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REFERENCE: R-5735

PROJECT: 50193.1.1

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	27+80 TO 92+00	4-9	-

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	27+80 TO 92+00	10-99

APPENDICES

APPENDIX	TITLE	SHEETS
A	BORE LOGS	100-117

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *CHEROKEE*

PROJECT DESCRIPTION *US-16/64/74/125 WIDENING FROM APPROXIMATELY 150' WEST OF BIDDIE LANE TO JUST EAST OF HIWASSEE STREET (US-19 BUSINESS)*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5735	1	121

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 (919) 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:
1. 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.
2. 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

P.M. WEAVER

C.R. PASTRANA

TRI-STATE DRILLING

INVESTIGATED BY *ESP Associates, P.A.*

DRAWN BY *C.R. PASTRANA*

CHECKED BY *P.M. WEAVER*

SUBMITTED BY *ESP Associates, P.A.*

DATE *October 2017*

ESP ASSOCIATES, PA
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SIGNATURE DATE

NORTH CAROLINA LICENSED SEAL 1500 GEOLOGIST PAUL M. WEAVER

DocuSigned by:
Paul Weaver
01847D3739AD49C...

2/12/2019

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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,
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5, A-7-6			
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
MATERIAL PASSING #40 LL PI	– 6 MX		– NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	NO MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	< 4 4 TO 10 10 TO 30 30 TO 50 > 50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	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	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NON PLASTIC	0-5	VERY LOW
SLIGHTLY PLASTIC	6-15	SLIGHT
MODERATELY PLASTIC	16-25	MEDIUM
HIGHLY PLASTIC	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

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.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LL < 31
MODERATELY COMPRESSIBLE	LL = 31 - 50
HIGHLY COMPRESSIBLE	LL > 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	20 - 35%
HIGHLY ORGANIC	> 10%	> 20%	HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT, DPT, DMT, VST, PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS

S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] CME-45C
- [X] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] GEOPROBE
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [ ] -N _____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [X] HAND AUGER
- [X] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
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.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
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.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V 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.
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.
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.
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. *IF TESTED, WOULD YIELD SPT REFUSAL*
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. *IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V 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. *IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF*
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.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
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.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED 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.
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 FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FOOT
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

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 DISLODGED 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 (SRQD) - 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.

BENCH MARK: FILE "R-5735_LS_TIN.TIN", OCT 17, 2016, WAS USED TO DETERMINE TOP OF GROUND ELEVATIONS FOR BORINGS LOCATIONS

ELEVATION: FEET

NOTES:

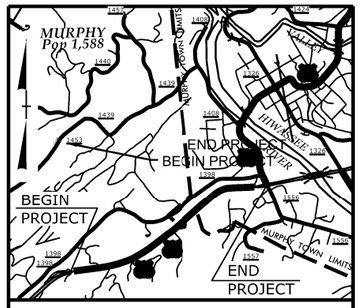
DATE: 8-15-14

09/08/20

TIP PROJECT: R-5735

CONTRACT: _____

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CHEROKEE COUNTY

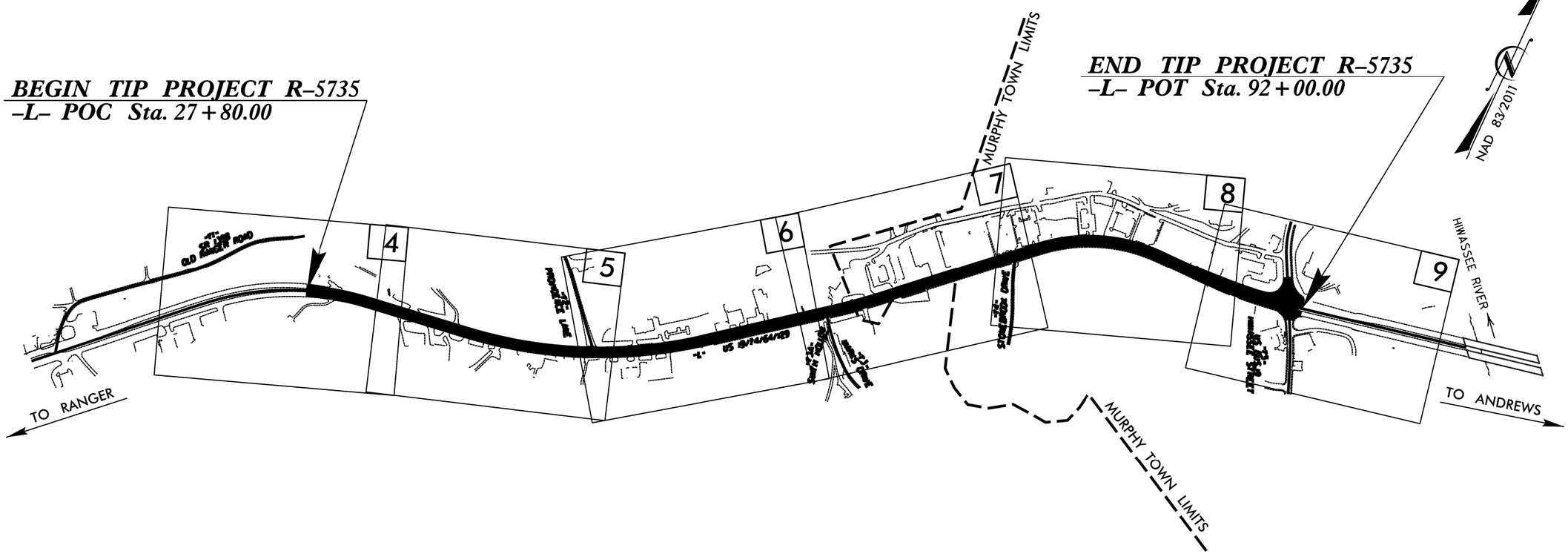
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5735	3	121
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
50193.1.1		PE	

LOCATION: US 19/US 74/US 64/US 129 FROM END OF DIVIDED SECTION TO SR 1556 (MARTINS CREK ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, & SIGNALS

BEGIN TIP PROJECT R-5735
-L- POC Sta. 27+80.00

END TIP PROJECT R-5735
-L- POT Sta. 92+00.00



NOTES:
1. PROJECT IS PARTIALLY LOCATED WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF MURPHY.
2. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ___.

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GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2020 = 19,900
ADT 2040 = 24,000
K = 9 %
D = 53 %
T = 7 % *
V = 40/50 MPH
* TTST = 2% DUAL 5%
FUNC CLASS = ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5735	=	1.216 MILES
LENGTH STRUCTURE TIP PROJECT R-5735	=	0.000 MILES
TOTAL LENGTH OF TIP PROJECT R-5735	=	1.216 MILES

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Suite 600
Cary, NC 27518
NC License: F-1084

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 16, 2018

LETTING DATE: FEBRUARY 18, 2020

TODD H. BUCKNER, PE
PROJECT ENGINEER

TERRANCE A. HARRIS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

ESP Associates, P.A.

October 11, 2017

STATE PROJECT: 50193.1.1 (R-5735)
COUNTY: Cherokee
DESCRIPTION: US 16/64/74/129 Widening from Approximately 150 feet West Of Biddie Lane to Just East of Hiwassee Street (US 49 Business)
SUBJECT: Geotechnical Inventory

Project Description

This project begins approximately 150 feet west of Biddie Lane and continues east to just west of the intersection of US16/64/74/129 and Hiwassee Street in Murphy, North Carolina. The project length is approximately 1.2 miles. This geotechnical investigation was confined to the areas of proposed construction.

Initial site scoping and boring layout was performed on January 4, 2017, and the field roadway investigation was performed from January 30 through February 3, 2017. Standard Penetration Test borings were advanced with a CME 55 drill machine and a GeoProbe 7822DT drill machine, both equipped with an automatic hammer. Hand auger borings with bridge probe rods were also performed at selected locations. Representative soil samples were collected for visual classification in the field and for laboratory analyses.

The following alignment was investigated. Subsurface cross sections of this alignments are included in this report.

Alignment	Station(±)
-L-	27+80 to 92+00

It should be noted that a -Y- line alignment (-Y3A-, Marks Road) was added to the project after ESP's field roadway investigation had already been completed resulting in no soil test borings being performed for this alignment. The proposed work on -Y3A- consists of approximately 100 feet of roadway realignment (from -Y3A- Stations 10+00 to 11+00) with approximately 3 feet of fill planned between 10+40 and 10+70.

Areas of Special Geotechnical Interest

1) The following sections contain soft, cohesive soils and/or soils with greater than 3 percent organic content which have the potential to cause embankment/subgrade and or slope stability problems during construction:

Alignment	Station(±)
-L-	39+75 to 41+75
-L-	46+75 to 48+25
-L-	54+75 to 55+25
-L-	55+75 to 56+25

2) The following area, based on conversations with the property owner, contains artificial fill mixed with significant amounts of sawdust and, according to the property owner, also contained noticeable amount of petroleum products:

Alignment	Station to Station (±)	Offset (±)
-L-	71+75 to 72+25	33' Lt

3) The following section contain artificial fill material. Artificial fill is fill material placed outside of the roadway embankment by entities other than the NCDOT and thus without the quality and compaction controls inherent in roadway embankment construction. The artificial fill encountered extended to depths ranging from approximately 4 feet to approximately 22 feet below the existing ground surface. Even though significant quantities of deleterious material was not encountered in the artificial fill sampled in the borings drilled for this project, there is a high probability of these materials within portions of the artificial fill (such as mentioned in Section 2 above):

Alignment	Station to Station (±)	Offset (±)
-L-	28+75 to 31+75	140' Lt to 35' Lt
-L-	32+75 to 36+70	140+' Lt to 5' Lt
-L-	39+75 to 67+75	140'+ Lt to 50' Rt
-L-	75+75 to 79+75	70'+ Lt to 30' Rt
-L-	83+25 to 89+25	70'+ Lt to 30' Rt

4) Sink hole activity has occurred in the past in several locations along the left side of the proposed alignment based on conversations with property owners, and there are other depressed areas along the project that appear to be indicative of potential sinkholes having occurred in the past and/or indicative of the beginning of sinkhole formation. It is assumed that these sinkholes are due to drainage issues since the underlying rock is not karst.

   The following areas are sink holes are known to have occurred based on ESP's conversations with property owners:

7011 Albert Pick Road, Suite E, Greensboro, NC 27409
Phone: 336.232-5210
www.espassociates.com

Alignment	Station to Station (±)	Offset (±)
-L-	46+39 to 46+53	20’ Lt to 45’ Lt
-L-	72+30 to 72+50	100’ Lt to 140’ Lt
-L-	78+30 to 80+00	145’ Lt to 200’ Lt

The following areas are where sink holes have potentially occurred in the past and/or are were potentially forming at the time of our investigation based on depressions visible on the surface:

Alignment	Station to Station (±)	Offset (±)
-L-	66+70 to 67+00	230’ Lt to 275’ Lt
-L-	72+60 to 73+00	35’ Lt to 45’ Lt
-L-	75+10 to 79+15	180’ Lt to 210’ Lt

5) Rock Outcrops are exposed along the project corridor at the following locations:

Alignment	Station to Station (±)	Dip/Dip Direction	Offset at Orientation Measurement (±)
-L-	20+00 to 22+80	30º/165 º	230’ Rt
-L-	34+30 to 34+70	80º/165 º	135’ Rt
-L-	43+70 to 43+80	76º/167 º	210’ Rt
-L-	49+70 to 52+35	56º/166 º	215’ Rt
-L-	63+50 to 63+55	67º/165 º	48’ Rt
-L-	79+60 to 81+20	70º/164 º	50’ Rt

The rock exposed along the right side of the existing roadway is schist with numerous fracture planes. This type of rock is platy in nature with slippage fractures common along the thin laminations in the rock.

It should be noted that the existing rock cut between approximately Stations 49+70 and 53+35 currently encounters one to two instances per month of rock falling off of the cut face and hitting the back of the Badcock Furniture building, according to the property owner. The rock cut between approximately Station 79+60 and 81+20 also shows sign of instability with abundant rock fall debris built up along the toe of the cut slope.

Physiography and Geology

The existing roadway within the project corridor sits in a valley amid a mountain terrain. The elevations along the existing roadway generally slopes down from the beginning (west end) of the project to the end (east end) of the project with elevations ranging from approximately 1690 feet (MSL) to approximately 1550 feet (MSL).

The project corridor is located within the Murphy Belt of the Blue Ridge Physiographic Province. The Murphy belt is an approximately 100-mile-long northeast-southeast-trending structure that sits between the Unaka range on the west and the Blue Ridge range on the east. The rocks of the Murphy belt are almost entirely metasedimentary rock. The rock encountered during this investigation consisted of schist with varying degrees of metamorphism.

Ground Water

Ground water data was collected in the end of January to the first of February, 2017. Ground water depths ranged from 6± to 38± feet below the existing ground surface, and groundwater elevations ranged from 1644± to 1537± feet above sea level.

Soils

Soils encountered within this project area have been divided into five categories: alluvial deposits, artificial fill, roadway embankment, residual soils, and weathered rock.

Asphalt pavement (either existing roadway or drive/parking areas) was present at the existing ground surface at the following borings: B-01, B-05, B-06, B-07, B-08, B-09, B-16, B-24, B-27, B-31, and B-33. The asphalt encountered within the roadway borings ranges in thickness from 1 inch to 6.5 inches with 3 to 4 inches of ABC stone underlying the asphalt at borings B-27, B-31, and B-33. At Borings B-21 and B-28, respectively, a 2-inch to 9-inch thick layer of asphalt was encountered under artificial fill material. The pavement design investigation performed for this project and issued under separate cover indicates that the existing asphalt pavement within the existing US 16/64/74/129 roadway within the project limits ranges from 5 to 16 inches in thickness with base stone thicknesses ranging from 2 to 12.5 inches.

Surficial organic soils were encountered in Borings B-10, B-11, B-12, and B-13 to depths ranging from 0.8 feet to 1.3’ below the existing ground surface. Minor amounts (less than 2 inches) of topsoil was encountered in other borings that did not have asphalt at the existing ground surface.

Soils identified as alluvial deposits (Boring B-20) are composed of 7± feet of very soft to medium stiff clayey silt (A-5) overlying stiff to very stiff sandy silt (A-4). Boring B-20 was terminated in residual soil. It should be noted that this boring was performed adjacent to an existing drainage ditch and that a drainage pipe extension will most likely be placed in this area.

Artificial fill material was encountered in many of the borings performed along the left side of the existing roadway. Artificial fill is fill material placed outside of the roadway embankment by entities other than the NCDOT and thus without the quality and compaction controls inherent in roadway embankment construction. The artificial fill extended to depths ranging from approximately 4 feet to approximately 22 feet below the existing ground surface and sampled as soft to hard, silty clay (A-6 and A-7-5), sandy clayey silt (A-5), and sandy silt (A-4). Inclusions common in the sampled artificial fill included asphalt, wood, gravel, and debris (glass and plastic). The higher blow counts within the artificial fill were influenced by gravel within the material. It should be noted that higher concentrations of deleterious material than those encountered in our borings are probable within areas of the artificial fill. Borings B-04, B-17, B-23, and B-34 were terminated in artificial fill material.

Roadway embankment soils were found along the existing US 16/64/74/129 corridor. Where encountered, the roadway embankment ranged in thickness from approximately 2 feet to approximately 13 feet, and was composed of soft to hard sandy silt (A-4) and clayey silt (A-5). Gravel was common within the roadway embankment material and traces of organics (roots) and asphalt was encountered in some samples. The higher blow counts within the roadway embankment soils were influenced by gravel and asphalt within the material.

Soils classified as residual consisted of soft to hard sandy silt (A-4), clayey silt (A5), and medium dense to very dense sand (A-2-4). Rock fragments and manganese seams were common within the residual soils encountered. Borings B-01, B-03, B-06, B-08 through B-16, B-19 through B-21, B-24, B-27, B-33, and B-35 were terminated in residual soil.

Weathered rock is defined as material that has weathered from the parent bedrock and that exhibits SPT N values greater than 100 blows per foot but less than 60 blows per 0.1 foot. The weathered rock on this project is Schist and was encountered underlying the residual soil at depths ranging from approximately 6 feet to approximately 38 feet at the following borings: B-02, B-05, B-07, B-18, B-25, B-28, B-30, and B-32. Weathered rock was also encountered as zones within the residual soil at Borings B-03, B-05, and B-29. Borings B-02, B-05, B-07, B-18, and B-32 were terminated in weathered rock

Crystalline Rock

Crystalline rock is visible along the project corridor in as rock outcrops in areas within the cut slopes along the right side of the existing roadway. Strikes and dips for the rock outcrops are noted on the following roadway plan sheets. The crystalline rock along the project corridor classifies as a Schist. Crystalline rock was encountered directly underlying the roadway embankment fill material at a depth of 4.3 feet at Boring B-22; directly underlying the residual soil at depths ranging from 10.3 feet to 23.4 feet at Borings B-26, B-29, and B-31; and underlying the weathered rock at depths ranging from 7.5 feet to 8.3 feet at Borings B-25, B-28, and B-30.

PROJECT REFERENCE NO.	SHEET NO.
R-5735	4

RW SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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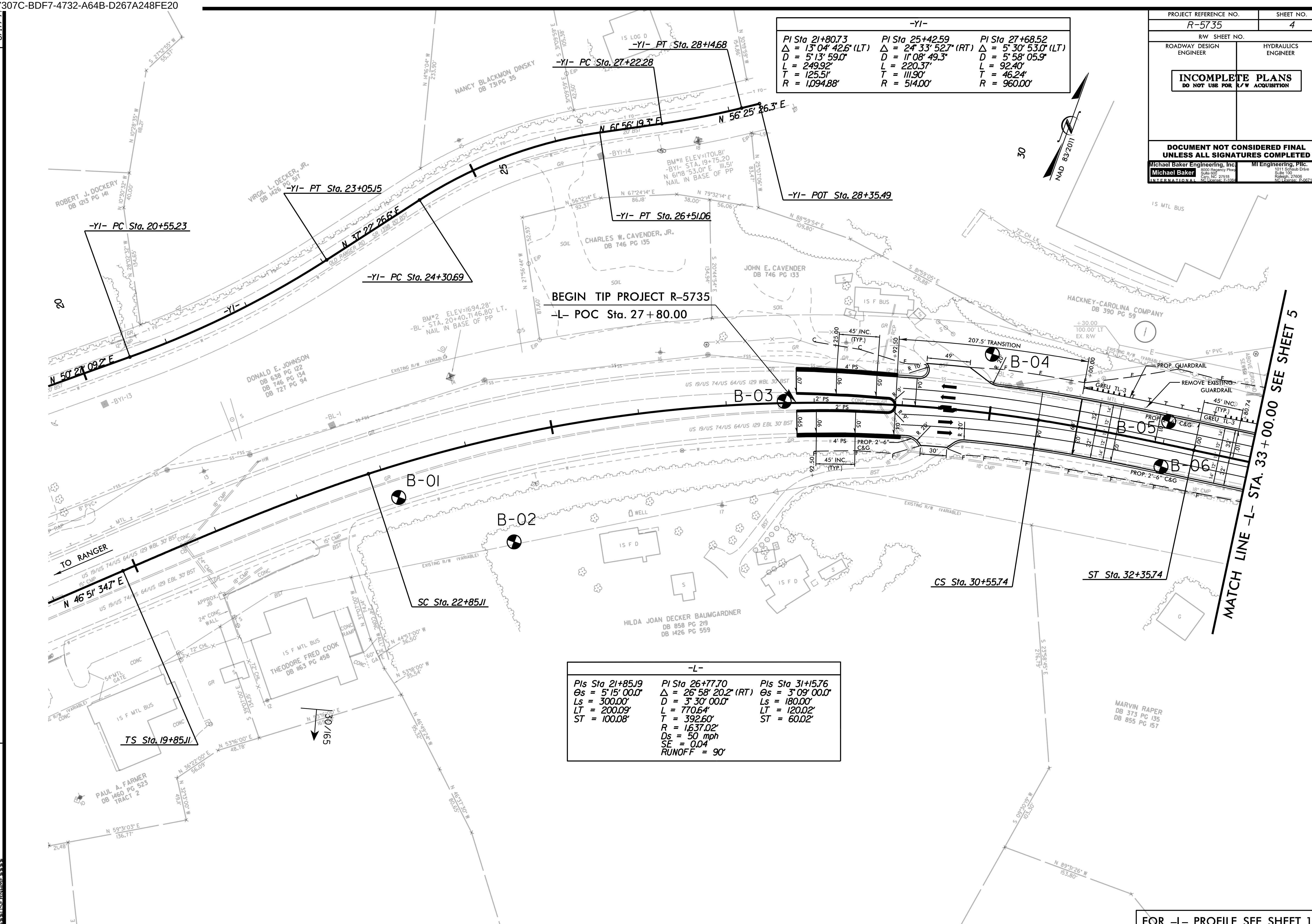
MI Engineering, Pllc. 1011 Schaub Drive Suite 100 Raleigh, 27606 NC License: P-0671

-Y1-

PI Sta 21+80.73	PI Sta 25+42.59	PI Sta 27+68.52
Δ = 13° 04' 42.6" (LT)	Δ = 24° 33' 52.7" (RT)	Δ = 5° 30' 53.0" (LT)
D = 5° 13' 59.0"	D = 11° 08' 49.3"	D = 5° 58' 05.9"
L = 249.92'	L = 220.37'	L = 92.40'
T = 125.51'	T = 111.90'	T = 46.24'
R = 1,094.88'	R = 514.00'	R = 960.00'


-Y1- PT Sta. 28+14.68
-Y1- PC Sta. 27+22.28
N 56° 25' 26.3" E
N 61° 56' 19.3" E
-Y1- POT Sta. 28+35.49
-Y1- PT Sta. 23+05.15
-Y1- PT Sta. 26+51.06
-Y1- PC Sta. 20+55.23
N 37° 22' 26.6" E
-Y1- PC Sta. 24+30.69
N 50° 27' 09.2" E
BEGIN TIP PROJECT R-5735
-L- POC Sta. 27+80.00
NANCY BLACKMON DINSKY DB 731 PG 35
ROBERT J. DOCKERY DB 1213 PG 141
VIRGIL L. DECKER, JR. DB 1426 PG 517
CHARLES W. CAVENDER, JR. DB 746 PG 135
JOHN E. CAVENDER DB 746 PG 133
HACKNEY-CAROLINA COMPANY DB 390 PG 59
DONALD E. JOHNSON DB 638 PG 122 DB 746 PG 134 DB 727 PG 94
BM#2 ELEV=1694.28' -BL- STA. 20+40.71 46.80' LT. NAIL IN BASE OF PP
BM#1 ELEV=1701.81' -BY1- STA. 19+75.20 N 61°18'53.01" E 111.51' NAIL IN BASE OF PP
NAD 83/2011
B-01
B-02
B-03
B-04
B-05
B-06
207.5' TRANSITION
PROP. GUARDRAIL
REMOVE EXISTING GUARDRAIL
PROP. 2'-6" C&G
45' INC. (TYP.)
TO RANGER
N 46° 51' 34.7" E
SC Sta. 22+85.11
TS Sta. 19+85.11
CS Sta. 30+55.74
ST Sta. 32+35.74
HILDA JOAN DECKER BAUMGARDNER DB 858 PG 219 DB 1426 PG 559
THEODORE FRED COOK DB 1163 PG 458
PAUL A. FARMER DB 1460 PG 523 TRACT 2
MARVIN RAPER DB 373 PG 135 DB 855 PG 157
MATCH LINE -L- STA. 33+00.00 SEE SHEET 5
REVISIONS

-L-

PIs Sta 21+85.19	PI Sta 26+77.70	PIs Sta 31+15.76
θs = 5° 15' 00.0"	Δ = 26° 58' 20.2" (RT)	θs = 3° 09' 00.0"
Ls = 300.00'	D = 3° 30' 00.0"	Ls = 180.00'
LT = 200.09'	L = 770.64'	LT = 120.02'
ST = 100.08'	T = 392.60'	ST = 60.02'
	R = 1,637.02'	
	Ds = 50 mph	
	SE = 0.04	
	RUNOFF = 90'	

FOR -L- PROFILE SEE SHEET 10

PROJECT REFERENCE NO.	SHEET NO.
R-5735	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS 8/17/99

$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$USERNAME$$$$$$$$

NAD 83/2011

-L-		
PIs Sta 38+33.88	PI Sta 45+71.28	PIs Sta 52+82.63
Θs = 1° 20' 59.6"	Δ = 27° 10' 22.9" (LT)	Θs = 1° 20' 59.6"
Ls = 135.00'	D = 1° 59' 59.5"	Ls = 135.00'
LT = 90.00'	L = 1,358.75'	LT = 90.00'
ST = 45.00'	T = 692.40'	ST = 45.00'
	R = 2,865.00'	
	Ds = 50 mph	
	SE = 0.03	
	RUNOFF = 90'	

-Y2-
PI Sta 10+40.30
Δ = 6° 38' 29.4" (RT)
D = 8° 15' 00.0"
L = 80.50'
T = 40.30'
R = 694.49'

MATCH LINE -L- STA. 33+00.00 SEE SHEET 4

MATCH LINE -L- STA. 46+00.00 SEE SHEET 6

-Y2- PT Sta. 10+80.50

TS Sta. 37+43.88

SC Sta. 38+78.88

-Y2-

B-07 B-08 B-09 B-10 B-11 B-12 B-13 B-14

N 82°13'55.0" E

S 41°47'53.6" E

BM#3 ELEV=1666.83'
-BL- STA. 32+39.51 75.13' LT.
NAIL IN BASE OF PP

BM#4 ELEV=1629.72'
-BL- STA. 43+11.03 229.47' RT.
NAIL IN BASE OF 10" POPLAR

SOUTHERN CENTERS, LLC DB 1432 PG 305

GREAT OAK NC OWNER, LLC DB 1483 PG 1160

CHARLIE J. HUGHES DB 228 PG 146 DB 736 PG 197 DB 736 PG 198

EDWARD R. NITZSCHE DB 1509 PG 373

BILLY J. COOK DB 1312 PG 534

MARVIN RAPER DB 375 PG 135 DB 855 PG 157

HURLBURT-JOHNSON FRIENDSHIP HOUSE, INC. DB 1489 PG 179

DANIEL L. EICHENBAUM DB 1481 PG 1008

JUDITH ANN SMITH DB 1491 PG 36

SUSAN JACOBSEN DB 1164 PG 808

MARVIN RAPER DB 644 PG 181

ALBERICO GARCIA-AGUILAR DB 1524 PG 744

EVAMARIA MURPHY, LLC DB 1283 PG 862

BC MACHINING, LLC DB 1293 PG 644

FOR -L- PROFILE SEE SHEET 10

PROJECT REFERENCE NO.	SHEET NO.
R-5735	6

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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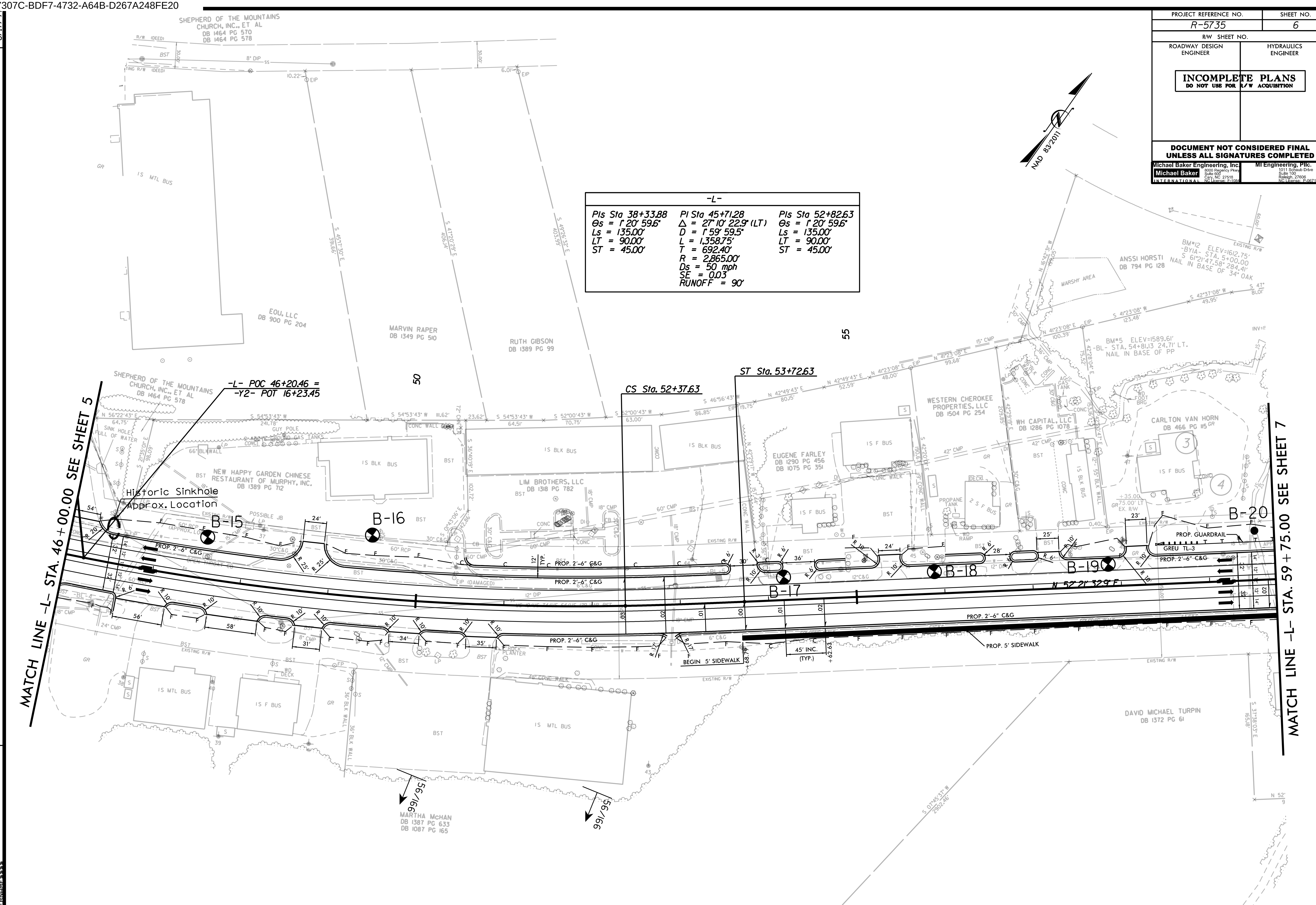
8/17/99
REVISIONS
NAD 83/2011
SHEPHERD OF THE MOUNTAINS CHURCH, INC., ET AL DB 1464 PG 570 DB 1464 PG 578
EOU, LLC DB 900 PG 204
MARVIN RAPER DB 1349 PG 510
RUTH GIBSON DB 1389 PG 99
ANSSI HORSTI DB 794 PG 128
BM#12 ELEV=1612.75' -BY1A- STA. 5+00.00 S 61°21'47.58" 284.41' NAIL IN BASE OF 34" OAK
BM#5 ELEV=1589.61' -BL- STA. 54+81.13 24.71' LT. NAIL IN BASE OF PP
-L- POC 46+20.46 = -Y2- POT 16+23.45
CS Sta. 52+37.63
ST Sta. 53+72.63
NEW HAPPY GARDEN CHINESE RESTAURANT OF MURPHY, INC. DB 1389 PG 712
LIM BROTHERS, LLC DB 1318 PG 782
EUGENE FARLEY DB 1290 PG 456 DB 1075 PG 351
WESTERN CHEROKEE PROPERTIES, LLC DB 1504 PG 254
WH CAPITAL, LLC DB 1286 PG 1078
CARLTON VAN HORN DB 466 PG 115
Historic Sinkhole Approx. Location
B-15
B-16
B-17
B-18
B-19
B-20
PROP. 2'-6" C&G
PROP. GUARDRAIL
GREU TL-3
PROP. 5' SIDEWALK
BEGIN 5' SIDEWALK
45' INC. (TYP.)
N 52°21'32.9" E
MATCH LINE -L- STA. 46+00.00 SEE SHEET 5
MATCH LINE -L- STA. 59+75.00 SEE SHEET 7
MARTHA MCHAN DB 1387 PG 633 DB 1087 PG 165
DAVID MICHAEL TURPIN DB 1372 PG 61

-L-		
PIs Sta 38+33.88	PI Sta 45+71.28	PIs Sta 52+82.63
Θs = 1° 20' 59.6"	Δ = 27° 10' 22.9" (LT)	Θs = 1° 20' 59.6"
Ls = 135.00'	D = 1° 59' 59.5"	Ls = 135.00'
LT = 90.00'	L = 1,358.75'	LT = 90.00'
ST = 45.00'	T = 692.40'	ST = 45.00'
	R = 2,865.00'	
	Ds = 50 mph	
	SE = 0.03	
	RUNOFF = 90'	

FOR -L- PROFILE SEE SHEET 11

PROJECT REFERENCE NO.	SHEET NO.
R-5735	7

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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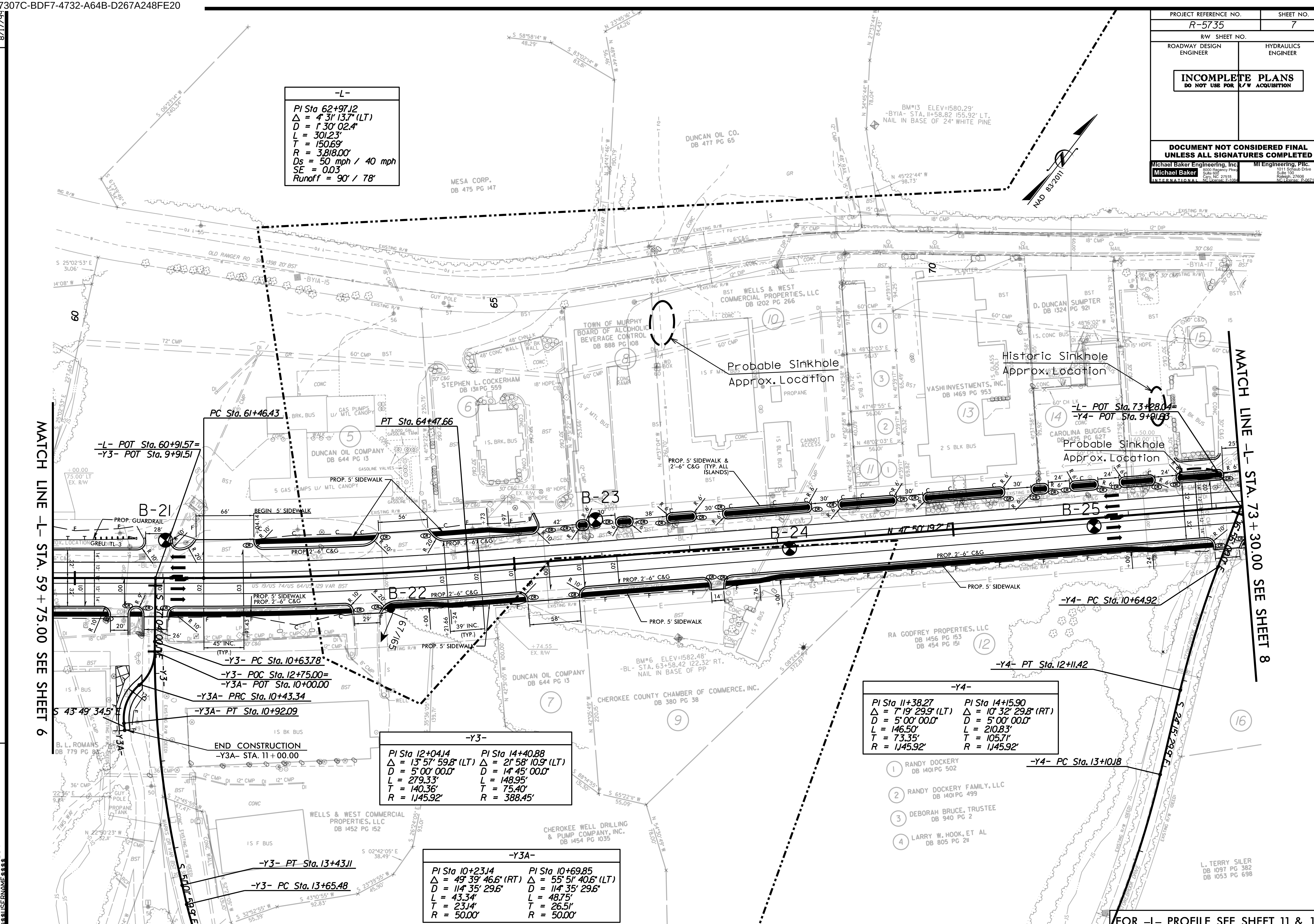

-L-

PI Sta 62+97.12
Δ = 4° 31' 13.7" (LT)
D = 1° 30' 02.4"
L = 301.23'
T = 150.69'
R = 3,818.00'
Ds = 50 mph / 40 mph
SE = 0.03
Runoff = 90' / 78'

-Y3-

PI Sta 12+04.14	PI Sta 14+40.88
Δ = 13° 57' 59.8" (LT)	Δ = 21° 58' 10.9" (LT)
D = 5° 00' 00.0"	D = 14° 45' 00.0"
L = 279.33'	L = 148.95'
T = 140.36'	T = 75.40'
R = 1,145.92'	R = 388.45'

-Y3A-

PI Sta 10+23.14	PI Sta 10+69.85
Δ = 49° 39' 46.6" (RT)	Δ = 55° 51' 40.6" (LT)
D = 114° 35' 29.6"	D = 114° 35' 29.6"
L = 43.34'	L = 48.75'
T = 23.14'	T = 26.51'
R = 50.00'	R = 50.00'

-Y4-

PI Sta 11+38.27	PI Sta 14+15.90
Δ = 7° 19' 29.9" (LT)	Δ = 10° 32' 29.8" (RT)
D = 5° 00' 00.0"	D = 5° 00' 00.0"
L = 146.50'	L = 210.83'
T = 73.35'	T = 105.71'
R = 1,145.92'	R = 1,145.92'

FOR -L- PROFILE SEE SHEET 11 & 12

PROJECT REFERENCE NO.	SHEET NO.
R-5735	8

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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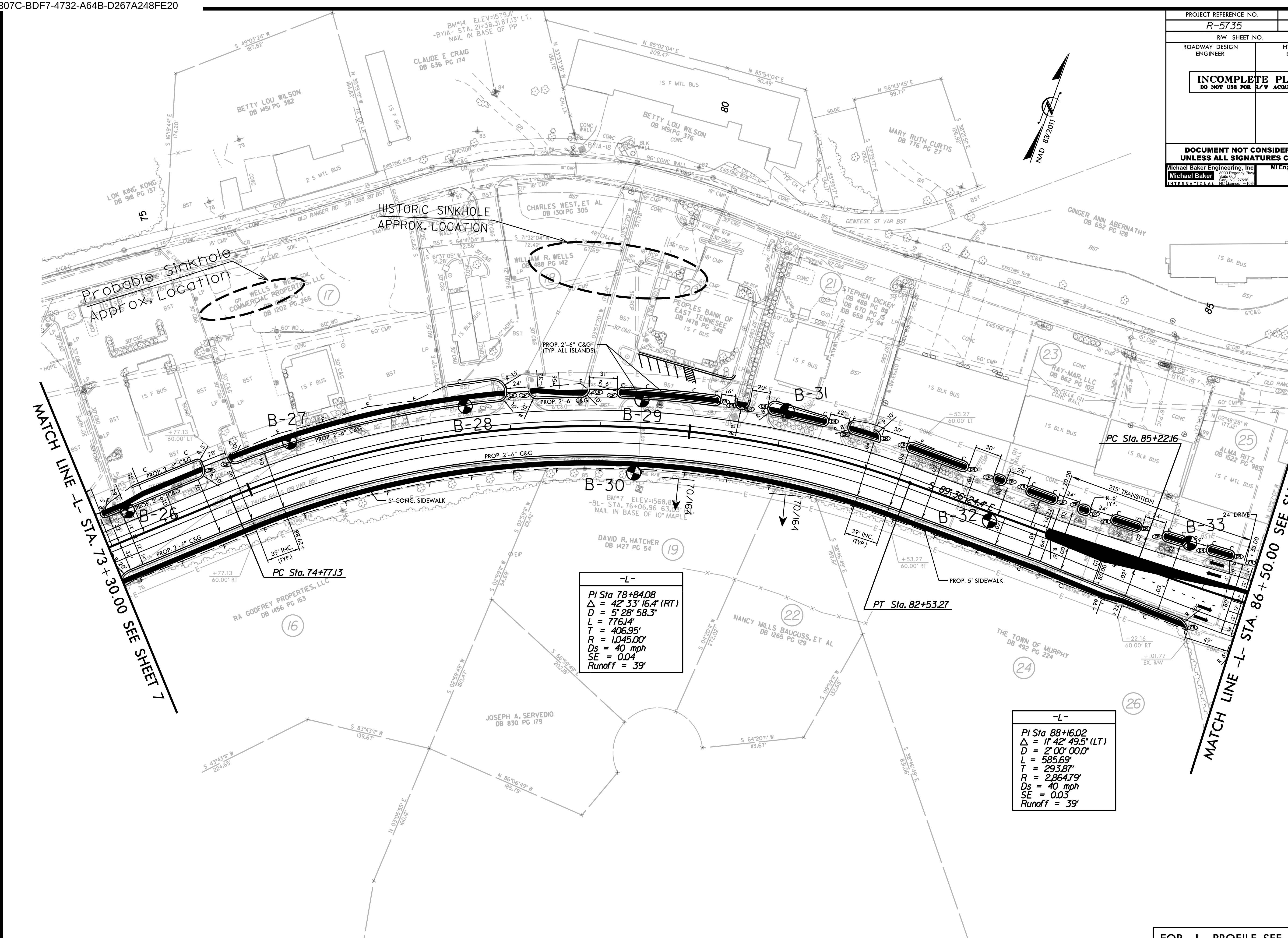

-L-
PI Sta 78+84.08
Δ = 42° 33' 16.4" (RT)
D = 5° 28' 58.3"
L = 776.14'
T = 406.95'
R = 1,045.00'
Ds = 40 mph
SE = 0.04
Runoff = 39'

-L-
PI Sta 88+16.02
Δ = 11° 42' 49.5" (LT)
D = 2° 00' 00.0"
L = 585.69'
T = 293.87'
R = 2,864.79'
Ds = 40 mph
SE = 0.03
Runoff = 39'

FOR -L- PROFILE SEE SHEET 12

REVISIONS

8/17/99

$$$$$SYSTIME$$$$$ $$$$$$$$$$DGN$$$$$$$$$$ $$$$USERNAME$$$$

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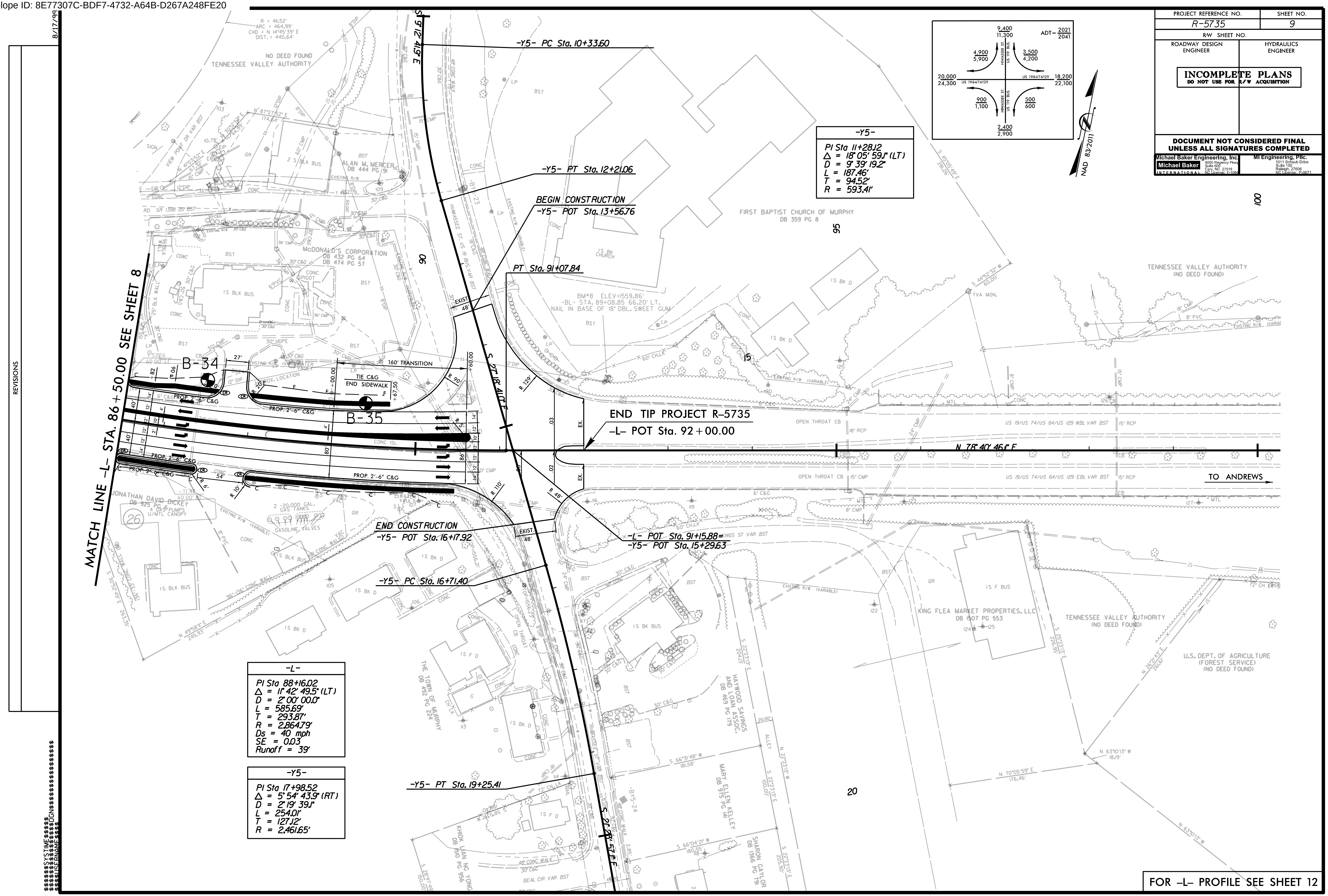


$$$$$SYSTIME$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1730
1720
1710
1700
1690
1680

1690.31
26+00.00

1690.00
25+50.00

1689.54
25+00.00

—℄—

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	11

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1730
1720
1710
1700
1690
1680

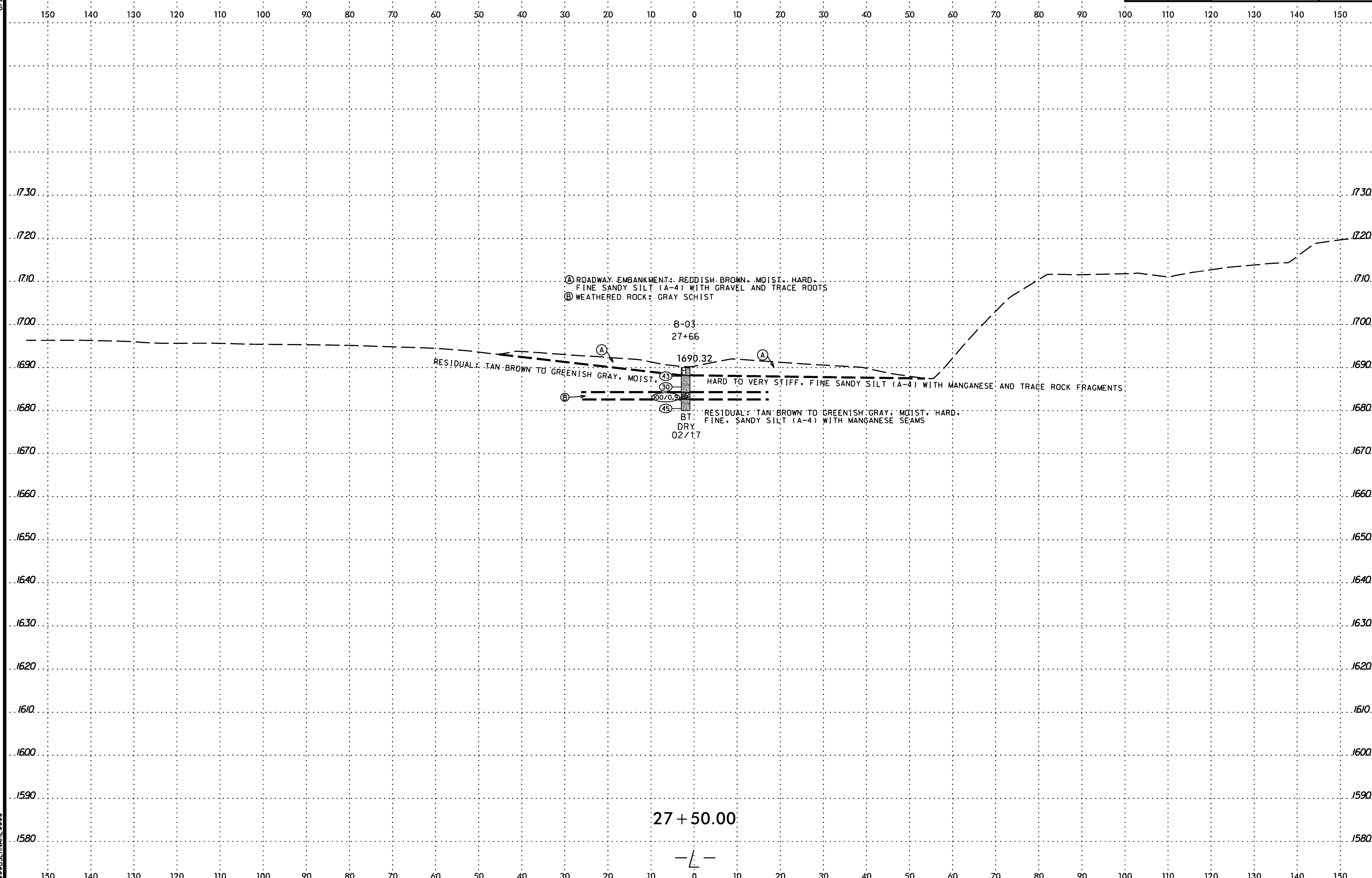
1690.34
27+00.00

1690.38
26+50.00

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5735	12



$$$$$SYSTIME$$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	13

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1740
1730
1720
1710
1700
1690
1680
1670

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, HARD, FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

6:1 6:1 0.055 Ⓐ 6:1 6:1 Ⓐ 0.049 6:1 6:1

1689.29

RESIDUAL: TAN BROWN TO GREENISH GRAY, MOIST, HARD TO VERY STIFF, FINE SANDY SILT (A-4) WITH MANGANESE SEAMS AND TRACE ROCK FRAGMENTS

28+50.00

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, HARD, FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

6:1 6:1 Ⓐ 0.066 6:1 6:1 Ⓐ 0.061 6:1 6:1

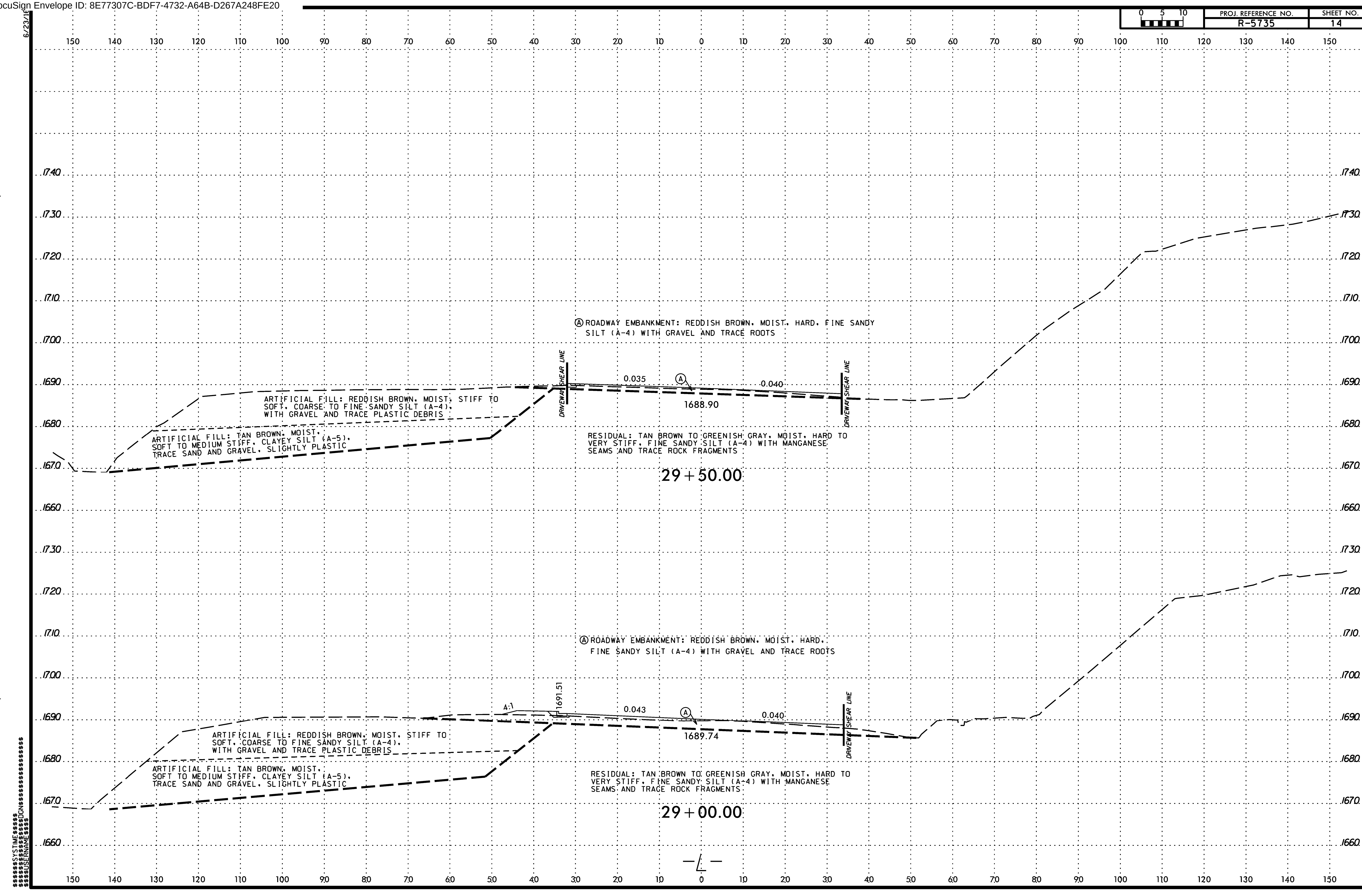
1689.94

RESIDUAL: TAN BROWN TO GREENISH GRAY, MOIST, HARD TO VERY STIFF, FINE SANDY SILT (A-4) WITH MANGANESE SEAMS AND TRACE ROCK FRAGMENTS

28+00.00

—L—

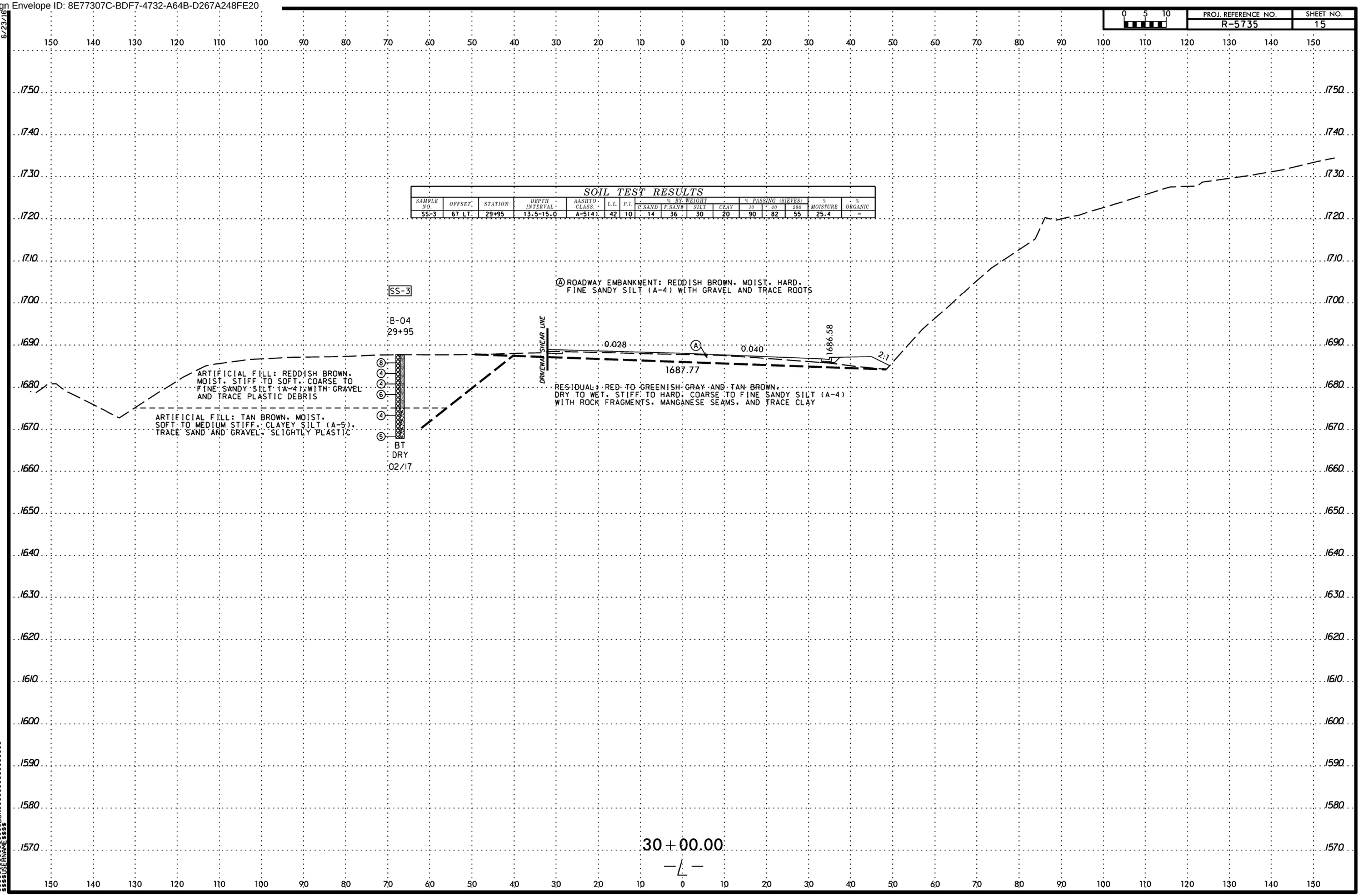
$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



6/23/16

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-3	67 LT.	29+95	13.5-15.0	A-5(4)	42	10	14	36	30	20	90	82	55	25.4	-



$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1750 1740 1730 1720 1710 1700 1690 1680 1670 1660

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST TO WET, STIFF TO VERY STIFF, COARSE TO FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL

1685.67

4:1

0.013

Ⓐ

0.030

1684.20

2:1

1684.97

ARTIFICIAL FILL: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4), WITH GRAVEL AND TRACE PLASTIC DEBRIS

ARTIFICIAL FILL: TAN BROWN, MOIST, SOFT TO MEDIUM STIFF, CLAYEY SILT (A-5), TRACE SAND AND GRAVEL, SLIGHTLY PLASTIC

RESIDUAL: RED TO GREENISH GRAY AND TAN BROWN, DRY TO WET, STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS, MANGANESE SEAMS, AND TRACE CLAY

31+00.00

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST TO WET, STIFF TO VERY STIFF, COARSE TO FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL

1687.38

4:1

0.020

Ⓐ

0.040

1685.31

2:1

1686.43

ARTIFICIAL FILL: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4), WITH GRAVEL AND TRACE PLASTIC DEBRIS

ARTIFICIAL FILL: TAN BROWN, MOIST, SOFT TO MEDIUM STIFF, CLAYEY SILT (A-5), TRACE SAND AND GRAVEL, SLIGHTLY PLASTIC

RESIDUAL: RED TO GREENISH GRAY AND TAN BROWN, DRY TO WET, STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS, MANGANESE SEAMS, AND TRACE CLAY

30+50.00

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-5735	17

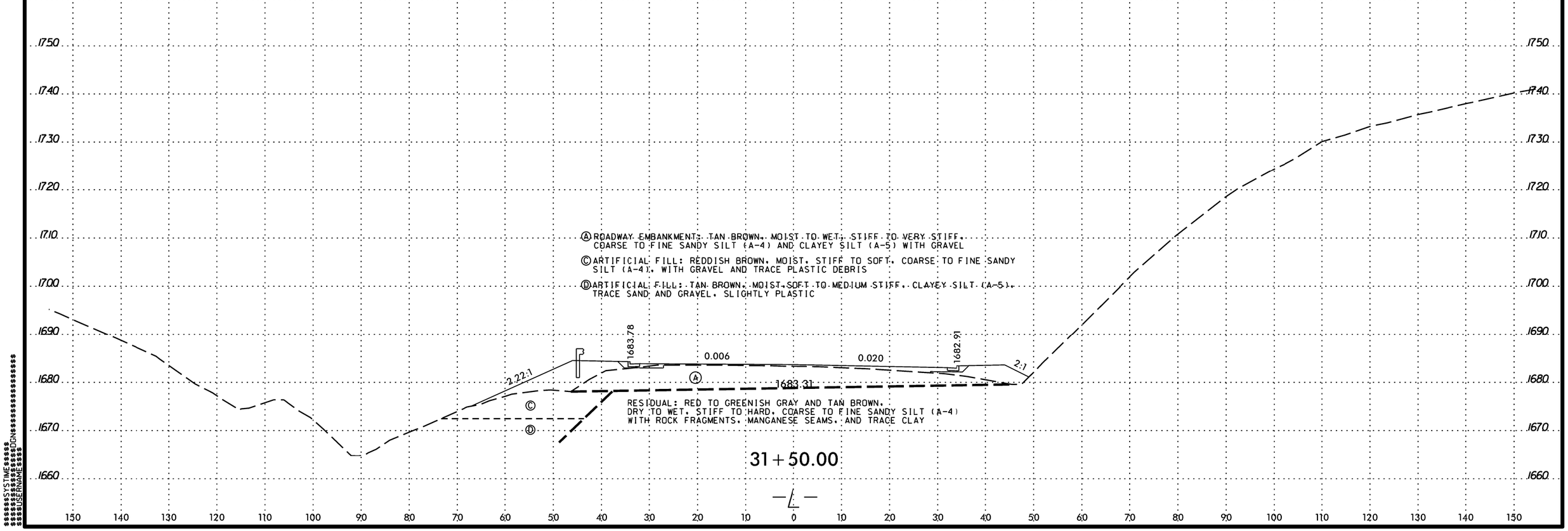
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1750
1740
1730
1720
1710
1700
1690
1680
1670
1660

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST TO WET, STIFF TO VERY STIFF, COARSE TO FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4), WITH GRAVEL AND TRACE PLASTIC DEBRIS

Ⓓ ARTIFICIAL FILL: TAN BROWN, MOIST, SOFT TO MEDIUM STIFF, CLAYEY SILT (A-5), TRACE SAND AND GRAVEL, SLIGHTLY PLASTIC

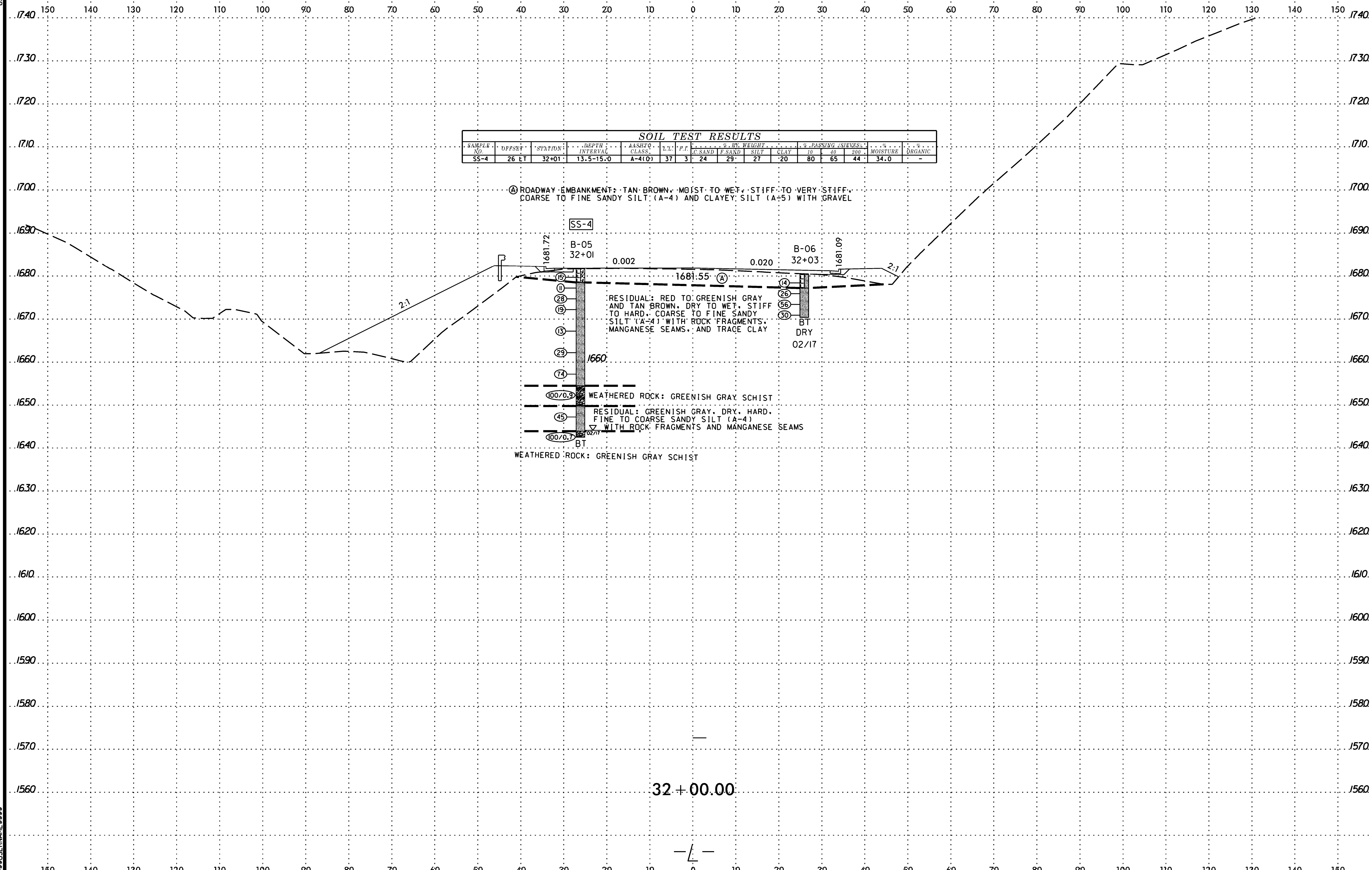


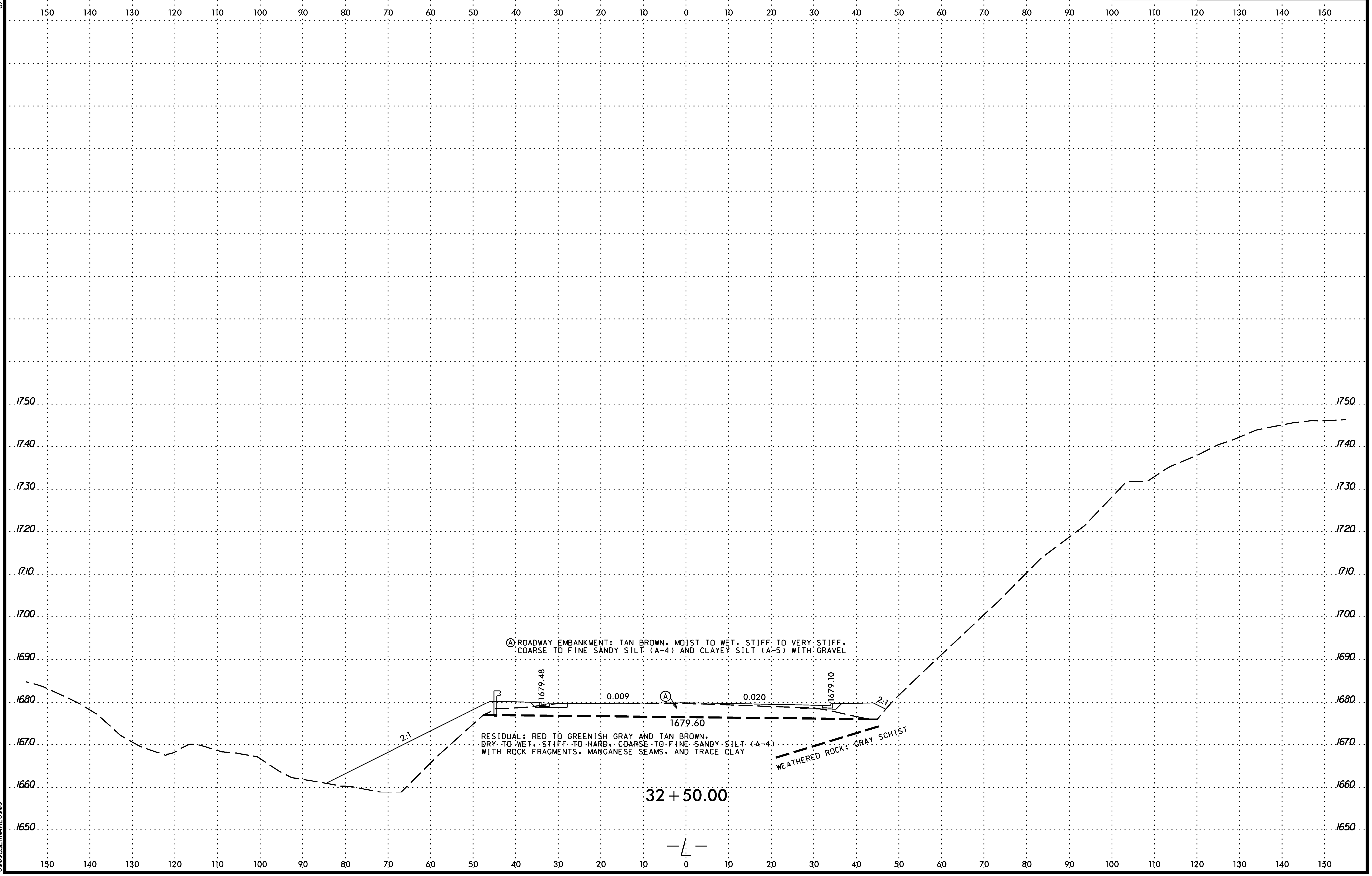
31+50.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-4	26 LT	32+01	13.5-15.0	A-4(0)	37	3	24	29	27	20	80	65	44	34.0	-




0 5 10
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
1750
1740
1730
1720
1710
1700
1690
1680
1670
1660
1650
Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST TO WET, STIFF TO VERY STIFF, COARSE TO FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL
1679.48
0.009
Ⓐ
0.020
1679.10
1679.60
2:1
2:1
RESIDUAL: RED TO GREENISH GRAY AND TAN BROWN, DRY TO WET, STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS, MANGANESE SEAMS, AND TRACE CLAY
WEATHERED ROCK: GRAY SCHIST
32+50.00
-L-

$$$$$SYSTIME$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	20

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1750
1740
1730
1720
1710
1700
1690
1680
1670
1660
1650

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

1677.06
1676.93
0.016
0.020
Ⓐ 1677.49
3.33:1
2:1

RESIDUAL: GREENISH GRAY TO GRAY, MOIST, STIFF TO HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

ARTIFICIAL FILL: REDDISH BROWN, MOIST, SOFT TO MEDIUM STIFF, COARSE TO FINE SANDY CLAYEY SILT (A-4) WITH GRAVEL AND TRACE PLASTIC DEBRIS

WEATHERED ROCK: GRAY, SCHIST

33+00.00

—L—

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	21

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1740 1730 1720 1710 1700 1690 1680 1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-5	27 RT	33+43	3.5-5.0	A-4(2)	38	5	10	43	37	10	83	76	54	23.3	-
SS-6	70 LT	33+45	1.0-2.5	A-4(0)	33	5	17	34	30	19	64	56	39	18.0	-

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

SS-6

B-08
33+45

4
3
14
24

BT
DRY
02/17

ARTIFICIAL FILL: REDDISH BROWN, MOIST, SOFT TO MEDIUM STIFF, COARSE TO FINE SANDY CLAYEY SILT (A-4) WITH GRAVEL AND TRACE PLASTIC DEBRIS

4:1

1674.59

Ⓐ

0.020

1675.14

0.020

1674.59

2:1

SS-5

B-07
33+43

16
40
86
100/0.2
100/0.8

BT
DRY
02/17

RESIDUAL: GREENISH GRAY TO GRAY, MOIST, STIFF TO HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

WEATHERED ROCK: GRAY SCHIST

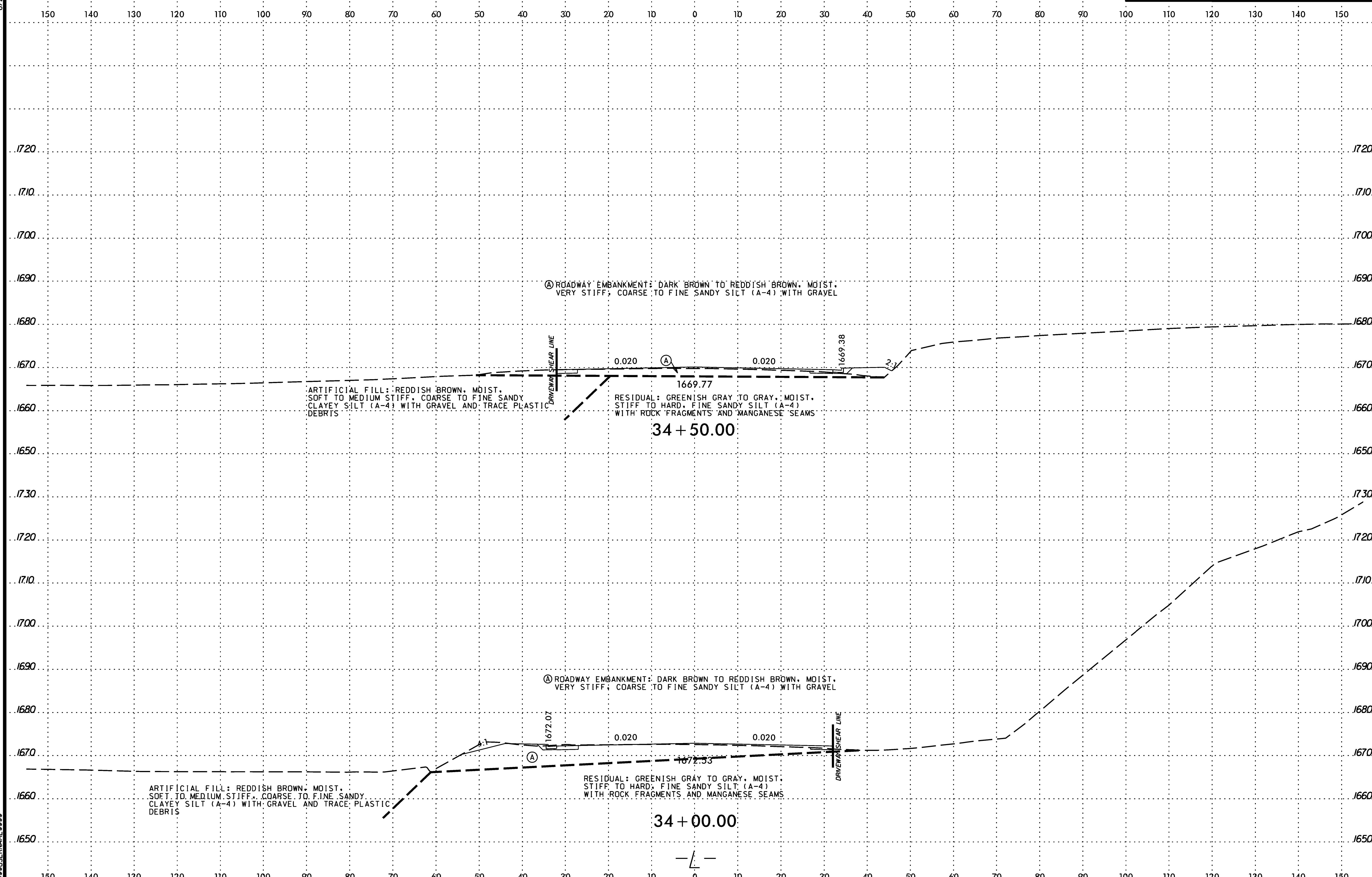
33+50.00

—℄—

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5735	22



$$$$$$SYSTIME$$$$$ $$$$$$$$$$$DGN$$$$$$$$$$$$$$$$ $$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	23

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1690
1680
1670
1660
1650
1640

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

4:1

1663.46

0.020 Ⓐ 0.020

1663.46

2:1

1663.90

ARTIFICIAL FILL: REDDISH BROWN TO TAN, MOIST, SOFT TO VERY STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE WOOD

RESIDUAL: TAN BROWN, MOIST, VERY STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

ARTIFICIAL FILL: GRAYISH BROWN, WET, SOFT, SILTY FINE SANDY CLAY (A-6) WITH ROCK FRAGMENTS AND TRACE ORGANICS

35 + 50.00

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

DRIVEWAY SHEAR LINE

0.020 Ⓐ 0.020

1666.51

2:1

1666.91

ARTIFICIAL FILL: REDDISH BROWN TO TAN, MOIST, SOFT TO VERY STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE WOOD

RESIDUAL: TAN BROWN, MOIST, VERY STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

ARTIFICIAL FILL: GRAYISH BROWN, WET, SOFT, SILTY FINE SANDY CLAY (A-6) WITH ROCK FRAGMENTS AND TRACE ORGANICS

35 + 00.00

$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

6/23/16

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1710 1700 1690 1680 1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C SAND	% BY WEIGHT F SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-7	63 LT	35+76	18.5-20.0	A-6(5)	35	11	12	27	27	34	89	83	61	24.7	-

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

SS-7

B-09
35+76

4:1

1660.30

0.020

Ⓐ

1660.80

0.020

DRIVEWAY SHEAR LINE

ARTIFICIAL FILL: REDDISH BROWN TO TAN, MOIST, SOFT TO VERY STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE WOOD

19
7
8
4
3
2
5

RESIDUAL: TAN BROWN, MOIST, VERY STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

ARTIFICIAL FILL: GRAYISH BROWN, WET, SOFT, SILTY FINE SANDY CLAY (A-6) WITH ROCK FRAGMENTS AND TRACE ORGANICS

BT
DRY
02/17

36+00.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-5735	25

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1680 1670 1660 1650 1640

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

DRIVEWAY SHEAR LINE

0.020 Ⓐ 1651.30 0.001 1651.55 2:1

RESIDUAL: TAN BROWN TO GREENISH GRAY, MOIST TO DRY, MEDIUM STIFF TO VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

37 + 50.00

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

3:1 1653.98 0.020 Ⓐ 1654.38 0.010

DRIVEWAY SHEAR LINE

RESIDUAL: TAN BROWN, MOIST, VERY STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

37 + 00.00

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

ARTIFICIAL FILL: REDDISH BROWN TO TAN, MOIST, SOFT TO VERY STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE WOOD

ARTIFICIAL FILL: GRAYISH BROWN, WET, SOFT, SILTY FINE SANDY CLAY (A-6) WITH ROCK FRAGMENTS AND TRACE ORGANICS

A:1 1657.14 0.020 Ⓐ 0.020 1657.14 2:1

1657.53

RESIDUAL: TAN BROWN, MOIST, VERY STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

36 + 50.00

—℄—

$$$$$$$$SYSTIME$$$$$$

$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

$$$$USERNAME$$$$

6/23/16

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1680 1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550 1540

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

B-10

1647.66

3:1

0.020

0.012

Ⓐ

1648.12

DRIVEWAY SHEAR LINE

RESIDUAL: TAN BROWN TO GREENISH GRAY, MOIST TO DRY, MEDIUM STIFF TO VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

6
10
28
24

BT
DRY
02/17

38+00.00

—L—

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DDN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-5735	27

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1670 1660 1650 1640 1630 1620

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

4:1 1637.99 0.030 0.030 DRIVEWAY SHEAR LINE

Ⓐ 1638.70

RESIDUAL: TAN BROWN TO GREENISH GRAY, WET TO DRY, SOFT TO HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS, MANGANESE SEAMS, AND TRACE CLAY

39 + 50.00

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

3:1 1641.02 0.030 0.030 1643.06 2:1

Ⓐ 1641.81

RESIDUAL: TAN BROWN TO GREENISH GRAY, WET TO DRY, SOFT TO HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS, MANGANESE SEAMS, AND TRACE CLAY

39 + 00.00

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

3:1 1644.38 0.024 0.024 DRIVEWAY SHEAR LINE

Ⓐ 1644.93

RESIDUAL: TAN BROWN TO GREENISH GRAY, MOIST TO DRY, MEDIUM STIFF TO VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

38 + 50.00

$$$$$$$$SYSTIME$$$$$$

$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	28

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1680 1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550 1540 1530 1520

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C SAND	% BY WEIGHT F SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-8	50 LT	40+05	3.5-5.0	A-5(11)	44	7	4	38	40	18	100	98	70	37.3	--

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

Ⓒ ARTIFICIAL FILL: TAN BROWN TO GRAY TO ORANGE, MOIST, SOFT TO MEDIUM STIFF, FINE SANDY CLAYEY SILT (A-5)

SS-8

B-11
40+05

4:1

1635.12

0.030

0.030

Ⓐ

1635.83

DRIVEWAY SHEAR LINE

4 4 2 5 40

Ⓒ

BT
DRY
02/17

RESIDUAL: TAN BROWN TO GREENISH GRAY, WET TO DRY, SOFT TO HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS, MANGANESE SEAMS, AND TRACE CLAY

40+00.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	29

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1670 1660 1650 1640 1630 1620 1610

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

Ⓒ ARTIFICIAL FILL: TAN BROWN TO GRAY TO ORANGE, MOIST, SOFT TO MEDIUM STIFF, FINE SANDY CLAYEY SILT (A-5)

4:1 1627.39 0.030 0.030 DRIVEWAY SHEAR LINE

Ⓐ 1628.41 Ⓒ

RESIDUAL: TAN BROWN TO GREENISH GRAY, WET TO DRY, SOFT TO HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS, MANGANESE SEAMS, AND TRACE CLAY

41 + 50.00

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

Ⓒ ARTIFICIAL FILL: TAN BROWN TO GRAY TO ORANGE, MOIST, SOFT TO MEDIUM STIFF, FINE SANDY CLAYEY SILT (A-5)

4:1 1629.82 0.030 0.030 1631.86 2:1

Ⓐ 1630.72 Ⓒ

RESIDUAL: TAN BROWN TO GREENISH GRAY, WET TO DRY, SOFT TO HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS, MANGANESE SEAMS, AND TRACE CLAY

41 + 00.00

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

Ⓒ ARTIFICIAL FILL: TAN BROWN TO GRAY TO ORANGE, MOIST, SOFT TO MEDIUM STIFF, FINE SANDY CLAYEY SILT (A-5)

4:1 1632.39 0.030 0.030 DRIVEWAY SHEAR LINE

Ⓐ 1633.21 Ⓒ

RESIDUAL: TAN BROWN TO GREENISH GRAY, WET TO DRY, SOFT TO HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS, MANGANESE SEAMS, AND TRACE CLAY

40 + 50.00

$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-5735	30

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1660
1650
1640
1630
1620
1610

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

2:1

1622.99

0.030

0.030 Ⓐ

1623.90

DRIVEWAY SHEAR LINE

RESIDUAL: TAN BROWN TO GREENISH GRAY TO GRAY, MOIST, STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4), TRACE ROCK FRAGMENTS AND MANGANESE SEAMS

42+50.00

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

2:1

1625.12

0.030

Ⓐ 0.030

1627.16

2:1

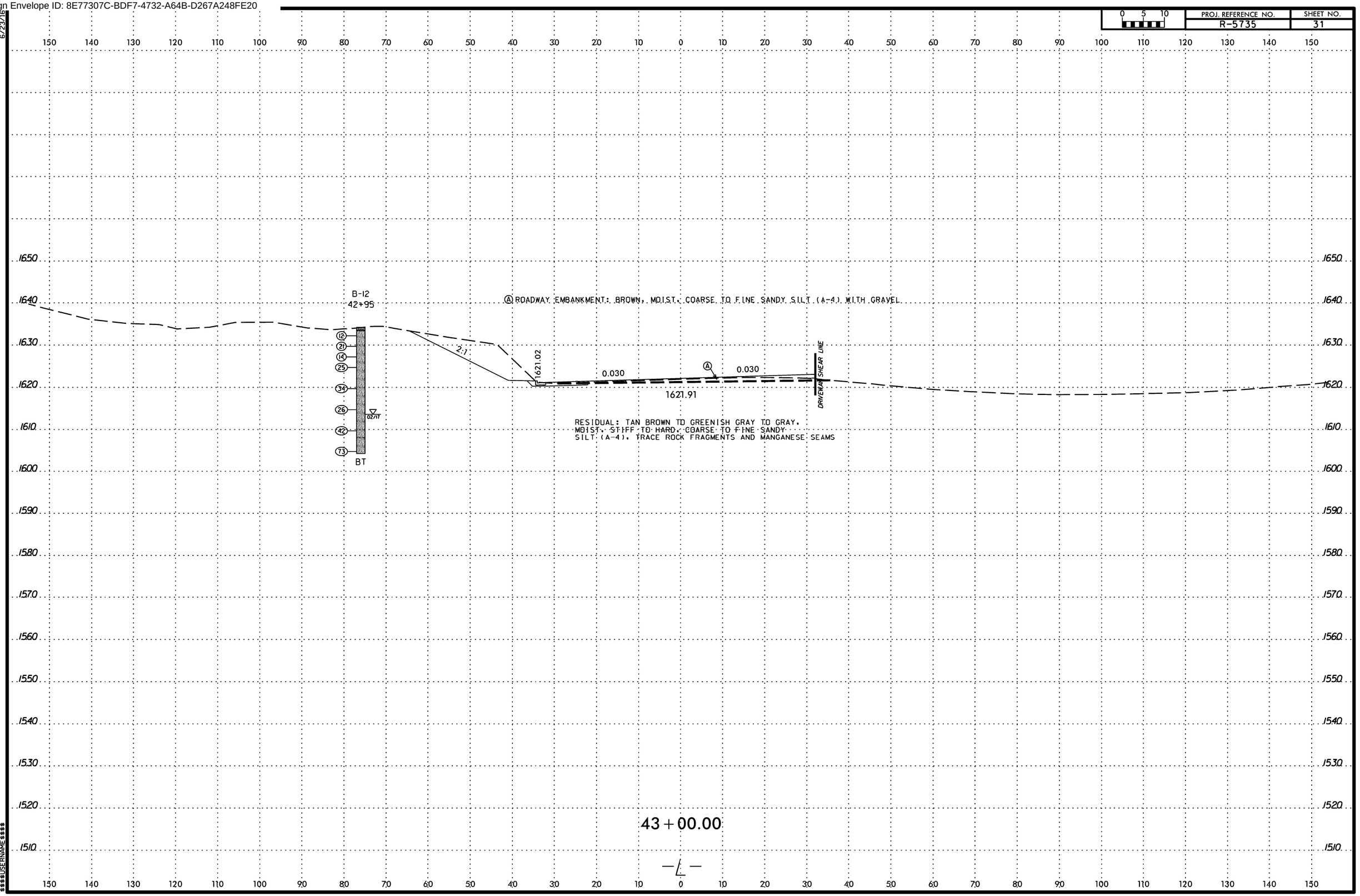
1626.12

RESIDUAL: TAN BROWN TO GREENISH GRAY TO GRAY, MOIST, STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4), TRACE ROCK FRAGMENTS AND MANGANESE SEAMS

42+00.00

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

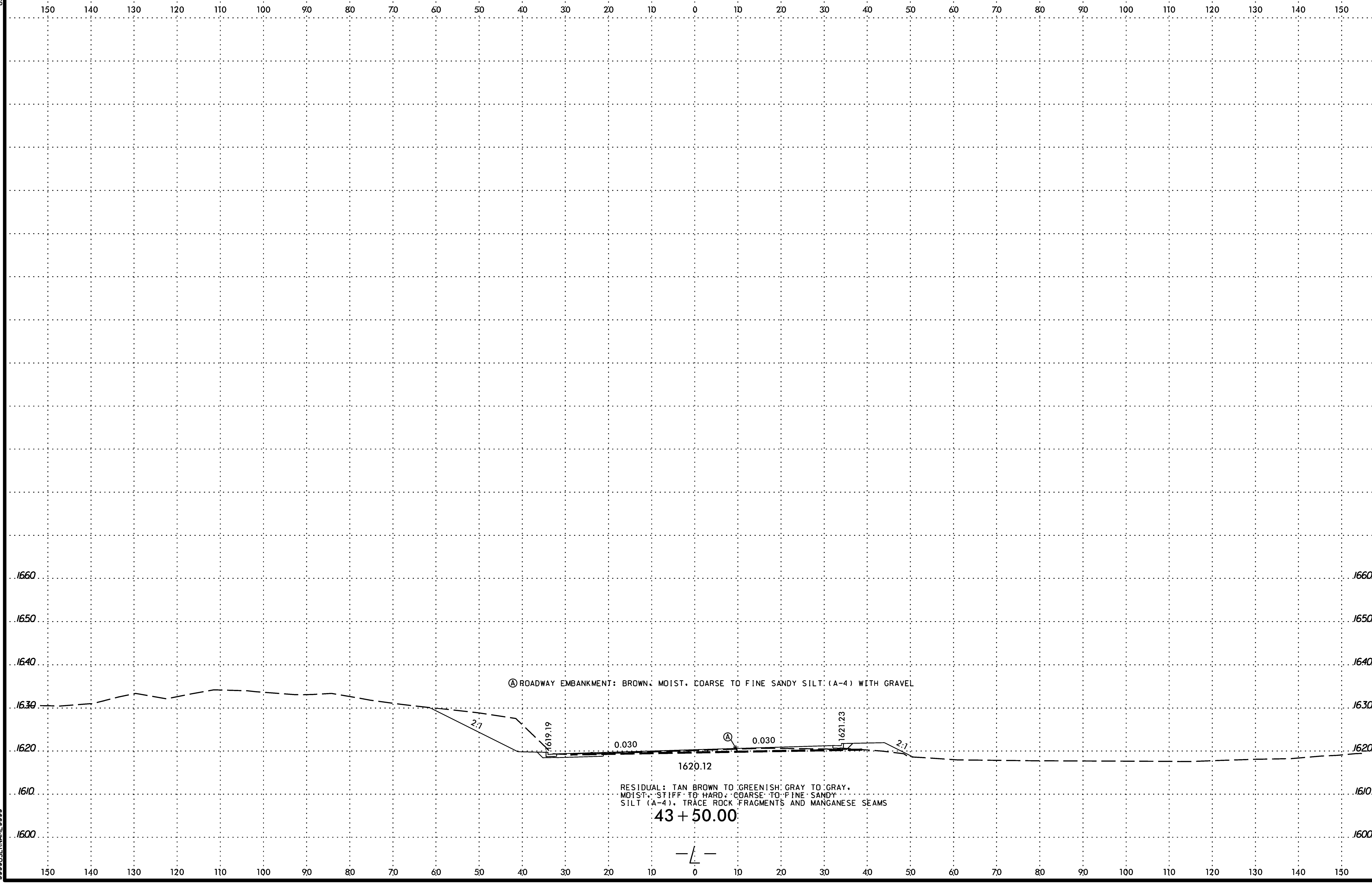
6/23/16



$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

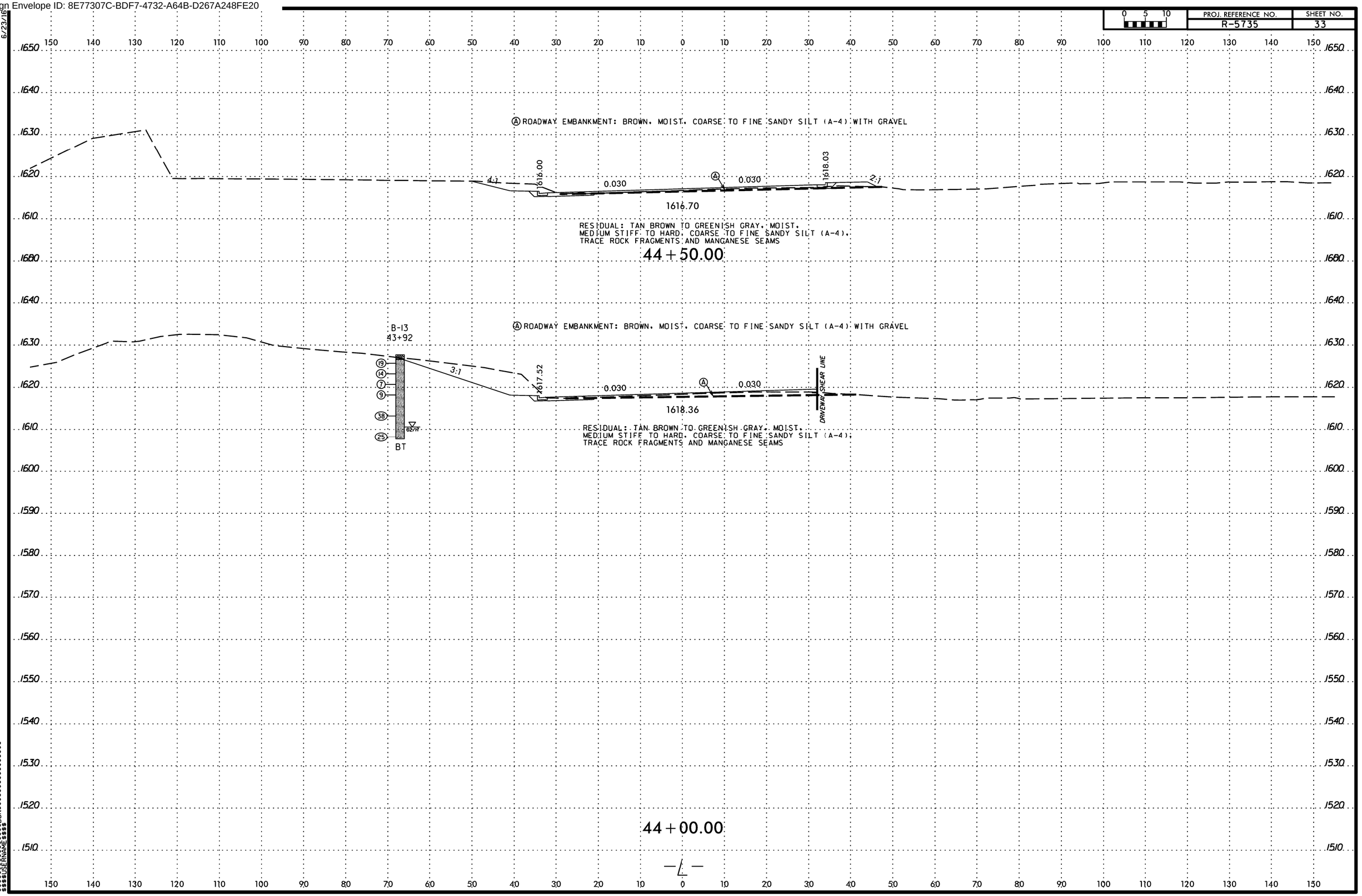
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	32



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
1660
1650
1640
1630
1620
1610
1600
Ⓐ ROADWAY EMBANKMENT: BROWN, MOIST, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL
2:1
1619.19
0.030
Ⓐ
0.030
1621.23
2:1
1620.12
RESIDUAL: TAN BROWN TO GREENISH GRAY TO GRAY, MOIST, STIFF TO HARD, COARSE TO FINE SANDY SILT (A-4), TRACE ROCK FRAGMENTS AND MANGANESE SEAMS
43+50.00
-L-

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$



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$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-5735	34

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1650
1640
1630
1620
1610
1600

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

Ⓒ ARTIFICIAL FILL: REDDISH BROWN TO DARK BROWN TO TAN, MOIST, SOFT TO STIFF, FINE TO COARSE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL AND TRACE ORGANICS

4:1

1614.62

0.030

Ⓐ

0.030

Ⓒ

1615.33

DRIVEWAY/SHEAR LINE

RESIDUAL: TAN BROWN, MOIST, MEDIUM STIFF, SILT (A-4) WITH MANGANESE SEAMS

45+00.00

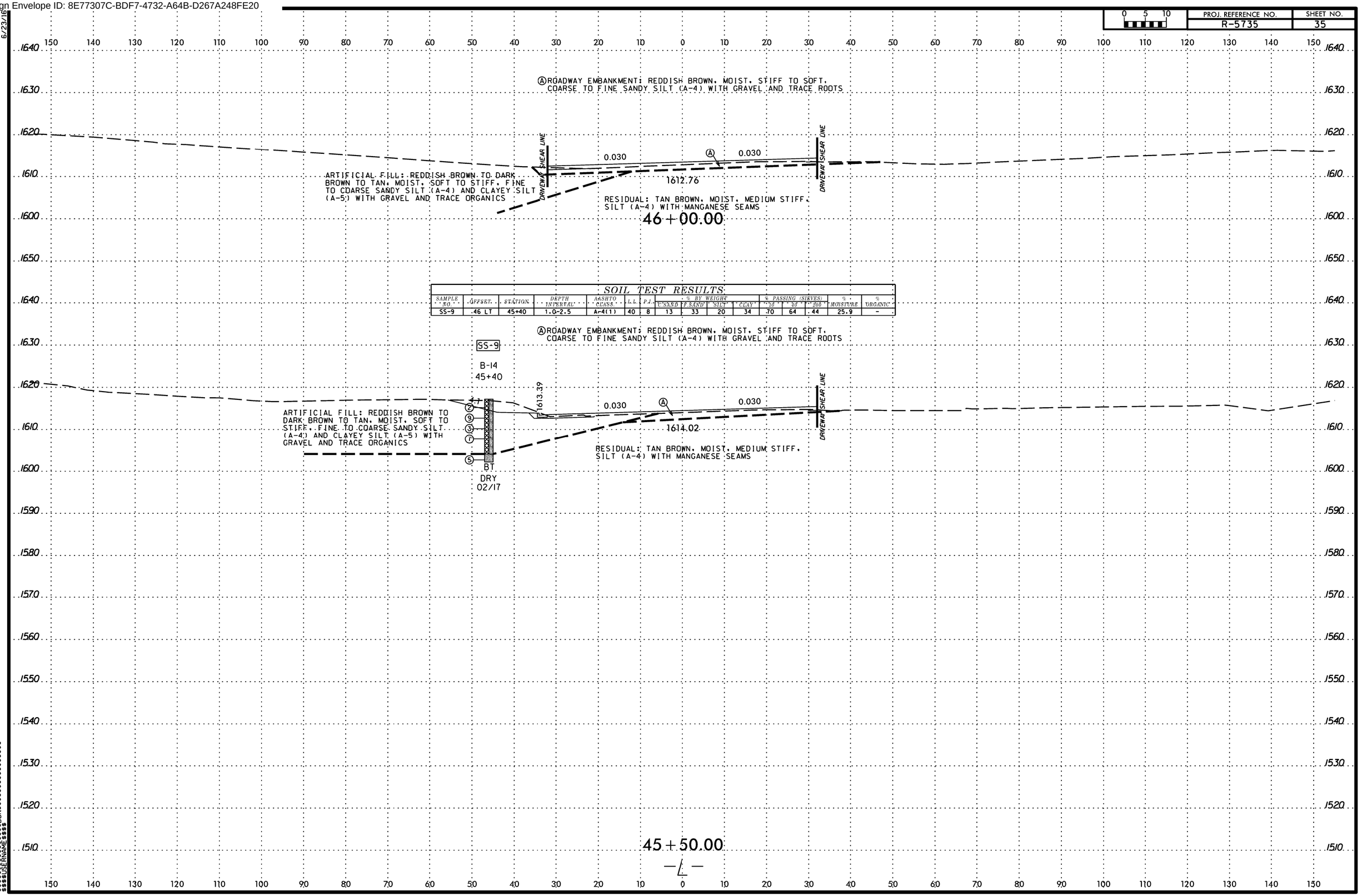
—L—

$$$$$$$$SYSTIME$$$$$$

$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

$$$$USERNAME$$$$

6/23/16



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) #10	% PASSING (SIEVES) #40	% PASSING (SIEVES) #200	% MOISTURE	% ORGANIC
SS-9	.46 LT	45+40	1.0-2.5	A-4(1)	40	8	13	33	20	34	70	64	44	25.9	-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	36

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1640
1630
1620
1610
1600

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

1610.51
4:1
0.030
Ⓐ
0.030
SHEAR LINE
DRIVEWAY
1610.79

ARTIFICIAL FILL: DARK BROWN TO GRAY, MOIST TO WET, SOFT, CLAYEY SILT (A-5) WITH GRAVEL, TRACE ORGANICS, AND TRACE SAND

RESIDUAL: TAN BROWN, MOIST, VERY STIFF, SILT (A-4) WITH MANGANESE SEAMS

47+00.00

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

1611.39
4:1
0.030
Ⓐ
0.030
1613.43
2:1
1611.72

ARTIFICIAL FILL: REDDISH BROWN TO DARK BROWN TO TAN, MOIST, SOFT TO STIFF, FINE TO COARSE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL AND TRACE ORGANICS

RESIDUAL: TAN BROWN, MOIST, MEDIUM STIFF, SILT (A-4) WITH MANGANESE SEAMS

46+50.00

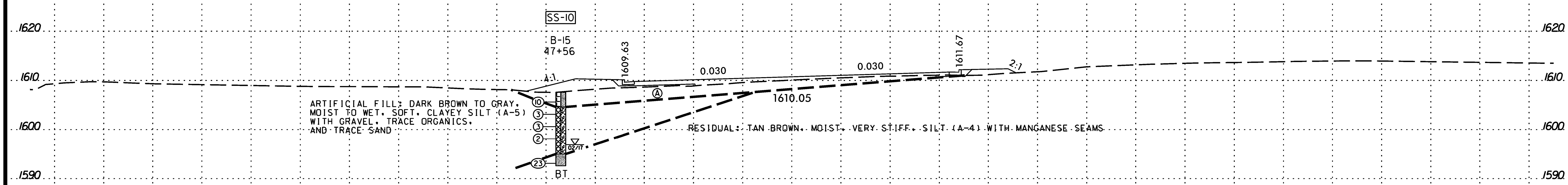
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

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-10	42 LT	47+56	8.5-10.0	-	-	-	-	-	-	-	-	-	-	34.4	3.87

(A) ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS



47+50.00

— L —

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1630 1620 1610 1600 1590 1640

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

DRIVEWAY SHEAR LINE

0.030

Ⓐ 0.030

1607.52

ARTIFICIAL FILL: REDDISH BROWN TO TAN BROWN, MOIST, SOFT TO MEDIUM STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

RESIDUAL: GREENISH GRAY, MOIST, VERY STIFF TO STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

49+00.00

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

DRIVEWAY SHEAR LINE

0.030

0.030

Ⓐ

1609.91

2:1

1608.41

ARTIFICIAL FILL: REDDISH BROWN TO TAN BROWN, MOIST, SOFT TO MEDIUM STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

RESIDUAL: GREENISH GRAY, MOIST, VERY STIFF TO STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

48+50.00

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

4:1

1608.75

0.030

0.030

DRIVEWAY SHEAR LINE

Ⓐ

1609.22

ARTIFICIAL FILL: DARK BROWN TO GRAY, MOIST TO WET, SOFT, CLAYEY SILT (A-5) WITH GRAVEL, TRACE ORGANICS, AND TRACE SAND

RESIDUAL: TAN BROWN, MOIST VERY STIFF, SILT (A-4) WITH MANGANESE SEAMS

48+00.00

$$$$$$$$SYSTIME$$$$$$

$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

$$$$USERNAME$$$$

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1640 1630 1620 1610 1600 1590 1580 1570 1560 1550 1540 1530 1520 1510 1500

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-11	71 LT	49+45	13.5-15.0	A-7-6(19)	48	20	3	14	31	52	96	95	85	38.1	-

SS-11

B-16
49+45

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

ARTIFICIAL FILL: REDDISH BROWN TO TAN BROWN, MOIST, SOFT TO MEDIUM STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

4 3 5 3

ARTIFICIAL FILL: REDDISH BROWN, WET, SOFT, CLAY (A-7-6), MODERATELY PLASTIC

3

02/17

21

12

BT

A:1

1606.11

0.030

0.030

Ⓐ

1608.15

2:1

1606.69

RESIDUAL: GREENISH GRAY, MOIST, VERY STIFF TO STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

49+50.00

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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	40

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1630
1620
1610
1600
1590
1680
1580

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

1603.92
1603.47
0.065
0.030
Ⓐ
0.030
1604.15
DRIVEWAY SHEAR LINE

ARTIFICIAL FILL: REDDISH BROWN TO TAN BROWN, MOIST, SOFT TO MEDIUM STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

RESIDUAL: GREENISH GRAY, MOIST, VERY STIFF TO STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

51+00.00

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

1604.35
4:1
0.030
Ⓐ
0.030
1606.39
2:1
1605.03

ARTIFICIAL FILL: REDDISH BROWN TO TAN BROWN, MOIST, SOFT TO MEDIUM STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

RESIDUAL: GREENISH GRAY, MOIST, VERY STIFF TO STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

50+50.00

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ROOTS

1605.23
4:1
0.030
Ⓐ
0.030
DRIVEWAY SHEAR LINE
1605.82

ARTIFICIAL FILL: REDDISH BROWN TO TAN BROWN, MOIST, SOFT TO MEDIUM STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

ARTIFICIAL FILL: REDDISH BROWN, WET, SOFT, CLAY (A-7-6)

RESIDUAL: GREENISH GRAY, MOIST, VERY STIFF TO STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

50+00.00

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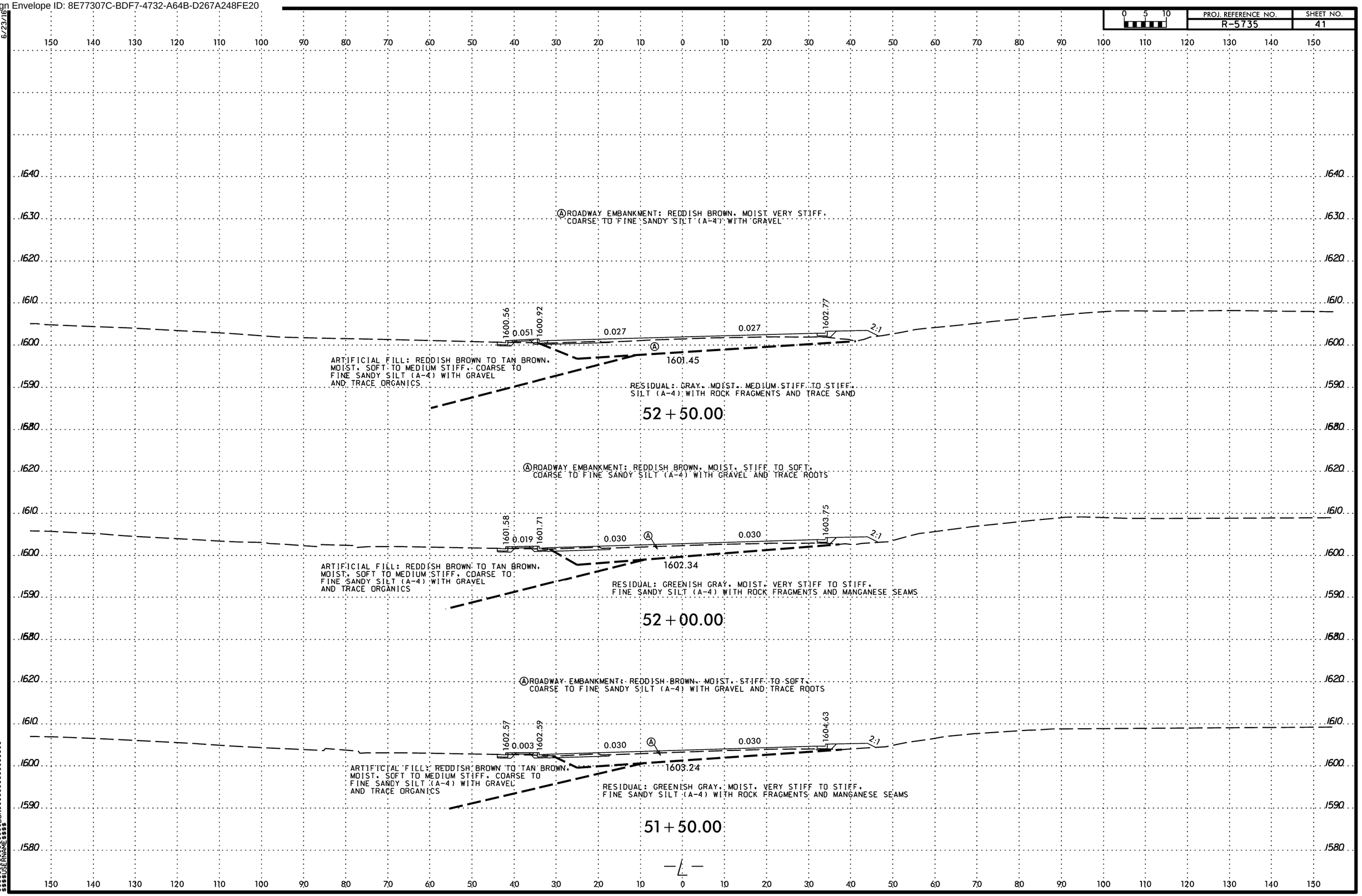
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	42

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1670
1660
1650
1640
1630
1620
1610
1600
1590
1580

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

1599.47 0.117 1600.29 0.020 0.016 DRIVEWAY/SHEAR LINE

Ⓐ 1600.53

ARTIFICIAL FILL: GRAY TO DARK BROWN TO GREENISH GRAY, MOIST TO WET, SOFT TO VERY STIFF, FINE TO COARSE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL AND TRACE ORGANICS

RESIDUAL: GRAY, MOIST, MEDIUM STIFF TO STIFF, SILT (A-4) WITH ROCK FRAGMENTS AND TRACE SAND

53+00.00

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	43

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1690
1680
1670
1660
1650
1640
1630
1620
1610
1600
1590
1580

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

1598.48
0.132
1599.41
0.020
0.005
1600.26
2:1
Ⓐ
1599.68

ARTIFICIAL FILL: GRAY TO DARK BROWN TO GREENISH GRAY, MOIST TO WET, SOFT TO VERY STIFF, FINE TO COARSE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL AND TRACE ORGANICS

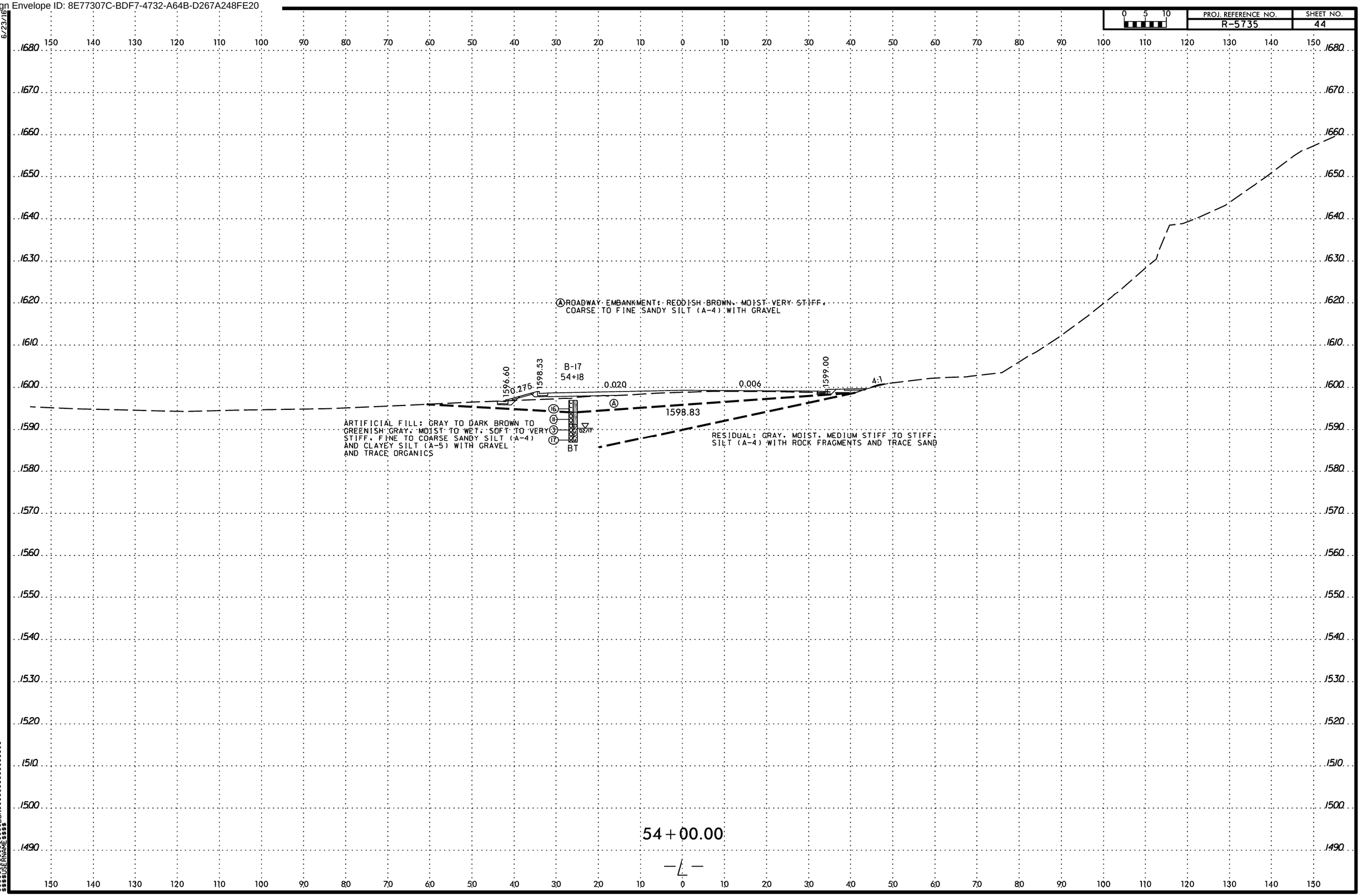
RESIDUAL: GRAY, MOIST, MEDIUM STIFF TO STIFF, SILT (A-4) WITH ROCK FRAGMENTS AND TRACE SAND

53+50.00

$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	44



$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	45

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1690
1680
1670
1660
1650
1640
1630
1620
1610
1600
1590
1580

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

DRIVEWAY SHEAR LINE

0.020

0.017

1597.74

2:1

Ⓐ

1597.92

ARTIFICIAL FILL: GRAY TO DARK BROWN TO GREENISH GRAY, MOIST TO WET, SOFT TO VERY STIFF, SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL AND TRACE ORGANICS

FINE TO COARSE SANDY

RESIDUAL: GRAY, MOIST, MEDIUM STIFF TO STIFF, SILT (A-4) WITH ROCK FRAGMENTS AND TRACE SAND

54+50.00

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	46

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1700
1690
1680
1670
1660
1650
1640
1630
1620
1610
1600
1590
1580

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN TO BROWN, MOIST, VERY STIFF TO MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH ASPHALT AND GRAVEL

1596.77

4:1

1596.99

Ⓐ

ARTIFICIAL FILL: REDDISH BROWN TO BROWN TO GRAY, MOIST, SOFT, CLAYEY SILT (A-5) WITH GRAVEL AND LITTLE ORGANICS

RESIDUAL: GRAY, MOIST, MEDIUM STIFF TO SOFT, SILT (A-4) WITH ROCK FRAGMENTS AND TRACE SAND

55+00.00

—℄—

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	47

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1700
1690
1680
1670
1660
1650
1640
1630
1620
1610
1600
1590
1580

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN TO BROWN, MOIST, VERY STIFF TO MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH ASPHALT AND GRAVEL

DRIVEWAY SHEAR LINE

0.020

0.020

1595.89

2:1

Ⓐ

1596.06

ARTIFICIAL FILL: REDDISH BROWN TO BROWN TO GRAY, MOIST, SOFT, CLAYEY SILT (A-5) WITH GRAVEL AND LITTLE ORGANICS

RESIDUAL: GRAY, MOIST, MEDIUM STIFF TO SOFT, SILT (A-4) WITH ROCK FRAGMENTS AND TRACE SAND

55+50.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	48

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) #10	% PASSING (SIEVES) #40	% PASSING (SIEVES) #200	% MOISTURE	% ORGANIC
SS-12	25 LT	55+89	3.5-5.0	A-4(2)	36	9	13	24	35	28	65	59	48	18.5	-

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN TO BROWN, MOIST, VERY STIFF TO MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH ASPHALT AND GRAVEL

SS-12

B-18
55+89

1595.01

4:1

0.020

0.020

1595.01

2:1

Ⓐ

1595.17

21
8
5
2
6
3
100/0.7

02/17

ARTIFICIAL FILL: REDDISH BROWN TO BROWN TO GRAY, MOIST, SOFT, CLAYEY SILT (A-5) WITH GRAVEL AND LITTLE ORGANICS

RESIDUAL: GRAY, MOIST, MEDIUM STIFF TO SOFT, SILT (A-4) WITH ROCK FRAGMENTS AND TRACE SAND

WEATHERED ROCK: GRAY SCHIST

56+00.00

$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1680 1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550 1540 1530 1520 1510 1500

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	49

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1690
1680
1670
1660
1650
1640
1630
1620
1610
1600
1590
1580

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN TO BROWN, MOIST, VERY STIFF TO MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH ASPHALT AND GRAVEL

DRIVEWAY SHEAR LINE

0.020 0.020

Ⓐ

1594.13

2:1

1594.29

ARTIFICIAL FILL: REDDISH BROWN TO BROWN TO GRAY, MOIST, SOFT, CLAYEY SILT (A-5) WITH GRAVEL

RESIDUAL: GRAY, MOIST, MEDIUM STIFF TO SOFT, SILT (A-4) WITH ROCK FRAGMENTS AND TRACE SAND

56+50.00

—℄—

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	50

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1690
1680
1670
1660
1650
1640
1630
1620
1610
1600
1590
1580
1570

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN TO BROWN, MOIST, VERY STIFF TO MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH ASPHALT AND GRAVEL

1591.94
0.187
1593.25
0.020
0.020
1593.25
2:1
Ⓐ
1589.43

ARTIFICIAL FILL: RED TO DARK BROWN TO GRAY, MOIST TO WET, STIFF TO SOFT, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

RESIDUAL: BROWN TO TAN BROWN, WET TO MOIST, SOFT TO STIFF, CLAYEY SILT (A-5) AND SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

57+00.00

$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-5735	51

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1690 1680 1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570

Ⓐ ROADWAY EMBANKMENT: TAN BROWN TO REDDISH BROWN, MOIST, STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

4:1 1592.37 0.020 0.020 1592.37 2:1

Ⓐ 1592.62

ARTIFICIAL FILL: RED TO DARK BROWN TO GRAY, MOIST TO WET, STIFF TO SOFT, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

RESIDUAL: BROWN TO TAN BROWN, WET TO MOIST, SOFT TO STIFF, CLAYEY SILT (A-5) AND SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

57+50.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	52

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C SAND	% BY WEIGHT F SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-13	25 LT	57+86	8.5-10.0	A-4(3)	38	10	13	24	35	28	72	66	53	23.0	-

Ⓐ ROADWAY EMBANKMENT: TAN BROWN TO REDDISH BROWN, MOIST, STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: RED TO DARK BROWN TO GRAY, MOIST TO WET, STIFF TO SOFT, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

SS-13

B-19
57+86

DRIVEWAY SHEAR LINE

0.020 Ⓐ 0.020

1592.37

1591.77

Ⓒ

RESIDUAL: BROWN TO TAN BROWN, WET TO MOIST, SOFT TO STIFF, CLAYEY SILT (A-5) AND SANDY SILT (A-4) WITH ROCK FRAGMENTS AND MANGANESE SEAMS

10
13
4
5
4
10

BT
DRY
02/17

58+00.00

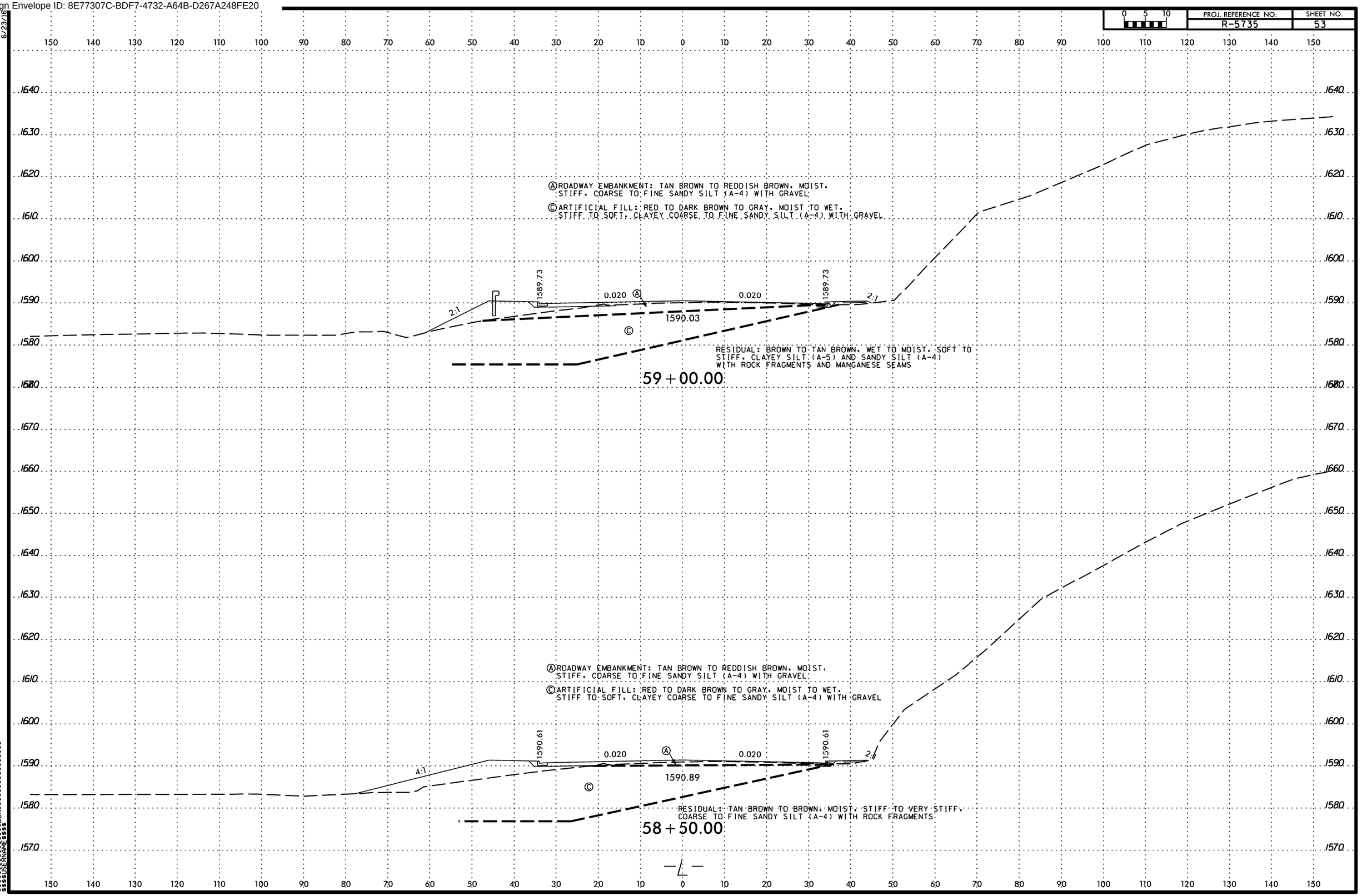
—℄—

1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550 1540 1530 1520 1510 1500 1490 1480

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DDN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	53



6/23/16

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
S-14	56 LT	59+53	1.0-2.1	A-5(7)	57	8	11	36	39	14	95	89	63	73.1	-

Ⓐ ROADWAY EMBANKMENT: TAN BROWN TO REDDISH BROWN, MOIST, STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: RED TO DARK BROWN TO GRAY, MOIST TO WET, STIFF TO SOFT, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓔ ALLUVIAL: BROWN TO GRAYISH BROWN, SATURATED, VERY SOFT TO MEDIUM STIFF, CLAYEY FINE SANDY SILT (A-5) WITH GRAVEL/COBBLES

S-14

B-20
59+53

1588.85

0.020 Ⓐ 0.020

1588.85

2:1

2:1

1589.14

Ⓒ

RESIDUAL: TAN BROWN TO BROWN, MOIST, STIFF TO VERY STIFF, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

Ⓔ

WOH WOH
18 20
5 4
21 10
30 28
34 31
53 60
48

02/11

BT

NOTE: BORING B-20 PERFORMED IN DRAINAGE DITCH

59+50.00

—L—

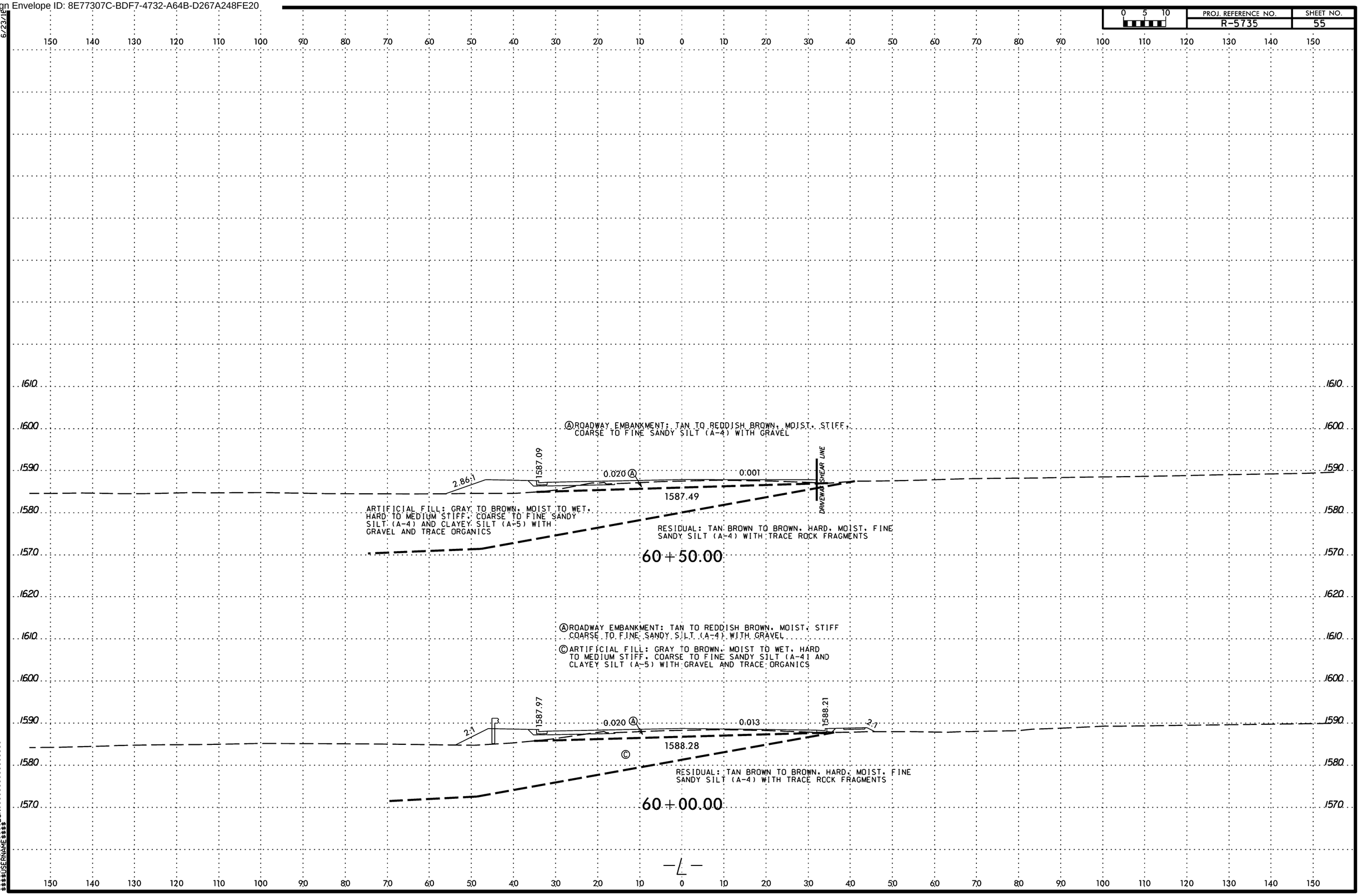
1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550 1540 1530 1520 1510 1500 1490 1480 1470

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	55



$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	56

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1610 1600 1590 1580 1570 1560 1550 1540 1530 1520 1510 1500 1490 1480

Ⓐ ROADWAY EMBANKMENT: TAN TO REDDISH BROWN, MOIST, SOFT TO STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

DRIVEWAY SHEAR LINE

0.021 0.021

Ⓐ 1585.82

1586.71

2:1

ARTIFICIAL FILL: GRAY TO BROWN, MOIST TO WET, HARD TO MEDIUM STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

RESIDUAL: TAN BROWN TO BROWN, MOIST, HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

61+50.00

Ⓐ ROADWAY EMBANKMENT: TAN TO REDDISH BROWN, MOIST, SOFT TO STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: GRAY TO BROWN, MOIST TO WET, HARD TO MEDIUM STIFF, COARSE TO FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL AND TRACE ORGANICS

B-21
61+03

DRIVEWAY SHEAR LINE

0.020 Ⓐ 0.010

1586.64

DRIVEWAY SHEAR LINE

Ⓒ

53 14 13 5 02/17 38

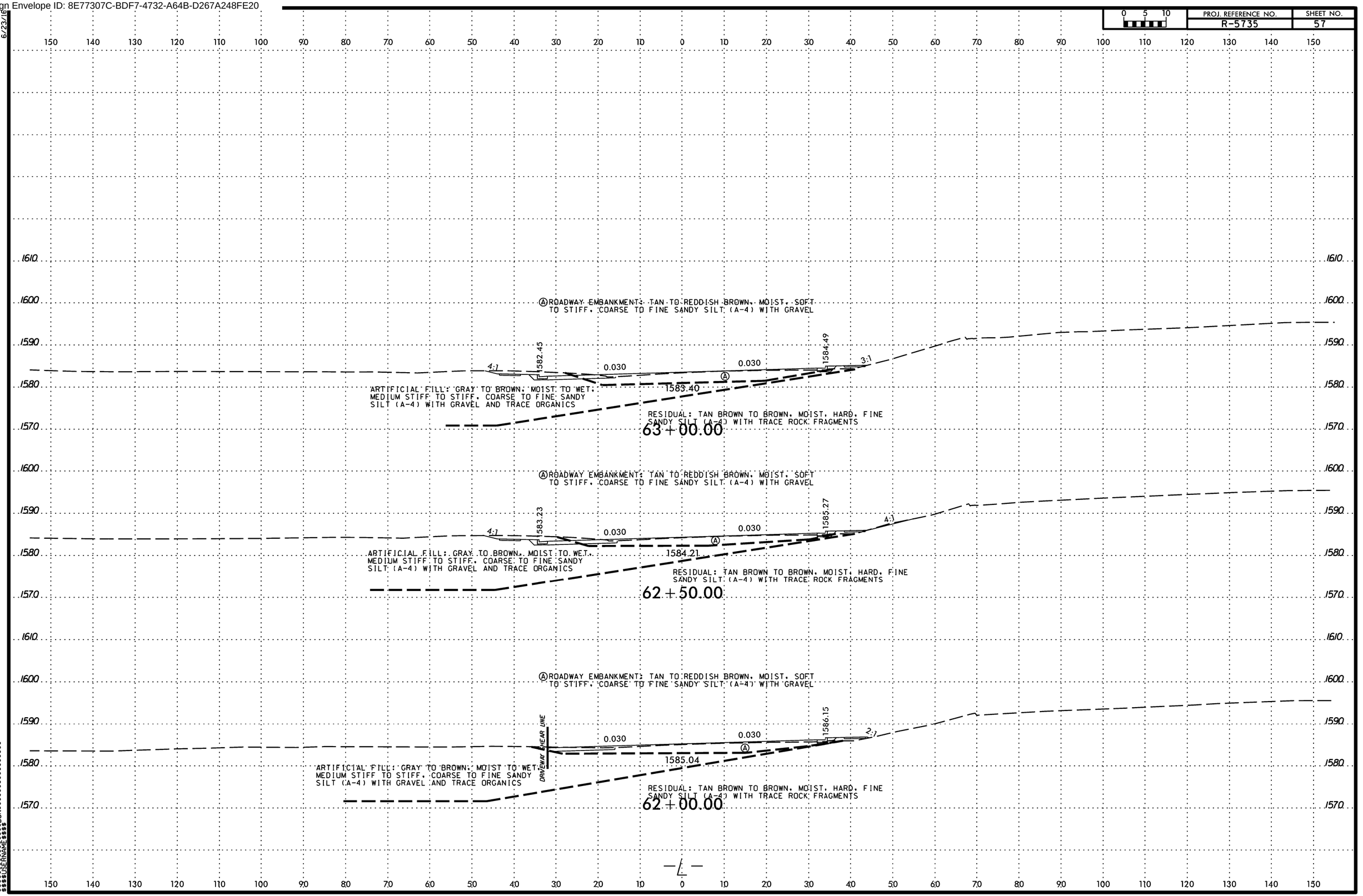
BT

RESIDUAL: TAN BROWN TO BROWN, MOIST, HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

61+00.00

—℄—

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	58

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1620 1610 1600 1590 1580 1570 1560 1550 1540 1530 1520 1510 1500 1490 1480

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, SOFT TO STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: GRAY TO BROWN, MOIST TO WET, MEDIUM STIFF TO STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

DRIVEWAY SHEAR LINE

0.030 Ⓐ 0.030

1582.55

Ⓒ

RESIDUAL: TAN BROWN TO BROWN, MOIST, HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

DRIVEWAY SHEAR LINE

B-22
63+57

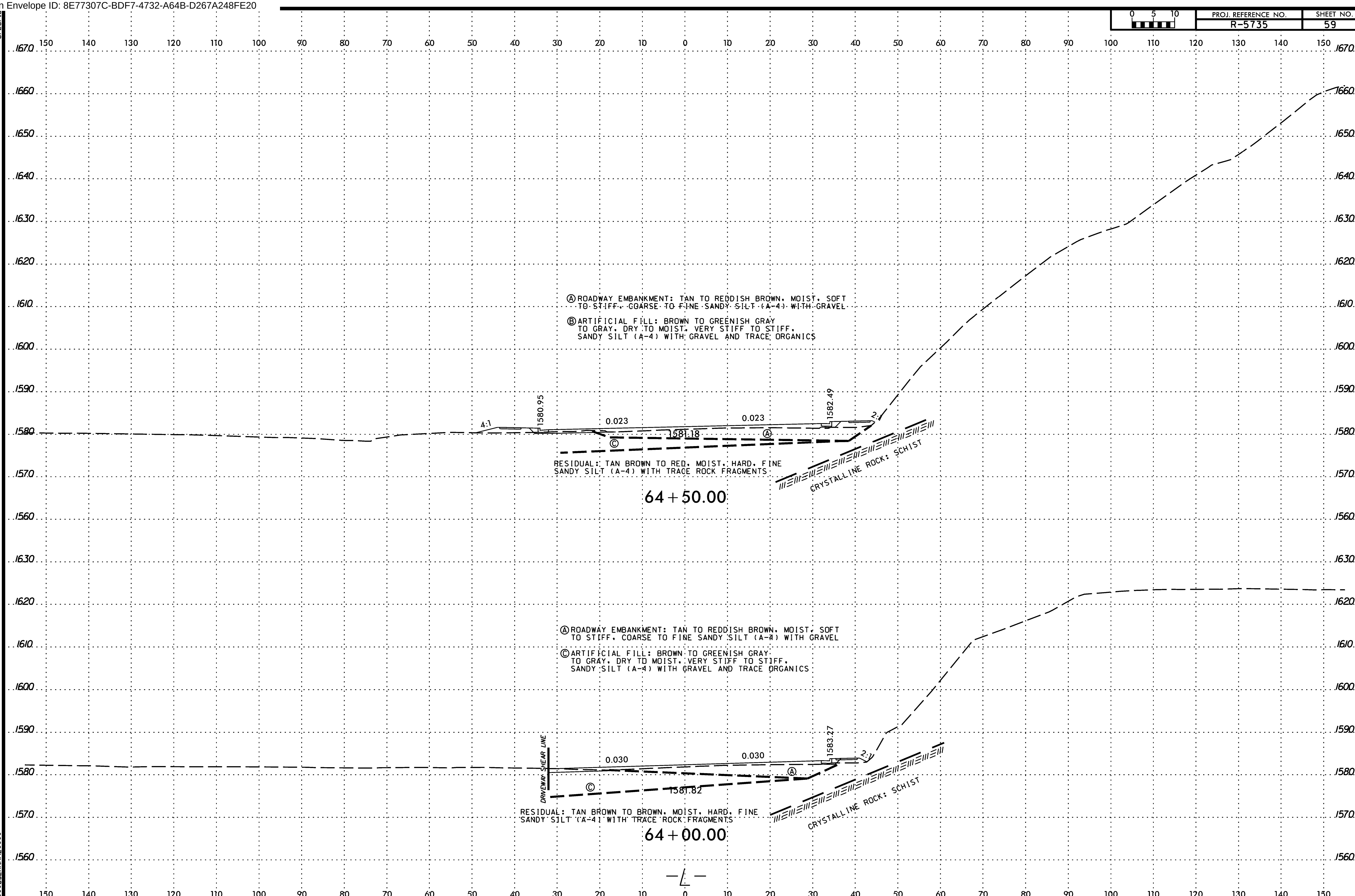
8 29 2 18 .007 0.8

BT
DRY
02/17

CRYSTALLINE ROCK: SCHIST

63+50.00

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	60

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1670
1660
1650
1640
1630
1620
1610
1600
1590
1580
1570
1560

Ⓐ ROADWAY EMBANKMENT: TAN TO REDDISH BROWN, MOIST, SOFT TO STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: BROWN TO GREENISH GRAY TO GRAY, DRY TO MOIST, VERY STIFF TO STIFF, SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

4:1
1580.52
0.020
0.010
1581.53
2:1
Ⓐ
Ⓒ
1580.49

RESIDUAL: TAN BROWN TO RED, MOIST, HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

CRYSTALLINE ROCK: SCHIST

65+00.00

—℄—

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	61

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1670
1660
1650
1640
1630
1620
1610
1600
1590
1580
1570
1560

Ⓐ ROADWAY EMBANKMENT: TAN TO REDDISH BROWN, MOIST, SOFT TO STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: BROWN TO GREENISH GRAY TO GRAY, DRY TO MOIST, VERY STIFF TO STIFF, SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

DRIVEWAY SHEAR LINE

0.020

0.003

Ⓐ

Ⓒ

1579.97

DRIVEWAY SHEAR LINE

RESIDUAL: TAN BROWN TO RED, MOIST, HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

65+50.00

—℄—

$$$$$$$$SYSTIME$$$$$$

$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	62

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-15	43 LT	65+96	6.0-7.5	A-4(0)	27	5	19	25	44	12	70	60	48	9.4	-

Ⓐ ROADWAY EMBANKMENT: DARK BROWN TO TAN BROWN, MOIST TO WET, VERY STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: BROWN TO GREENISH GRAY TO GRAY, DRY TO MOIST, VERY STIFF TO STIFF, SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

SS-15

B-23
65+96

DRIVEWAY SHEAR LINE

0.020

Ⓐ

0.016

1579.61

2:1

1579.45

Ⓒ

(22) (26) (9) (12)

BT
DRY
02/17

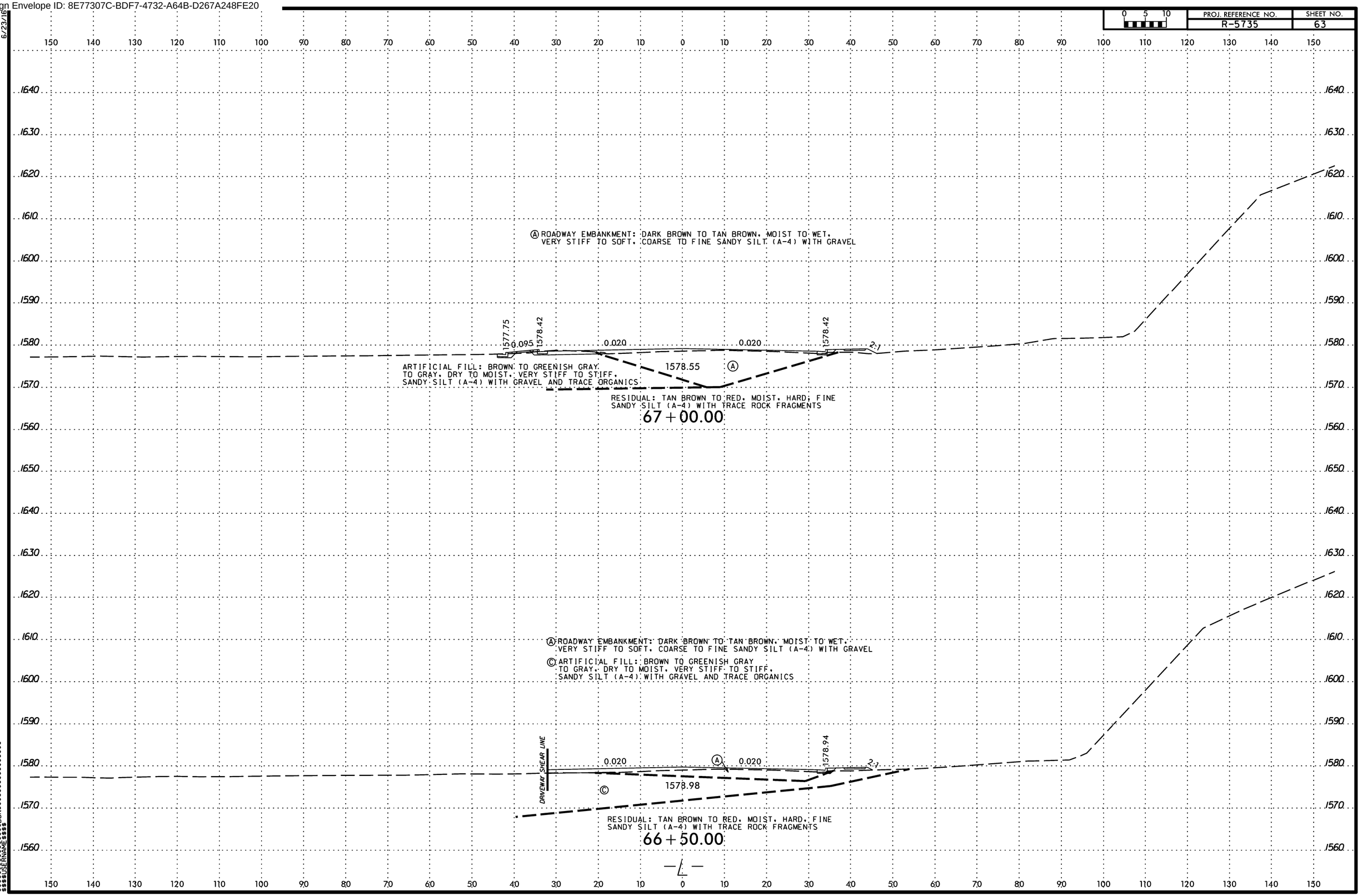
RESIDUAL: TAN BROWN TO RED, MOIST, HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

66+00.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	63



$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-5735	64

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1630
1620
1610
1600
1590
1580
1570
1560

Ⓐ ROADWAY EMBANKMENT: DARK BROWN TO TAN BROWN, MOIST TO WET, VERY STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

1577.73
0.023
1577.89
0.020
0.020
1577.89
2:1

ARTIFICIAL FILL: BROWN TO GREENISH GRAY TO GRAY, DRY TO MOIST, VERY STIFF TO STIFF, SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

1578.11 Ⓐ

WEATHERED ROCK: RED SCHIST

RESIDUAL: TAN BROWN TO RED, MOIST, HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

67+50.00

—L—

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

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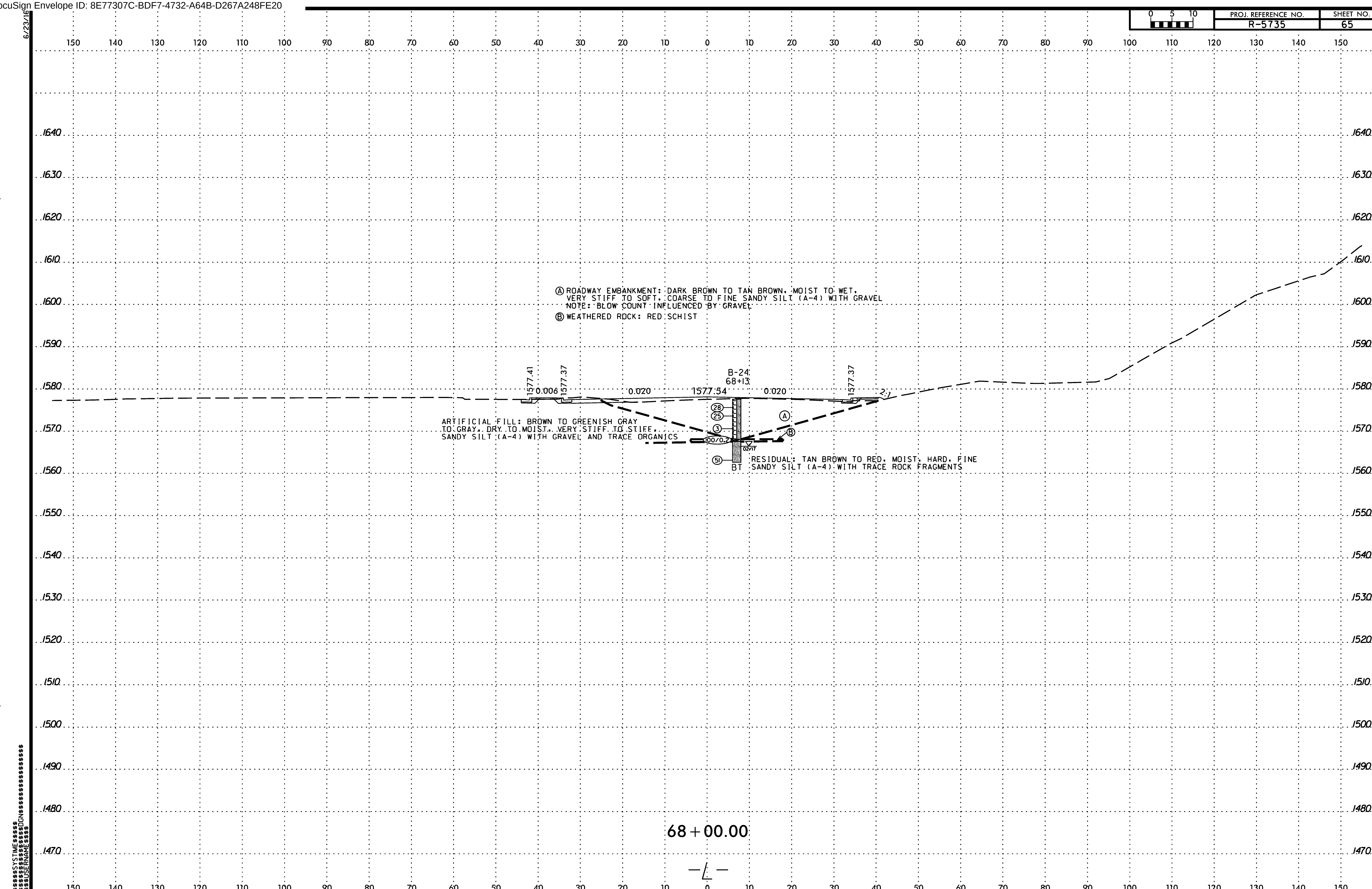
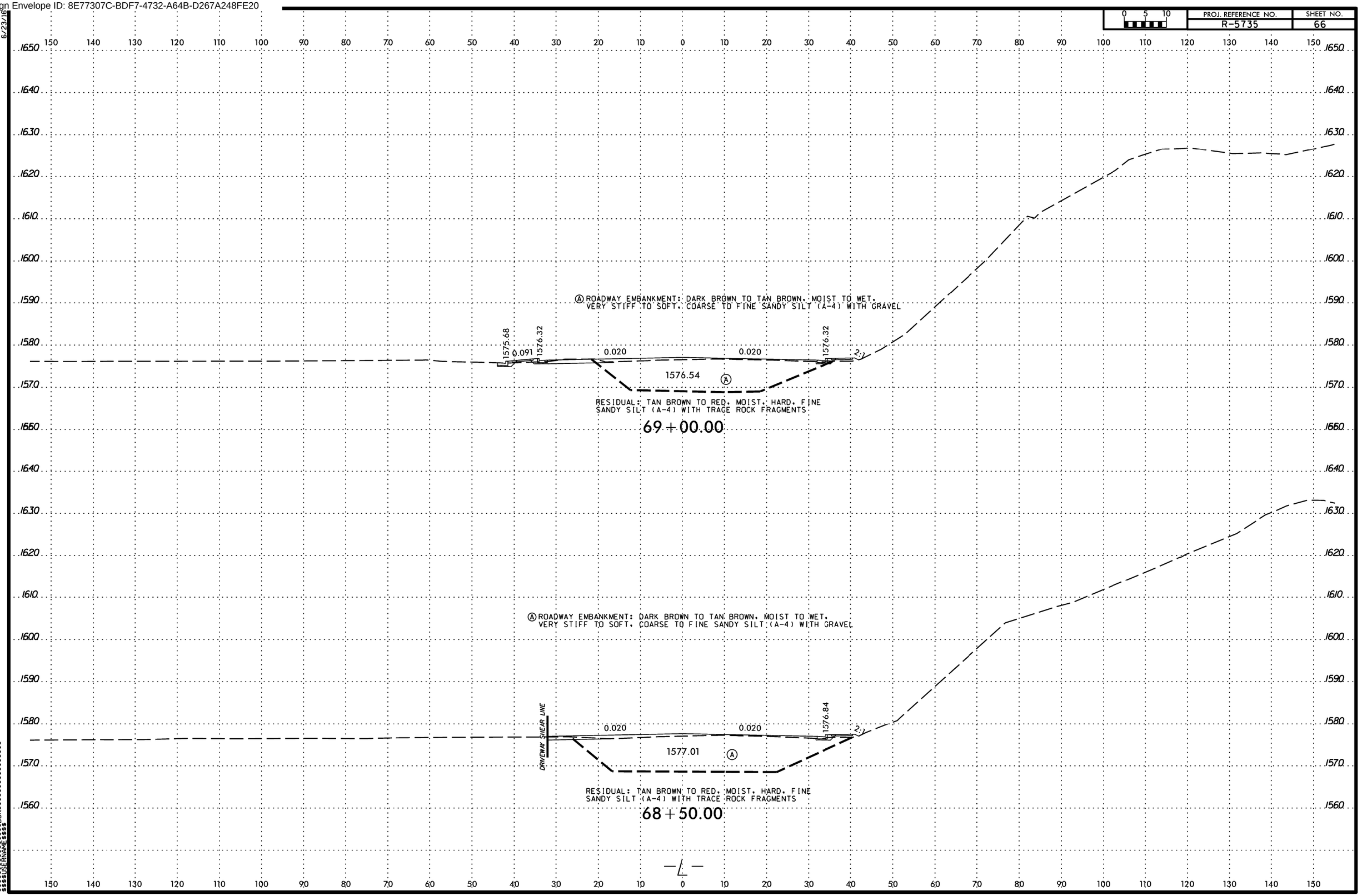
PROJ. REFERENCE NO.	SHEET NO.
R-5735	65



6/23/16
0 5 10
Ⓐ ROADWAY EMBANKMENT: DARK BROWN TO TAN BROWN, MOIST TO WET, VERY STIFF TO SOFT, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL
NOTE: BLOW COUNT INFLUENCED BY GRAVEL
Ⓑ WEATHERED ROCK: RED SCHIST
ARTIFICIAL FILL: BROWN TO GREENISH GRAY TO GRAY, DRY TO MOIST, VERY STIFF TO STIFF, SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS
RESIDUAL: TAN BROWN TO RED, MOIST, HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS
B-24
68+13
1577.41
1577.37
1577.54
1577.37
0.006
0.020
0.020
2:1
28
25
3
100/0.2
51
BT
68+00.00
-L-
1640
1630
1620
1610
1600
1590
1580
1570
1560
1550
1540
1530
1520
1510
1500
1490
1480
1470
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
$$$$$$SYSTIME$$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	66



$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	67

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1640 1630 1620 1610 1600 1590 1580 1570 1560 1550

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, VERY STIFF, FINE SANDY SILT (A-4) WITH GRAVEL

1575.18 0.012 1575.27 0.020 0.020 1575.27 2:1

1575.62 Ⓐ

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

WEATHERED ROCK: GREENISH GRAY SCHIST

70+00.00

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, VERY STIFF, FINE SANDY SILT (A-4) WITH GRAVEL

DRIVEWAY SHEAR LINE 0.020 0.020 1575.79 2:1

1576.10 Ⓐ

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

WEATHERED ROCK: RED SCHIST

69+50.00

—L—

$$$$$$$$SYSTIME$$$$$$

$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	68

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1620 1610 1600 1590 1580 1570 1560 1650 1620 1610 1600 1590 1580 1570 1560 1550

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

Ⓕ RESIDUAL: GRAY, MOIST, HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

Ⓑ WEATHERED ROCK: GREENISH GRAY SCHIST

1573.90 0.045 1574.22 0.020 0.020 1574.22 2:1

1574.60 Ⓐ Ⓕ Ⓑ

CRYSTALLINE ROCK: SCHIST

71+00.00

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

Ⓕ RESIDUAL: GRAY, MOIST, HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

Ⓑ WEATHERED ROCK: GREENISH GRAY SCHIST

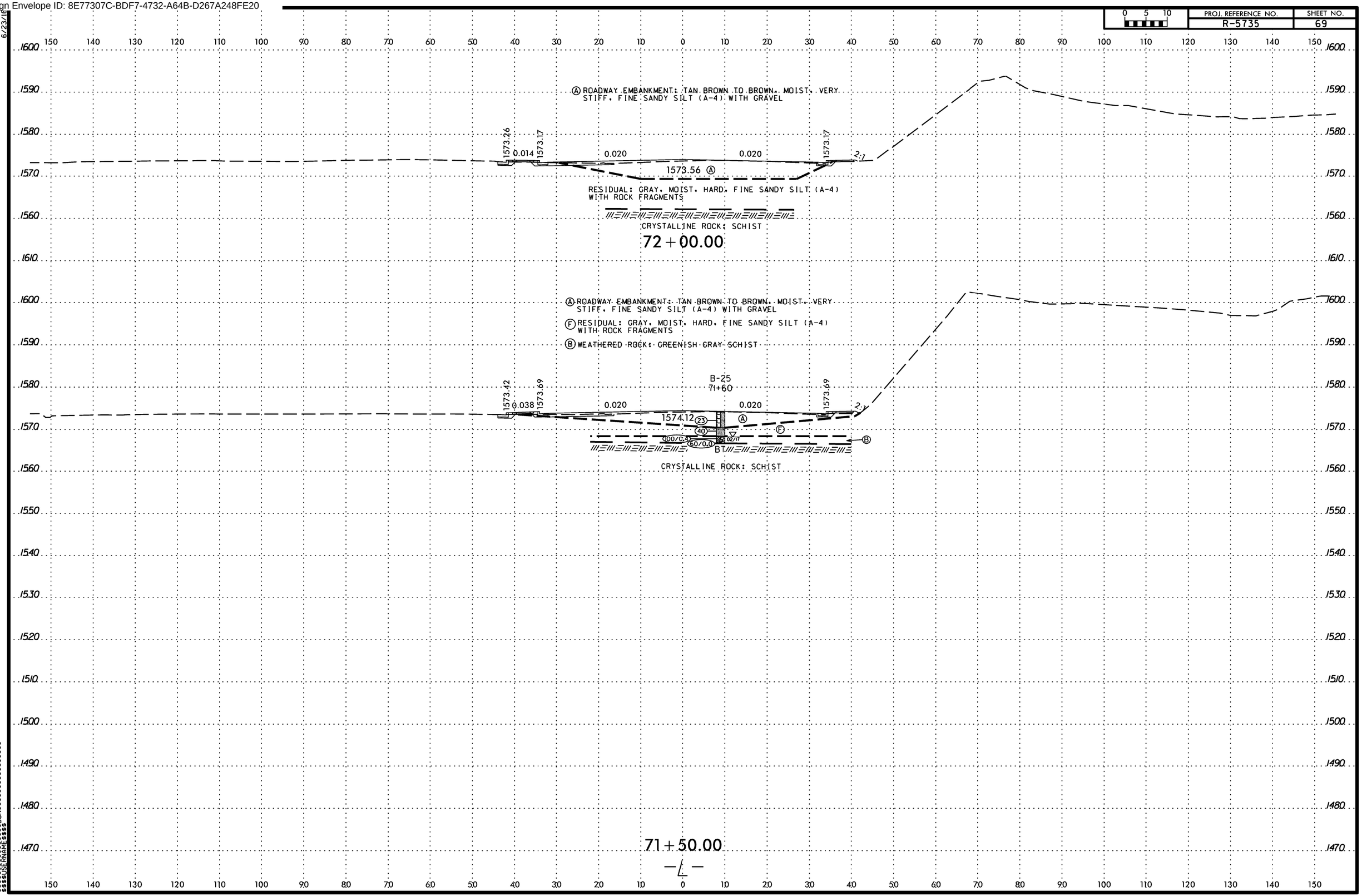
1574.61 0.019 1574.74 0.020 0.020 1574.74 2:1

1575.11 Ⓐ Ⓕ Ⓑ

CRYSTALLINE ROCK: SCHIST

70+50.00

$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	70

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1610
1600
1590
1580
1570
1560
1550
1540

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

1572.43 0.039 1572.16 0.019 0.020 DRIVEWAY SHEAR LINE

Ⓐ 1572.32

RESIDUAL: DARK BROWN AND GRAY, DRY TO SATURATED, MEDIUM STIFF TO VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

CRYSTALLINE ROCK: SCHIST

73+00.00

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

DRIVEWAY SHEAR LINE 0.020 0.020 1572.64 2:1

Ⓐ 1572.90

RESIDUAL: DARK BROWN AND GRAY, DRY TO SATURATED, MEDIUM STIFF TO VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

CRYSTALLINE ROCK: SCHIST

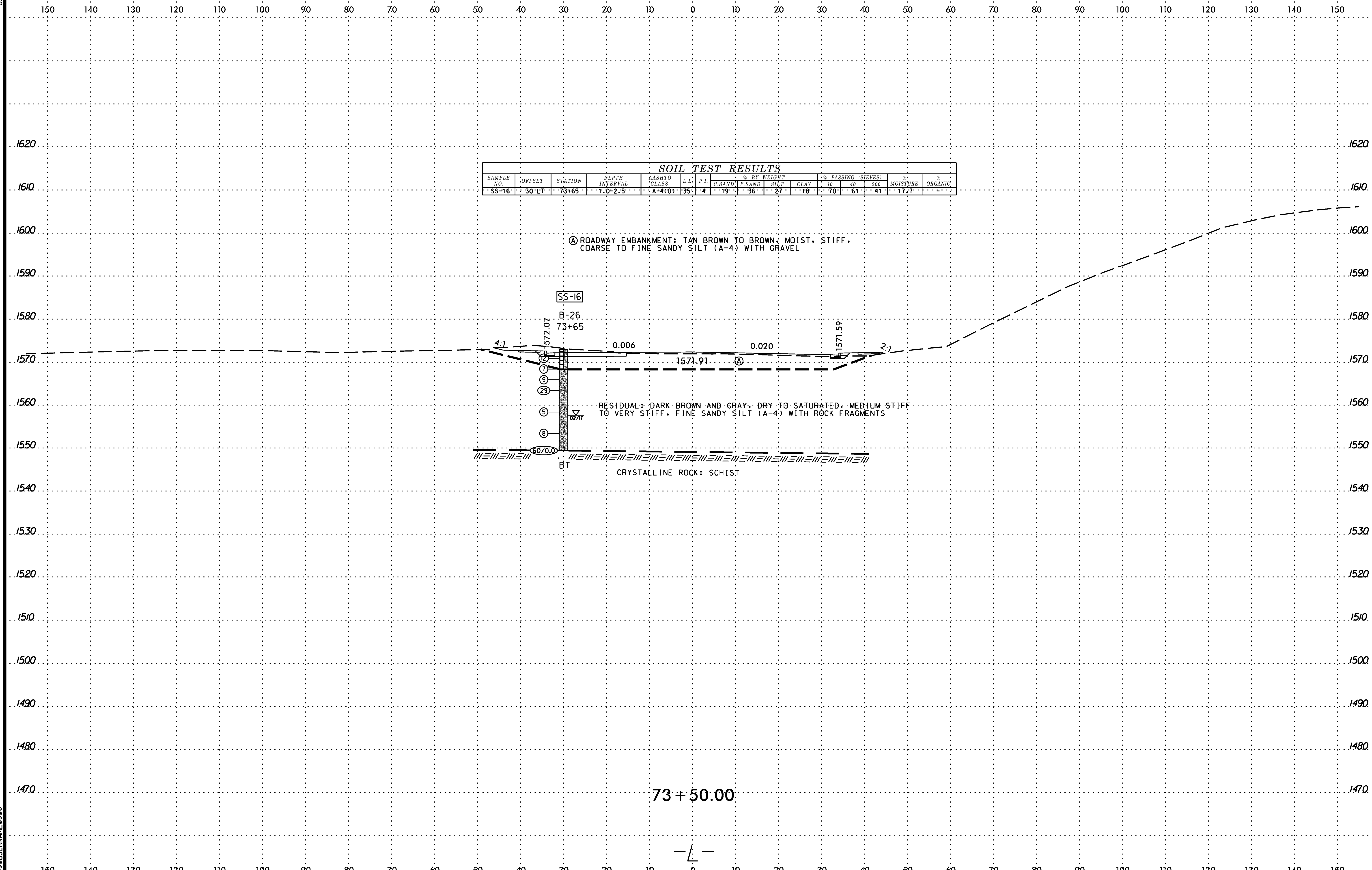
72+50.00

—L—

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-16	30 LT	73+65	1.0-2.5	A-4(0)	35	4	19	36	27	18	70	61	41	17.7	-



73+50.00

-L-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	72

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1630 1620 1610 1600 1590 1580 1570 1560 1550 1540

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

1572.16 0.016 1571.89 0.020 0.020 1570.54 2:1

1571.03 Ⓐ

RESIDUAL: DARK BROWN AND GRAY, DRY TO SATURATED, MEDIUM STIFF TO VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

RESIDUAL: GRAY, DRY, VERY DENSE, TO MEDIUM DENSE, SILTY COARSE TO FINE SILTY SAND (A-2-4) WITH ROCK FRAGMENTS

74+50.00

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

1572.09 0.007 1571.98 0.007 0.020 1571.07 2:1

1571.46 Ⓐ

RESIDUAL: DARK BROWN AND GRAY, DRY TO SATURATED, MEDIUM STIFF TO VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

CRYSTALLINE ROCK: SCHIST

74+00.00

—L—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-5735	73

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1640
1630
1620
1610
1600
1590
1580
1570
1560
1550

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, VERY STIFF, CLAYEY FINE SANDY SILT (A-4) WITH GRAVEL

4:1

1571.80

0.033

0.033

Ⓐ 1570.67

1569.59

2:1

RESIDUAL: BROWN AND GRAY, MOIST, HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

RESIDUAL: GRAY, DRY, VERY DENSE, TO MEDIUM DENSE, SILTY COARSE TO FINE SAND (A-2-4) WITH ROCK FRAGMENTS

75+00.00

—L—

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-17	35 LT	75+59	6.0-7.5	A-2-4(0)	26	3	28	27	35	10	48	37	27	4.8	-

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, VERY STIFF, CLAYEY FINE SANDY SILT (A-4) WITH GRAVEL

Ⓕ RESIDUAL: BROWN AND GRAY, MOIST, HARD, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

SS-17

B-27
75+59

1571.53

4:1

0.040

Ⓐ 1570.24

0.040

1568.81

2:1

16
33
72
22

BT
DRY
02/17

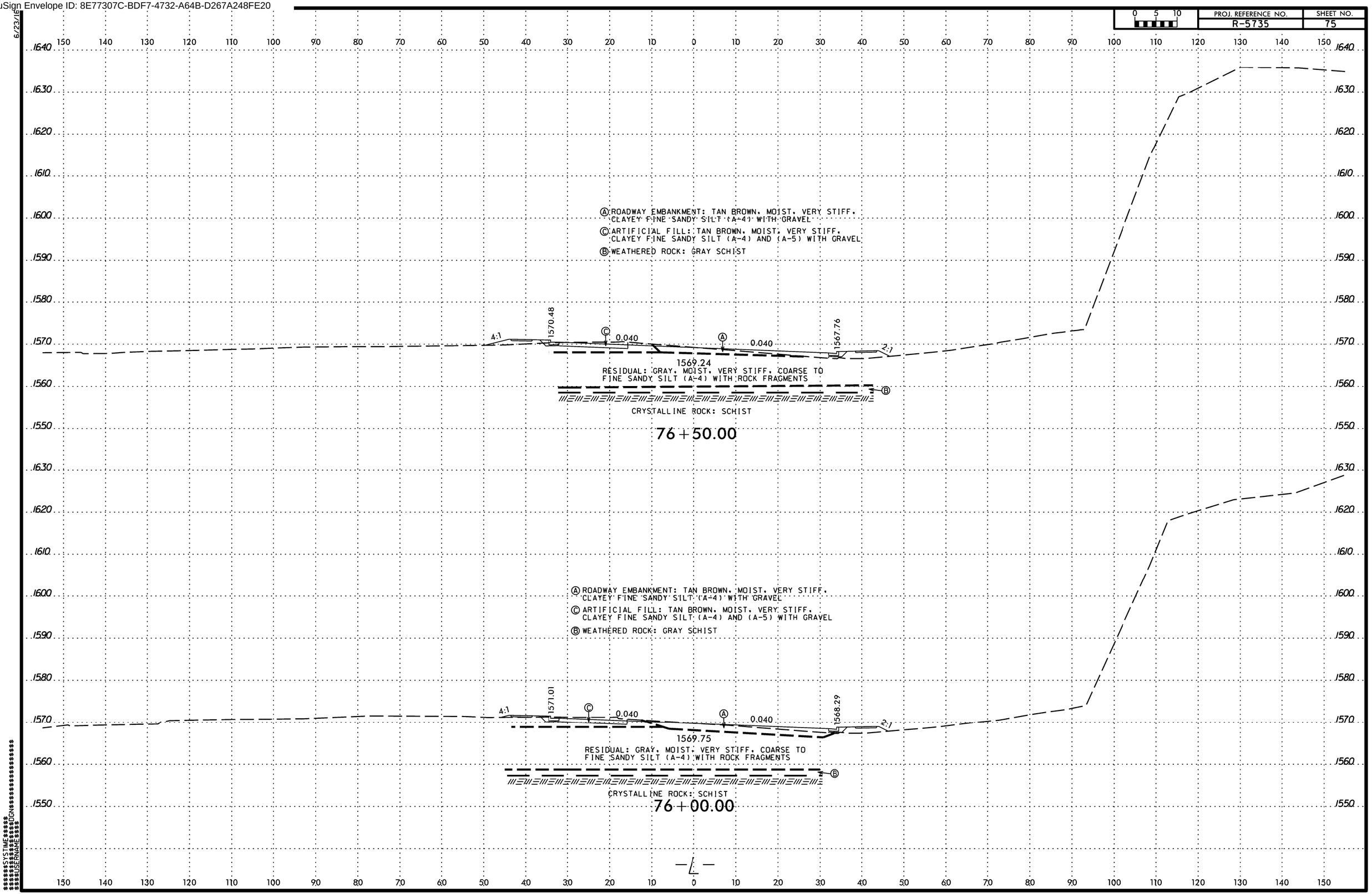
RESIDUAL: GRAY, DRY, VERY DENSE, TO MEDIUM DENSE, SILTY COARSE TO FINE SAND (A-2-4) WITH ROCK FRAGMENTS

75+50.00

—L—

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	75



$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	76

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1660
1650
1640
1630
1620
1610
1600
1590
1580
1570
1560
1550

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: TAN BROWN, MOIST, VERY STIFF, CLAYEY FINE SANDY SILT (A-4) AND (A-5) WITH GRAVEL

Ⓑ WEATHERED ROCK: GRAY SCHIST

4:1
1569.96
Ⓒ
0.040
Ⓐ
0.040
1567.24
2:1
1568.71
RESIDUAL: GRAY, MOIST, VERY STIFF, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS
Ⓑ
CRYSTALLINE ROCK: SCHIST

77+00.00

$$$$$$SYSTIMES$$$$$$
$$$$$$$$$$$$$$$$DGNS$$$$$$$$$$$$$$$$$$
$$$$USERNAMES$$$$

6/23/16

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	30	200	% MOISTURE	% ORGANIC
SS-18	31 LT	77+53	1.0-2.5	A-2-4(0)	35	5	27	26	30	17	61	50	34	13.1	-

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: TAN BROWN, MOIST, VERY STIFF, CLAYEY FINE SANDY SILT (A-4) AND (A-5) WITH GRAVEL

Ⓖ ARTIFICIAL FILL: TAN BROWN, MOIST, MEDIUM DENSE, SILTY COARSE TO FINE SAND (A-2-4)

Ⓕ RESIDUAL: GRAY, MOIST, VERY STIFF, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

Ⓑ WEATHERED ROCK: GRAY SCHIST

SS-18

B-28
77+53

1569.07

1569.43

0.018

0.040

0.040

1566.71

2:1

1568.16

30

25

60/0.1

100/0.8

BT
DRY
02/17

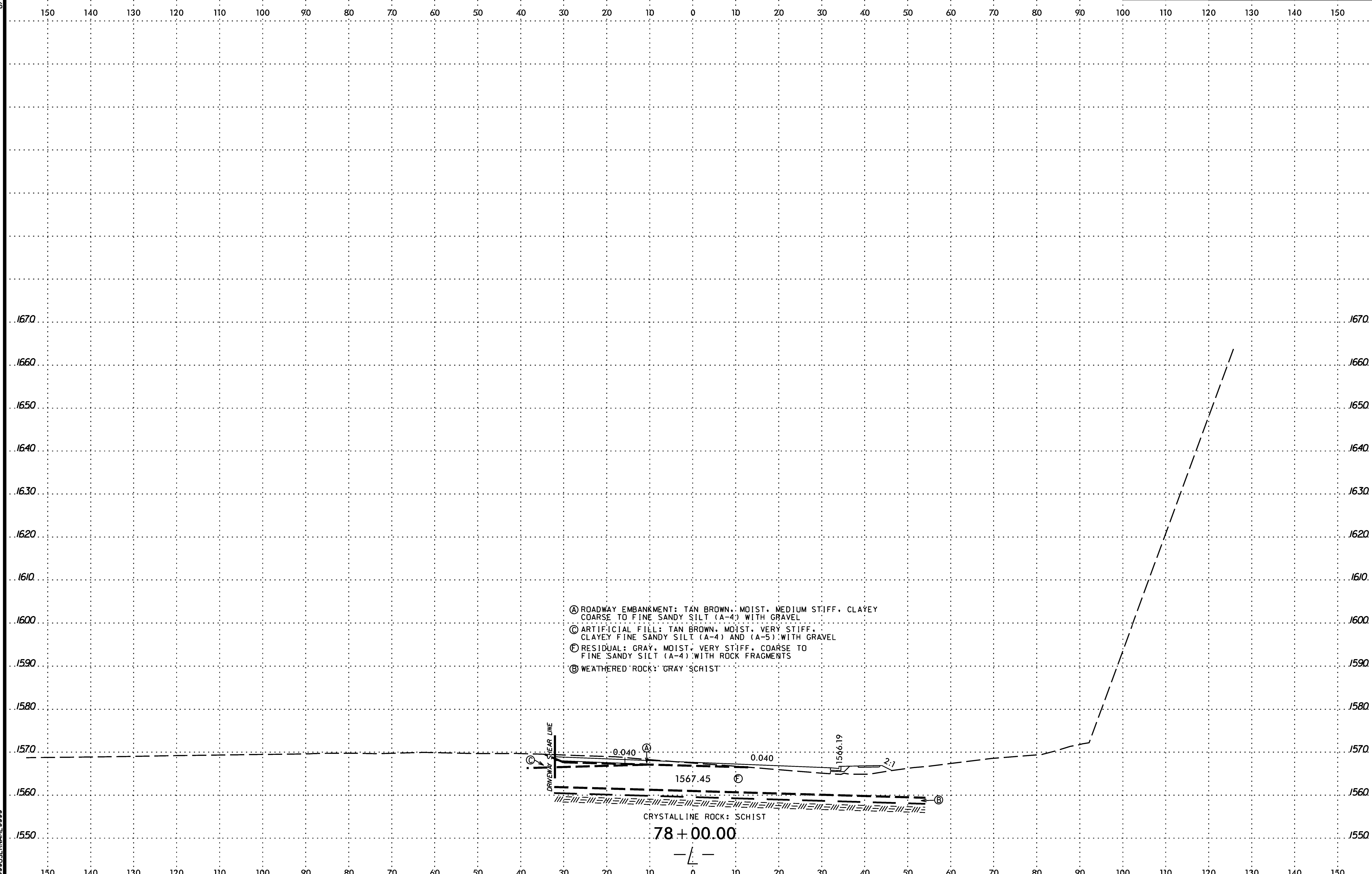
CRYSTALLINE ROCK: SCHIST

77+50.00

$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DDN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5735	78



$$$$$$SYSTIME$$$$
$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	79

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

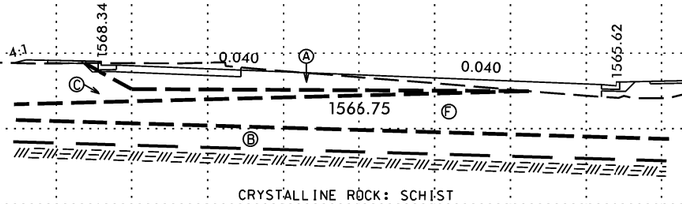
1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550 1540

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: TAN BROWN, MOIST, VERY STIFF, CLAYEY FINE SANDY SILT (A-4) AND (A-5) WITH GRAVEL

Ⓕ RESIDUAL: GRAY, MOIST, VERY STIFF, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

Ⓑ WEATHERED ROCK: GRAY SCHIST



CRYSTALLINE ROCK: SCHIST

78+50.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

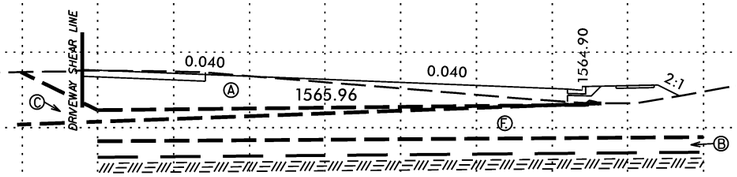
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	80

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL
Ⓒ ARTIFICIAL FILL: GRAY TO ORANGE BROWN, MOIST, SOFT TO MEDIUM STIFF, FINE SANDY SILT (A-4) WITH GRAVEL
Ⓕ RESIDUAL: GRAY, MOIST, HARD, COARSE TO FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS
Ⓑ WEATHERED ROCK: GRAY SCHIST



CRYSTALLINE ROCK: SCHIST

79+00.00

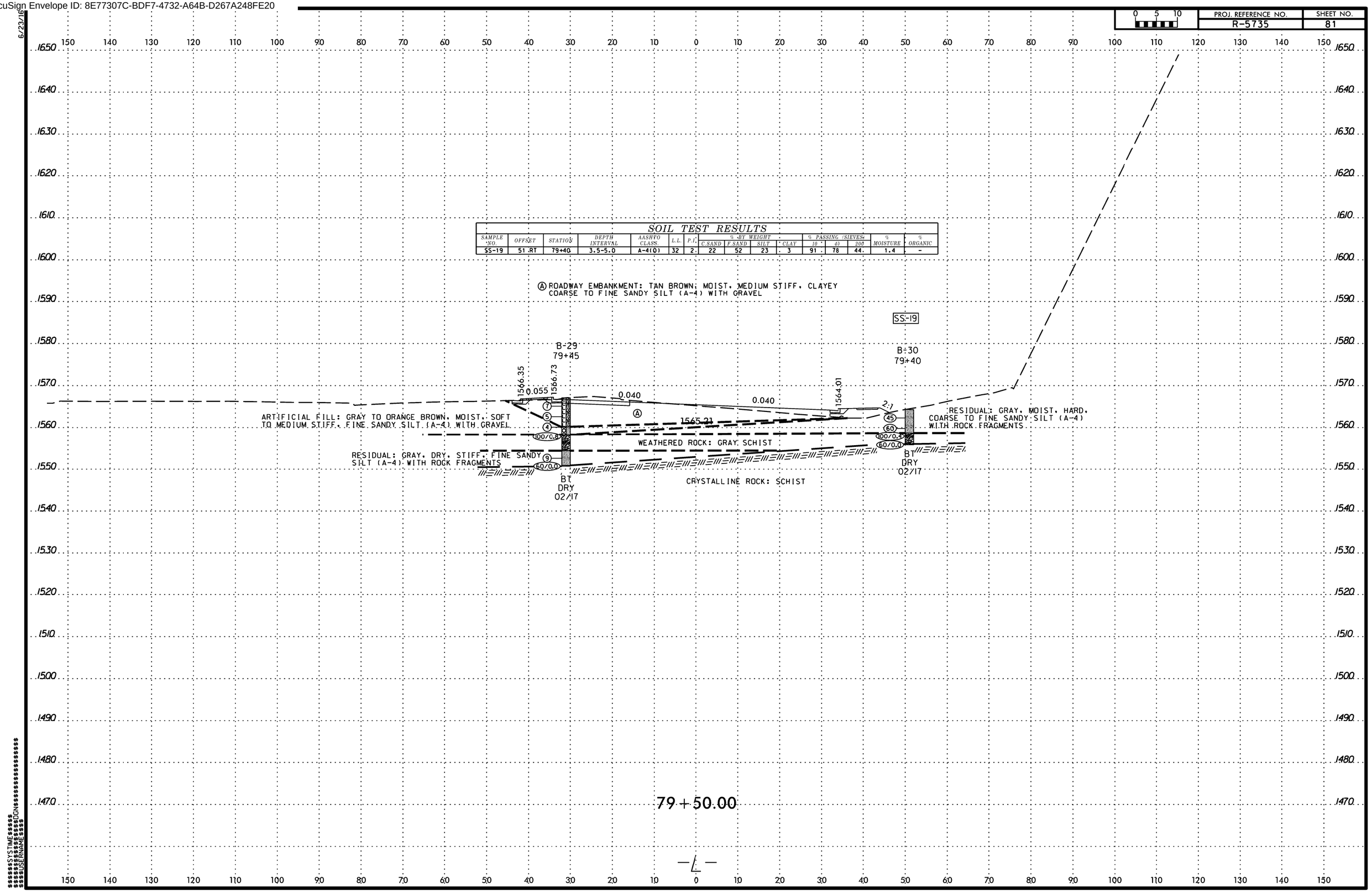
$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	81

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-19	51 RT	79+40	3.5-5.0	A-4(0)	32	2	22	52	23	3	91	78	44.	1.4	-



79+50.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	82

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550 1540

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

1565.83 0.016 1565.72 0.040 0.040 1563.00 2:1

Ⓐ 1564.29

RESIDUAL: GRAY, DRY, STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

CRYSTALLINE ROCK: SCHIST

80+00.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-5735	83

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550 1540

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-4) WITH GRAVEL

DRIVEWAY SHEAR LINE

0.040 0.040

Ⓐ 1563.24

1561.98

2:1

RESIDUAL: GRAY, MOIST TO DRY, STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

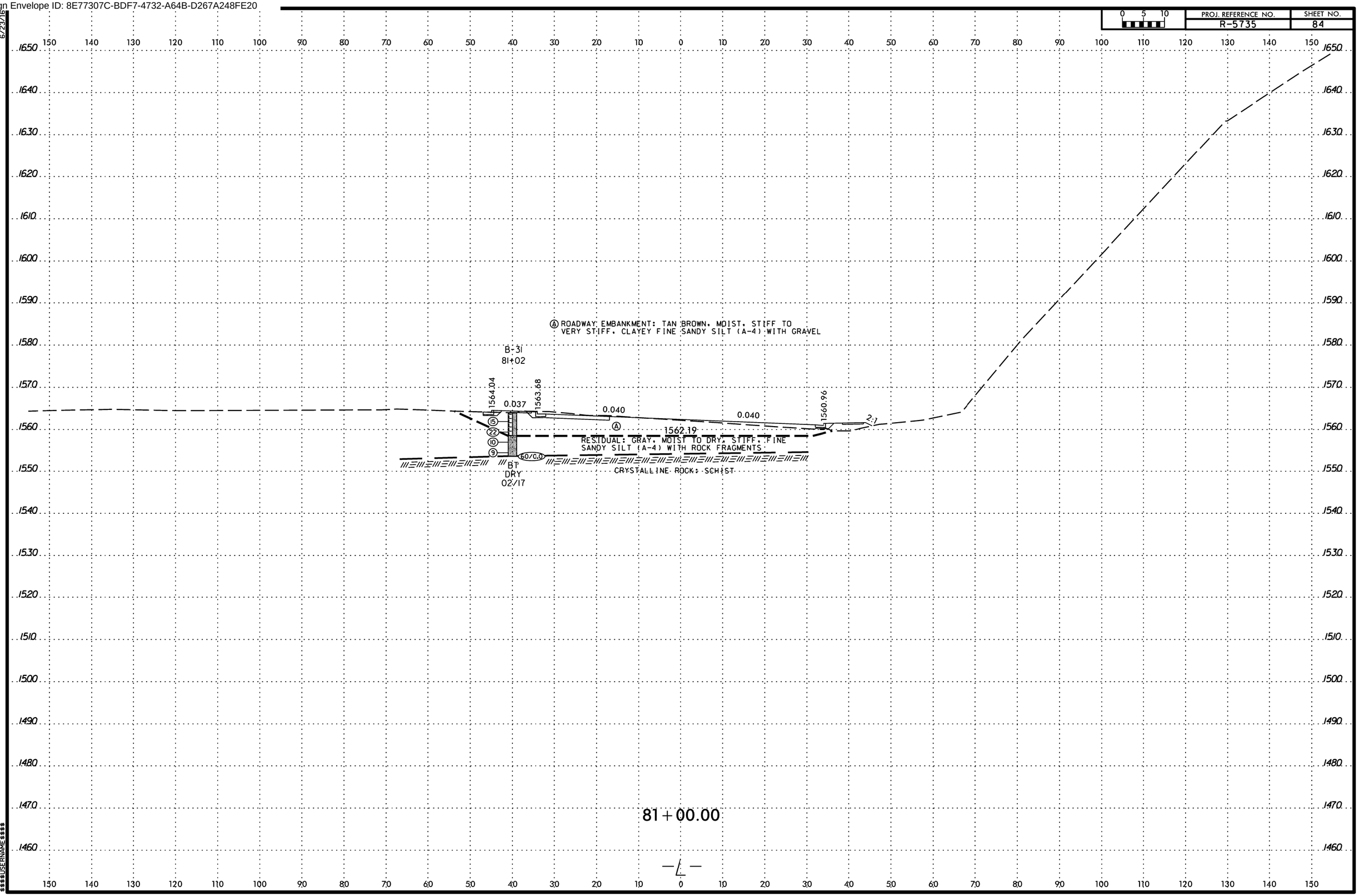
CRYSTALLINE ROCK: SCHIST

80+50.00

$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

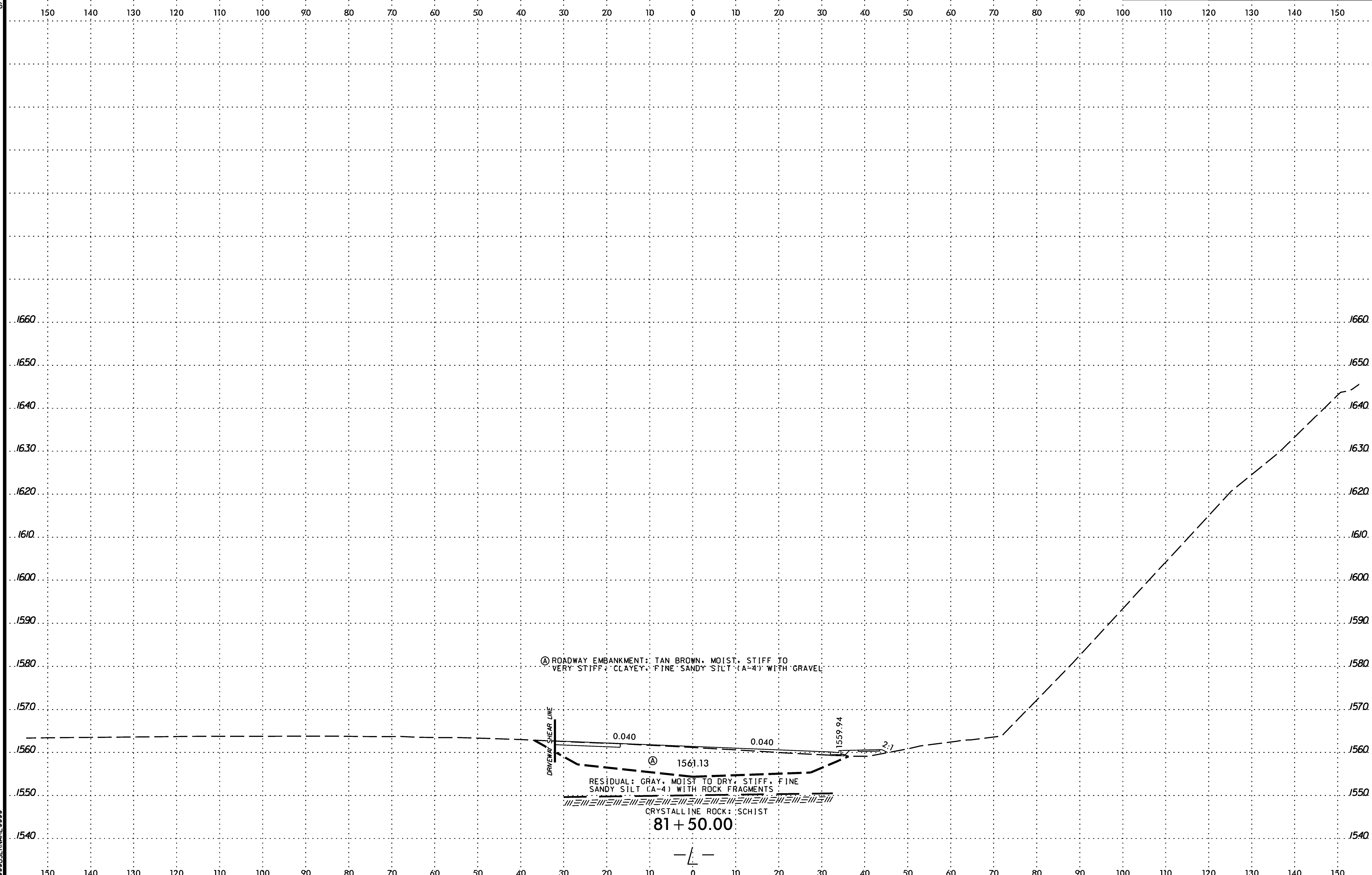
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	84



$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5735	85



$$$$$$SYSTIME$$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	86

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1660
1650
1640
1630
1620
1610
1600
1590
1580
1570
1560
1550
1540

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, STIFF TO VERY STIFF, CLAYEY, FINE SANDY SILT (A-4) WITH GRAVEL

Ⓕ RESIDUAL: GRAY, MOIST TO DRY, STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

4:1
1561.64
0.040
0.040
1558.92
2:1
Ⓐ 1560.01
Ⓕ
CRYSTALLINE ROCK: SCHIST

82+00.00
—L—

$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DDN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	87

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1660
1650
1640
1630
1620
1610
1600
1590
1580
1570
1560
1550
1540

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, STIFF TO SOFT, CLAYEY FINE SANDY SILT (A-4) WITH GRAVEL

Ⓕ RESIDUAL: GRAY, MOIST TO DRY, STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

4:1
1560.19
0.028
0.028
1558.32
2:1
1558.89
Ⓐ
Ⓕ
WEATHERED ROCK: GRAY SCHIST

82+50.00

$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	88

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1660
1650
1640
1630
1620
1610
1600
1590
1580
1570
1560
1550
1540

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST TO WET, VERY STIFF TO SOFT, CLAYEY FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL

1558.76
0.002
1558.74
0.015
0.020
1557.57
2:1
1557.83
Ⓐ

ARTIFICIAL FILL: REDDISH BROWN, MOIST TO WET, VERY STIFF TO SOFT, CLAYEY FINE SANDY SILT (A-4) WITH GRAVEL

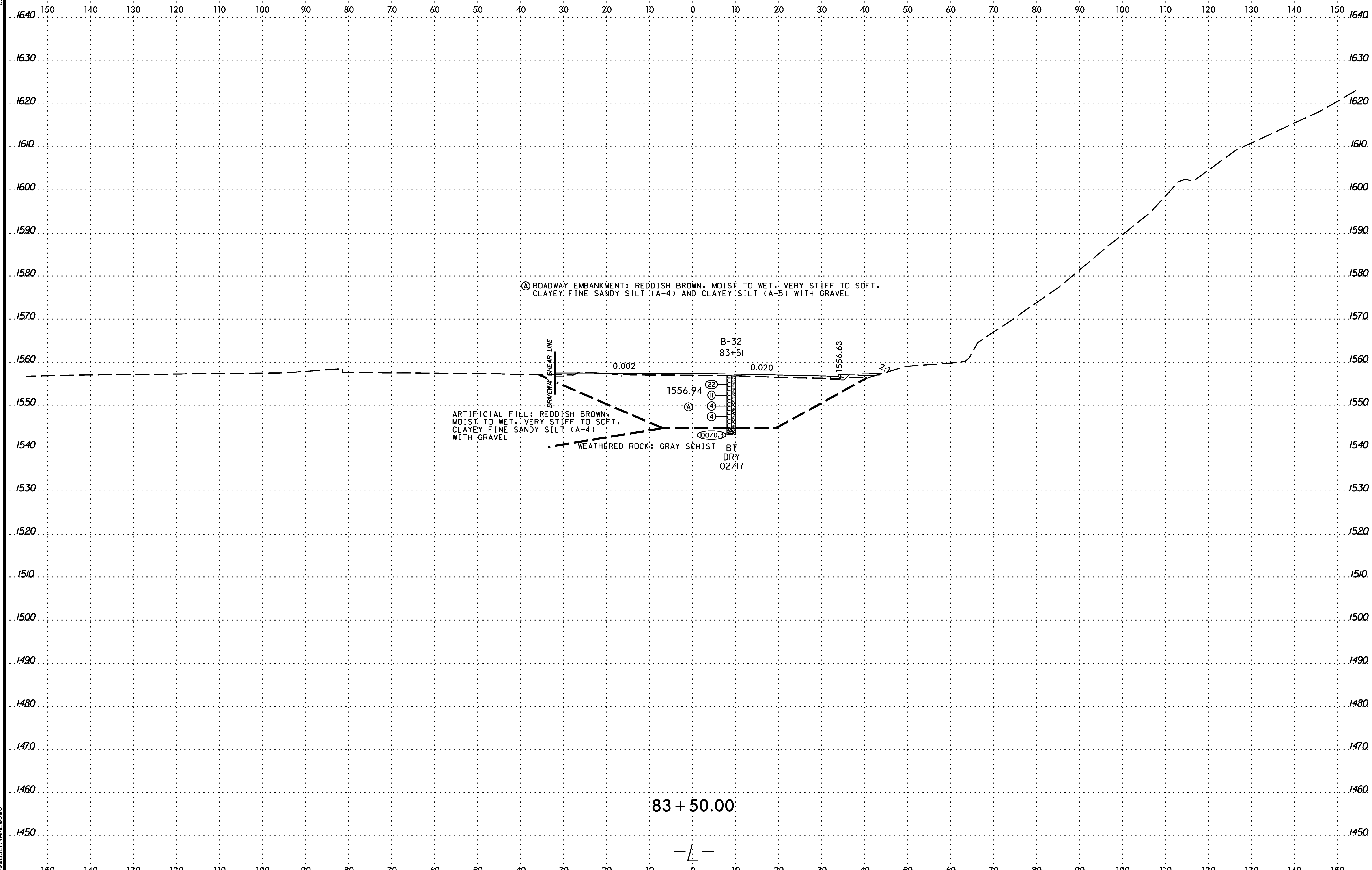
WEATHERED ROCK: GRAY SCHIST

83+00.00

—℄—

$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
R-5735	89



6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-5735	90

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1640
1630
1620
1610
1600
1590
1580
1570
1560
1550
1540
1530

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST TO WET, VERY STIFF TO SOFT, CLAYEY FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL

1555.86
0.034
1556.10
0.011
0.011
1556.09
4:1
1556.08 Ⓐ

ARTIFICIAL FILL: REDDISH BROWN, MOIST TO WET, VERY STIFF TO SOFT, CLAYEY FINE SANDY SILT (A-4) WITH GRAVEL

RESIDUAL: GRAY TO REDDISH BROWN, MOIST, VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

WEATHERED ROCK: GRAY SCHIST

84+00.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	91

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1640
1630
1620
1610
1600
1590
1580
1570
1560
1550
1540
1530

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST TO WET, VERY STIFF TO SOFT, CLAYEY FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL

DRIVEWAY

SHEAR LINE

0.020

0.001

1555.78

4:1

Ⓐ 1555.37

ARTIFICIAL FILL: TAN BROWN TO GRAYISH BROWN TO GRAY, DRY TO SATURATED, MEDIUM STIFF TO VERY STIFF, CLAYEY FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

RESIDUAL: GRAY TO REDDISH BROWN, MOIST, VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

84+50.00

$$$$$$$$SYSTIME$$$$$$

$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	92

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1640
1630
1620
1610
1600
1590
1580
1570
1560
1550
1540
1530

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, VERY STIFF TO STIFF, CLAYEY FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL

1553.92
0.060
1554.34
0.020
0.014
1555.61
2:1
Ⓐ
1554.76

ARTIFICIAL FILL: TAN BROWN TO GRAYISH BROWN TO GRAY, DRY TO SATURATED, SOFT TO VERY STIFF, CLAYEY FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORANICS

RESIDUAL: GRAY TO REDDISH BROWN, MOIST, VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

85+00.00

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5735	93

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1620 1610 1600 1590 1580 1570 1560 1550 1540 1530 1520 1510 1500 1490 1480 1470 1460 1450

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 270	% MOISTURE	% ORGANIC
SS-20	44 LT	85+70	13.5-15.0	A-4(0)	31	4	14	45	25	16	83	77	44	30.8	-

SS-20

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, VERY STIFF TO STIFF, CLAYEY FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: TAN BROWN TO GRAYISH BROWN TO GRAY, DRY TO SATURATED, SOFT TO VERY STIFF, CLAYEY FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

B-33
85+70

1553.01
1553.47
1555.58
0.067
0.027
0.027
2:1
1554.17
Ⓐ
Ⓒ
22
12
30
6
4
23
02/12
BT

RESIDUAL: GRAY TO REDDISH BROWN, MOIST, VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

85+50.00

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	94

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1590 1580 1570 1560 1550 1540 1530

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, VERY STIFF TO STIFF, CLAYEY FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL

DRIVEWAY SHEAR LINE

0.030

0.030

1553.34 Ⓐ

DRIVEWAY SHEAR LINE

ARTIFICIAL FILL: TAN BROWN TO GRAYISH BROWN TO GRAY, DRY TO SATURATED, SOFT TO VERY STIFF, CLAYEY FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

RESIDUAL: GRAY TO REDDISH BROWN, MOIST, VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

86 + 50.00

1610 1600 1590 1580 1570 1560 1550 1540 1530

Ⓐ ROADWAY EMBANKMENT: REDDISH BROWN, MOIST, VERY STIFF TO STIFF, CLAYEY FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5) WITH GRAVEL

1552.34

0.072

1552.85

0.030

0.030

1553.68 Ⓐ

DRIVEWAY SHEAR LINE

ARTIFICIAL FILL: TAN BROWN TO GRAYISH BROWN TO GRAY, DRY TO SATURATED, SOFT TO VERY STIFF, CLAYEY FINE SANDY SILT (A-4) WITH GRAVEL AND TRACE ORGANICS

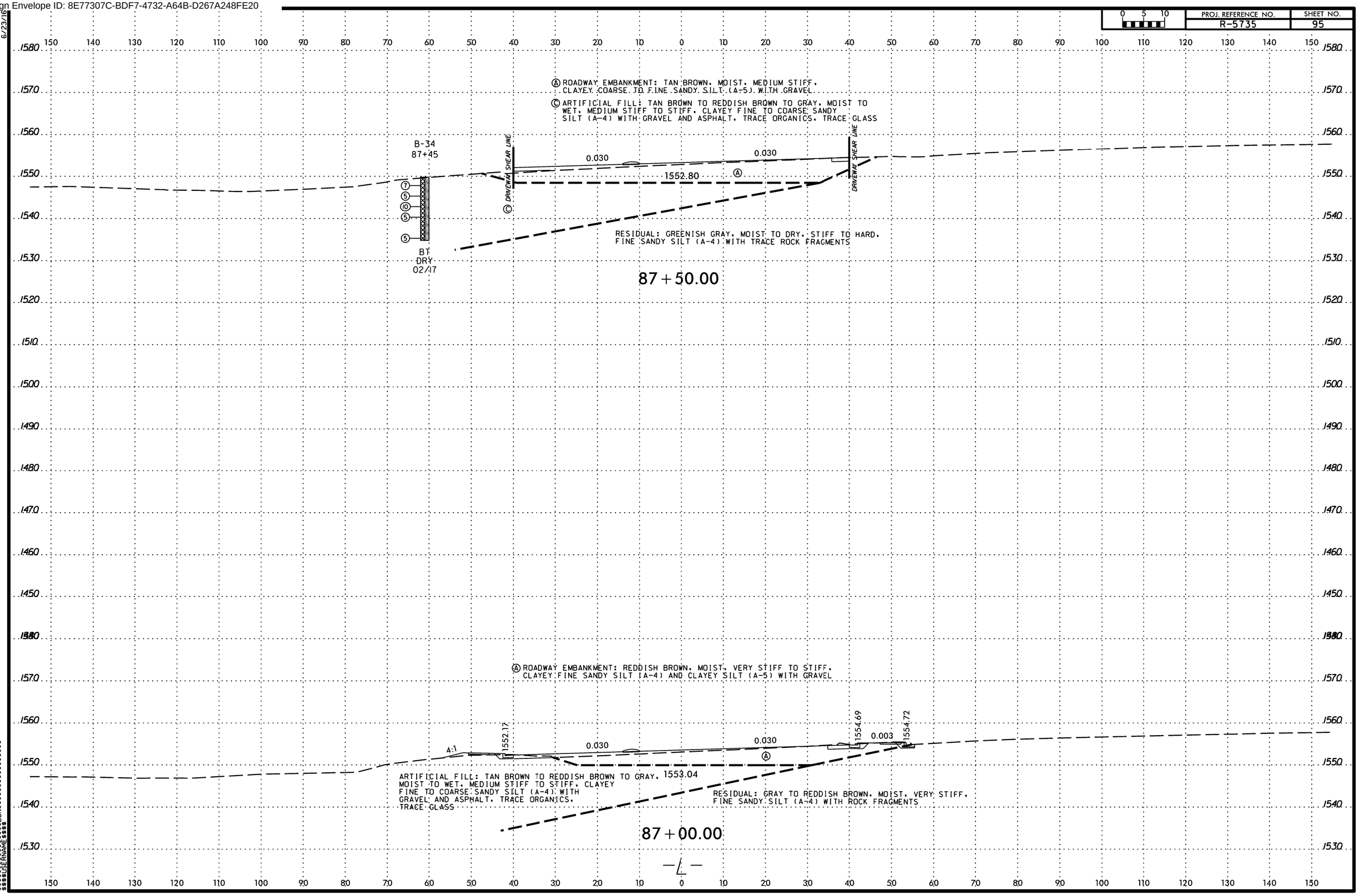
RESIDUAL: GRAY TO REDDISH BROWN, MOIST, VERY STIFF, FINE SANDY SILT (A-4) WITH ROCK FRAGMENTS

86 + 00.00

$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	95



6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	96

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1580 1570 1560 1550 1540

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-5) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: TAN BROWN TO REDDISH BROWN TO GRAY, MOIST TO WET, MEDIUM STIFF TO STIFF, CLAYEY FINE TO COARSE SANDY SILT (A-4) WITH GRAVEL AND ASPHALT, TRACE ORGANICS, TRACE GLASS

1553.66

4:1

0.030 0.030

1552.82 Ⓐ

Ⓒ

DRIVEWAY SHEAR LINE

RESIDUAL: GREENISH GRAY, MOIST TO DRY, STIFF TO HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

89 + 00.00

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-5) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: TAN BROWN TO REDDISH BROWN TO GRAY, MOIST TO WET, MEDIUM STIFF TO STIFF, CLAYEY FINE TO COARSE SANDY SILT (A-4) WITH GRAVEL AND ASPHALT, TRACE ORGANICS, TRACE GLASS

4:1

1551.40

0.030 0.030

1553.12 Ⓐ

Ⓒ

1553.92

4:1

RESIDUAL: GREENISH GRAY, MOIST TO DRY, STIFF TO HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

88 + 50.00

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-5) WITH GRAVEL

Ⓒ ARTIFICIAL FILL: TAN BROWN TO REDDISH BROWN TO GRAY, MOIST TO WET, MEDIUM STIFF TO STIFF, CLAYEY FINE TO COARSE SANDY SILT (A-4) WITH GRAVEL AND ASPHALT, TRACE ORGANICS, TRACE GLASS

DRIVEWAY SHEAR LINE

0.030 0.030

1552.81 Ⓐ

Ⓒ

DRIVEWAY SHEAR LINE

RESIDUAL: GREENISH GRAY, MOIST TO DRY, STIFF TO HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

88 + 00.00

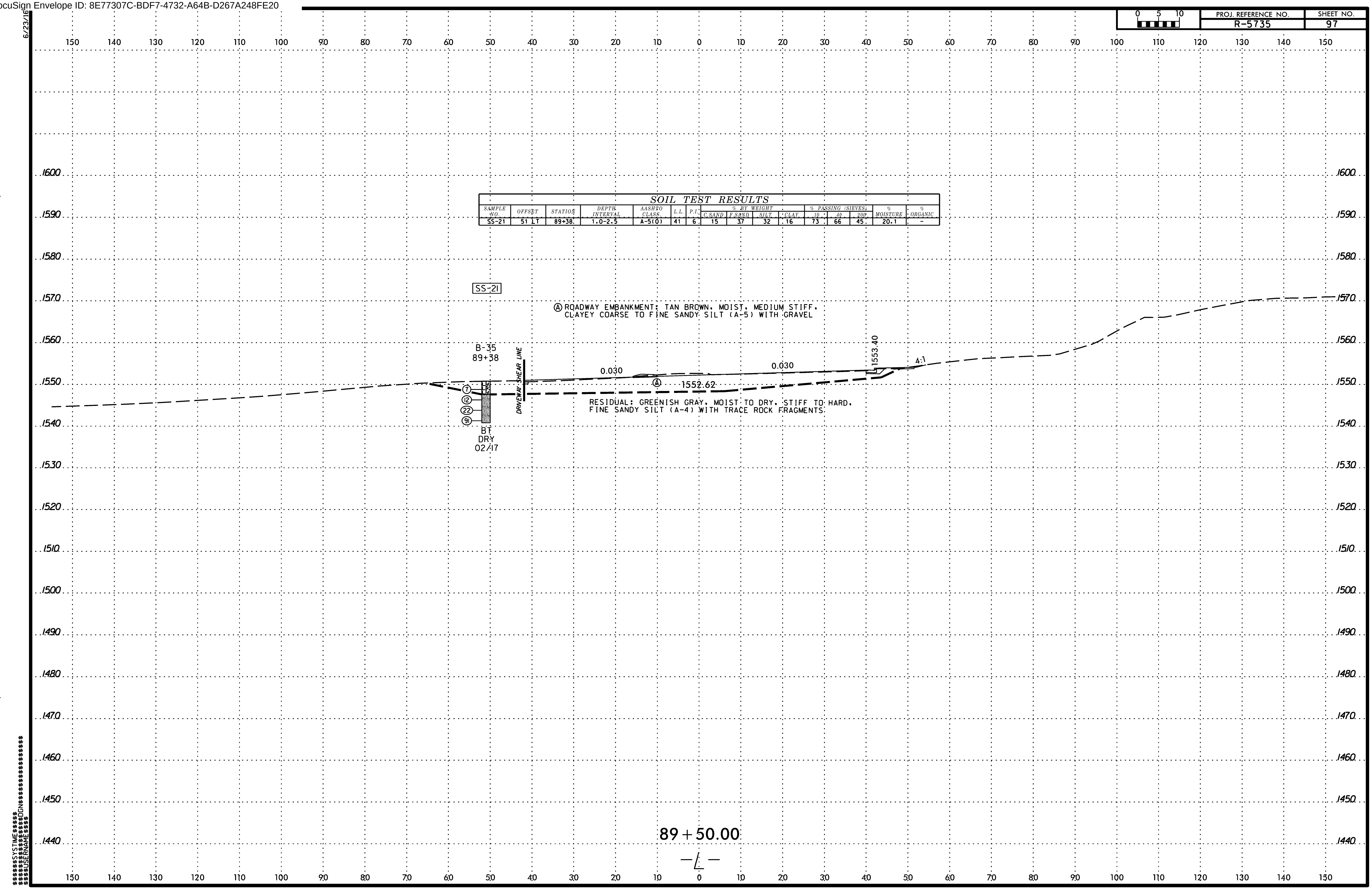
1530

$$$$$$$$SYSTIME$$$$$$

$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
R-5735	97



6/23/16
0 5 10
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
1600 1590 1580 1570 1560 1550 1540 1530 1520 1510 1500 1490 1480 1470 1460 1450 1440
SS-21
Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-5) WITH GRAVEL
B-35
89+38
DRIVEWAY SHEAR LINE
0.030
0.030
1553.40
4:1
Ⓐ
1552.62
7
12
22
91
RESIDUAL: GREENISH GRAY, MOIST TO DRY, STIFF TO HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS
BT
DRY
02/17
89+50.00
-L-
$$$$$SYSTIME$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

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-21	51 LT	89+38	1.0-2.5	A-5(0)	41	6	15	37	32	16	73	66	45	20.1	-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	98

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1560 1550 1540

1550.12

92 + 00.00

1560 1550 1540

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-5) WITH GRAVEL

DRIVEWAY SHEAR LINE

0.030

0.024

1551.05 Ⓐ

DRIVEWAY SHEAR LINE

RESIDUAL: GREENISH GRAY, MOIST TO DRY, STIFF TO HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

91 + 50.00

1570 1560 1550 1540

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-5) WITH GRAVEL

DRIVEWAY SHEAR LINE

0.030

0.030

1551.33 Ⓐ

DRIVEWAY SHEAR LINE

RESIDUAL: GREENISH GRAY, MOIST TO DRY, STIFF TO HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

91 + 00.00

1570 1560 1550 1540

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-5) WITH GRAVEL

DRIVEWAY SHEAR LINE

0.030

0.030

1552.07 Ⓐ

DRIVEWAY SHEAR LINE

RESIDUAL: GREENISH GRAY, MOIST TO DRY, STIFF TO HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

90 + 50.00

1570 1560 1550 1540

Ⓐ ROADWAY EMBANKMENT: TAN BROWN, MOIST, MEDIUM STIFF, CLAYEY COARSE TO FINE SANDY SILT (A-5) WITH GRAVEL

4:1

1550.44

0.030

0.030

1553.14

4:1

1552.38 Ⓐ

RESIDUAL: GREENISH GRAY, MOIST TO DRY, STIFF TO HARD, FINE SANDY SILT (A-4) WITH TRACE ROCK FRAGMENTS

90 + 00.00

1560 1550 1540

$$$$$$$$SYSTIME$$$$$

$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

$$$$$USERNAME$$$$

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5735	99

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1570
1560
1550
1540

1549.62
92 + 50.00
—℄—

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R–5735	99A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
BORE LOGS

REFERENCE: R–5735

PROJECT: 50193

ESP
ESP ASSOCIATES, PA
7011 ALBERT PICK RD
SUITE E
GREENSBORO, NC 27409
FIRM # C-0587
WWW.ESPASSOCIATES.COM

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-01	**STATION** 23+10	**OFFSET** 36 ft RT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,688.0 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 519,634	**EASTING** 488,471	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/31/17	**COMP. DATE** 01/31/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1690										ELEV. (ft) DEPTH (ft)
										1,688.0 GROUND SURFACE 0.0
	1,687.0	1.0	18	14	8	22		D		**ROADWAY EMBANKMENT** 6.5" Asphalt with Gravel Base over Reddish Brown, Very Stiff, Fine Sandy SILT (A-4) with Gravel
1685	1,684.5	3.5	8	20	30	50		D		1,684.2 3.8
	1,682.0	6.0	8	17	19	36		D		**RESIDUAL** Tan Brown to Gray, Very Stiff to Hard, Fine Sandy SILT (A-4) with Rock Fragment, Manganese Seams, and Trace Mica
1680	1,679.5	8.5	8	11	13	24	SS-1	20%		
1675	1,674.5	13.5	25	41	45	86		D		1,673.0 15.0
										Boring Terminated at Elevation 1,673.0 ft In Residual Soil: Sandy SILT (A-4)
										Cave-In at 10.7'

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-02	**STATION** 24+29	**OFFSET** 119 ft RT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,721.8 ft	**TOTAL DEPTH** 19.3 ft	**NORTHING** 519,631	**EASTING** 488,612	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE GEO7822 Geoprobe 7822DT 86% 12/10/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER T. Williams	**START DATE** 02/03/17	**COMP. DATE** 02/03/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1725										
										1,721.8 GROUND SURFACE 0.0
	1,720.8	1.0	2	4	12	16		D		**RESIDUAL** Reddish Brown to Tan Brown, Medium Dense to Very Dense, Coarse to Fine Sandy SILT (A-4) with Rock Fragments
1720	1,718.3	3.5	5	7	7	14		D		
	1,715.8	6.0	5	9	8	17	SS-2	13%		
1715	1,713.3	8.5	30	38	39	77		D		
1710	1,708.3	13.5	8	9	12	21		D		
1705	1,703.3	18.5	76	24/0.3		100/0.8				1,704.5 17.3 **WEATHERED ROCK** 1,702.5 Tannish Brown SCHIST 19.3
										Boring Terminated by Auger Refusal at Elevation 1,702.5 ft In Weathered Rock: SCHIST
										Cave-In at 15.4'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)			**GROUND WTR (ft)**
BORING NO. B-03	**STATION** 27+66	**OFFSET** 2 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,690.0 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 519,885	**EASTING** 488,847	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER A. Bisching	**START DATE** 02/01/17	**COMP. DATE** 02/01/17	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
1690										1,690.0 GROUND SURFACE	0.0
	1,689.0	1.0	10	18	25	43		M		**ROADWAY EMBANKMENT** Reddish Brown, Hard, Fine Sandy SILT (A-4) with Gravel and Trace Organics (Roots)	
	1,686.5	3.5								1,688.2	1.8
1685			7	10	20	30		M		**RESIDUAL** Tannish Brown to Greenish Gray, Hard to Very Stiff, Fine Sandy SILT (A-4) with Manganese Seams and Trace Rock Fragments	
	1,684.0	6.0								1,684.3	5.7
			22	78/0.4		100/0.9				1,682.6	7.4
	1,681.5	8.5								**WEATHERED ROCK** Gray SCHIST	
1680			20	21	24	45		M		1,680.0	10.0
										RESIDUAL Tan Brown to Greenish Gray, Hard, Fine Sandy SILT (A-4) with Manganese Seams	
										Boring Terminated at Elevation 1,680.0 ft In Residual Soil: Sandy SILT (A-4)	
										Cave-In at 7.7'	

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)			**GROUND WTR (ft)**
BORING NO. B-04	**STATION** 29+95	**OFFSET** 67 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,687.8 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 520,016	**EASTING** 489,051	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER A. Bisching	**START DATE** 02/02/17	**COMP. DATE** 02/02/17	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
1690										1,687.8 GROUND SURFACE	0.0
	1,686.8	1.0	3	4	4	8		M		**ARTIFICIAL FILL** Reddish Brown, Stiff to Soft, Coarse to Fine Sandy SILT (A-4) with Gravel and Trace Debris (Plastic)	
1685											
	1,684.3	3.5	3	2	2	4		M			
	1,681.8	6.0	1	2	2	4		W			
1680											
	1,679.3	8.5	2	2	4	6		M		1,675.1	12.7
1675										**ARTIFICIAL FILL** Tan Brown, Soft to Medium Stiff, Clayey SILT (A-5), Trace Sand and Gravel, Slightly Plastic	
	1,674.3	13.5	1	2	2	4	SS-3	25%			
1670											
	1,669.3	18.5	1	2	3	5		M		1,667.8	20.0
										Boring Terminated at Elevation 1,667.8 ft In Artificial Fill: Clayey SILT (A-5)	
										Cave-In at 19.4'	

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-05	**STATION** 32+01	**OFFSET** 26 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 37.6
COLLAR ELEV. 1,681.7 ft	**TOTAL DEPTH** 39.2 ft	**NORTHING** 520,012	**EASTING** 489,265	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/01/17	**COMP. DATE** 02/01/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
1685										
										1,681.7 GROUND SURFACE 0.0
1680	1,680.7	1.0								**ROADWAY EMBANKMENT**
	1,678.2	3.5	12	8	7	15		W		6.5" Asphalt over Tan Brown, Stiff to Very Stiff, Clayey SILT (A-5) with Gravel
			8	7	4	11		D		1,678.5 3.2
1675	1,675.7	6.0	16	14	14	28		M		**RESIDUAL**
	1,673.2	8.5	7	7	12	19		M		Red to Greenish Gray, Stiff to Hard, Coarse to Fine Sandy SILT (A-4) with Rock Fragments, Manganese Seams and Trace Clay Seams - Saprolitic
1670										Note: Abundent Rock Fragments and/or Boulders at 13.2'
	1,668.2	13.5	4	5	8	13	SS-4	34%		
1665	1,663.2	18.5	9	13	16	29		M		
1660	1,658.2	23.5	13	26	48	74		M		
1655										1,654.5 27.2
	1,653.2	28.5	42	58/0.4		100/0.9				**WEATHERED ROCK**
1650										Greenish Gray SCHIST
	1,648.2	33.5	18	20	25	45		D		1,649.8 31.9
1645										**RESIDUAL**
	1,643.2	38.5	60	40/0.2		100/0.7				Greenish Gray, Hard, Fine to Coarse Sandy SILT (A-4) with Rock Fragments and Manganese Seams
										1,643.9 37.8
										WEATHERED ROCK
										Greenish Gray SCHIST
										1,642.5 39.2
										Boring Terminated at Elevation 1,642.5 ft In Weathered Rock: SCHIST
										Cave-In at 29.5'

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-06	**STATION** 32+03	**OFFSET** 26 ft RT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,680.4 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 519,960	**EASTING** 489,274	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/31/17	**COMP. DATE** 01/31/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1685										
										1,680.4 GROUND SURFACE 0.0
1680	1,679.4	1.0								**ROADWAY EMBANKMENT**
			13	6	8	14		M		6" Asphalt over Tan Brown to Brown, Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel
	1,676.9	3.5	7	13	13	26		M		1,677.2 3.2
1675	1,674.4	6.0	25	31	25	56		D		**RESIDUAL**
	1,671.9	8.5	10	15	15	30		D		Greenish Gray, Very Stiff to Hard, Fine Sandy SILT (A-4) with Rock Fragments
										1,670.4 10.0
										Boring Terminated at Elevation 1,670.4 ft In Residual Soil: Sandy SILT (A-4)
										Cave-In at 7.2'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-07	**STATION** 33+43	**OFFSET** 27 ft RT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,674.6 ft	**TOTAL DEPTH** 11.3 ft	**NORTHING** 519,978	**EASTING** 489,413	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/31/17	**COMP. DATE** 01/31/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
1675												
										GROUND SURFACE	1,674.6	0.0
	1,673.6	1.0	8	8	8	16		M		**ROADWAY EMBANKMENT** 6" Asphalt over Dark Brown to Reddish		
	1,671.1	3.5								Brown, Very Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel	1,671.4	3.2
1670			8	21	19	40	SS-5	23%		**RESIDUAL**		
	1,668.6	6.0								Gray, Hard, Fine Sandy SILT (A-4) with Rock Fragments - Saprolitic		
			9	35	51	86		M			1,666.5	8.1
	1,666.1	8.5	100/0.2			100/0.2				**WEATHERED ROCK** Gray SCHIST		
1665											1,663.3	11.3
	1,664.1	10.5	19	81/0.3		100/0.8				Boring Terminated at Elevation 1,663.3 ft In Weathered Rock: SCHIST		
										Cave-In at 9.8'		

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-08	**STATION** 33+45	**OFFSET** 70 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,666.1 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 520,075	**EASTING** 489,402	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/02/17	**COMP. DATE** 02/02/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
1670												
										GROUND SURFACE	1,666.1	0.0
1665	1,665.1	1.0	2	2	2	4	SS-6	18%		**ARTIFICIAL FILL** 2" of Asphalt over Reddish Brown, Soft to Medium Stiff, Coarse to Fine Sandy Clayey SILT (A-4) with Gravel and Trace Debris (Plastic)	1,660.4	5.7
	1,662.6	3.5	1	1	2	3		M		**RESIDUAL** Greenish Gray, Stiff to Very Stiff, Fine Sandy SILT (A-4) with Rock Fragments and Manganese Seams		
1660	1,660.1	6.0	5	7	7	14		M			1,656.1	10.0
	1,657.6	8.5	7	10	14	24		M		Boring Terminated at Elevation 1,656.1 ft In Residual Soil: Sandy SILT (A-4)		
										Cave-In at 8.6'		

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-09	**STATION** 35+76	**OFFSET** 63 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,665.7 ft	**TOTAL DEPTH** 25.0 ft	**NORTHING** 520,099	**EASTING** 489,632	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/02/17	**COMP. DATE** 02/02/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)
1670										
1665										1,665.7 GROUND SURFACE 0.0
	1,664.7	1.0	4	7	12	19		M		**ARTIFICIAL FILL** 1" of Asphalt over Reddish Brown to Tan Brown to Gray, Soft to Very Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel and Trace Organics (Wood)
	1,662.2	3.5	4	3	4	7		M		
1660	1,659.7	6.0	5	4	4	8		M		
	1,657.2	8.5	2	2	2	4		M		
1655										
	1,652.2	13.5	3	2	1	3		M		
1650										1,649.5 16.2
	1,647.2	18.5	WOH	WOH	2	2	SS-7	25%		**ARTIFICIAL FILL** Grayish Brown, Soft, Silty Fine Sandy CLAY (A-6) with Rock Fragments and Trace Organics,Slightly Plastic
1645										1,643.8 21.9
	1,642.2	23.5	8	21	30	51		M		**RESIDUAL** Tan Brown, Hard, Fine Sandy SILT (A-4) Trace Rock Fragments and Manganese Seams
										1,640.7 25.0 Boring Terminated at Elevation 1,640.7 ft In Residual Soil: Sandy SILT (A-4) Cave-In at 20.2'

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-10	**STATION** 38+00	**OFFSET** 50 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,641.6 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 520,117	**EASTING** 489,855	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE GEO7822 Geoprobe 7822DT 86% 12/10/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER C.Hollander	**START DATE** 02/03/17	**COMP. DATE** 02/03/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1645										
										1,641.6 GROUND SURFACE 0.0
1640	1,640.6	1.0	1	2	4	6		M		1,640.3 Topsoil 1.3
	1,638.1	3.5	3	4	6	10		M		**RESIDUAL** Tan Brown to Greenish Gray, Medium Stiff to Very Stiff, Fine Sandy SILT (A-4) with Rock Fragments - Saprolitic
1635	1,635.6	6.0	8	12	16	28		D		
	1,633.1	8.5	4	10	14	24		D		1,631.6 10.0 Boring Terminated at Elevation 1,631.6 ft In Residual Soil: Sandy SILT (A-4) Cave-In at 9.6'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-11	**STATION** 40+05	**OFFSET** 50 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,630.2 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 520,150	**EASTING** 490,054	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE GEO7822 Geoprobe 7822DT 86% 12/10/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER T. Wiliams	**START DATE** 02/03/17	**COMP. DATE** 02/03/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
1635											
										1,630.2	GROUND SURFACE 0.0
1630	1,629.2	1.0	3	2	2	4		M		1,629.4	Topsoil 0.8
	1,626.7	3.5	1	2	2	4	SS-8	37%		**ARTIFICIAL FILL** Tan Brown to Gray to Orange, Soft to Medium Stiff, Fine Sandy Clayey SILT (A-5)	
1625	1,624.2	6.0	1	1	1	2		W		1,624.8	5.4
	1,621.7	8.5	1	2	3	5		M		**RESIDUAL** Tan Brown to Greenish Gray, Soft to Hard, Fine Sandy SILT (A-4) with Rock Fragments, Manganese Seams, and Trace Clay	
1620											
	1,616.7	13.5	12	20	20	40		D		1,615.2	15.0
										Boring Terminated at Elevation 1,615.2 ft In Residual Soil: Sandy SILT (A-4)	
										Cave-In at 14.7'	

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-12	**STATION** 42+95	**OFFSET** 76 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 20.6
COLLAR ELEV. 1,634.2 ft	**TOTAL DEPTH** 30.0 ft	**NORTHING** 520,247	**EASTING** 490,322	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE GEO7822 Geoprobe 7822DT 86% 12/10/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER T. Williams	**START DATE** 02/03/17	**COMP. DATE** 02/03/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1635										
										1,634.2 GROUND SURFACE 0.0
	1,633.2	1.0	4	6	6	12		M		1,633.4 Topsoil 0.8
1630	1,630.7	3.5	6	10	11	21		M		**RESIDUAL** Tan Brown to Greenish Gray to Gray, Stiff to Hard, Coarse to Fine Sandy SILT (A-4), Trace Rock Fragments and Manganese Seams
	1,628.2	6.0	4	6	8	14		M		
1625	1,625.7	8.5	6	12	13	25		M		
	1,620.7	13.5	12	13	21	34		M		
1620	1,615.7	18.5	10	16	10	26		M		
1615	1,610.7	23.5	12	16	26	42		M		
1610	1,605.7	28.5	12	30	43	73		M		1,604.2 30.0
1605										Boring Terminated at Elevation 1,604.2 ft In Residual Soil: Sandy SILT (A-4)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-13	**STATION** 43+92	**OFFSET** 67 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 17.1
COLLAR ELEV. 1,627.7 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 520,268	**EASTING** 490,415	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE GEO7822 Geoprobe 7822DT 86% 12/10/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER T. Williams	**START DATE** 02/03/17	**COMP. DATE** 02/03/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
1630											
										1,627.7 GROUND SURFACE	0.0
	1,626.7	1.0	7	11	8	19		M		1,626.6 Topsoil	1.1
1625	1,624.2	3.5	8	8	6	14		M		**RESIDUAL** Tan Brown to Greenish Gray, Medium Stiff to Hard, Coarse to Fine Sandy SILT (A-4), Trace Rock Fragments and Manganese Seams	
	1,621.7	6.0	4	2	5	7		M		Note: At 13.5' sample, the tan layer in the top 0.3' of sample was saturated, the rest of the sample was moist	
1620	1,619.2	8.5	3	4	5	9		M			
1615	1,614.2	13.5	10	16	22	38		M			
1610	1,609.2	18.5	8	11	14	25		M		1,607.7 Boring Terminated at Elevation 1,607.7 ft In Residual Soil: Sandy SILT (A-4)	20.0

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-14	**STATION** 45+40	**OFFSET** 46 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,617.2 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 520,300	**EASTING** 490,558	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/02/17	**COMP. DATE** 02/02/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1620										
										1,617.2 GROUND SURFACE 0.0
	1,616.2	1.0	1	1	1	2	SS-9	26%		**ARTIFICIAL FILL** Reddish Brown to Dark Brown to Tan Brown, Soft to Stiff , Clayey Coarse to Fine Sandy SILT (A-4) with Gravel, and Trace Organics
1615	1,613.7	3.5	3	4	5	9		M		
	1,611.2	6.0	2	1	2	3		M		
1610	1,608.7	8.5	10	4	3	7		M		
1605	1,603.7	13.5	1	2	3	5		M		1,604.1 13.1 1,602.2 **RESIDUAL** Tan Brown, Medium Stiff, SILT (A-4) with Manganese Seams 15.0 Boring Terminated at Elevation 1,602.2 ft In Residual Soil: Sandy SILT (A-4) Cave-In at 12.6'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-15	**STATION** 47+56	**OFFSET** 47 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 10.7
COLLAR ELEV. 1,607.6 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 520,389	**EASTING** 490,751	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/01/17	**COMP. DATE** 02/01/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
1610										
										1,607.6 GROUND SURFACE 0.0
	1,606.6	1.0								**ROADWAY EMBANKMENT**
1605			5	6	4	10		M		Reddish Brown, Stiff to Soft, Coarse to Fine Sandy SILT (A-4) with Gravel and Trace Organics (Roots)
	1,604.1	3.5								1,604.6 3.0
			2	1	2	3		M		**ARTIFICIAL FILL**
	1,601.6	6.0								Dark Brown to Gray, Soft, Clayey SILT (A-5) with Gravel, Trace Organics, and Trace Fine to Coarse Sand
1600			2	2	1	3		W		
	1,599.1	8.5								
			1	0	2	2	SS-10	34%		
1595										1,595.0 12.6
	1,594.1	13.5								**RESIDUAL**
			7	11	12	23		M		Tan Brown, Very Stiff, SILT (A-4) with Manganese Seams
										1,592.6 15.0
										Boring Terminated at Elevation 1,592.6 ft In Residual Soil: Sandy SILT (A-4)

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-16	**STATION** 49+45	**OFFSET** 71 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 12.7
COLLAR ELEV. 1,608.8 ft	**TOTAL DEPTH** 25.0 ft	**NORTHING** 520,499	**EASTING** 490,902	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/02/17	**COMP. DATE** 02/02/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1610										
										1,608.8 GROUND SURFACE 0.0
	1,607.8	1.0								**ARTIFICIAL FILL**
1605			3	2	2	4		M		I" Asphalt over Reddish Brown, Soft to Medium Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel, and Trace Organics (Roots)
	1,605.3	3.5								1,603.3 5.5
			1	2	1	3		M		Tan Brown, Soft to Medium Stiff, Fine Sandy SILT (A-4) with Gravel and Trace Organics (Wood Fragments)
	1,602.8	6.0								
			2	3	2	5		M		
1600	1,600.3	8.5								
			1	2	1	3		M		
								▽		1,596.7 12.1
1595	1,595.3	13.5								Reddish Brown, Soft, CLAY (A-7-6), Moderately Plastic
			WOH	1	2	3	SS-11	38%		
										1,592.4 Note: Clay is very clean (No Gravel) and it is approximately same depth as 60" sewer pipe (3' away from boring) 16.4
1590	1,590.3	18.5	7	10	11	21		M		**RESIDUAL**
										Greenish Gray, Very Stiff to Stiff, Fine Sandy SILT (A-4) with Rock Fragments, and Manganese Seams
1585	1,585.3	23.5								
			3	5	7	12		M		1,583.8 Note: Blow count at 18.5' influenced by rock fragments, repushed spoon from 20.0' to 20.8' (soft) 25.0
										Boring Terminated at Elevation 1,583.8 ft In Residual Soil: Sandy SILT (A-4)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-17	**STATION** 54+18	**OFFSET** 26 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 6.6
COLLAR ELEV. 1,596.9 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 520,728	**EASTING** 491,310	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/01/17	**COMP. DATE** 02/01/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
1600										
										1,596.9 GROUND SURFACE 0.0
	1,595.9	1.0								**ROADWAY EMBANKMENT**
1595			9	9	7	16		M		Reddish Brown, Very Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel
	1,593.4	3.5								1,594.1 2.8
			6	6	5	11		M		**ARTIFICIAL FILL**
	1,590.9	6.0								Gray to Dark Brown, Stiff, Fine to Coarse Sandy SILT (A-4) with Gravel
1590			3	2	1	3				1,591.2 5.7
	1,588.4	8.5								Wet, Greenish Gray, Soft to Very Stiff, Clayey SILT (A-5) with Gravel, Trace Sand, and Trace Organics
			3	7	10	17		W		1,586.9 10.0
										Boring Terminated at Elevation 1,586.9 ft In Artificial Fill: Clayey SILT (A-5)

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-18	**STATION** 55+89	**OFFSET** 25 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 16.3
COLLAR ELEV. 1,594.7 ft	**TOTAL DEPTH** 24.7 ft	**NORTHING** 520,832	**EASTING** 491,446	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/01/17	**COMP. DATE** 02/01/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1595										1,594.7 GROUND SURFACE 0.0
	1,593.7	1.0								**ROADWAY EMBANKMENT**
			3	10	11	21		M		Reddish Brown to Brown, Very Stiff to Medium Stiff, Clayey Coarse to Fine Sandy SILT (A-4) with Gravel and Asphalt
	1,591.2	3.5								
1590			3	4	4	8	SS-12	19%		
	1,588.7	6.0								
			2	3	2	5		M		1,586.8 7.9
	1,586.2	8.5								**ARTIFICIAL FILL**
1585			WOH	1	1	2		M		Reddish Brown to Gray, Soft, Clayey SILT (A-5) with Gravel and Little Organics
										1,581.6 13.1
	1,581.2	13.5								**RESIDUAL**
1580			2	3	2	5		M		Gray, Medium Stiff to Soft, SILT (A-4) with Rock Fragments, Trace Fine Sand
										1,571.5 23.2
	1,576.2	18.5								**WEATHERED ROCK**
1575			1	2	1	3		M		Gray SCHIST
										1,570.0 24.7
	1,571.2	23.5								Boring Terminated at Elevation 1,570.0 ft In Weathered Rock: SCHIST
1570			12	27	73/0.2	100/0.7		M		

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-19	**STATION** 57+86	**OFFSET** 25 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,591.8 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 520,952	**EASTING** 491,602	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/01/17	**COMP. DATE** 02/01/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
1595											
										1,591.8	0.0
										GROUND SURFACE	
1590	1,590.8	1.0	3	5	5	10		M		1,590.0	1.8
	1,588.3	3.5	10	6	7	13		M		**ROADWAY EMBANKMENT** Tan Brown to Reddish Brown, Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel	
1585	1,585.8	6.0	2	2	2	4		W		**ARTIFICIAL FILL** Red to Dark Brown to Gray, Stiff to Soft, Clayey Coarse to Fine Sandy SILT (A-4) with Gravel	
	1,583.3	8.5	WOH	2	1	3	SS-13	23%			
1580	1,578.3	13.5	1	2	2	4		W		1,578.8	13.0
										RESIDUAL Brown, Soft, Clayey SILT (A-5) with Rock Fragments	
1575	1,573.3	18.5	4	4	6	10		M		1,575.6	16.2
										Tan Brown, Stiff, Fine Sandy SILT (A-4) with Rock Fragments and Manganese Seams - Saprolitic	
										1,571.8	20.0
										Boring Terminated at Elevation 1,571.8 ft In Residual Soil: Sandy SILT (A-4)	
										Cave-In at 16.7'	

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-20	**STATION** 59+53	**OFFSET** 56 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 2.1
COLLAR ELEV. 1,579.4 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 521,079	**EASTING** 491,715	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** Hand Auger	**HAMMER TYPE** N/A	
DRILLER N/A	**START DATE** 02/02/17	**COMP. DATE** 02/02/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1580										
	1,579.4	0.0								1,579.4 GROUND SURFACE 0.0
	1,578.4	1.0	N/A	1	WOH	1				**ALLUVIAL**
	1,577.4	2.0	N/A	WOH	WOH	0				Saturated, Brown to Grayish Brown, Very Soft to Medium Stiff, Clayey Fine Sandy SILT (A-5) with Gravel/Cobbles
	1,576.4	3.0	N/A	WOH	20	20				
1575	1,575.4	4.0	N/A	9	9	18	S-14	73		
	1,574.4	5.0	N/A	1	3	4				
	1,573.4	6.0	N/A	2	3	5				
	1,572.4	7.0	N/A	3	7	10				1,572.2 7.2
	1,571.4	8.0	N/A	13	14	27				**RESIDUAL** Tan Brown to Brown, Moist, Stiff to Very Stiff, Coarse to Fine Sandy SILT (A-4) with Rock Fragments
1570	1,570.4	9.0	N/A	11	17	28				
	1,569.4	10.0	N/A	20	10	30				
	1,568.4	11.0	N/A	13	24	37				
	1,567.4	12.0	N/A	20	14	34				
	1,566.4	13.0	N/A	27	33	60				
1565	1,565.4	14.0	N/A	32	21	53				1,564.4 15.0
			N/A	23	25	48				Boring Terminated at Elevation 1,564.4 ft In Residual Soil: Sandy SILT (A-4)
										Note: Attempted 3 hand augers at location with a maximum depth of 3.3' due to Gravel/Cobbles
										Note: Bridge Rod Sounding preformed in conjunction with hand auger. Blow counts reflect blows per foot for bridge rods and are not equivalent to N-values.
										Note: Stratigraphy inferred from surrounding borings

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-21	**STATION** 61+03	**OFFSET** 43 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 10.9
COLLAR ELEV. 1,584.9 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 521,160	**EASTING** 491,841	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/31/17	**COMP. DATE** 01/31/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
1585										1,584.9 GROUND SURFACE	0.0
	1,583.9	1.0	10	30	23	53		M		**ARTIFICIAL FILL** 1,583.3 Dark Brown, Very Stiff, Fine Sandy SILT (A-4) with Gravel	1.6
	1,581.4	3.5	10	7	7	14		M		Note: 2" Thick Layer of Asphalt from 0.67' to 0.84'	
1580	1,578.9	6.0	7	7	6	13		M		Note: Blow Count Influenced by Gravel 1,579.3 Gray to Brown, Hard to Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel, Trace Organics	5.6
	1,576.4	8.5									
1575			2	1	4	5		W		Brown, Stiff to Medium Stiff, Clayey SILT (A-5) with Gravel 1,571.8	13.1
	1,571.4	13.5								**RESIDUAL**	
1570			8	13	25	38		D		1,569.9 Tan Brown to Brown, Hard, Fine Sandy SILT (A-4), Trace Rock Fragments - Saprolitic	15.0
										Boring Terminated at Elevation 1,569.9 ft In Residual Soil: Sandy SILT (A-4)	

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-22	**STATION** 63+57	**OFFSET** 41 ft RT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,583.6 ft	**TOTAL DEPTH** 4.3 ft	**NORTHING** 521,255	**EASTING** 492,092	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** Hand Auger	**HAMMER TYPE** N/A	
DRILLER N/A	**START DATE** 02/02/17	**COMP. DATE** 02/02/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
1585											
	1,583.6	0.0								1,583.6 GROUND SURFACE	0.0
	1,582.6	1.0	N/A	1	1	2				**ROADWAY EMBANKMENT**	
	1,581.6	2.0	N/A	3	5	8				Reddish Brown, Soft to Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel	
1580	1,580.6	3.0	N/A	6	12	18				1,579.3	4.3
	1,579.6	4.0	N/A	15	14	29				Boring Terminated at Elevation 1,579.3 ft On Crystalline Rock: SCHIST	
			N/A	32/0.3						Note: Attempted 3 hand augers at location with a maximum depth of 0.6' due to Gravel	
										Note: Bridge Rod Sounding preformed in conjunction with hand auger. Blow counts reflect blows per foot for bridge rods and are not equivalent to N-values.	
										Note: Stratigraphy inferred from surrounding borings	

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-23	**STATION** 65+96	**OFFSET** 43 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,578.1 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 521,477	**EASTING** 492,214	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/01/17	**COMP. DATE** 02/01/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
1580										
	1,578.1	0.0								1,578.1 GROUND SURFACE 0.0
	1,577.1	1.0	10	10	12	22		M		**ARTIFICIAL FILL**
1575										1,576.2 Tan Brown, Very Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel 1.9
	1,574.6	3.5	12	14	12	26		D		Greenish Gray to Gray, Very Stiff to Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel
	1,572.1	6.0	5	4	5	9	SS-15	9%		
1570										1,570.0 8.1
	1,569.6	8.5	7	7	5	12		M		1,568.1 Greenish Gray to Dark Brown, Stiff, SILT (A-4) with Gravel and Trace Organics (Wood Fragments) 10.0
										Boring Terminated at Elevation 1,568.1 ft In Artificial Fill: Sandy SILT (A-4)
										Cave-In at 8.2'

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-24	**STATION** 68+13	**OFFSET** 7 ft RT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 11.2
COLLAR ELEV. 1,577.6 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 521,586	**EASTING** 492,409	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/31/17	**COMP. DATE** 01/31/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1580										
	1,577.6	0.0								1,577.6 GROUND SURFACE 0.0
	1,576.6	1.0	13	12	16	28		M		**ROADWAY EMBANKMENT**
1575										4" Asphalt over Dark Brown to Tan Brown to Gray, Very Stiff to Soft, Coarse to Fine Sandy SILT (A-4) with Gravel
	1,574.6	3.0	20	12	13	25		M		
	1,571.6	6.0	1	2	1	3		W		Note: Blow Count Influenced by Gravel
1570										
	1,569.1	8.5	WOH	2	100/0.2	100/0.2				1,568.1 9.5
										1,567.5 **WEATHERED ROCK** 10.1
1565										Red Schist
	1,564.1	13.5	19	22	29	51		M		**RESIDUAL**
										Tan Brown to Red, Hard, Fine Sandy SILT
										1,562.6 (A-4) with Trace Rock Fragments, Saprolitic 15.0
										Boring Terminated at Elevation 1,562.6 ft In Residual Soil: Sandy SILT (A-4)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-25	**STATION** 71+60	**OFFSET** 9 ft RT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 5.9
COLLAR ELEV. 1,574.1 ft	**TOTAL DEPTH** 7.6 ft	**NORTHING** 521,817	**EASTING** 492,667	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/31/17	**COMP. DATE** 01/31/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
1575												
										GROUND SURFACE	1,574.1	0.0
	1,573.1	1.0								**ROADWAY EMBANKMENT** Tan Brown, Very Stiff, Fine Sandy SILT (A-4) wtih Gravel		
			11	13	10	23		M			1,570.4	3.7
1570	1,570.6	3.5								**RESIDUAL**		
			16	21	19	40				Gray, Hard, Fine Sandy SILT (A-4) with Rock Fragments	1,568.4	5.7
	1,568.1	6.0	100/0.4			100/0.4					1,566.6	7.5
	1,566.5	7.6	60/0.0			60/0.0				**WEATHERED ROCK** Greenish Gray SCHIST	1,566.5	7.6
										CRYSTALLINE ROCK SCHIST		
										Boring Terminated with Standard Penetration Test Refusal at Elevation 1,566.5 ft In Crystalline Rock: SCHIST		

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-26	**STATION** 73+65	**OFFSET** 30 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 15.3
COLLAR ELEV. 1,572.9 ft	**TOTAL DEPTH** 23.5 ft	**NORTHING** 521,984	**EASTING** 492,793	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/30/17	**COMP. DATE** 01/30/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
1575												
										GROUND SURFACE	1,572.9	0.0
	1,571.9	1.0	3	6	6	12				**ROADWAY EMBANKMENT** Tan Brown to Brown, Stiff, Coarse to Fine Sandy SILT (A-4) with Gravel		
1570	1,569.4	3.5	6	4	3	7	SS-16	18%			1,568.3	4.6
	1,566.9	6.0	2	3	6	9		M		**RESIDUAL** Dry to Saturated, Dark Brown and Gray, Medium Stiff to Very Stiff, Fine Sandy SILT (A-4) with Rock Fragments		
1565	1,564.4	8.5	16	13	16	29		D				
								D				
1560	1,559.4	13.5	2	2	3	5						
1555	1,554.4	18.5	4	3	5	8		W				
1550	1,549.4	23.5	60/0.0			60/0.0					1,549.5	23.4
										CRYSTALLINE ROCK SCHIST	1,549.4	23.5
										Boring Terminated with Standard Penetration Test Refusal at Elevation 1,549.4 ft In Crystalline Rock: SCHIST		

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)			**GROUND WTR (ft)**
BORING NO. B-27	**STATION** 75+59	**OFFSET** 35 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,571.5 ft	**TOTAL DEPTH** 9.7 ft	**NORTHING** 522,117	**EASTING** 492,938	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER A. Bisching	**START DATE** 01/30/17	**COMP. DATE** 01/30/17	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
1575										
										1,571.5 GROUND SURFACE 0.0
1570	1,570.5	1.0								**ROADWAY EMBANKMENT**
			10	6	10	16		M		2" Asphalt/4" ABC over Brown, Very Stiff,
	1,568.0	3.5								Clayey Fine Sandy SILT (A-4) with Gravel
			20	16	17	33		M		1,567.1 4.4
1565	1,565.5	6.0								**RESIDUAL**
			16	47	25	72	SS-17	5%		1,565.7 5.8 Brown to Gray, Hard, Fine Sandy SILT (A-4) with Rock Fragments
	1,563.3	8.2								
			17	10	12	22		D		Gray, Very Dense to Medium Dense, Silty Fine to Coarse SAND (A-2-4) with Rock Fragments - Saprolitic
										1,561.8 9.7
										Boring Terminated at Elevation 1,561.8 ft In Residual Soil: Silty SAND (A-2-4)
										Cave-In at 6.8'

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)			**GROUND WTR (ft)**
BORING NO. B-28	**STATION** 77+53	**OFFSET** 31 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,569.9 ft	**TOTAL DEPTH** 7.7 ft	**NORTHING** 522,220	**EASTING** 493,109	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER A. Bisching	**START DATE** 01/30/17	**COMP. DATE** 01/30/17	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
1570										
										1,569.9 GROUND SURFACE 0.0
	1,568.9	1.0								**ARTIFICIAL FILL**
			5	13	17	30	SS-18	13%		Tan Brown, Medium Dense, Clayey Silty
	1,566.4	3.5								1,566.7 3.2 Coarse to Fine SAND (A-2-4) with Gravel
			5	8	17	25		M		Note: Asphalt Layer from 1.4' to 2.2'
1565	1,563.9	6.0								1,565.2 4.7 Tan Brown, Very Stiff, Fine Sandy SILT (A-4) with Gravel
			17	32	68/0.3	100/0.8				1,562.8 7.1
	1,562.3	7.6								**RESIDUAL**
			60/0.1			60/0.1				1,562.3 7.6 Gray, Very Stiff, Coarse to Fine Sandy SILT (A-4) with Rock Fragments
										1,562.2 7.7 **WEATHERED ROCK**
										Gray SCHIST
										CRYSTALLINE ROCK
										SCHIST
										Boring Terminated with Standard Penetration Test Refusal at Elevation 1,562.2 ft In Crystalline Rock: SCHIST
										Cave-In at 6.2'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-29	**STATION** 79+45	**OFFSET** 31 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,567.1 ft	**TOTAL DEPTH** 16.4 ft	**NORTHING** 522,294	**EASTING** 493,292	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/30/17	**COMP. DATE** 01/30/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1570										ELEV. (ft) / DEPTH (ft)
										1,567.1 GROUND SURFACE 0.0
	1,566.1	1.0	4	4	3	7		M		**ROADWAY EMBANKMENT** Tan Brown, Medium Stiff, Clayey Coarse to Fine Sandy SILT (A-4) with Gravel
1565	1,563.6	3.5	3	2	3	5		M		
	1,561.1	6.0	2	1	3	4		M		1,560.2 6.9
1560	1,558.6	8.5	31	69/0.3		100/0.8				**ARTIFICIAL FILL** 1,558.3 Gray to Orange Brown, Soft to Medium Stiff, Fine Sandy SILT (A-4) with Gravel 8.8
										WEATHERED ROCK Gray SCHIST
1555	1,553.6	13.5	6	3	6	9		D		1,554.4 12.7
										RESIDUAL Gray, Stiff, Fine Sandy SILT (A-4) with Rock Fragments
	1,550.7	16.4	60/0.0			60/0.0				1,550.9 16.2
										1,550.7 16.4 **CRYSTALLINE ROCK** Gray SCHIST
										Boring Terminated with Standard Penetration Test Refusal at Elevation 1,550.7 ft In Crystalline Rock: SCHIST
										Cave-In at 15.3'

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-30	**STATION** 79+40	**OFFSET** 51 ft RT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,564.3 ft	**TOTAL DEPTH** 8.5 ft	**NORTHING** 522,214	**EASTING** 493,311	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/31/17	**COMP. DATE** 01/31/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1565										ELEV. (ft) / DEPTH (ft)
										1,564.3 GROUND SURFACE 0.0
	1,563.3	1.0								**RESIDUAL** Gray, Hard, Coarse to Fine Sandy SILT (A-4) with Rock Fragments
			16	16	29	45		M		
1560	1,560.8	3.5				60				
			18	31	29		SS-19	1%		1,558.7 5.6
	1,558.3	6.0	100/0.4			100/0.4				**WEATHERED ROCK** Gray SCHIST
										1,556.0 8.3
	1,555.8	8.5	60/0.0			60/0.0				1,555.8 8.5 **CRYSTALLINE ROCK** Gray SCHIST
										Boring Terminated with Standard Penetration Test Refusal at Elevation 1,555.8 ft In Crystalline Rock: SCHIST
										Cave-In at 7.2'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-31	**STATION** 81+02	**OFFSET** 40 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,563.9 ft	**TOTAL DEPTH** 10.4 ft	**NORTHING** 522,337	**EASTING** 493,449	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/30/17	**COMP. DATE** 01/30/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1565										ELEV. (ft) DEPTH (ft)
										1,563.9 GROUND SURFACE 0.0
	1,562.9	1.0	6	8	7	15		M		**ROADWAY EMBANKMENT** 2" Asphalt/4" ABC over Tan Brown, Stiff to Very Stiff, Clayey Fine Sandy SILT (A-4) with Gravel
1560	1,560.4	3.5	7	9	13	22		M		1,558.5 5.4
	1,557.9	6.0	6	6	4	10		M		**RESIDUAL** Gray, Stiff, Fine Sandy SILT (A-4) with Rock Fragments
1555	1,555.4	8.5	7	5	4	9		D		1,553.6 10.3
	1,553.5	10.4	60/0.0			60/0.0				1,553.5 10.4 **CRYSTALLINE ROCK** Gray SCHIST Boring Terminated with Standard Penetration Test Refusal at Elevation 1,553.5 ft In Crystalline Rock: SCHIST Cave-In at 9.2'

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-32	**STATION** 83+51	**OFFSET** 9 ft RT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,556.8 ft	**TOTAL DEPTH** 13.8 ft	**NORTHING** 522,297	**EASTING** 493,703	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/01/17	**COMP. DATE** 02/01/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1560										
										1,556.8 GROUND SURFACE 0.0
1555	1,555.8	1.0	7	8	14	22		M		**ROADWAY EMBANKMENT** Reddish Brown, Very Stiff to Stiff, Clayey Fine Sandy SILT (A-4) with Gravel
	1,553.3	3.5	10	6	5	11		M		Note: Slight Petroleum Odor 1,551.2 5.6
1550	1,550.8	6.0	1	2	2	4		M		Reddish Brown, Soft to Medium Stiff, Clayey SILT (A-5) with Gravel and Trace Sand
	1,548.3	8.5	1	2	2	4		W		
1545	1,543.3	13.5	100/0.3			100/0.3				1,544.6 12.2 1,543.0 **WEATHERED ROCK** Gray SCHIST 13.8 Boring Terminated at Elevation 1,543.0 ft In Weathered Rock: SCHIST Cave-In at 10.8'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-33	**STATION** 85+70	**OFFSET** 44 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** 16.2
COLLAR ELEV. 1,552.9 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 522,349	**EASTING** 493,921	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 01/30/17	**COMP. DATE** 01/30/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
1555										
	1,552.9	0.0								1,552.9 GROUND SURFACE 0.0
	1,551.9	1.0	3	11	11	22		D		**ARTIFICIAL FILL** 1" Asphalt/3"ABC over Tan Brown, Very Stiff, Fine Sandy SILT (A-4) with Gravel
1550	1,549.4	3.5	3	6	6	12 30		M		1,549.6 3.3 Grayish Brown to Gray to Dark Gray, Soft to Very Stiff, Clayey Fine Sandy SILT (A-4) with Gravel and Trace Organics
	1,547.4	5.5	26	24	6			M		Note: Blow Count Influenced by Gravel
1545	1,544.4	8.5	7	3	3	6		M		
1540	1,539.4	13.5	1	1	3	4	SS-20	31%		
1535	1,534.4	18.5	4	10	13	23		M		1,533.8 19.1 **RESIDUAL** Gray to Reddish Brown, Very Stiff, Fine Sandy SILT (A-4) with Rock Fragments - Saprolitic 1,532.9 20.0 Boring Terminated at Elevation 1,532.9 ft In Residual Soil: Sandy SILT (A-4)

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-34	**STATION** 87+45	**OFFSET** 61 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,549.8 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 522,373	**EASTING** 494,092	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER A. Bisching	**START DATE** 02/01/17	**COMP. DATE** 02/01/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
1550										1,549.8 GROUND SURFACE 0.0
	1,548.8	1.0	2	4	3	7		M		**ARTIFICIAL FILL** Tan Brown to Reddish Brown to Gray, Medium Stiff to Stiff, Clayey Fine to Coarse Sandy SILT (A-4) with Gravel and Asphalt, Trace Organics, Trace Glass
1545	1,546.3	3.5	2	2	3	5		M		Note: Slight Petroleum Odor at 13.5'
	1,543.8	6.0	4	5	5	10		M		
1540	1,541.3	8.5	4	3	2	5		W		
1535	1,536.3	13.5	2	3	2	5		W		1,534.8 15.0 Boring Terminated at Elevation 1,534.8 ft In Artificial Fill: Sandy SILT (A-4) Cave-In at 10.7'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50193.1.1	**TIP** R-5735	**COUNTY** CHEROKEE	**GEOLOGIST** Pastrana, C.R.	
SITE DESCRIPTION US 16/64/74/129 Widening From West of Biddie Lane to West of Hiwassee Street (ALT-1)				**GROUND WTR (ft)**
BORING NO. B-35	**STATION** 89+38	**OFFSET** 51 ft LT	**ALIGNMENT** -L- (ALT-1)	**0 HR.** Dry
COLLAR ELEV. 1,550.8 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 522,383	**EASTING** 494,281	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 85% 02/22/2016		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER A. Bisching	**START DATE** 02/01/17	**COMP. DATE** 02/01/17	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
1555										
										1,550.8 GROUND SURFACE 0.0
1550	1,549.8	1.0	3	3	4	7	SS-21	20%		**ROADWAY EMBANKMENT** Tan Brown, Medium Stiff, Clayey Coarse to
	1,547.3	3.5	6	6	6	12		M		1,547.6 Fine Sandy SILT (A-5) with Gravel 3.2
1545	1,544.8	6.0	11	11	11	22		M		**RESIDUAL** Greenish Gray, Stiff to Hard, Fine Sandy SILT (A-4) Trace Rock Fragments
	1,542.3	8.5	25	45	46	91		D		1,540.8 10.0
										Boring Terminated at Elevation 1,540.8 ft In Residual Soil: Sandy SILT (A-4)
										Cave-In at 6.8'