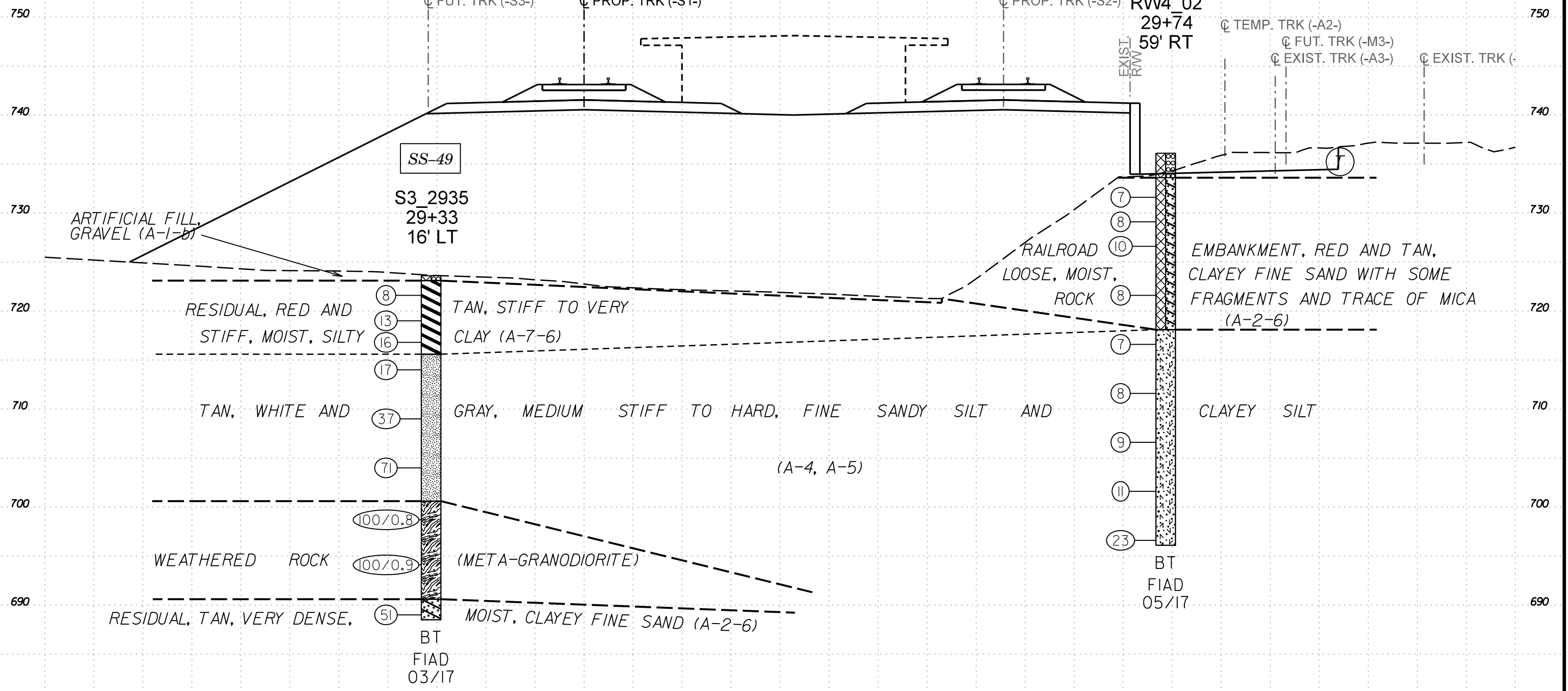
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>34</b>
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NC REGISTERED FIRM: P-0869

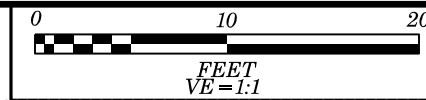
-S/-



(T) RAILROAD BALLAST, CRUSHED STONE (A-1-b)

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 80 85 90 95

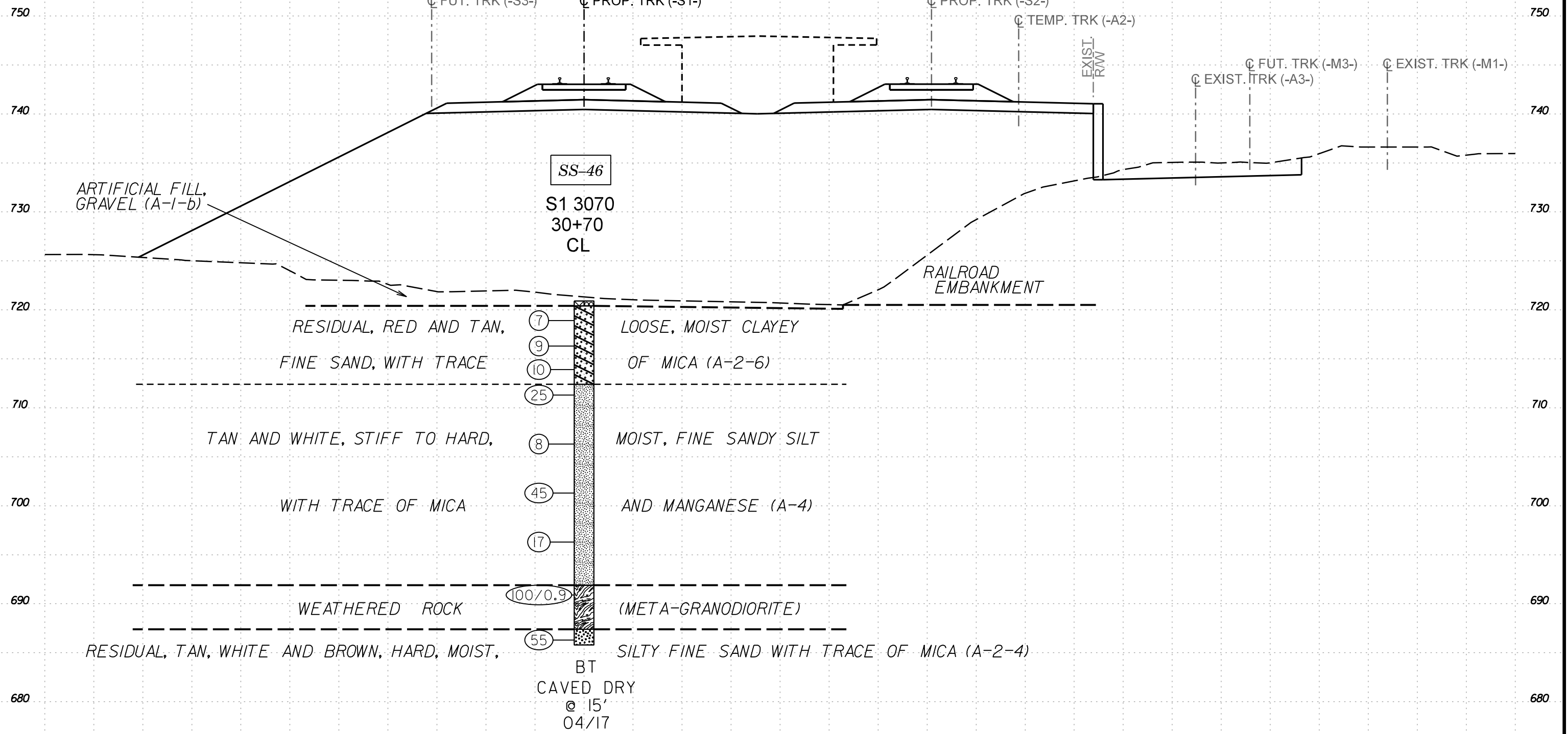
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>35</b>
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NC REGISTERED FIRM: P-0869

-S/-



SS-46

S1 3070  
30+70  
CL

- 7
- 9
- 10
- 25
- 8
- 45
- 17
- 100/0.9
- 55

RESIDUAL, RED AND TAN,  
FINE SAND, WITH TRACE

LOOSE, MOIST CLAYEY  
OF MICA (A-2-6)

TAN AND WHITE, STIFF TO HARD,  
WITH TRACE OF MICA

MOIST, FINE SANDY SILT  
AND MANGANESE (A-4)

WEATHERED ROCK

(META-GRANODIORITE)

RESIDUAL, TAN, WHITE AND BROWN, HARD, MOIST,

SILTY FINE SAND WITH TRACE OF MICA (A-2-4)

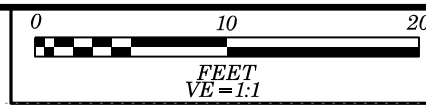
BT  
CAVED DRY  
@ 15'  
04/17

30 + 50

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 80 85 90 95

0012DEL\_P28

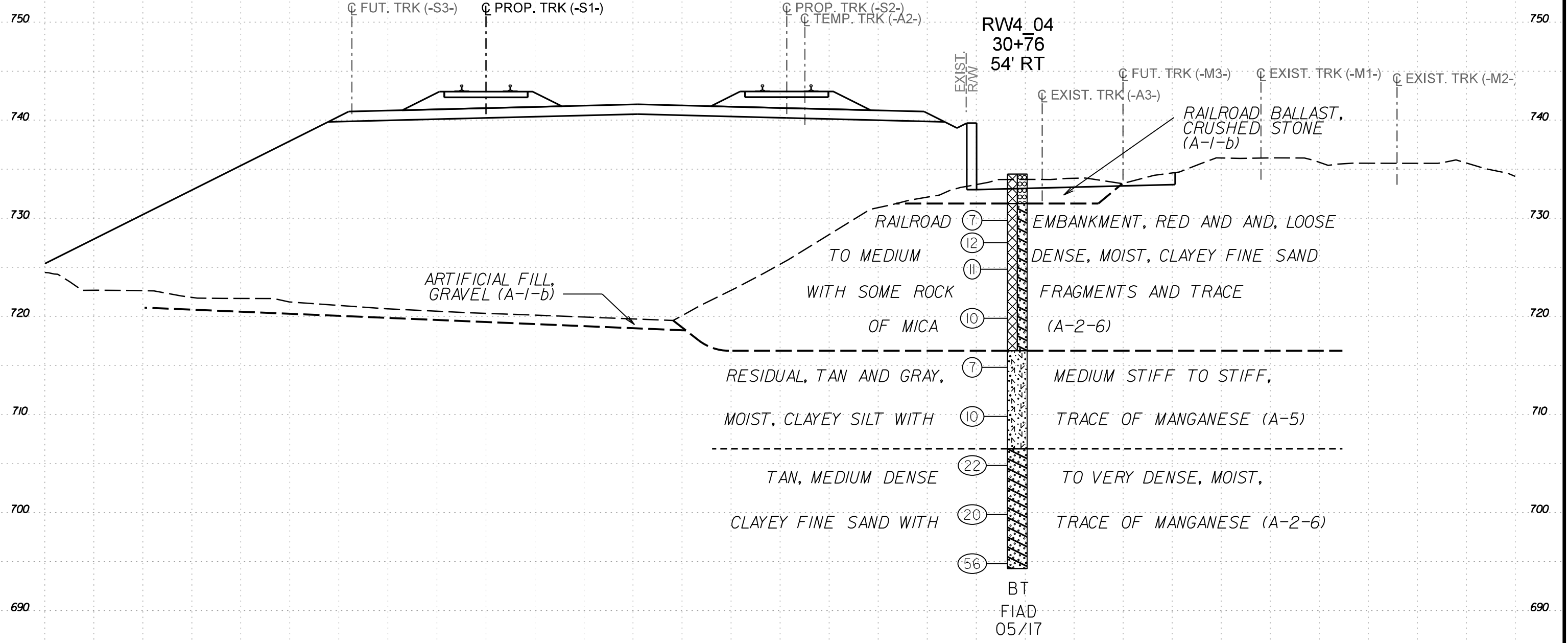
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>36</b>
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NC REGISTERED FIRM: P-0869

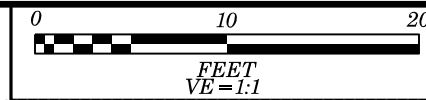
-S1-



0012DEL\_P28

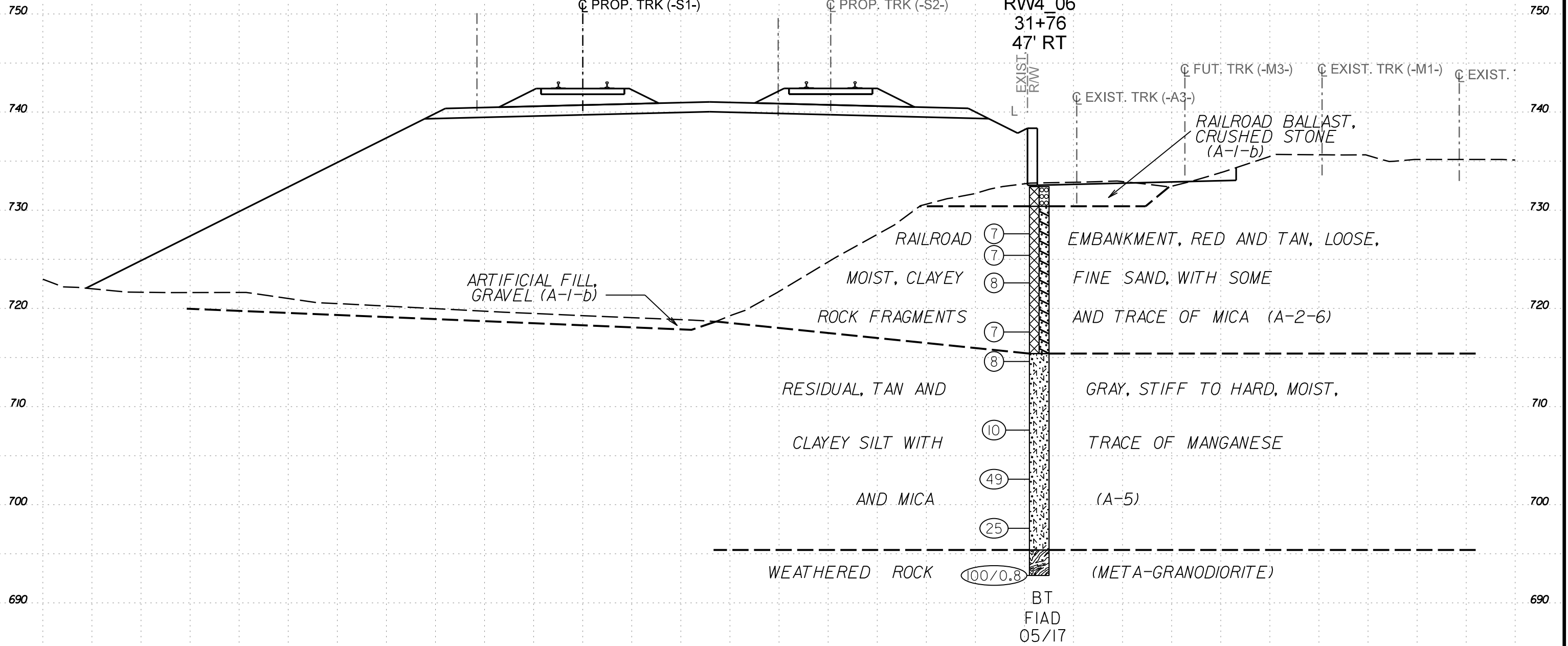
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-S/-



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>37</b>
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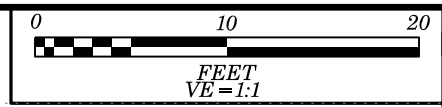
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NC REGISTERED FIRM: P-0869



31 + 50

0012DEL\_P28

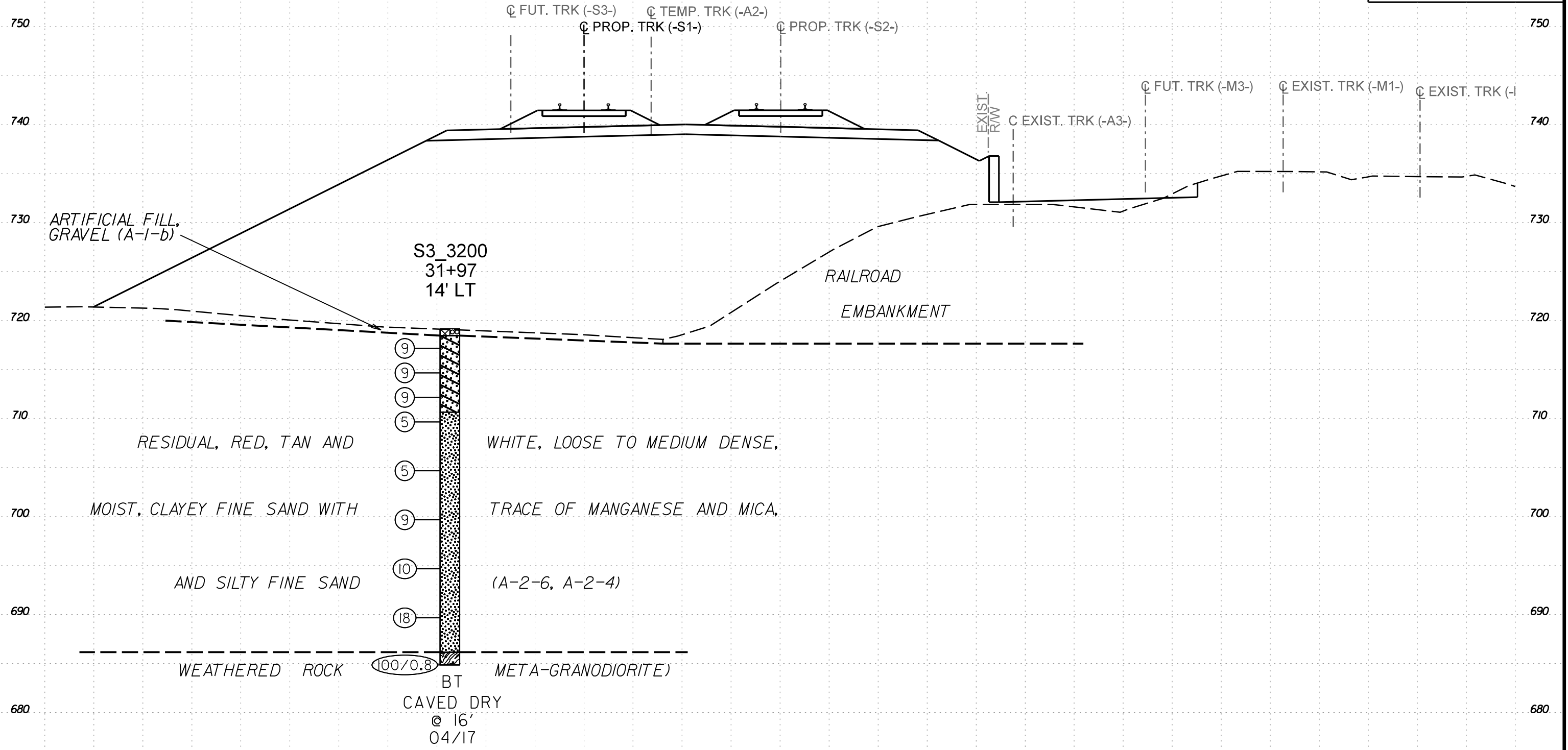
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>38</b>
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NC REGISTERED FIRM: P-0869

-S/-



S3\_3200  
31+97  
14' LT

RAILROAD  
EMBANKMENT

RESIDUAL, RED, TAN AND

WHITE, LOOSE TO MEDIUM DENSE,

MOIST, CLAYEY FINE SAND WITH

TRACE OF MANGANESE AND MICA,

AND SILTY FINE SAND

(A-2-6, A-2-4)

WEATHERED ROCK

(META-GRANODIORITE)

100/0.8

BT

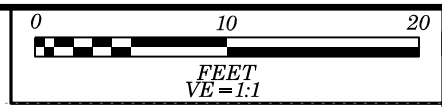
CAVED DRY  
@ 16'  
04/17

32 + 00

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 80 85 90 95

0012DEL\_P28

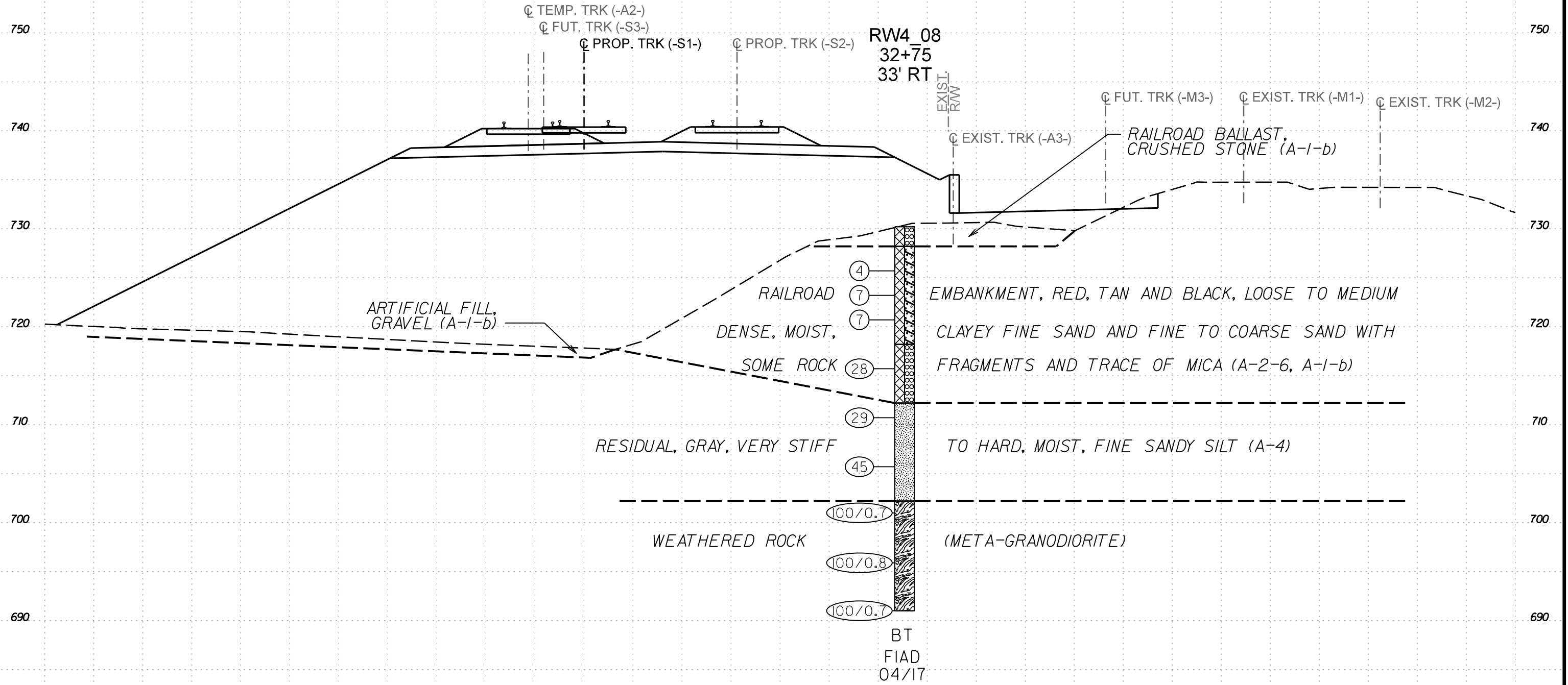
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>39</b>
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NC REGISTERED FIRM: P-0869

-S/-

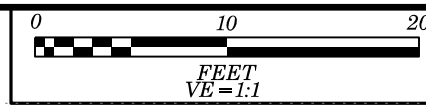


RW4\_08  
32+75  
33' RT

32 + 50

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 80 85 90 95

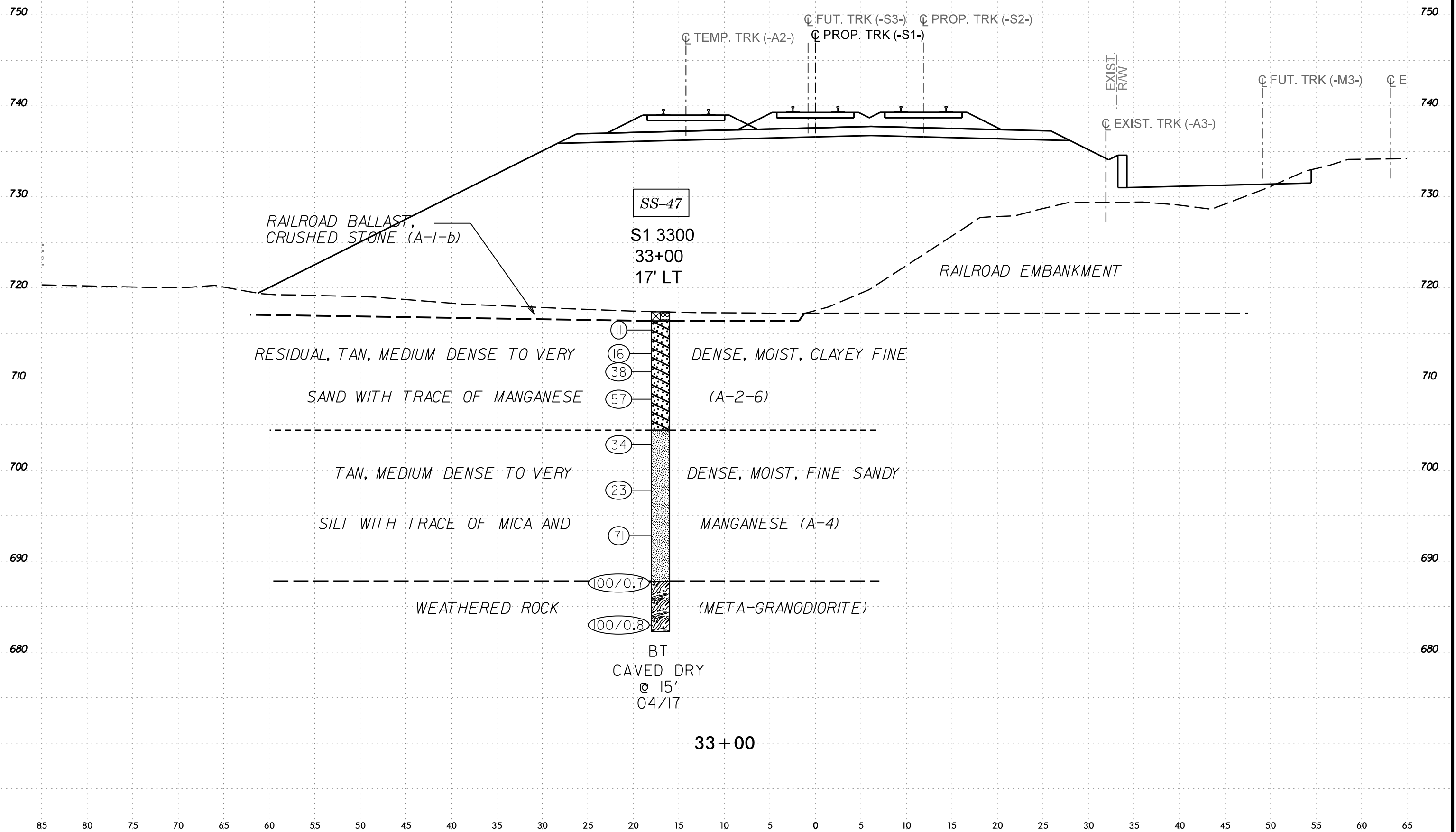
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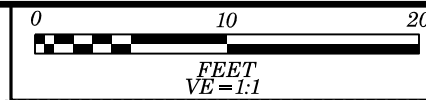
PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>40</b>
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NC REGISTERED FIRM: P-0869

-S/-



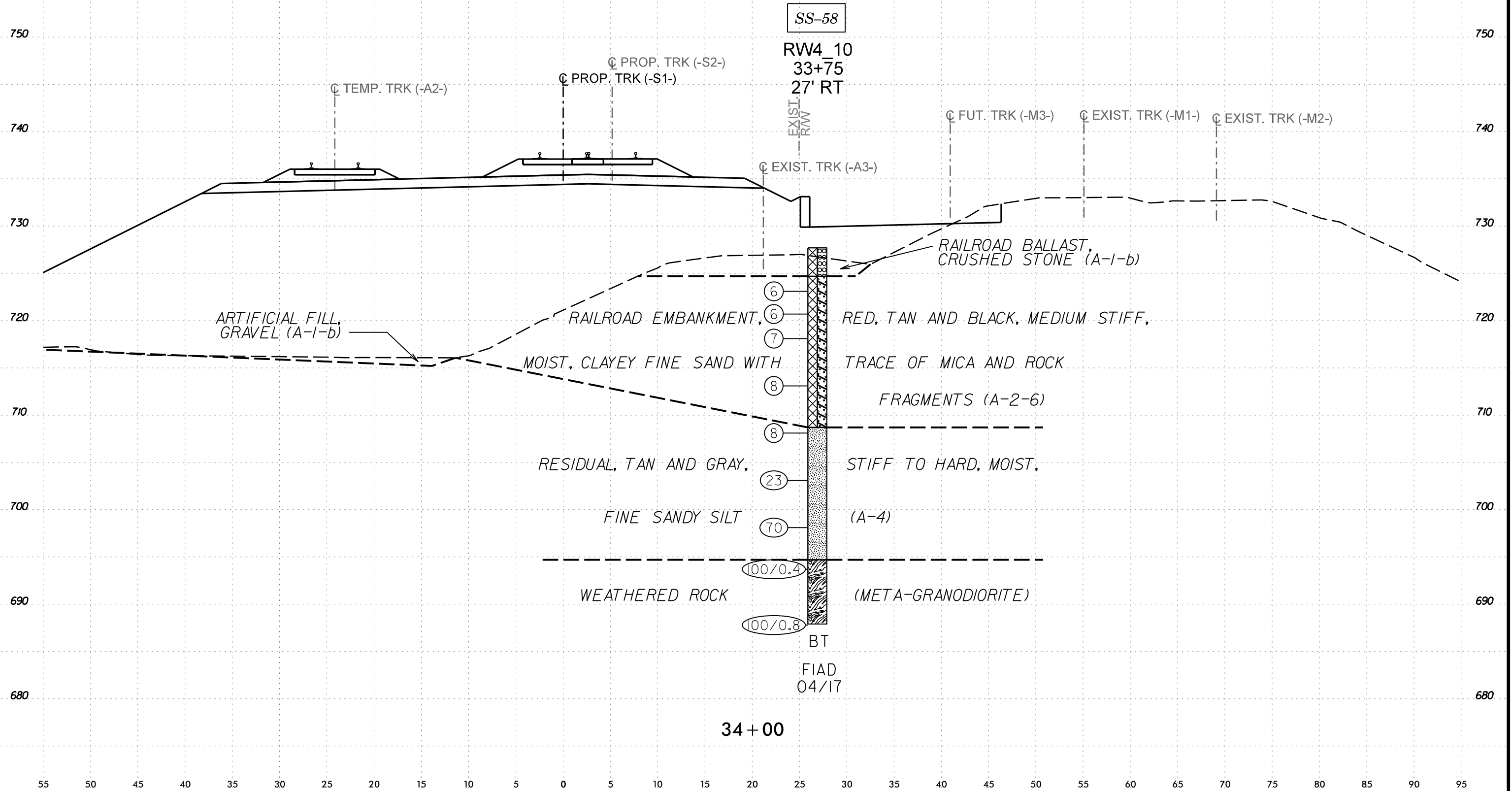




PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>41</b>
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 NC REGISTERED FIRM: P-0869

-S1-



SS-58

RW4 10  
33+75  
27' RT

EXIST. RAW

EXIST. TRK (-A3-)

FUT. TRK (-M3-)

EXIST. TRK (-M1-)

EXIST. TRK (-M2-)

TEMP. TRK (-A2-)

PROP. TRK (-S1-)

PROP. TRK (-S2-)

RAILROAD BALLAST,  
CRUSHED STONE (A-1-b)

ARTIFICIAL FILL,  
GRAVEL (A-1-b)

RAILROAD EMBANKMENT,

RED, TAN AND BLACK, MEDIUM STIFF,

MOIST, CLAYEY FINE SAND WITH

TRACE OF MICA AND ROCK

FRAGMENTS (A-2-6)

RESIDUAL, TAN AND GRAY,

STIFF TO HARD, MOIST,

FINE SANDY SILT

(A-4)

WEATHERED ROCK

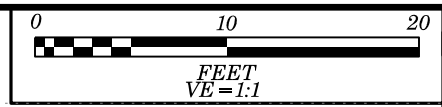
(META-GRANODIORITE)

BT

FIAD  
04/17

34+00

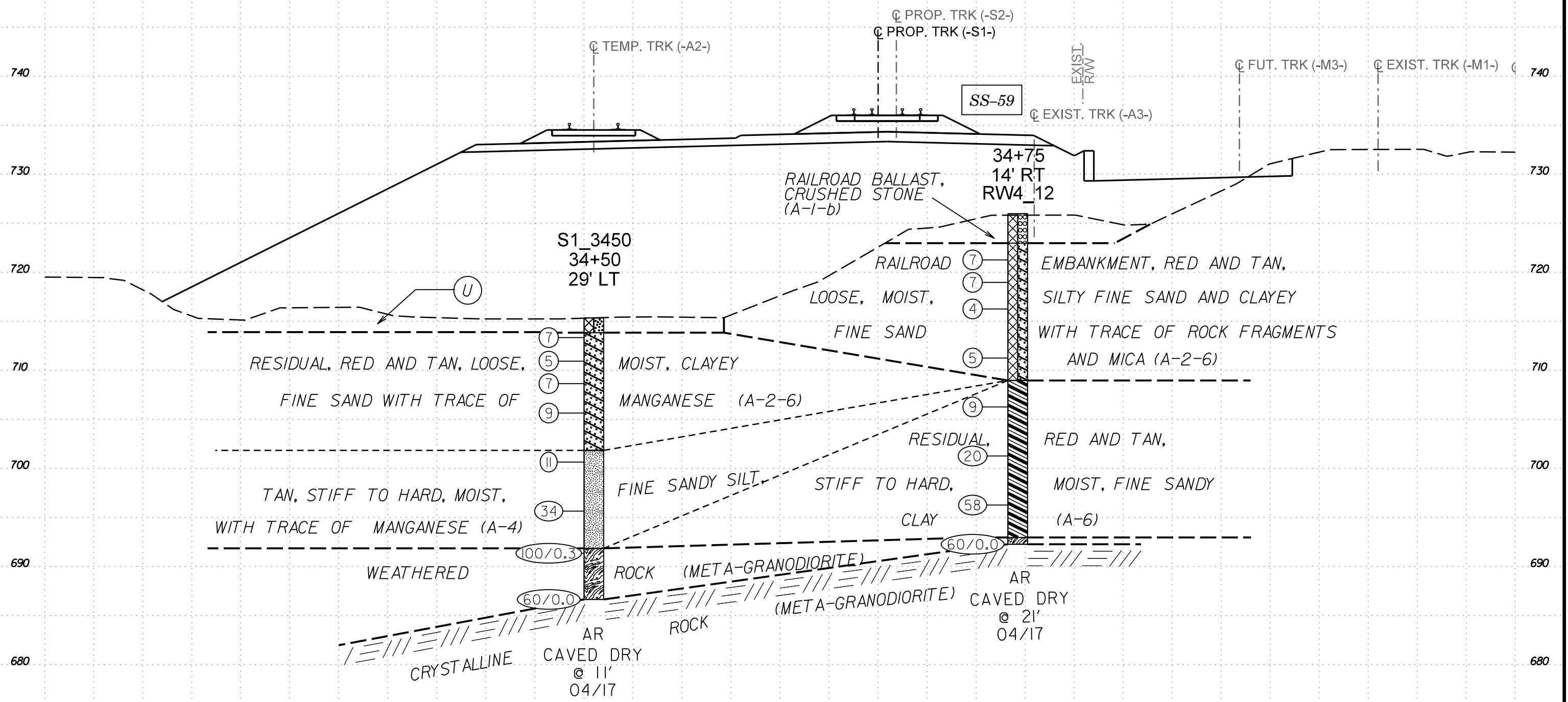
85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>42</b>
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NC REGISTERED FIRM: P-0869

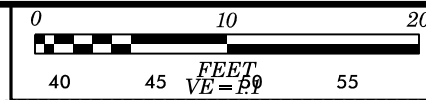
-S/-



(U) ARTIFICIAL FILL, BLACK, LOOSE, MOIST, SILTY FINE SAND WITH TRACE OF ROCK FRAGMENTS (A-2-4)

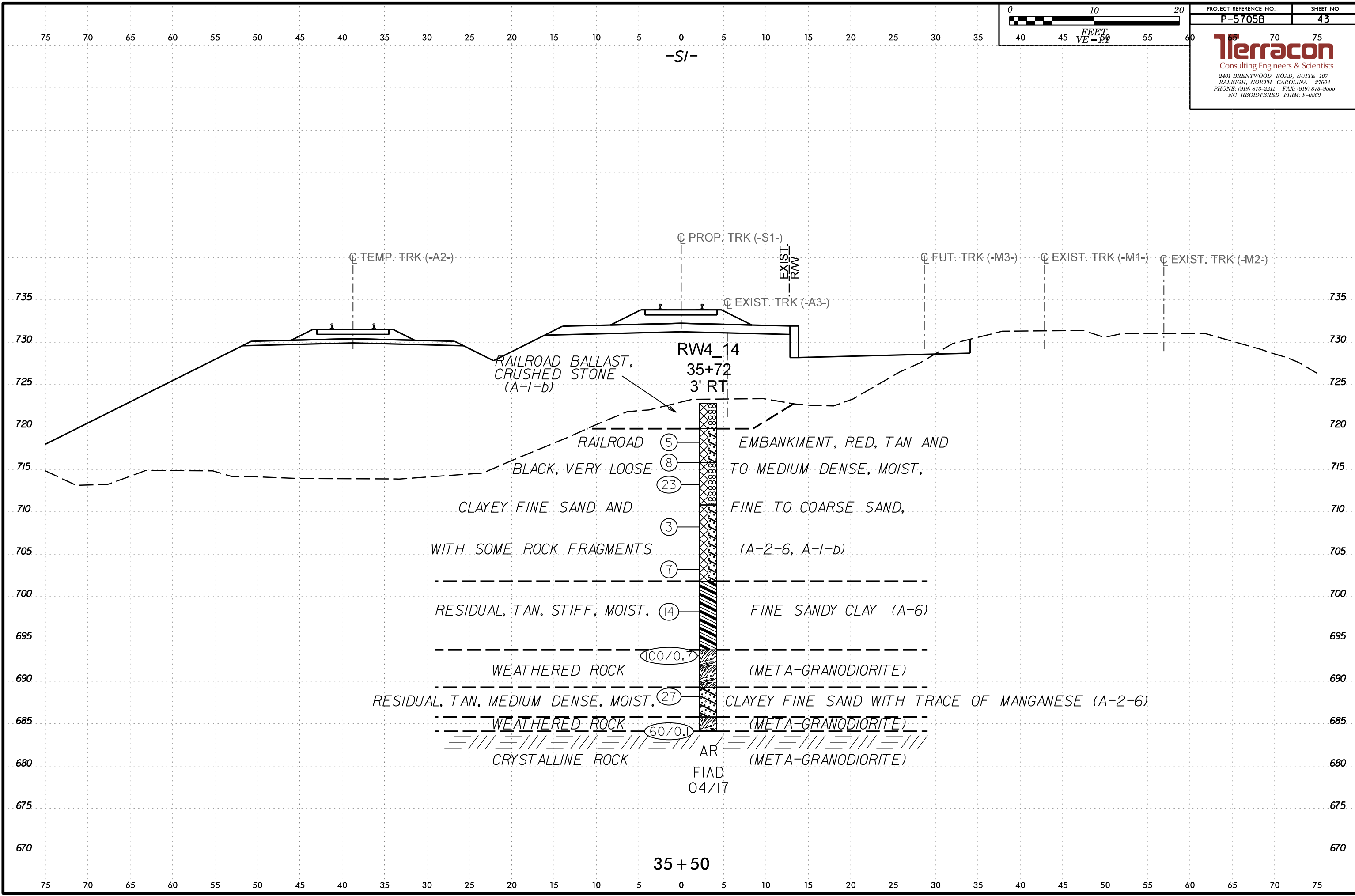
34 + 50

85 80 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



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>43</b>
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NC REGISTERED FIRM: P-0869



35 + 50

FIAD  
04/17

100/0.7

60/0.1

14

7

3

23

8

5

RW4\_14  
35+72  
3' RT

RESIDUAL, TAN, STIFF, MOIST,

WITH SOME ROCK FRAGMENTS

CLAYEY FINE SAND AND

BLACK, VERY LOOSE

RAILROAD

RAILROAD BALLAST,  
CRUSHED STONE  
(A-1-b)

FINE SANDY CLAY (A-6)

(A-2-6, A-1-b)

EMBANKMENT, RED, TAN AND  
TO MEDIUM DENSE, MOIST,  
FINE TO COARSE SAND,

(A-2-6, A-1-b)

WEATHERED ROCK

(META-GRANODIORITE)

WEATHERED ROCK

(META-GRANODIORITE)

CRYSTALLINE ROCK

(META-GRANODIORITE)

RESIDUAL, TAN, MEDIUM DENSE, MOIST,

CLAYEY FINE SAND WITH TRACE OF MANGANESE (A-2-6)

WEATHERED ROCK

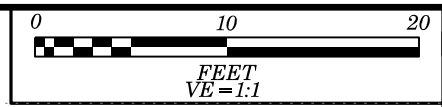
(META-GRANODIORITE)

WEATHERED ROCK

(META-GRANODIORITE)

0012DEL\_P28

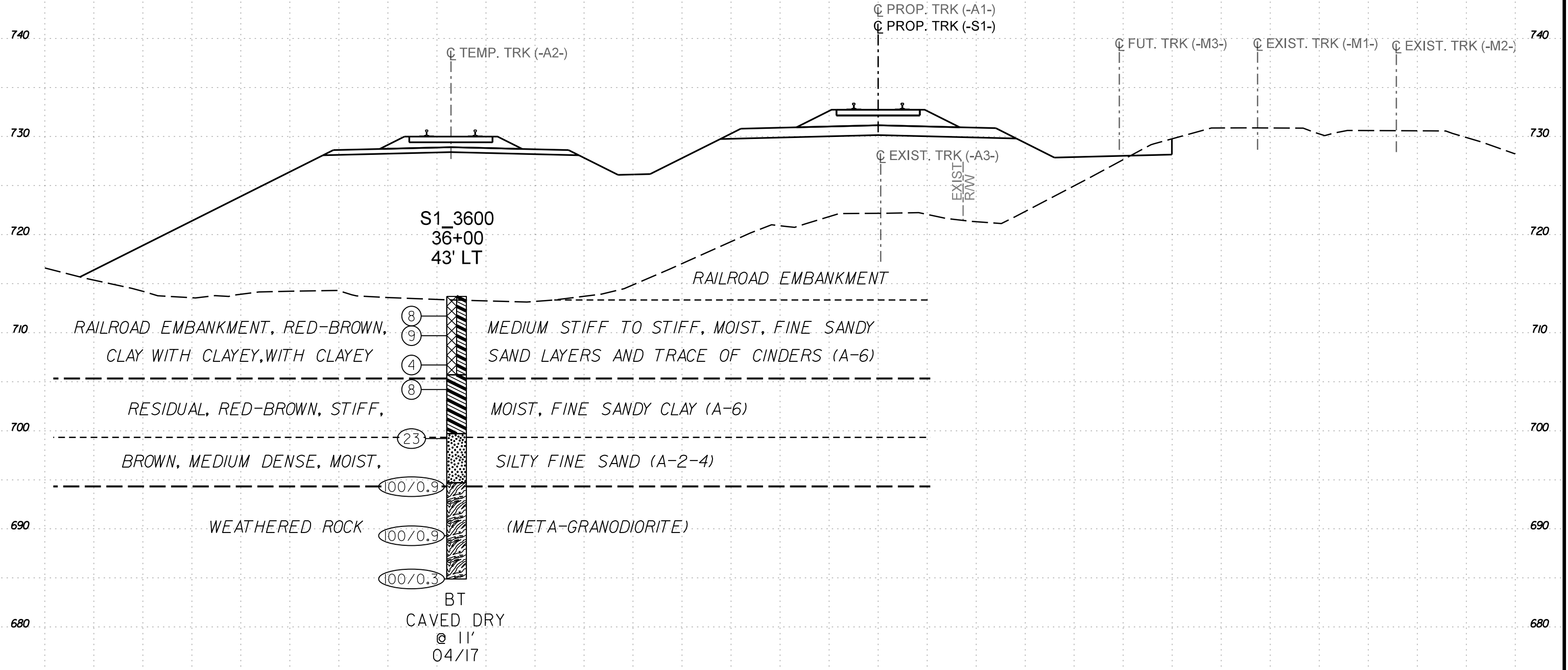
85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>44</b>
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NC REGISTERED FIRM: P-0869

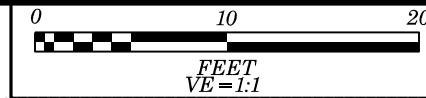
-S1-



36+00

85 80 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

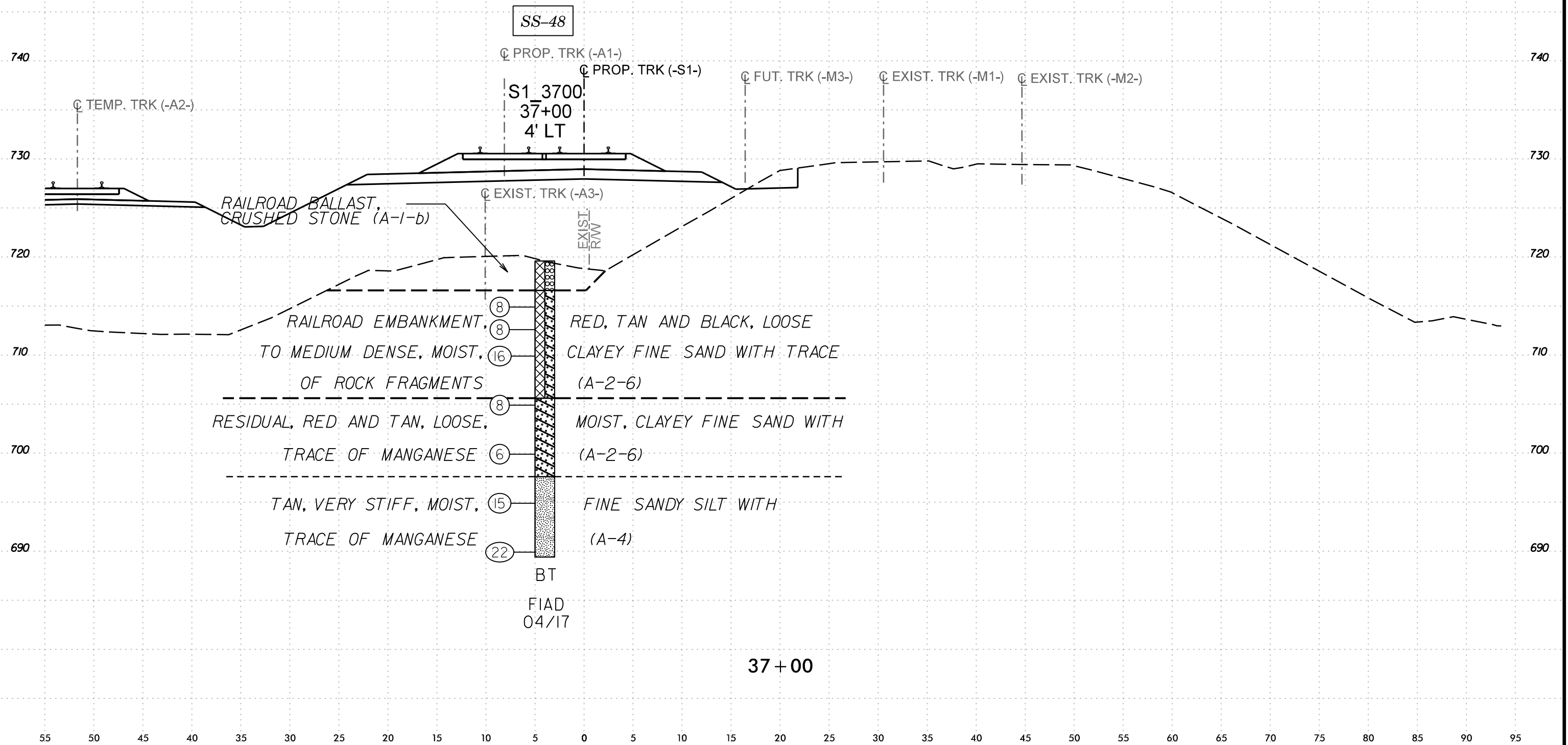
55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>45</b>
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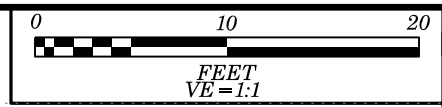
**Terracon**  
Consulting Engineers & Scientists  
2401 BRENTWOOD ROAD, SUITE 107  
RALEIGH, NORTH CAROLINA 27604  
PHONE: (919) 873-2211 FAX: (919) 873-9555  
NC REGISTERED FIRM: P-0869

-S1-



0012DEL\_P28

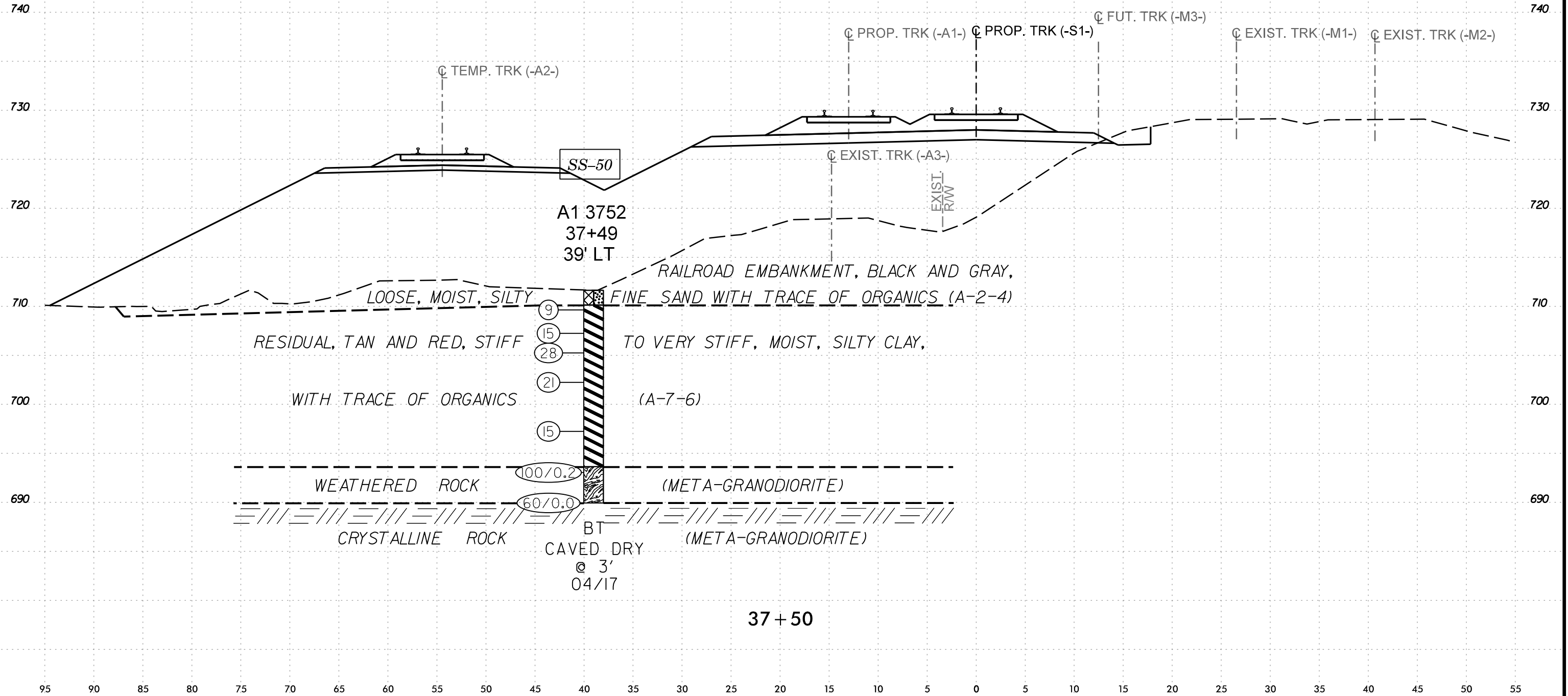
95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>46</b>
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NC REGISTERED FIRM: P-0869

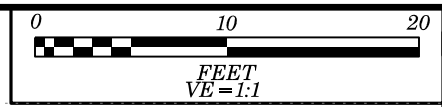
-S1-



0012DEL\_P28

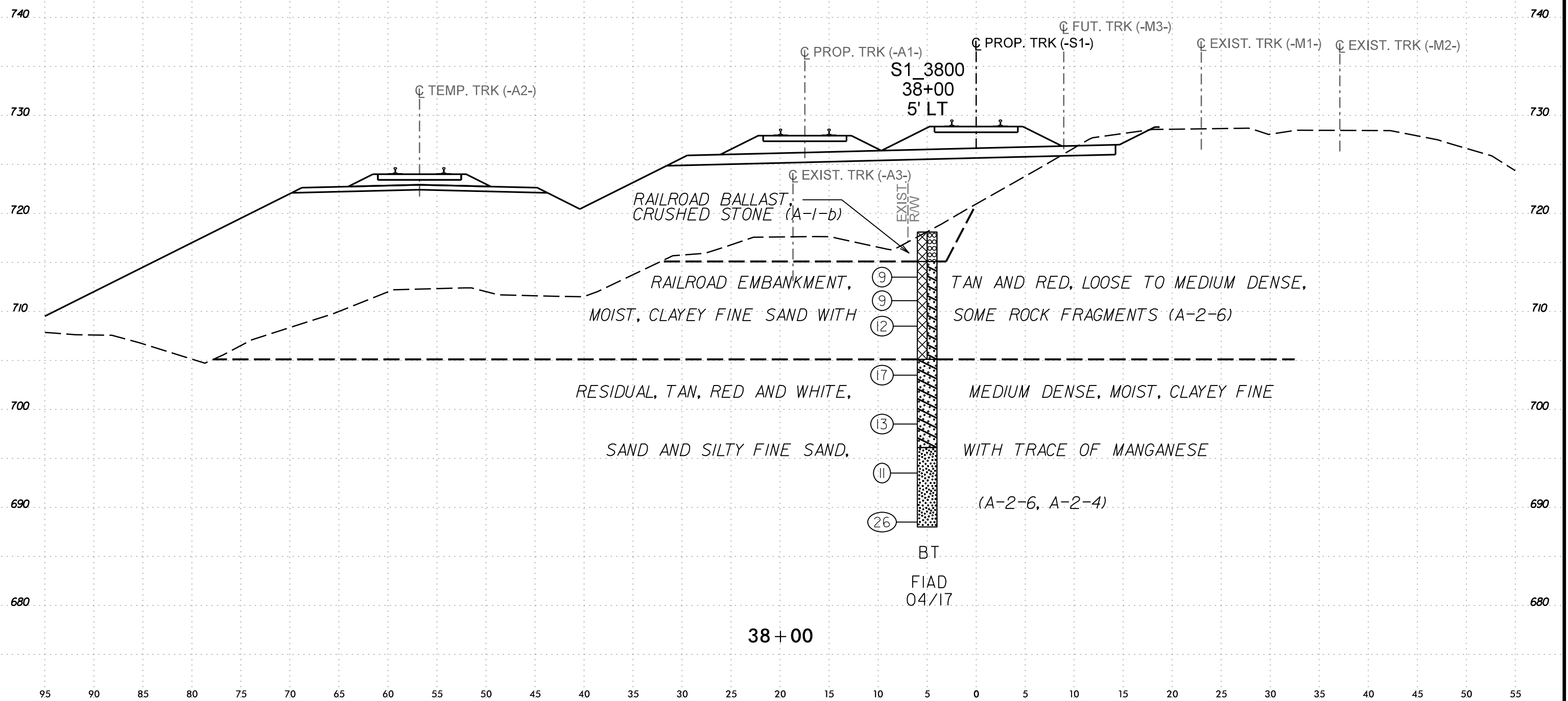
95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15

-S1-



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>47</b>
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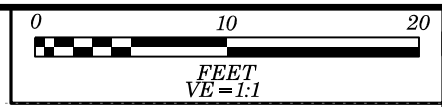
**Terracon**  
Consulting Engineers & Scientists  
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NC REGISTERED FIRM: P-0869



38 + 00

95 90 85 80 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

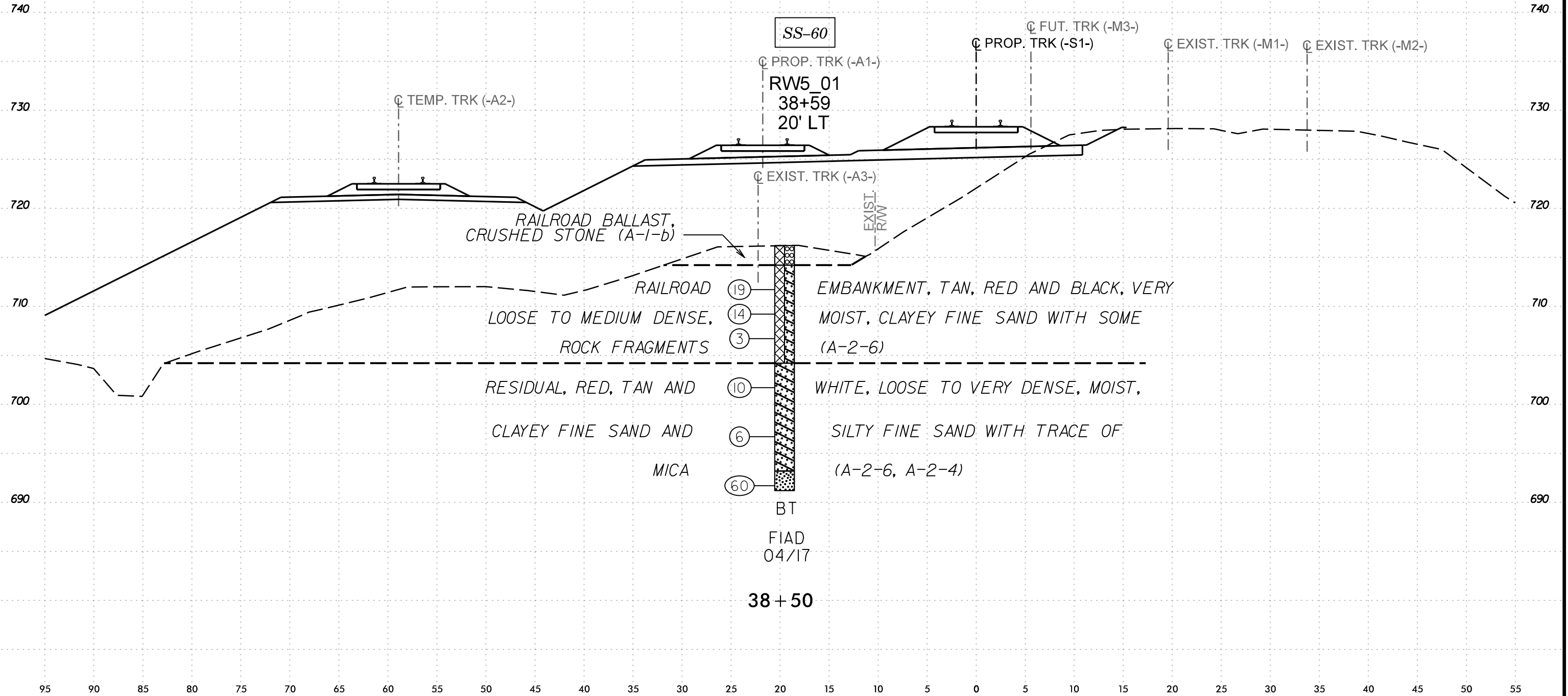
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>48</b>
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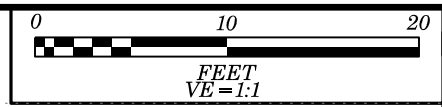
-S1-





0012DEL\_P28

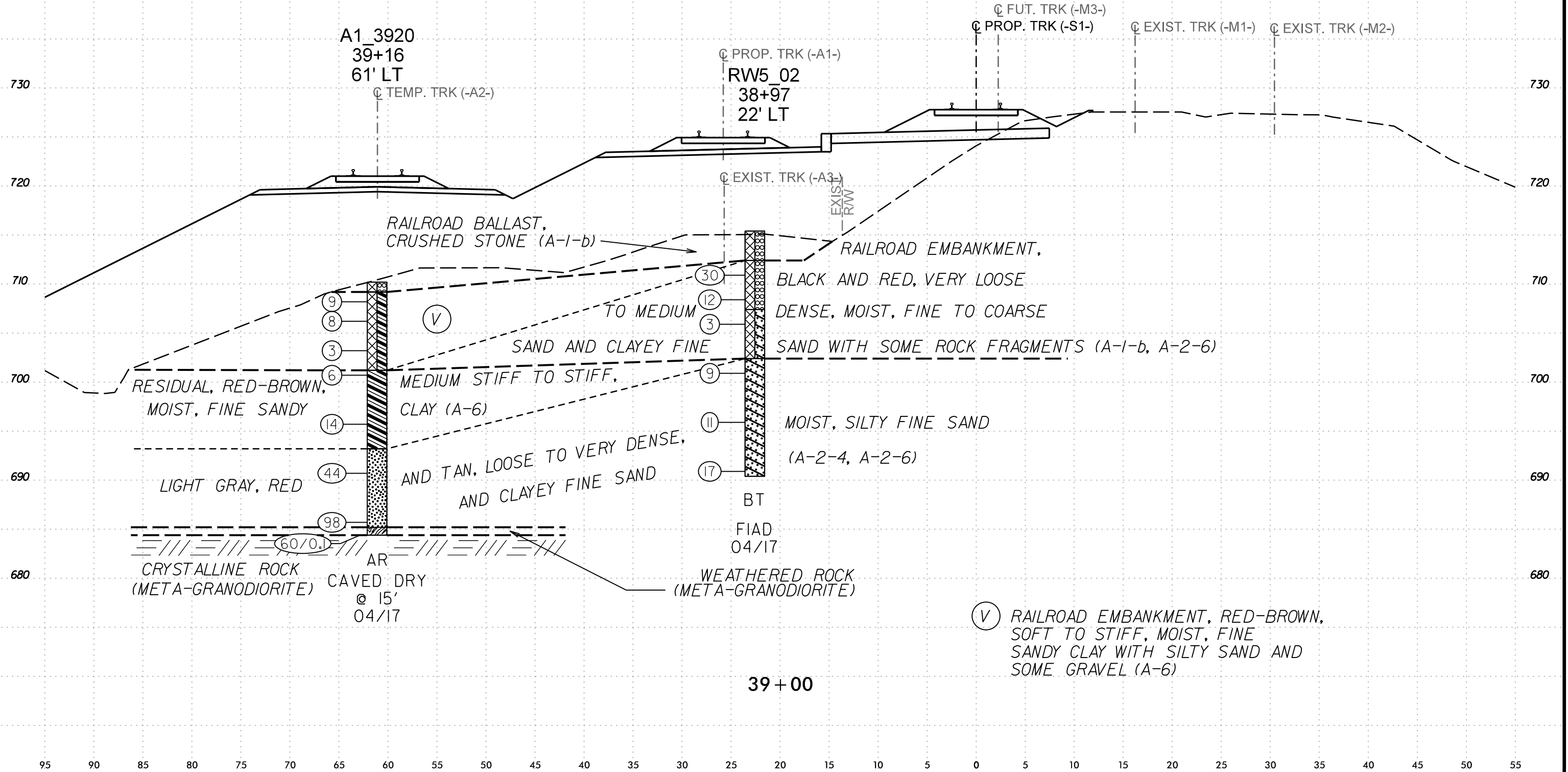
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>49</b>
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NC REGISTERED FIRM: P-0869

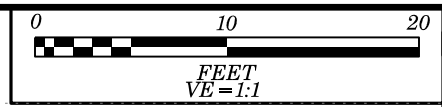
-S1-



95 90 85 80 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

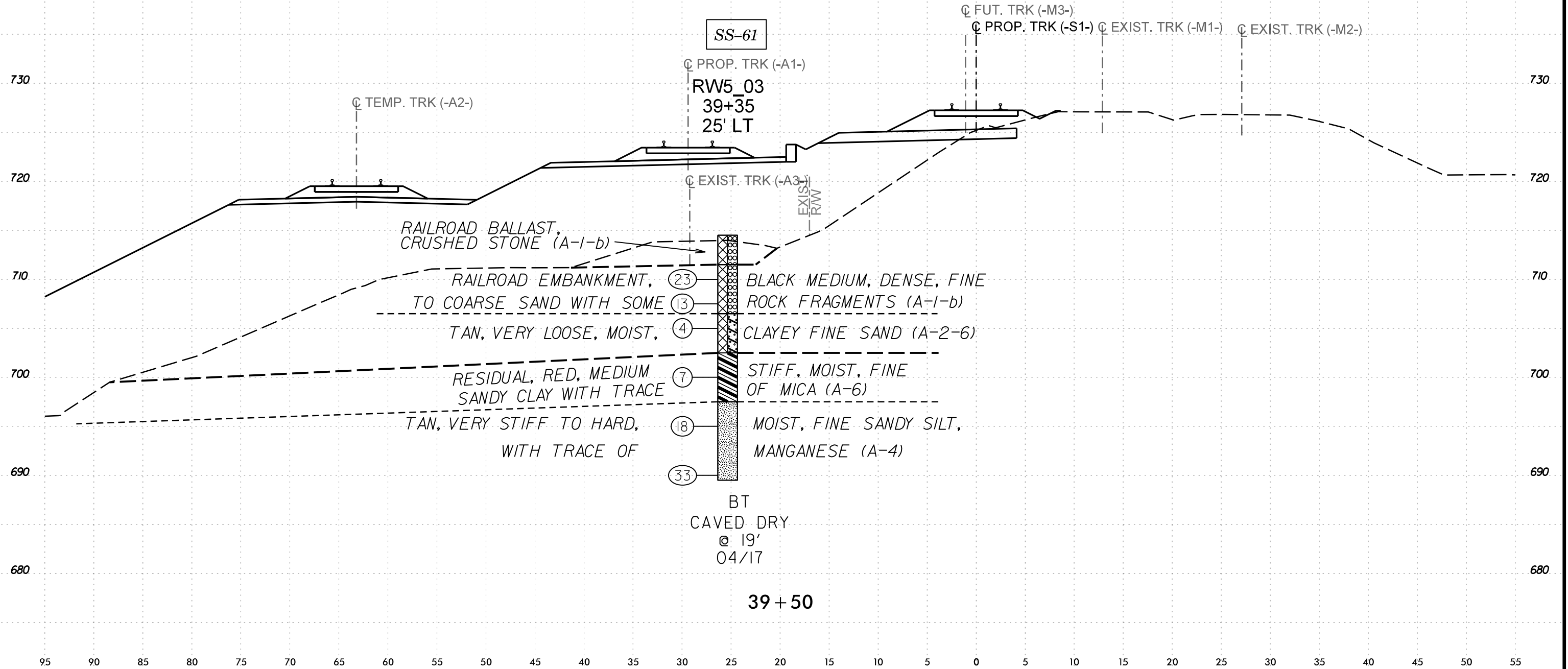
95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15

-S1-

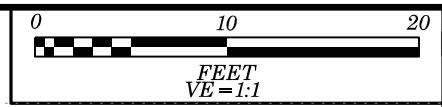


PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>50</b>
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NC REGISTERED FIRM: P-0869



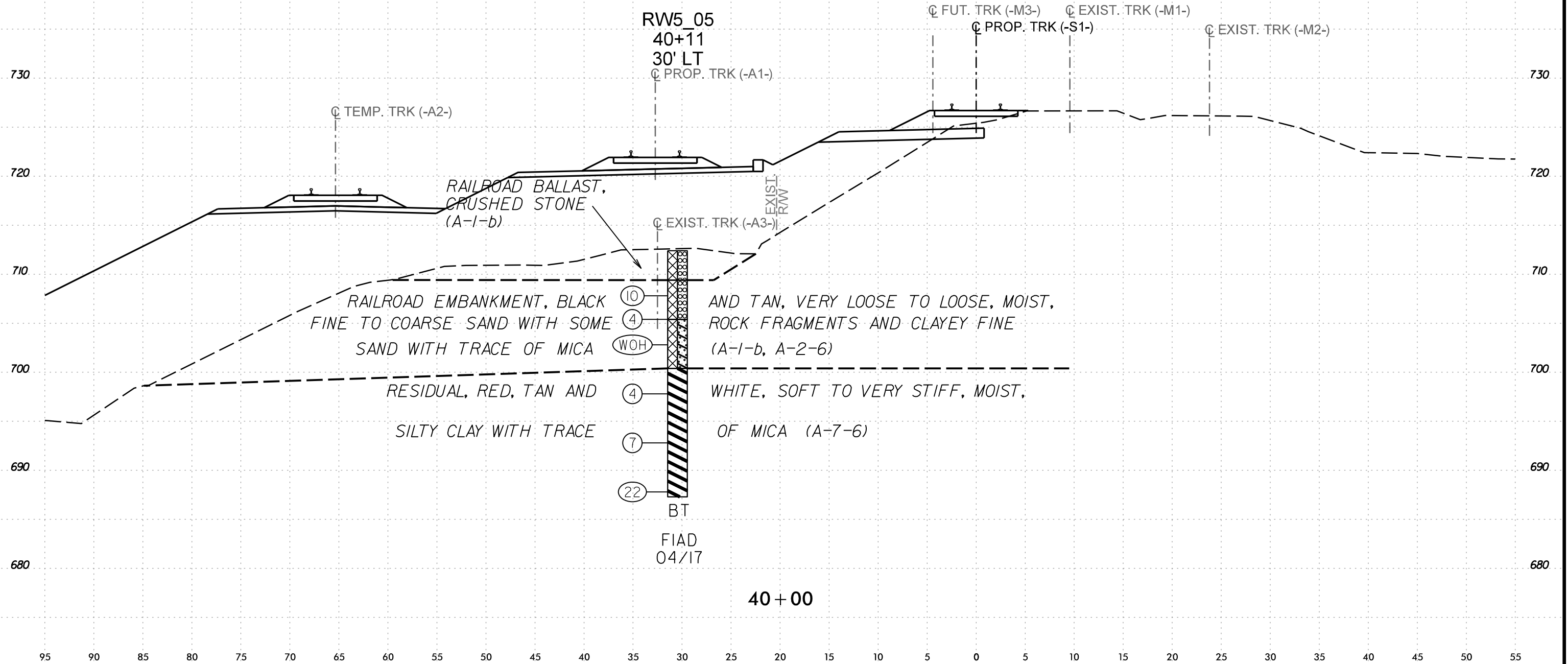
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>51</b>
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NC REGISTERED FIRM: P-0869

-S1-

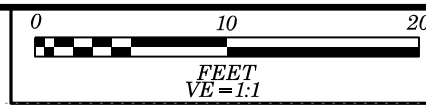


40 + 00

95 90 85 80 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

0012DEL\_P28

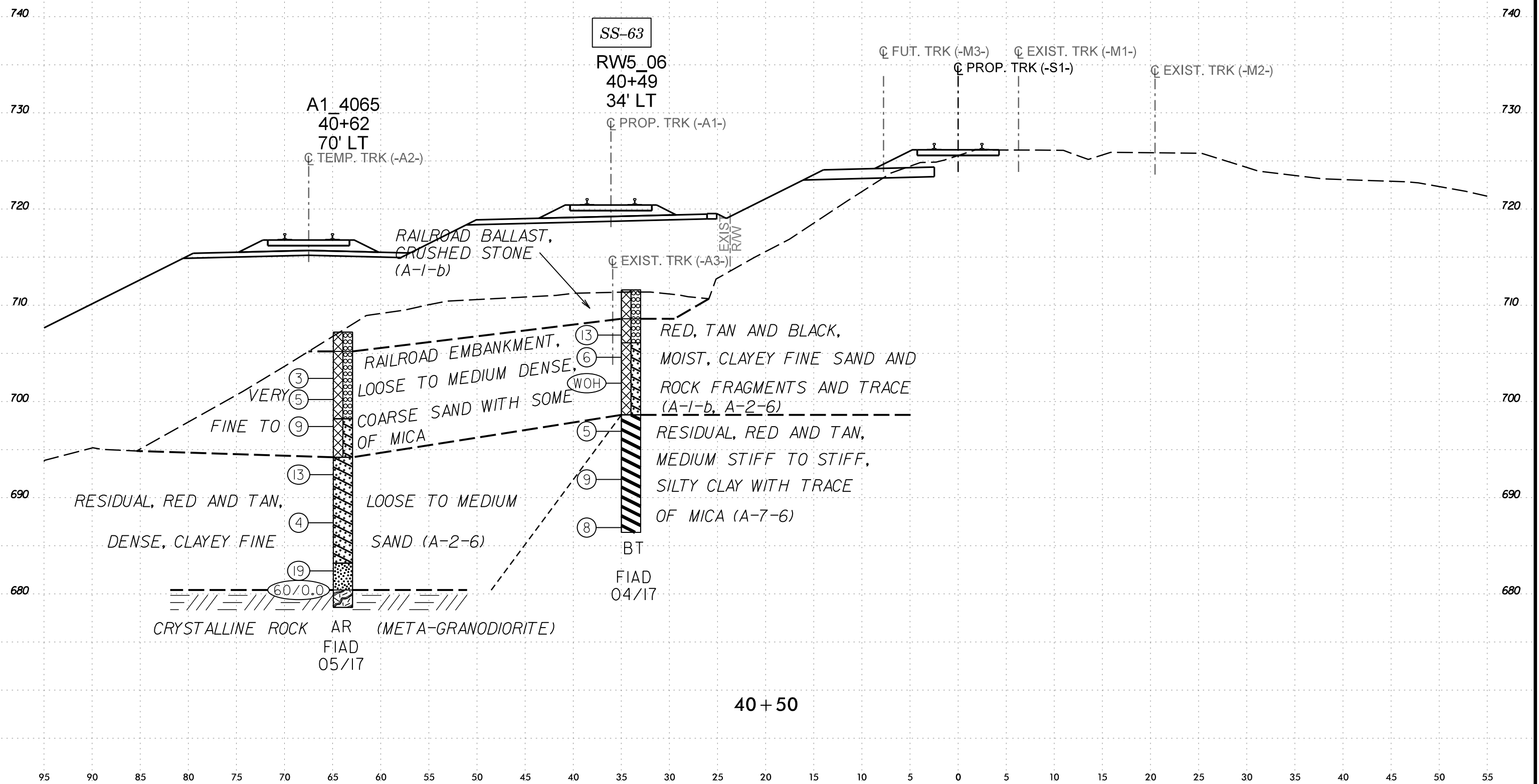
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>52</b>
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NC REGISTERED FIRM: P-0869

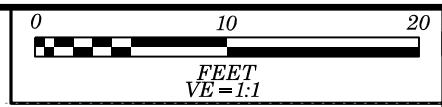
-S1-



95 90 85 80 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

0012DEL\_P28

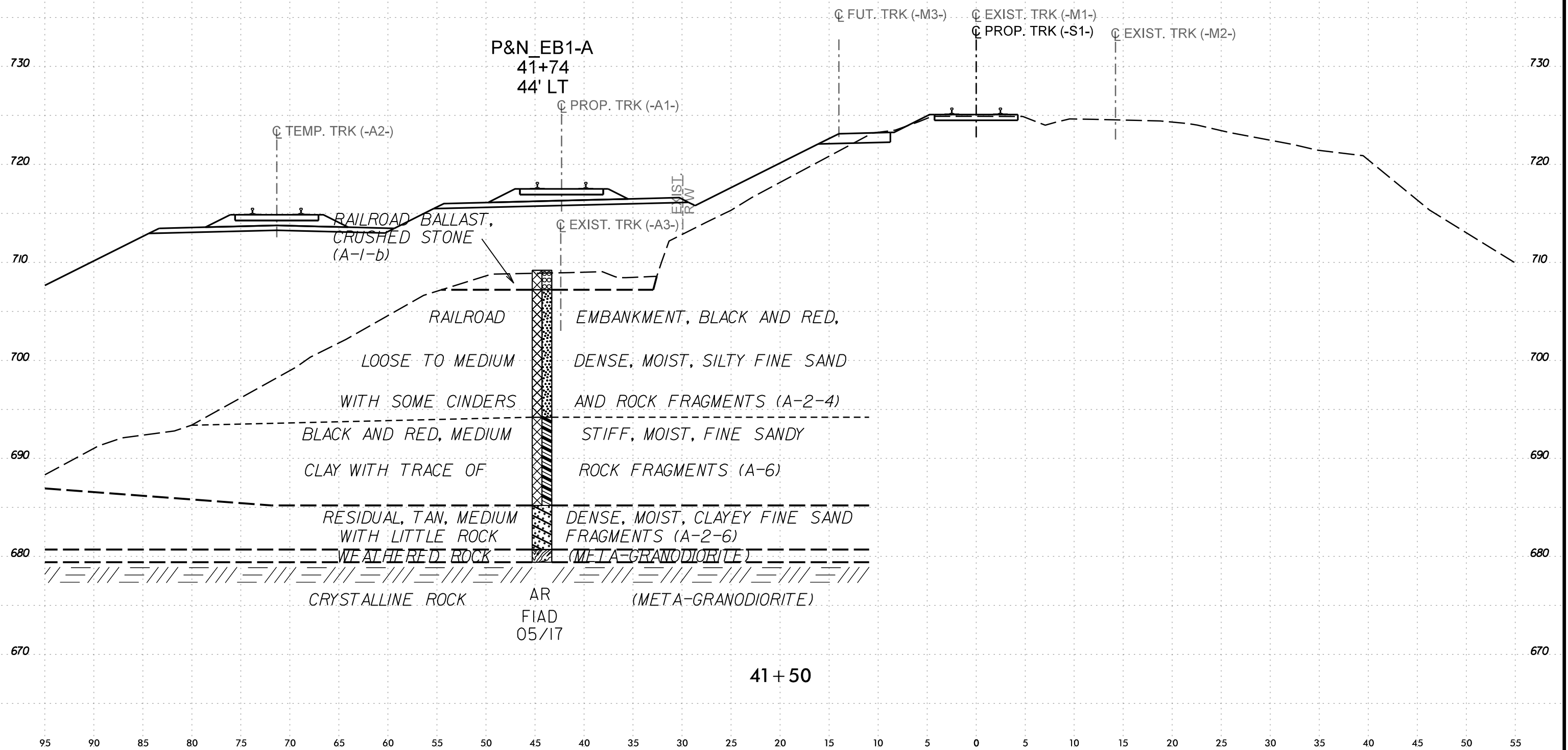
95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>53</b>
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NC REGISTERED FIRM: P-0869

-S1-



P&N EB1-A  
41+74  
44' LT

730 730

720 720

710 710

700 700

690 690

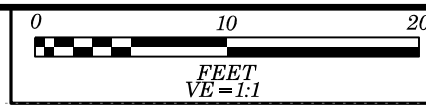
680 680

670 670

41+50

95 90 85 80 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

95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>54</b>
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NC REGISTERED FIRM: P-0869

-S1-

SS-44

P&N\_EB2-A 43+45 42' LT  
P&N\_EB2-B 43+55 29' LT

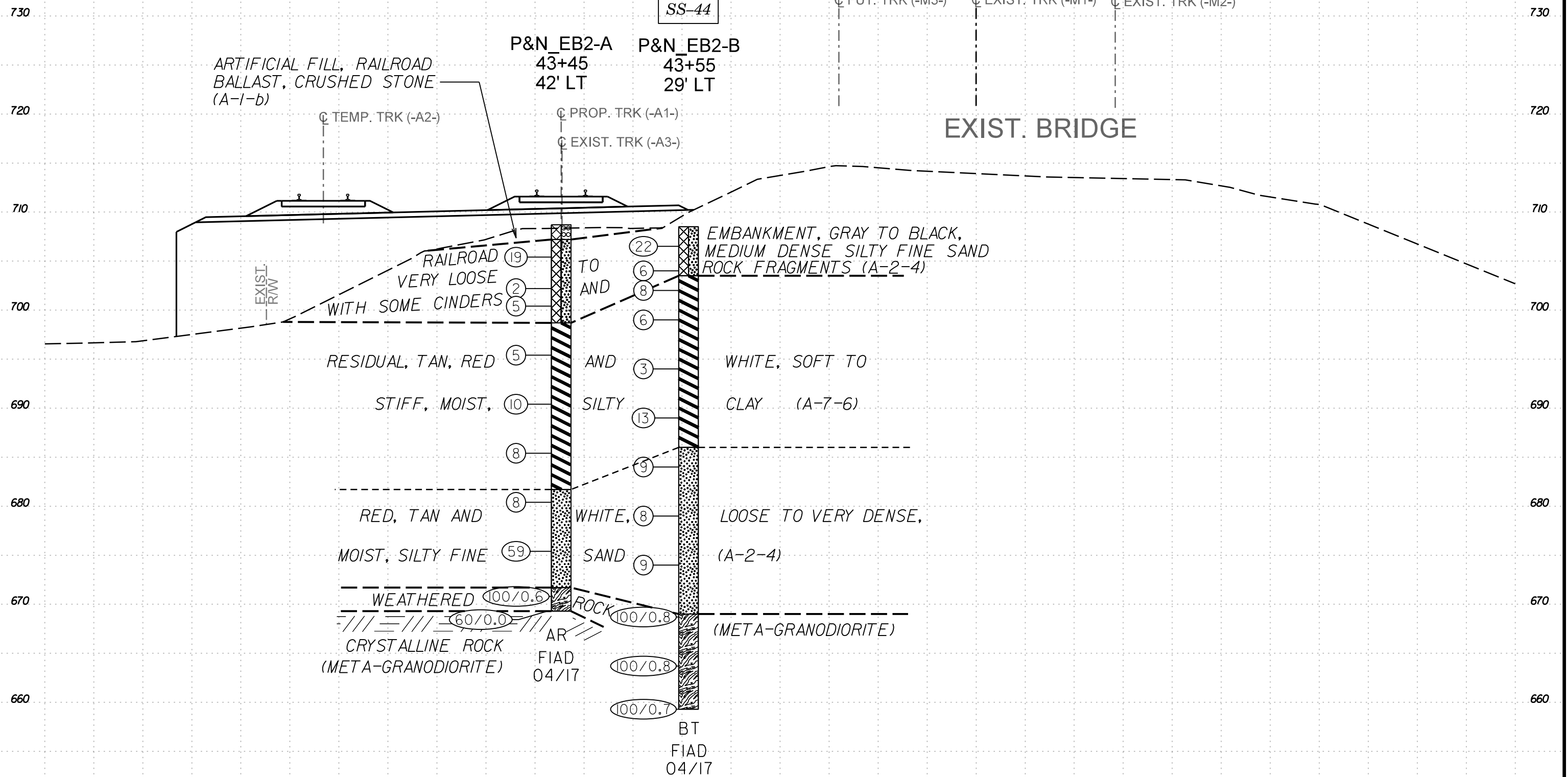
◻ FUT. TRK (-M3-)  
◻ PROP. TRK (-S1-)  
◻ EXIST. TRK (-M1-)  
◻ EXIST. TRK (-M2-)

ARTIFICIAL FILL, RAILROAD BALLAST, CRUSHED STONE (A-1-b)

◻ TEMP. TRK (-A2-)

◻ PROP. TRK (-A1-)  
◻ EXIST. TRK (-A3-)

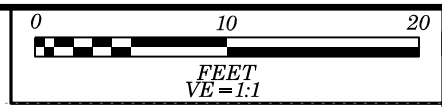
EXIST. BRIDGE



43 + 50

95 90 85 80 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

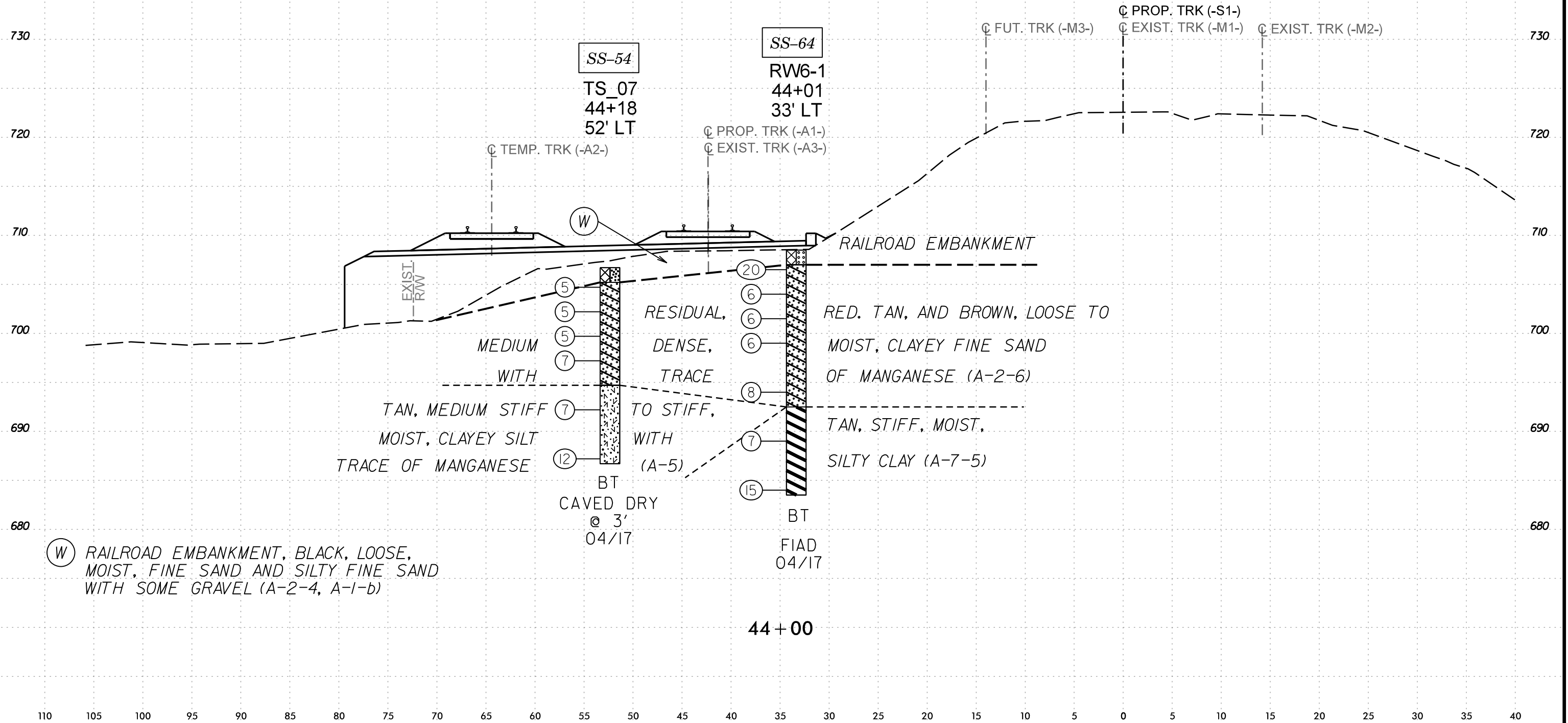
110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>55</b>
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NC REGISTERED FIRM: P-0869

-S1-



SS-54

TS\_07  
44+18  
52' LT

SS-64

RW6-1  
44+01  
33' LT

TEMP. TRK (-A2-)

PROP. TRK (-A1-)  
EXIST. TRK (-A3-)

FUT. TRK (-M3-)

PROP. TRK (-S1-)

EXIST. TRK (-M1-)

EXIST. TRK (-M2-)

RAILROAD EMBANKMENT

MEDIUM WITH TAN, MEDIUM STIFF MOIST, CLAYEY SILT TRACE OF MANGANESE

RESIDUAL, DENSE, TRACE TO STIFF, WITH (A-5)

RED. TAN, AND BROWN, LOOSE TO MOIST, CLAYEY FINE SAND OF MANGANESE (A-2-6)

TAN, STIFF, MOIST, SILTY CLAY (A-7-5)

BT  
CAVED DRY @ 3' 04/17

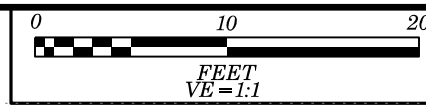
BT  
FIAD 04/17

44+00

(W) RAILROAD EMBANKMENT, BLACK, LOOSE, MOIST, FINE SAND AND SILTY FINE SAND WITH SOME GRAVEL (A-2-4, A-1-b)

110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40

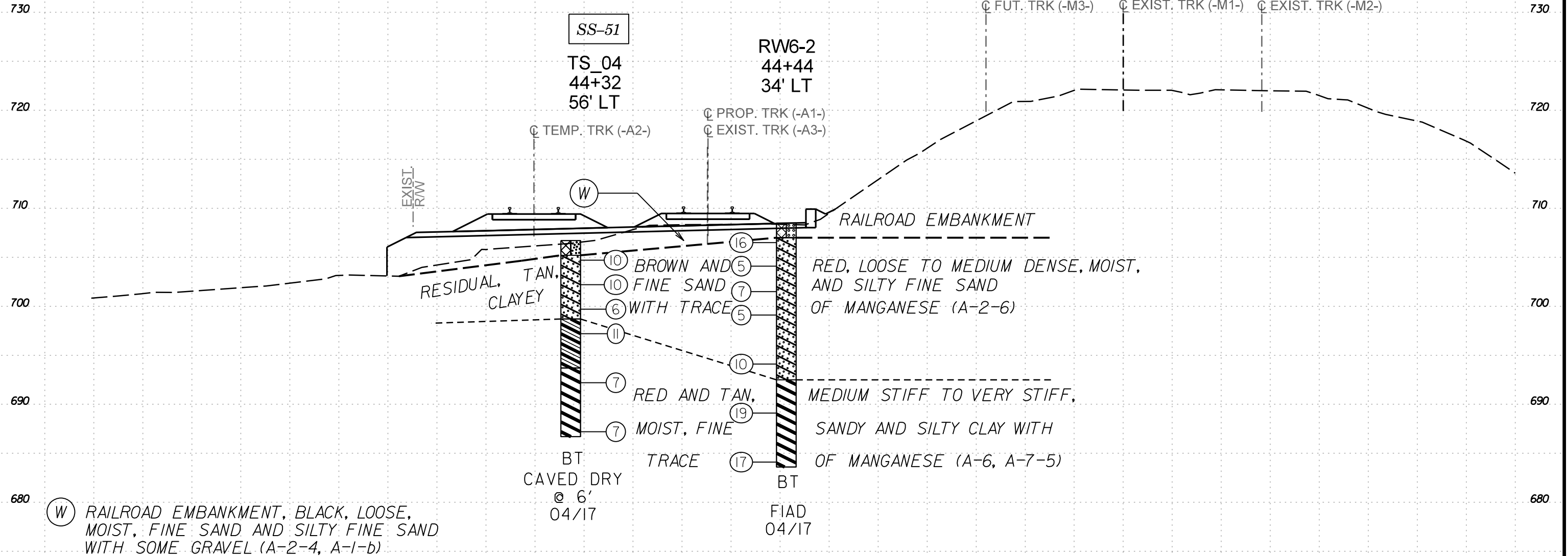
110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0



PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>56</b>
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NC REGISTERED FIRM: P-0869

-S1-



SS-51

TS\_04  
44+32  
56' LT

RW6-2  
44+44  
34' LT

TEMP. TRK (-A2-)

PROP. TRK (-A1-)  
EXIST. TRK (-A3-)

FUT. TRK (-M3-)

PROP. TRK (-S1-)  
EXIST. TRK (-M1-)

EXIST. TRK (-M2-)

EXIST. R/W

W

RAILROAD EMBANKMENT

RESIDUAL, TAN. CLAYEY

10 BROWN AND  
10 FINE SAND  
6 WITH TRACE  
11

16

5

7

5

RED, LOOSE TO MEDIUM DENSE, MOIST, AND SILTY FINE SAND OF MANGANESE (A-2-6)

7 RED AND TAN,  
7 MOIST, FINE

10

19

MEDIUM STIFF TO VERY STIFF, SANDY AND SILTY CLAY WITH OF MANGANESE (A-6, A-7-5)

BT  
CAVED DRY  
@ 6'  
04/17

17

BT

FIAD  
04/17

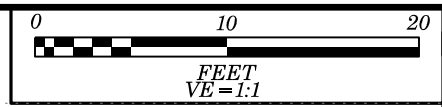
W RAILROAD EMBANKMENT, BLACK, LOOSE, MOIST, FINE SAND AND SILTY FINE SAND WITH SOME GRAVEL (A-2-4, A-1-b)

44 + 50

110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40



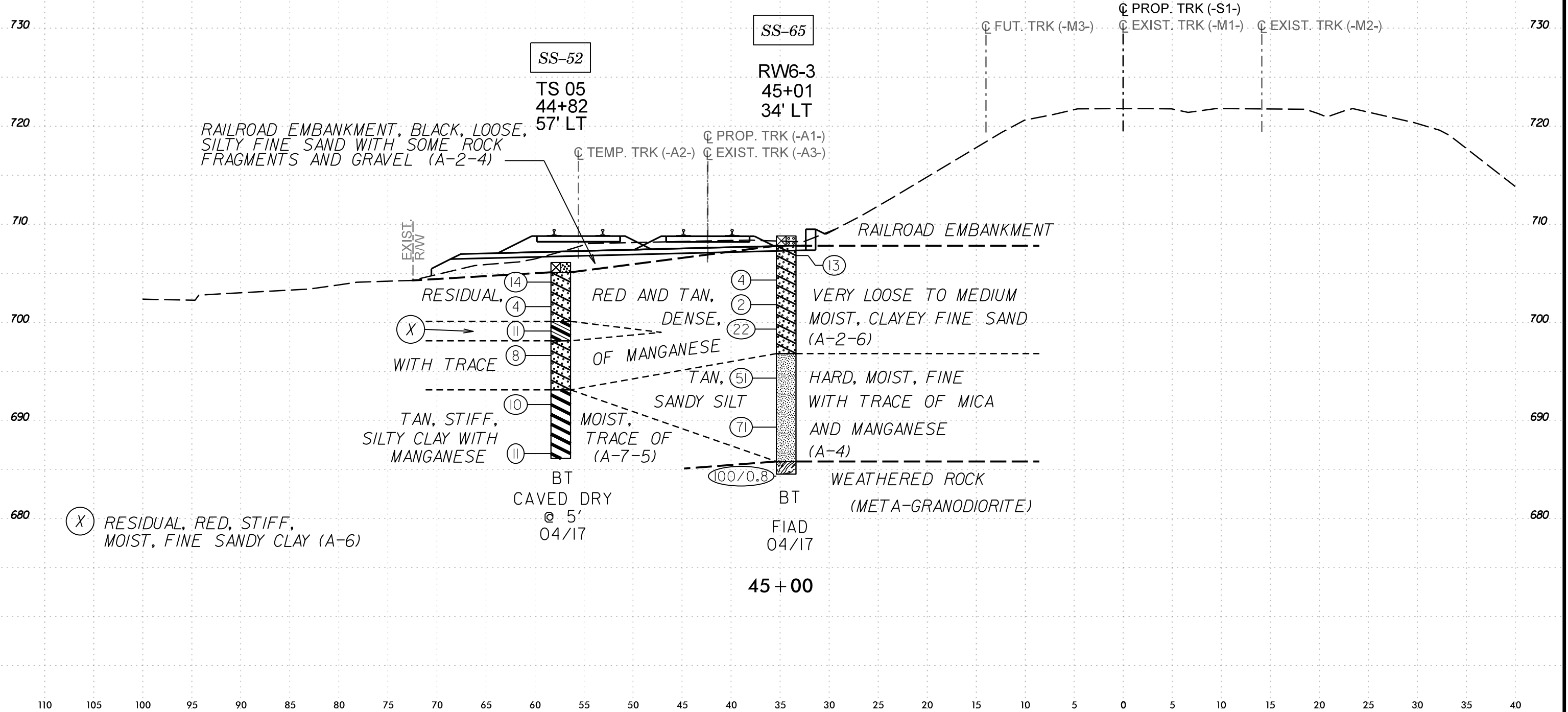
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>57</b>
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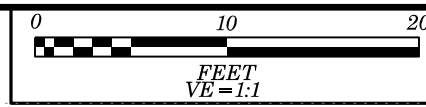
**Terracon**  
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-S1-



0012DEL\_P28

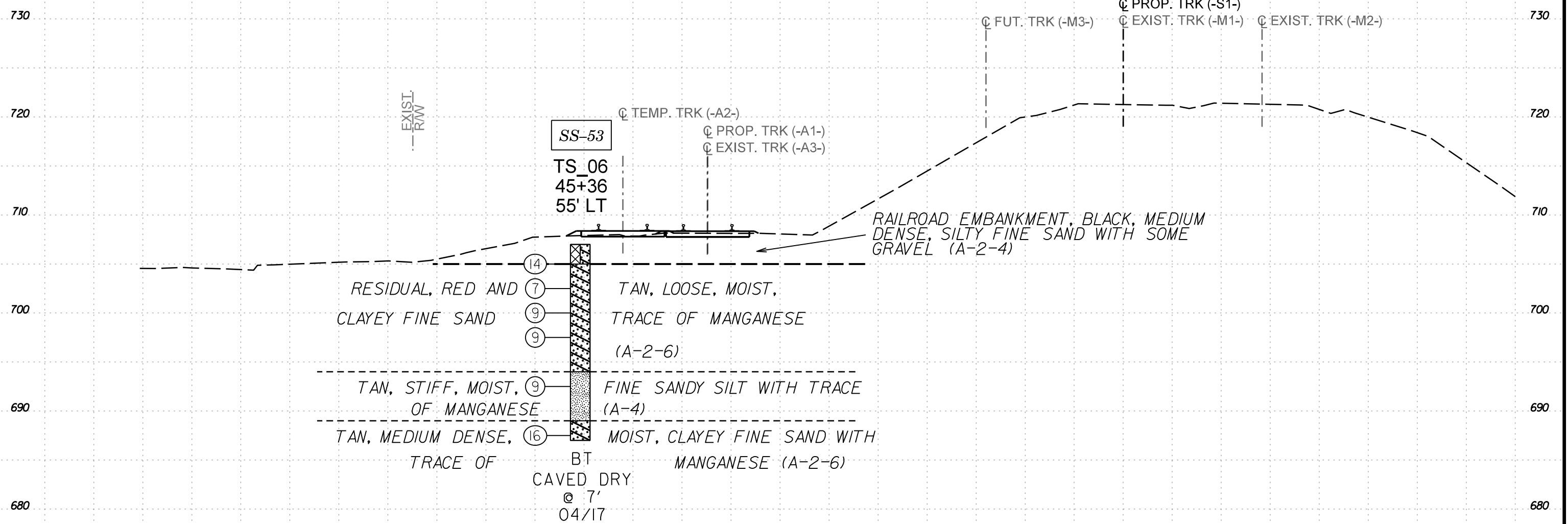
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PROJECT REFERENCE NO. <b>P-5705B</b>	SHEET NO. <b>58</b>
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-S1-



SS-53

TS\_06  
45+36  
55' LT

14

7

9

9

9

16

BT  
CAVED DRY  
@ 7'  
04/17

RESIDUAL, RED AND  
CLAYEY FINE SAND

TAN, LOOSE, MOIST,  
TRACE OF MANGANESE  
(A-2-6)

TAN, STIFF, MOIST,  
OF MANGANESE

FINE SANDY SILT WITH TRACE  
(A-4)

TAN, MEDIUM DENSE,  
TRACE OF

MOIST, CLAYEY FINE SAND WITH  
MANGANESE (A-2-6)

RAILROAD EMBANKMENT, BLACK, MEDIUM  
DENSE, SILTY FINE SAND WITH SOME  
GRAVEL (A-2-4)

45 + 50

110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40

**PROJECT: 44475.1.2**

**REFERENCE: P-5705B**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-2705B	59	60

***APPENDIX A***

