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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2581BA	1	62

REFERENCE: U-2581BA

PROJECT: 34840

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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LINE	STATION	PLAN	PROFILE
-L-	10+00 - 91+80	4 - 9	11 - 13
-Y1-	13+45 - 23+00	4	14
-Y2-	10+00 - 18+14	4, 10	14
-Y3-	10+00 - 14+50	6	15
-Y4-	10+00 - 12+43	6	15
-Y5-	10+00 - 11+85	6	15
-Y6-	12+90 - 18+09.82	9	16
-Y7-	12+76.74	9	16

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	23+50 - 27+00	17 - 19
-L-	30+50 - 37+50	20 - 24
-L-	53+00 - 55+50	25 - 26
-L-	63+50 - 70+00	27 - 31
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-L-	73+50 - 79+00	31 - 35
-L-	81+00 - 83+50	35 - 36
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-L-	88+00 - 89+50	37 - 38
-Y1-	13+45 - 17+00	39 - 42
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APPENDICES

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *GUILFORD*

PROJECT DESCRIPTION *IMPROVE US 70 (BURLINGTON RD) FROM WEST OF SR 3045/SR 2819 (MT HOPE CHURCH RD) TO JUST EAST OF SR 3175 (BIRCH CREEK RD)*

INVENTORY

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

M. HAYES

A. BHUIYAN

J. WINGO

R. NORWOOD

E. ARGABRIGHT

INVESTIGATED BY *S&ME, INC.*

DRAWN BY *C. CHANDLER*

CHECKED BY *K. HILL*

SUBMITTED BY *S. MITCHELL*

DATE *FEBRUARY 2019*

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NORTH CAROLINA PROFESSIONAL SEAL 032125 ENGINEER STACIE E. MITCHELL

DocuSigned by:
Stacie E. Mitchell, PE 2/26/2019
BBC611B6AF18458...
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PROJECT REFERENCE NO.	SHEET NO.
U-2581BA	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
- [ ] CME-55
- [X] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] CME-750
- [ ] _____

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
- [ ] 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: • SEE NOTE

ELEVATION: FEET

NOTES:

• ELEVATIONS DERIVED FROM GEOPAK AND THE .TIN FILE u2581ba_ls_tin_18053l. DATED 05/31/18

DATE: 8-15-14

February 20, 2019

STATE PROJECT: 34840 (U-2581BA)
FEDERAL PROJECT: N/A
COUNTY: Guilford
DESCRIPTION: 70 (Burlington Road) West of SR 3045/SR 2819 (Mt. Hope Church Road) to Just East of SR 3175 (Birch Creek Road)

SUBJECT: Geotechnical Report – Inventory

S&ME, Inc. has completed a reconnaissance and subsurface investigation for the above roadway project and presents the following revised inventory. Plans, profiles and cross-sections are included in this revised report.

Project Description

The project consists of widening US 70 (Burlington Road), from west of SR 3045/SR 2819 (Mt. Hope Church Road) to just east of SR 3175 (Birch Creek Road), in Guilford County, North Carolina. The length of the project is approximately 1.5 miles. Embankment fill heights and cut sections of up to approximately 10 feet are proposed along the widening. In addition, one culvert was investigated near station 55+50 along US 70 (-L-) that has a proposed extension.

The geotechnical field investigation was conducted during the period of October through November 2018. Two drill crews were used to drill, sample, and log the borings in this report. The drill rigs used for the drilling include two ATV mounted rigs: a CME 750, and a CME 550. All rigs were equipped with automatic hammers. Standard Penetration Tests were performed at selected locations and additional borings were advanced using continuous flight augers and hand augers. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis by the S&ME soils lab.

The following alignments, totaling 1.5 miles, were investigated. Subsurface profiles and/or cross-sections of these alignments are included in this report.

Line	Station
-L-	11+85 to 91+80
-Y1-	13+45 to 20+24
-Y2-	10+00 to 18+14
-Y3-	10+00 to 14+50
-Y4-	10+00 to 12+43
-Y5-	10+00 to 11+85
-Y6-	12+90 to 18+10
-Y7-	11+00 to 12+77

Physiography and Geology

The project corridor is located in north-central North Carolina in the Piedmont Physiographic Province of North Carolina between the city limits of Greensboro and Burlington. The project corridor is mixed with single family homes and business developments. Topography along the project is flat to steeply sloping with rolling hills and long low ridges. Elevations along the project range from approximately 695± to 745± feet above sea level.

Geologically the project area is located within the Carolina Slate Belt and consists of intrusive granitic rock, which is common in this area, with varying degrees of metamorphism, and also intrusive metavolcanic rocks in this region. These are igneous plutonic bodies of rock that were formed around the Late Proterozoic to Permian periods. The residual soils derived from these rocks can contain a high mica content in some locations. Weathered and crystalline rock underlay these residual soils at depth.

Soil Properties

Soils encountered during this investigation are separated into 4 categories: Artificial Fill, Roadway Embankment, Alluvial and Residual soils.

Artificial Fill soils consist of gray, black very loose to loose clayey sand (A-2-6) and tan and gray very soft to medium stiff silty clay (A-7-6) and sandy silt, with trace asphalt and stone. PI of these soils range between 7 and 22.

Roadway Embankment soils are similar in nature to Residual soils and may be derived from nearby sources. These soils consist of gray, tan, brown, red and orange, soft to med. stiff, sandy silt (A-4), clayey silt (A-5), sandy clay (A-6) and silty clay (A-7-6) and loose to dense, clayey sand (A-2-6) and silty sand (A-2-4). PI of these soils range between 1 and 37.

Alluvial soils are found in the floodplains from the nearby streams, brooks and creeks in the area. These soils consist of gray, black, tan, and brown, soft to med. stiff, sandy clay (A-6), silty clay (A-7-6), sandy silt (A-4), and very loose to dense, silty sand (A-2-4), sand (A-3). PI of these soils range between 5 and 15.

Residual soils are derived from the weathering of underlying rock in the area. These soils consist of gray, tan, brown, pink, red, black, white and orange, soft to hard, saprolitic, micaceous, sandy silt (A-4), clayey silt (A-5), sandy clay (A-6), silty clay (A-7-5/A-7-6) and loose to dense, saprolitic, micaceous, silty sand (A-2-4), clayey sand (A-2-6) and sand (A-3). PI of these soils range between 4 and 65.

Rock Properties

Weathered rock and crystalline rock were encountered across some areas of the project. The weathered rock is derived from the underlying Meta-Granite bedrock and ranges from inches to 10 feet or more in thickness. The crystalline rock was found as shallow as 5.5 feet. Discontinuous lenses of weathered rock at depth were seen in some locations and may occur in other areas that were not investigated.

Ground Water

Ground water measurements were taken in October through November 2018. Ground water is typically between 1’ and 13’ below the ground surface. Elevation of ground water levels range between 664.5’ and 711’. Groundwater was found within 6 feet of the proposed embankment or subgrade on the mainline L at: 49+50 40 feet right, 59+00 35 feet right, 62+00 25 feet right, 65+00 30 feet right, and 91+00 35 feet right. There is also groundwater within 6 feet on Y3, station 14+00 26 feet right.

Areas of Special Geotechnical Interest

1) Soft Soils: The following locations encountered soft, cohesive soils which have the potential to cause embankment stability and/or long term settlement problems:

Line	Stations	Offset
-L-	28+00 to 30+00	LT
-L-	53+25 to 55+25	RT
-Y3-	10+70 to 13+25	LT

2) Highly Plastic Clays: (PI > 35) were encountered on the project at the following locations:

Line	Stations	Offset
-L-	24+00 to 27+00	LT and RT
-L-	30+75 to 33+75	LT and RT
-L-	35+75 to 37+25	LT and RT
-L-	66+75 to 70+00	LT and RT
-L-	74+00 to 75+50	LT and RT
-L-	82+50 to 83+25	LT and RT
-L-	88+25 to 89+25	LT and RT
-Y1-	14+25 to 17+00	LT and RT
-Y1-	19+00 to 20+00	LT and RT
-Y2-	12+00 to 15+25	LT and RT
-Y2-	16+75 to 18+25	LT and RT
-Y3-	10+00 to 13+50	LT and RT

3) Moisture Sensitive Clays/ Silts: Clays and Silts with a moderate PI and a Moisture Content above the Plastic Limit were encountered on the project at the following locations:

Line	Stations	Offset
-L-	75+25 to 79+25	LT and RT
-Y1-	13+50 to 15+00	LT and RT
-Y2-	12+00 to 17+00	LT and RT
-Y3-	13+50 to 14+50	LT and RT
-Y5-	10+75 to 12+00	LT and RT
-Y6-	16+50 to 17+75	LT and RT

4) Artificial Fill: Three areas of artificial fill occurs at the following locations:

Line	Stations	Offset (ft)
-L-	13+75 to 17+75	LT
-L-	86+75 to 87+75	RT
-Y3-	10+50 to 14+40	LT

5) Ponds: Four ponds occur on or within close proximity of the right of way on this project. They are noted at the following locations:

Line	Stations	Offset (ft)
-Y4-	11+00 to 11+75	30 RT
-L-	68+75 to 73+25	550 RT
-L-	81+00 to 84+50	575 LT
-L-	85+25 to 89+00	625 LT

6) Culvert: A box culvert was noted at the following location:

Line	Station
-L-	55+85

7) Water wells: Nineteen water wells were located with close proximity to the project. These wells were noted at the following locations:

Line	Stations	Offset (ft)
-L-	10+17	108 LT
-L-	30+26	95 RT
-L-	30+99	113 RT
-L-	40+49	105 RT
-L-	45+73	77 RT
-L-	46+57	86 RT
-L-	48+69	114 LT
-L-	53+80	62 LT
-L-	68+28	64 RT
-Y1-	12+81	59 LT
-Y3-	11+22	44 RT
-Y3-	11+71	35 LT
-Y3-	13+00	36 RT
-Y3-	15+82	53 RT
-Y4-	14+90	38 LT
-Y5-	12+05	39 LT
-Y5-	14+91	33 RT
-Y7-	10+00	45 LT
-Y7-	10+65	36 LT

Bulk Samples

Two bulk samples were collected for Standard Proctor and CBR testing at the following locations:

Sample No.	Line	Station & Offset	Depth	Test
S-01	-L-	36+40, 40 LT	1.0-6.0	CBR
S-02	-Y1-	14+00, 40 RT	1.0-6.0	CBR

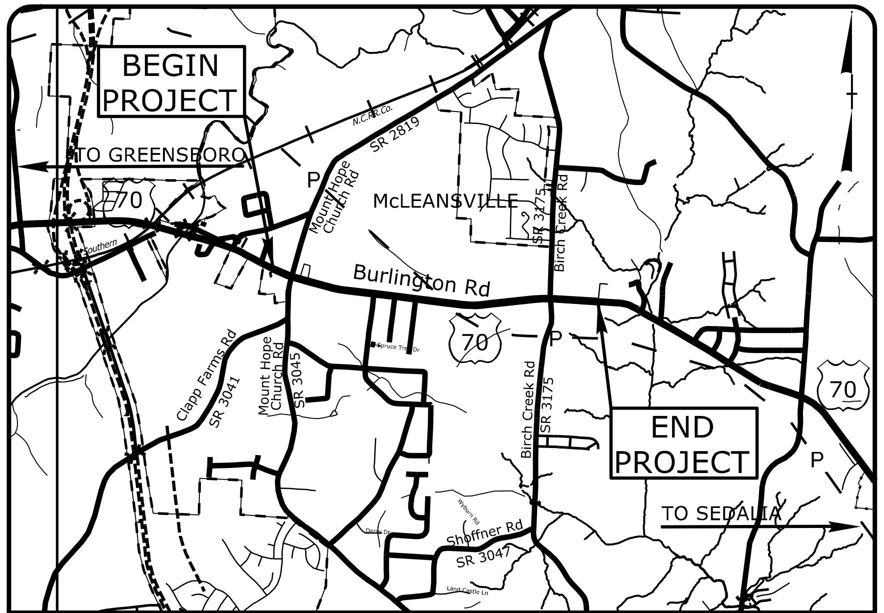
Prepared by,

Stacie E Mitchell, PE
Project Engineer

09/08/99

TIP PROJECT: U-2581BA

See Sheet 1B For Conventional Symbols



VICINITY MAP

NOT TO SCALE

65% PLANS

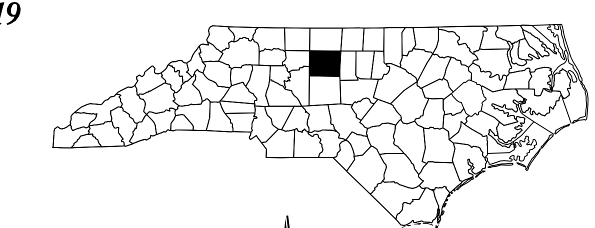
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

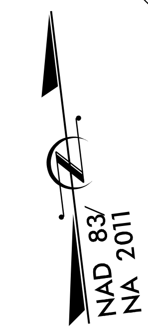
GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.		SHEET NO.	TOTAL SHEETS
N.C.	U-2581BA		3	62
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION		
34840.1.1		PE		
		R/W, UTIL.		
		CONST.		

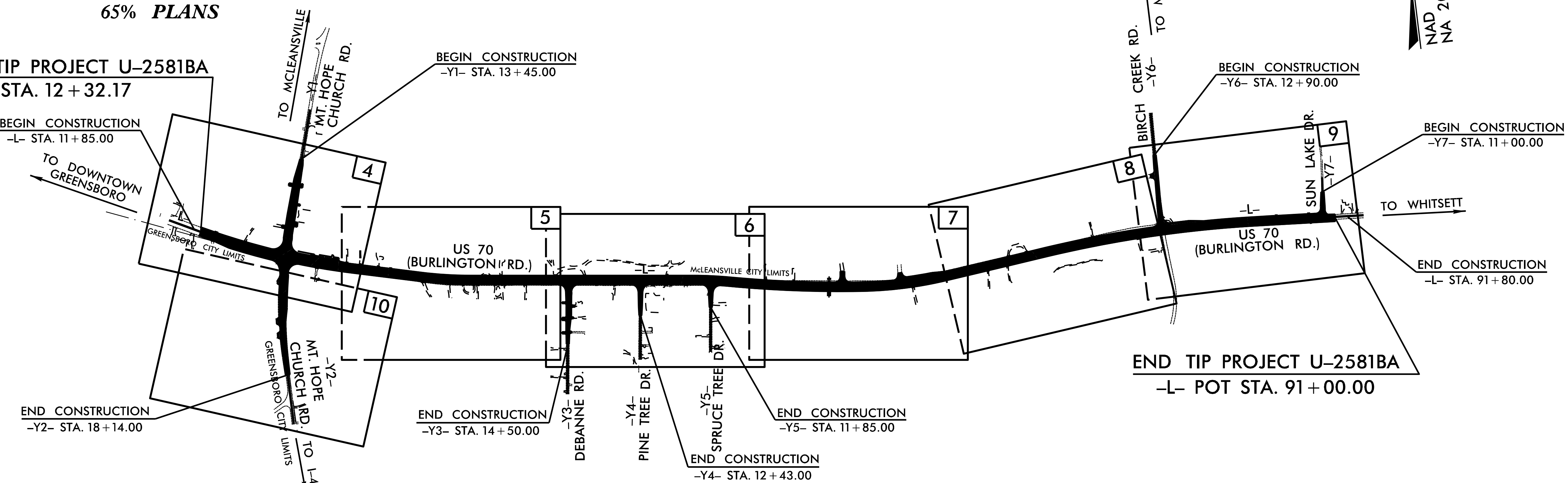
LOCATION: US 70 (BURLINGTON ROAD) FROM WEST OF SR 3045/SR 2819 (MT. HOPE CHURCH ROAD) TO JUST EAST OF SR 3175 (BIRCH CREEK ROAD)

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





★ EXISTING SIGNAL TO BE MODIFIED



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF GREENSBORO AND McLEANSVILLE.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ??.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2019 = 15,430
ADT 2039 = 25,890
K = 12 %
D = 60 %
T = 6 % *
V = 50 MPH
* (TTST 1 + DUAL 5)
FUNC CLASS =
PRINCIPAL ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2581BA = 1.490 MI.

TOTAL LENGTH OF TIP PROJECT U-2581BA = 1.490 MI.

Prepared for the North Carolina Department of Transportation
In the Office of:

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 30, 2018

LETTING DATE:
OCTOBER 15, 2019

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

JERRY JAVELLANA, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT LAURA SUTTON, PE

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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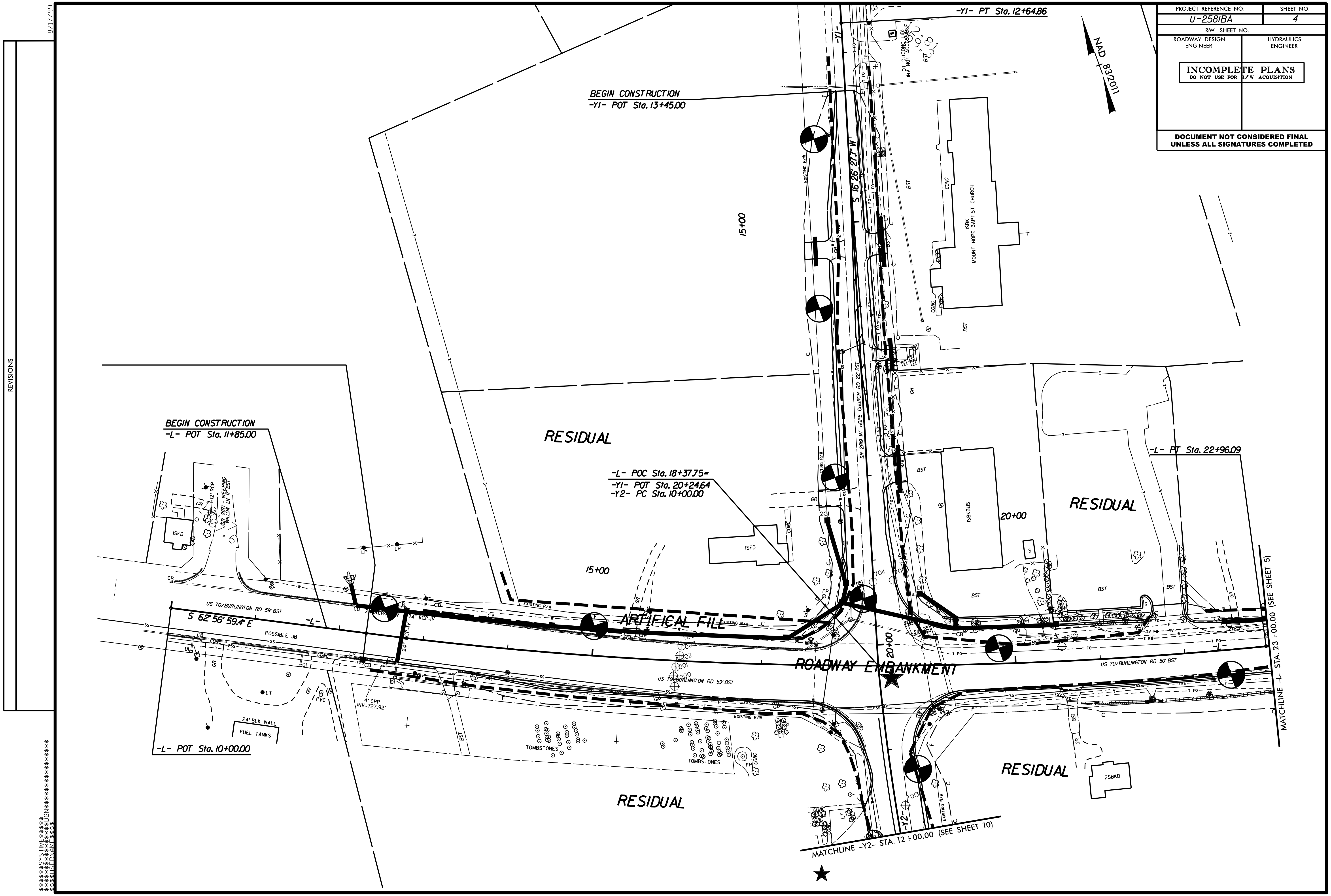
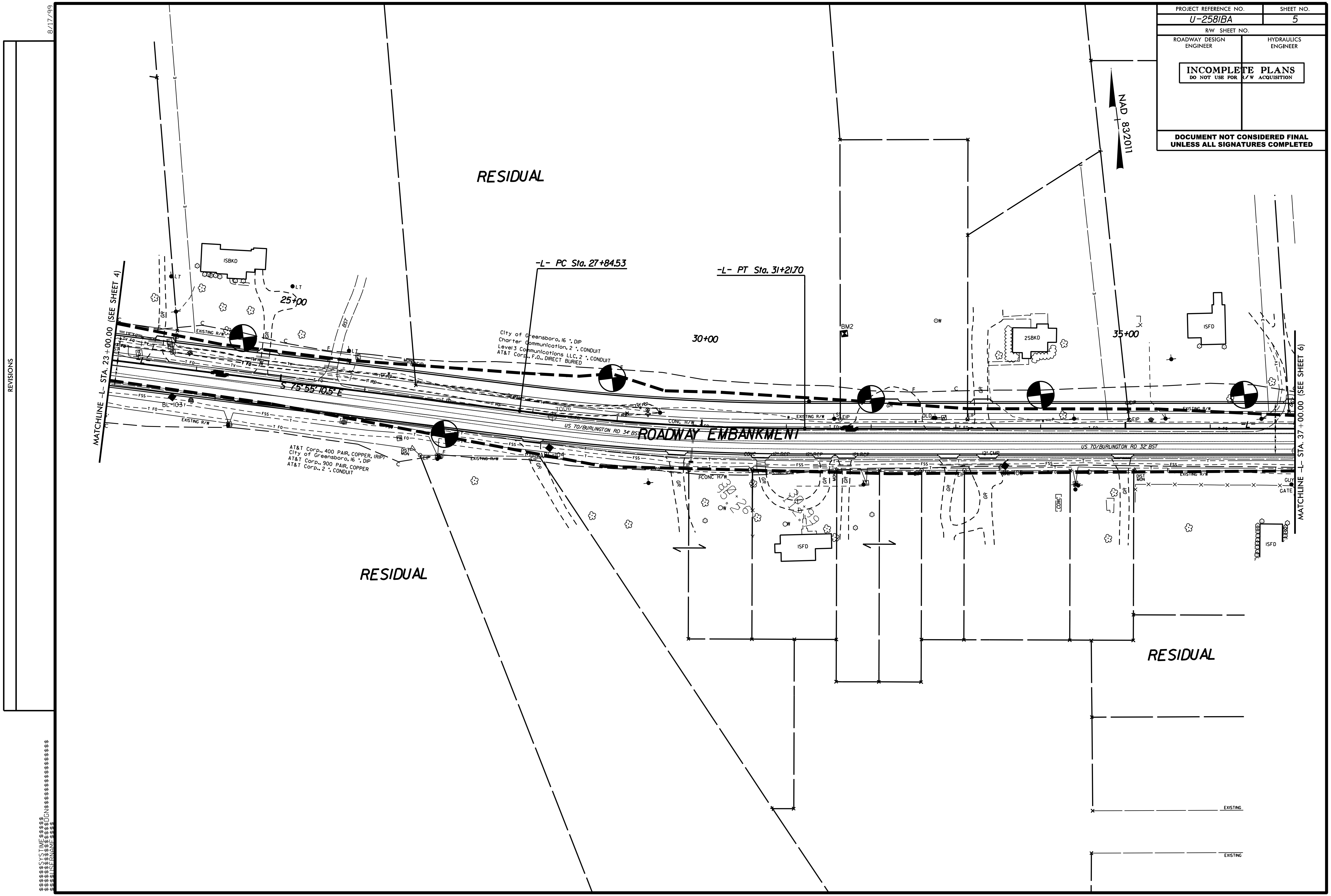
$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$


PROJECT REFERENCE NO.
U-2581BA
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
REVISIONS
8/17/99
-Y1- PT Sta. 12+64.86
BEGIN CONSTRUCTION
-Y1- POT Sta. 13+45.00
S 16°26'27.7" W
SR 2819 MT HOPE CHURCH RD 22' BST
1SBK MOUNT HOPE BAPTIST CHURCH
15+00
RESIDUAL
BEGIN CONSTRUCTION
-L- POT Sta. 11+85.00
-L- POC Sta. 18+37.75=
-Y1- POT Sta. 20+24.64
-Y2- PC Sta. 10+00.00
-L- PT Sta. 22+96.09
1SBKBUS
20+00
RESIDUAL
15+00
ISFD
SR 2871 WEEPING WILLOW LN 17' BST
US 70/BURLINGTON RD 59' BST
S 62°56'59.4" E
-L-
ARTIFICAL FILL
ROADWAY EMBANKMENT
POSSIBLE JB
US 70/BURLINGTON RD 50' BST
US 70/BURLINGTON RD 59' BST
MATCHLINE -L- STA. 23+00.00 (SEE SHEET 5)
4" CPP INV=727.92'
24" BLK WALL
FUEL TANKS
-L- POT Sta. 10+00.00
TOMBSTONES
TOMBSTONES
RESIDUAL
RESIDUAL
2SBKD
-Y2-
MATCHLINE -Y2- STA. 12+00.00 (SEE SHEET 10)


PROJECT REFERENCE NO.
U-2581BA
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
8/17/99
REVISIONS
RESIDUAL
RESIDUAL
RESIDUAL
-L- PC Sta. 27+84.53
-L- PT Sta. 31+21.70
MATCHLINE -L- STA. 23+00.00 (SEE SHEET 4)
MATCHLINE -L- STA. 37+00.00 (SEE SHEET 6)
1SBKD
2SBKD
1SFD
1SFD
1SFD
25+00
30+00
35+00
BM2
S 75°55'10.5" E
ROADWAY EMBANKMENT
US 70/BURLINGTON RD 34' BST
US 70/BURLINGTON RD 32' BST
City of Greensboro, 16 ", DIP
Charter Communication, 2 ", CONDUIT
Level 3 Communications LLC, 2 ", CONDUIT
AT&T Corp., F.O., DIRECT BURIED
AT&T Corp., 400 PAIR, COPPER, (RIP)
City of Greensboro, 16 ", DIP
AT&T Corp., 900 PAIR, COPPER
AT&T Corp., 2 ", CONDUIT
EXISTING R/W
BL-103
BL-104
BL-105
CONC H/W
FCONC H/W
12" RCP
12" CMP
DIST MON
GUY
GATE
EXISTING
EXISTING
$$$$$$SYSTIME$$$$$
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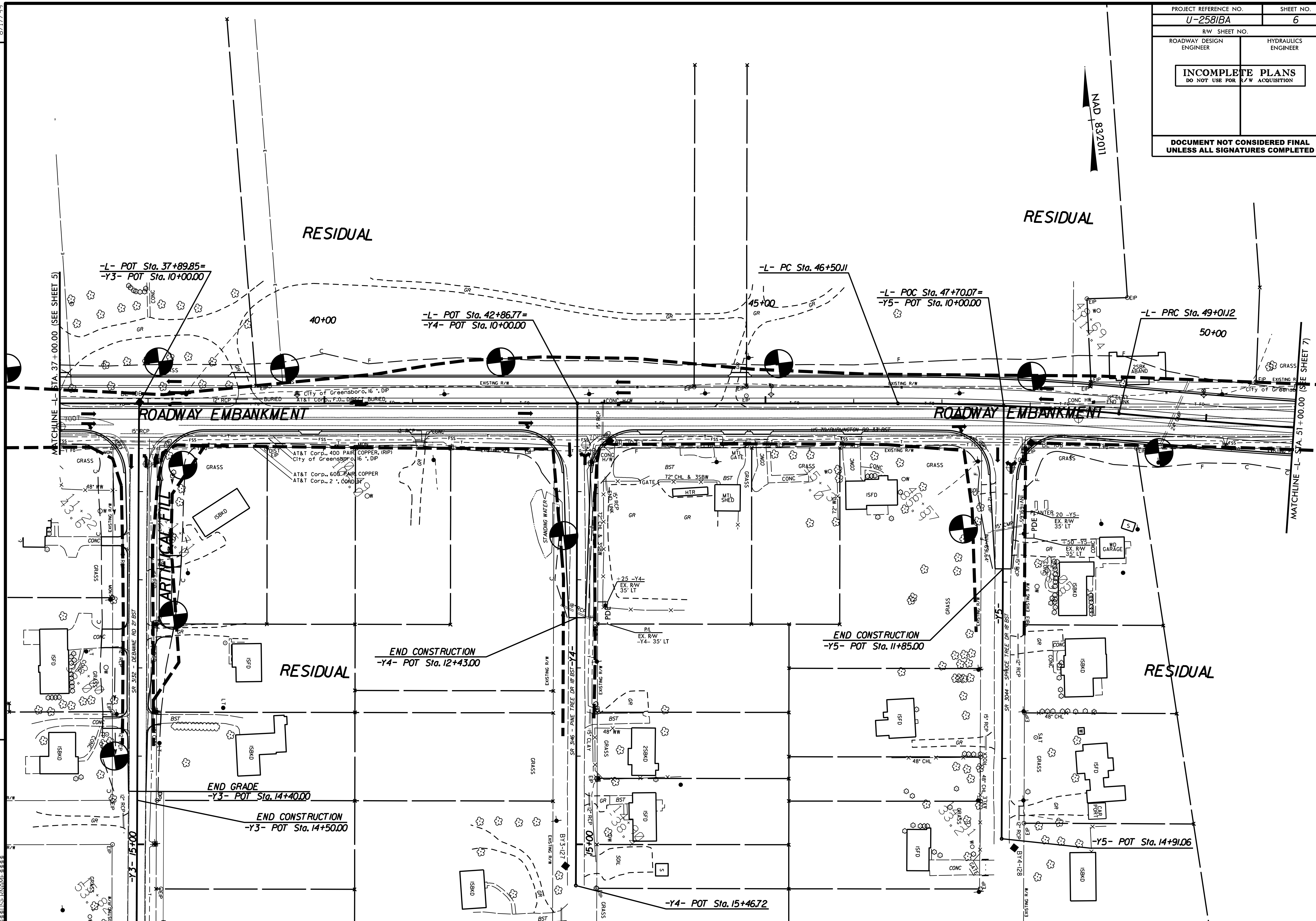
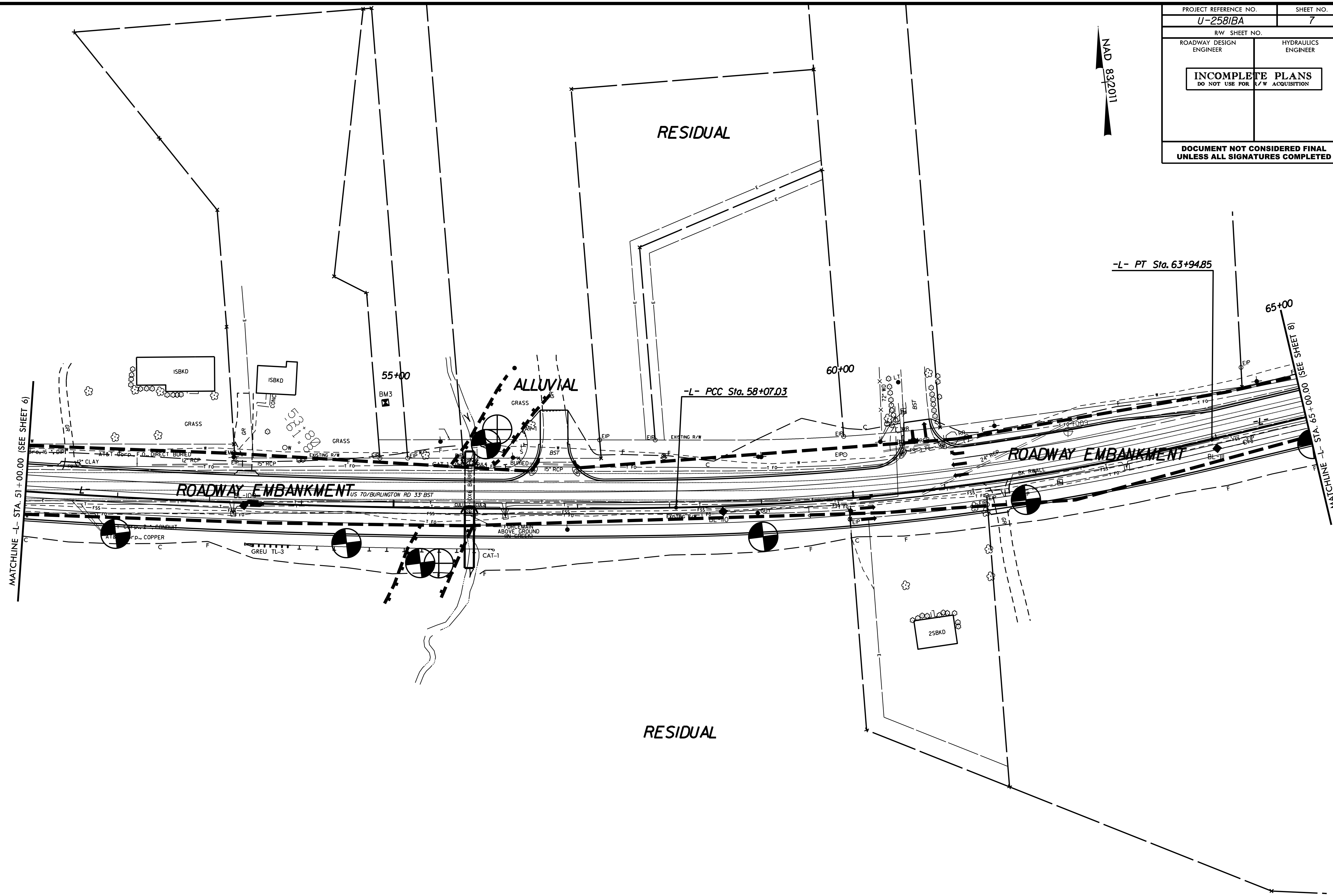
$$$$$USERNAME$$$$$


PROJECT REFERENCE NO.
U-2581BA
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
REVISIONS
8/17/99
RESIDUAL
RESIDUAL
RESIDUAL
RESIDUAL
MATCHLINE -L- STA. 37+00.00 (SEE SHEET 5)
MATCHLINE -L- STA. 51+00.00 (SEE SHEET 7)
-L- POT Sta. 37+89.85=
-Y3- POT Sta. 10+00.00
-L- POT Sta. 42+86.77=
-Y4- POT Sta. 10+00.00
-L- PC Sta. 46+50.11
-L- POC Sta. 47+70.07=
-Y5- POT Sta. 10+00.00
-L- PRC Sta. 49+01.12
40+00
45+00
50+00
ROADWAY EMBANKMENT
ROADWAY EMBANKMENT
ARTIFICAL FILL
STANDING WATER
END CONSTRUCTION
-Y4- POT Sta. 12+43.00
END CONSTRUCTION
-Y5- POT Sta. 11+85.00
END GRADE
-Y3- POT Sta. 14+40.00
END CONSTRUCTION
-Y3- POT Sta. 14+50.00
-Y4- POT Sta. 15+46.72
-Y5- POT Sta. 14+91.06
SR 3132 - DEBANNE RD 21' BST
SR 3146 - PINE TREE DR 18' BST
SR 3044 - SPRUCE TREE DR 18' BST
-Y3- 15+00
-Y4-
15+00
-Y5-
City of Greensboro, 16" DIP
AT&T Corp., F.O., DIRECT BURIED
AT&T Corp., 400 PAIR COPPER, (RIP)
City of Greensboro, 16" DIP
AT&T Corp., 600 PAIR COPPER
AT&T Corp., 2" CONDUIT
EXISTING R/W
+25 -Y4-
EX. R/W
35' LT
P/L
EX. R/W
-Y4- 35' LT
+20 -Y5-
EX. R/W
35' LT
+50 -Y5-
EX. R/W
35' LT
1SBKD
1SFD
2SBKD
2SBK ABAND
MTL SHED
MTL GATE
WD GARAGE
CAR PORT
HTR
BY3-127
BY4-128
GRASS
CONC
BST
GR
PDE
12" RCP
15" RCP
15" CMP
15" CLAY
48" WW
48" CHL
72" CHL & 3SBW
SOIL
S

PROJECT REFERENCE NO.	SHEET NO.
U-2581BA	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2518BA	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83 2011

8/17/99

REVISIONS

RESIDUAL

-L- PC Sta. 71+03.36

65+00

70+00

75+00

BM4
AXLE

GRASS

ISBLKD CARPORT

GR

WP

City of Greensboro, 16 ", DIP

AT&T Corp., F.O., DIRECT BURIED

EXISTING R/W

CONC HW

AT&T Corp., F.O., DIRECT BURIED

EIP

12" RCP

BL-113

US 70/BURLINGTON RD 34" BST

-L-

N 83°33'16" E

BL-112

ROADWAY EMBANKMENT

AT&T Corp., 300 PAIR, COPPER

City of Greensboro, 16 ", DIP

AT&T Corp., 2 ", CONDUIT

WD POST & CONC

GRASS

GOLF COURSE

MATCHLINE -L- STA. 65+00.00 (SEE SHEET 7)

MATCHLINE -L- STA. 78+00.00 (SEE SHEET 9)

ISFD

OW

15" CMP

GR

2SB

46" WD SR

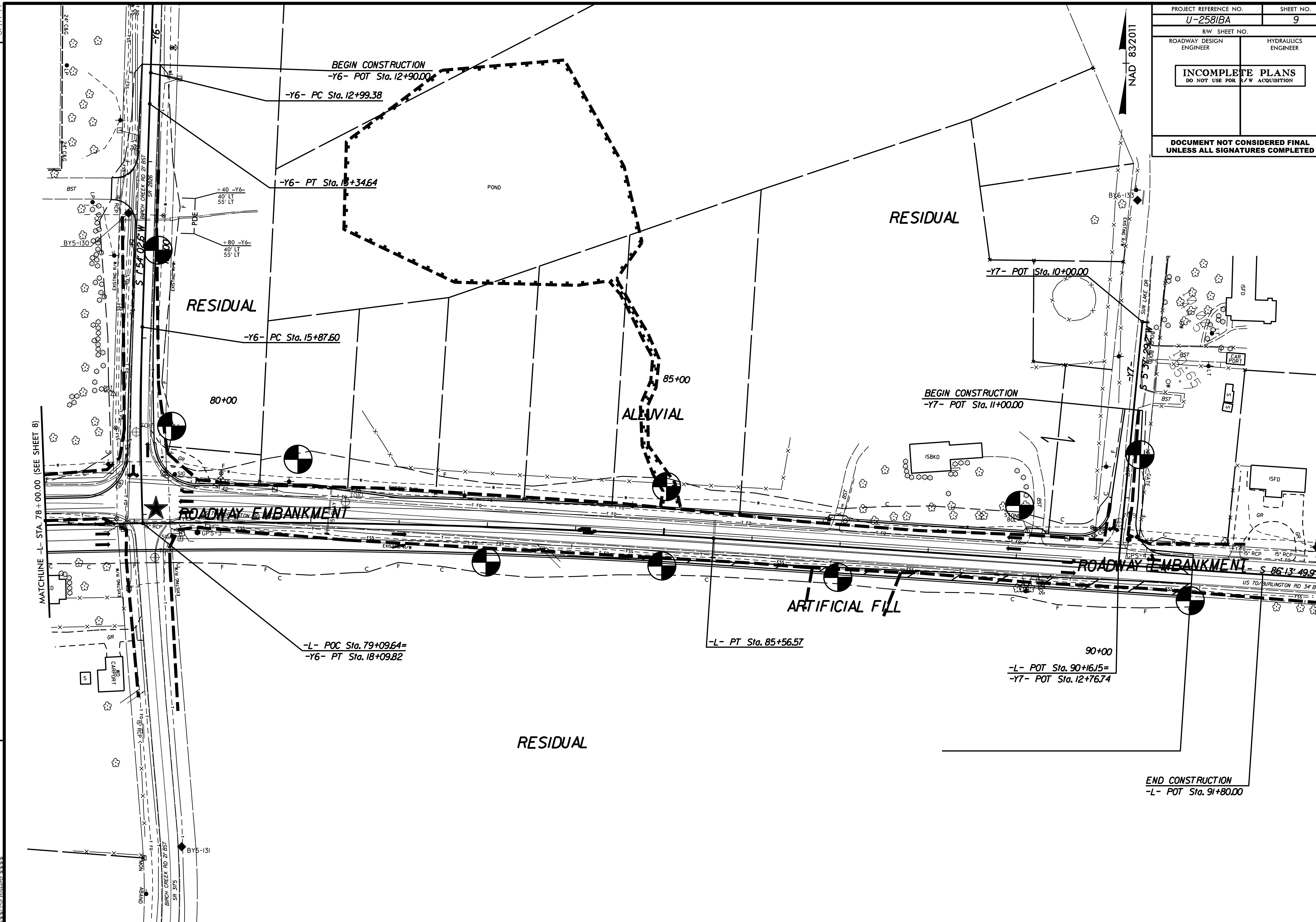
RESIDUAL

$$$$$$$SYSTIME$$$$$$$
$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
$$$$$$$FILENAME$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-2581BA	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



REVISIONS

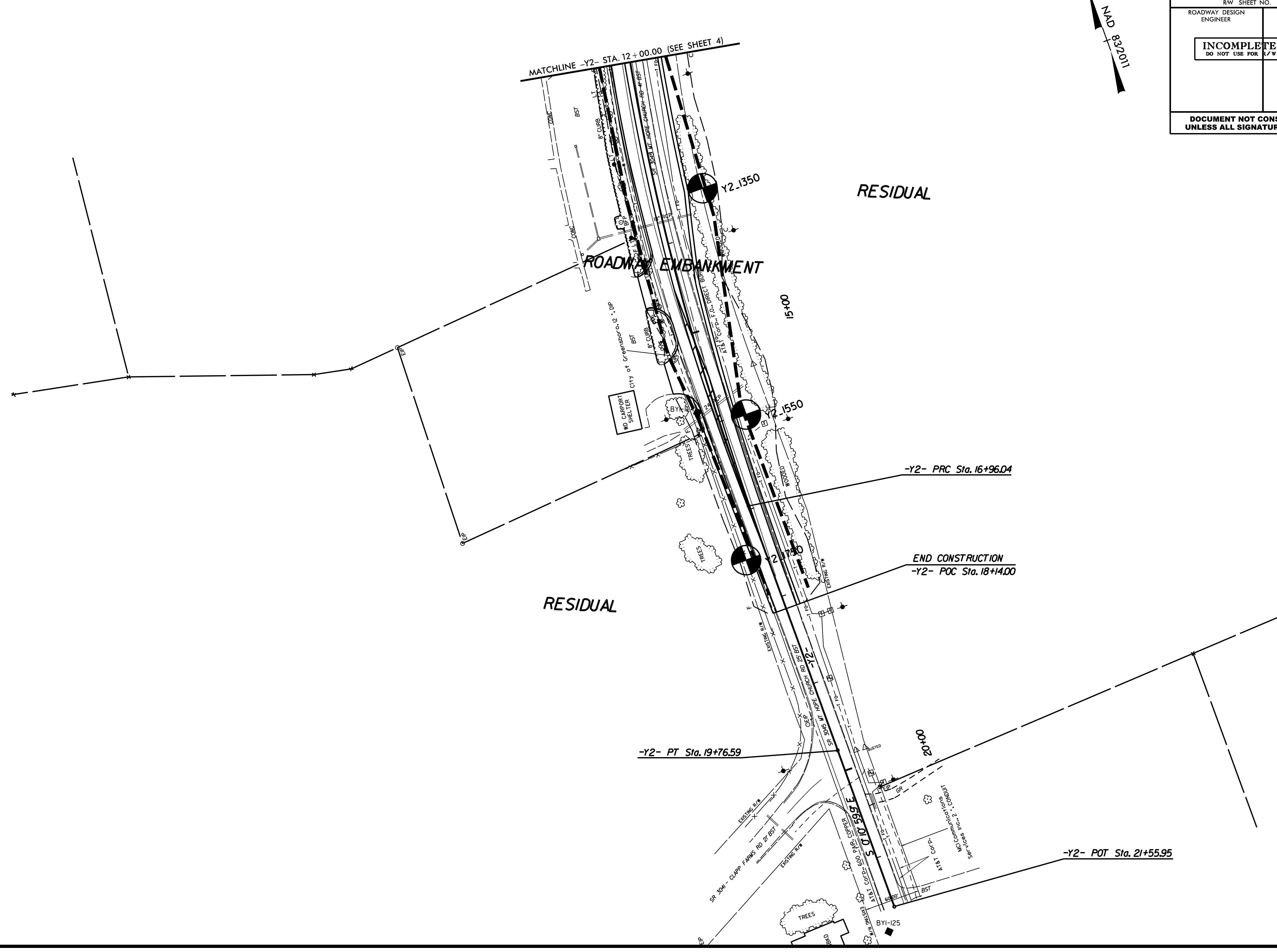
8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
U-2581BA	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



8/17/99

REVISIONS

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

PROJECT REFERENCE NO.	SHEET NO.
U-2581BA	11

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

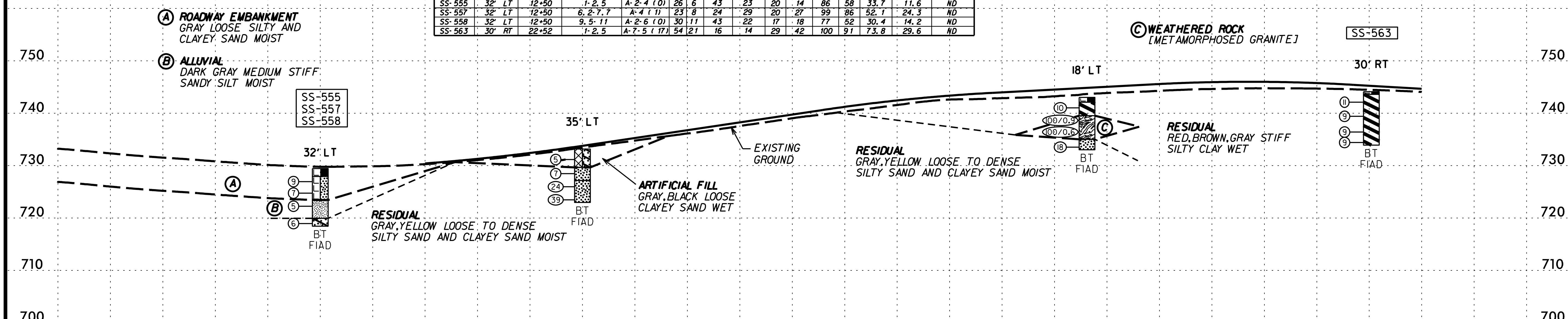
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/28/99

-L-

SOIL TEST RESULTS

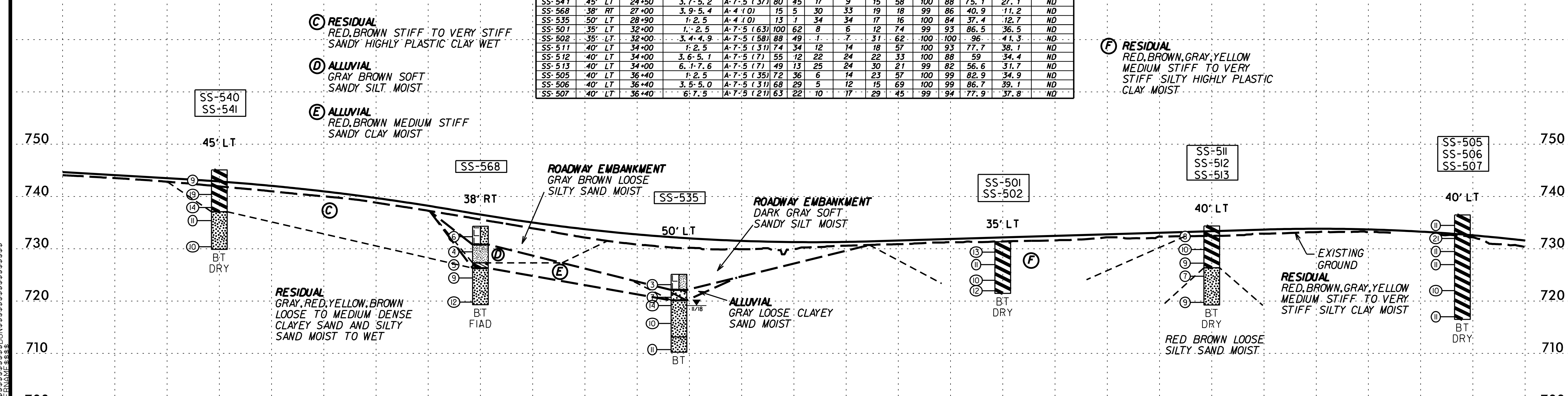
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-555	32' LT	12+50	1-2.5	A-2-4 (0)	26	6	43	23	20	14	86	58	33.7	11.6	ND
SS-557	32' LT	12+50	6.2-7.7	A-4 (1)	23	8	24	29	20	27	99	86	52.1	24.3	ND
SS-558	32' LT	12+50	9.5-11	A-2-6 (0)	30	11	43	22	17	18	77	52	30.4	14.2	ND
SS-563	30' RT	22+52	1-2.5	A-7-5 (17)	54	21	16	14	29	42	100	91	73.8	29.6	ND



-L-

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-540	45' LT	24+50	1-2.5	A-7-6 (36)	76	47	8	20	16	55	100	99	73.4	31.8	ND
SS-541	45' LT	24+50	3.7-5.2	A-7-5 (37)	80	45	17	9	15	58	100	88	75.1	27.1	ND
SS-568	38' RT	27+00	3.9-5.4	A-4 (0)	15	5	30	33	19	18	99	86	40.9	11.2	ND
SS-535	50' LT	28+90	1-2.5	A-4 (0)	13	1	34	34	17	16	100	84	37.4	12.7	ND
SS-501	35' LT	32+00	1.-2.5	A-7-5 (63)	100	62	8	6	12	74	99	93	86.5	36.5	ND
SS-502	35' LT	32+00	3.4-4.9	A-7-5 (58)	88	49	1	7	31	62	100	100	96	41.3	ND
SS-511	40' LT	34+00	1-2.5	A-7-5 (31)	74	34	12	14	18	57	100	93	77.7	38.1	ND
SS-512	40' LT	34+00	3.6-5.1	A-7-5 (7)	55	12	22	24	22	33	100	88	59	34.4	ND
SS-513	40' LT	34+00	6.1-7.6	A-7-5 (7)	49	13	25	24	30	21	99	82	56.6	31.7	ND
SS-505	40' LT	36+40	1-2.5	A-7-5 (35)	72	36	6	14	23	57	100	99	82.9	34.9	ND
SS-506	40' LT	36+40	3.5-5.0	A-7-5 (31)	68	29	5	12	15	69	100	99	86.7	39.1	ND
SS-507	40' LT	36+40	6-7.5	A-7-5 (21)	63	22	10	17	29	45	99	94	77.9	37.8	ND



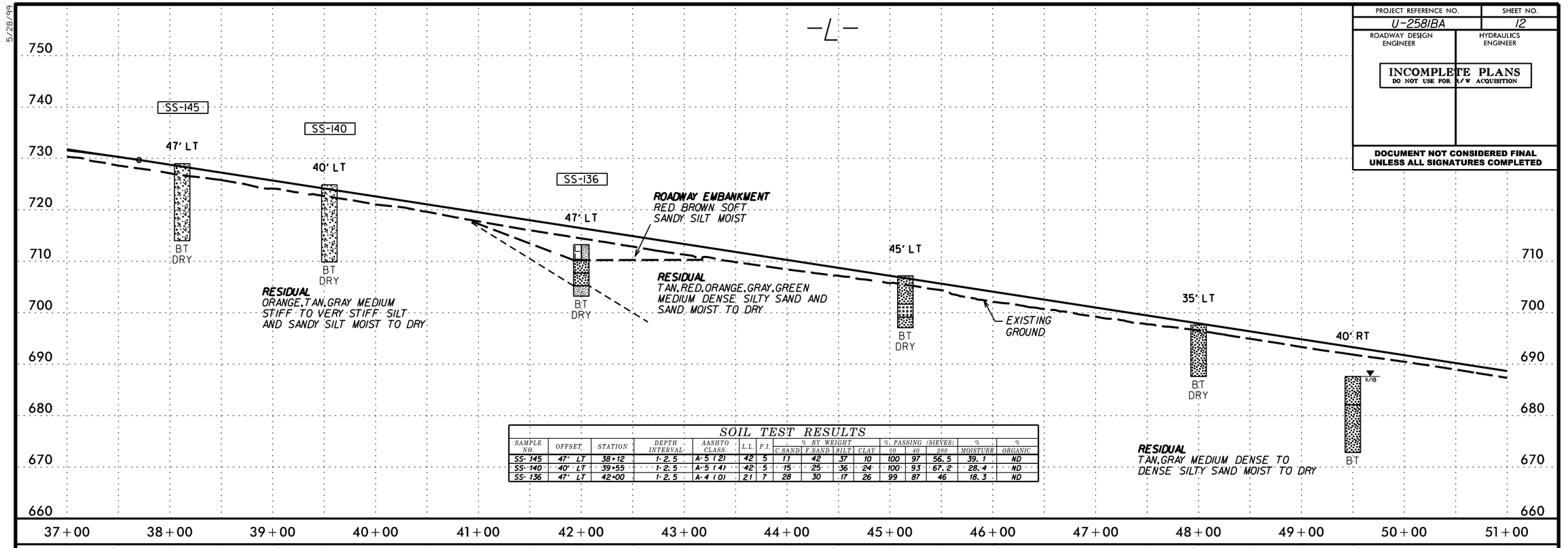
$$$$$SYSTIME$$$$$
$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-2581BA	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

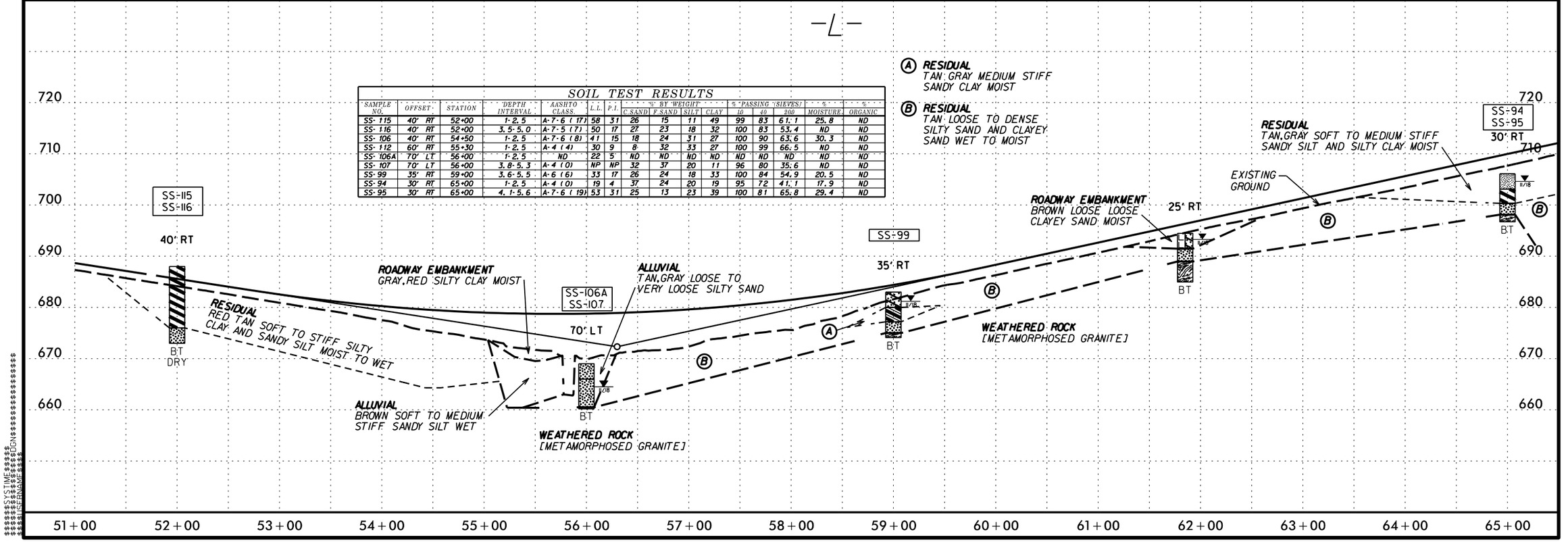
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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-145	47' LT	38+12	1-2.5	A-5 (2)	42	5	11	42	37	10	100	97	56.5	39.1	ND
SS-140	40' LT	39+55	1-2.5	A-5 (4)	42	5	15	25	36	24	100	93	67.2	28.4	ND
SS-136	47' LT	42+00	1-2.5	A-4 (0)	21	7	28	30	17	26	99	87	46	18.3	ND



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-115	40' RT	52+00	1-2.5	A-7-6 (17)	58	31	26	15	11	49	99	83	61.1	25.8	ND
SS-116	40' RT	52+00	3.5-5.0	A-7-5 (7)	50	17	27	23	18	32	100	83	53.4	ND	ND
SS-106	40' RT	54+50	1-2.5	A-7-6 (8)	41	15	18	24	31	27	100	90	63.6	30.3	ND
SS-112	60' RT	55+30	1-2.5	A-4 (4)	30	9	8	32	33	27	100	99	66.5	ND	ND
SS-106A	70' LT	56+00	1-2.5	ND	22	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-107	70' LT	56+00	3.8-5.3	A-4 (0)	NP	NP	32	37	20	11	96	80	35.6	ND	ND
SS-99	35' RT	59+00	3.6-5.5	A-6 (6)	33	17	26	24	18	33	100	84	54.9	20.5	ND
SS-94	30' RT	65+00	1-2.5	A-4 (0)	19	4	37	24	20	19	95	72	41.1	17.9	ND
SS-95	30' RT	65+00	4.1-5.6	A-7-6 (19)	53	31	25	13	23	39	100	81	65.8	29.4	ND

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-2518A	13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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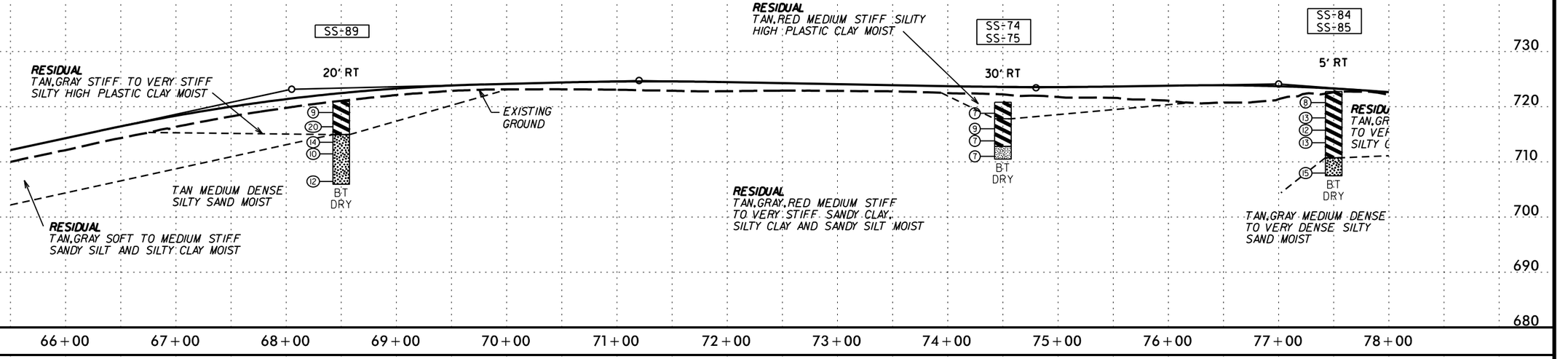
SOIL TEST RESULTS

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-89	20' RT	68+50	1-2.5	A-7-6 (52)	80	51	4	10	25	61	100	98	88.7	ND	ND
SS-74	30' RT	74+50	1-2.5	A-7-6 (62)	94	65	7	10	10	73	100	96	84.8	38.1	ND
SS-75	30' RT	74+50	3.8-5.3	A-7-5 (13)	53	11	4	19	41	36	100	99	83.2	45.2	ND
SS-84	5' RT	77+50	1-2.5	A-7-6 (25)	61	35	16	15	14	55	99	90	70.8	29.4	ND
SS-85	5' RT	77+50	3.8-5.3	A-7-6 (22)	53	29	13	18	24	45	100	91	73.9	27.3	ND



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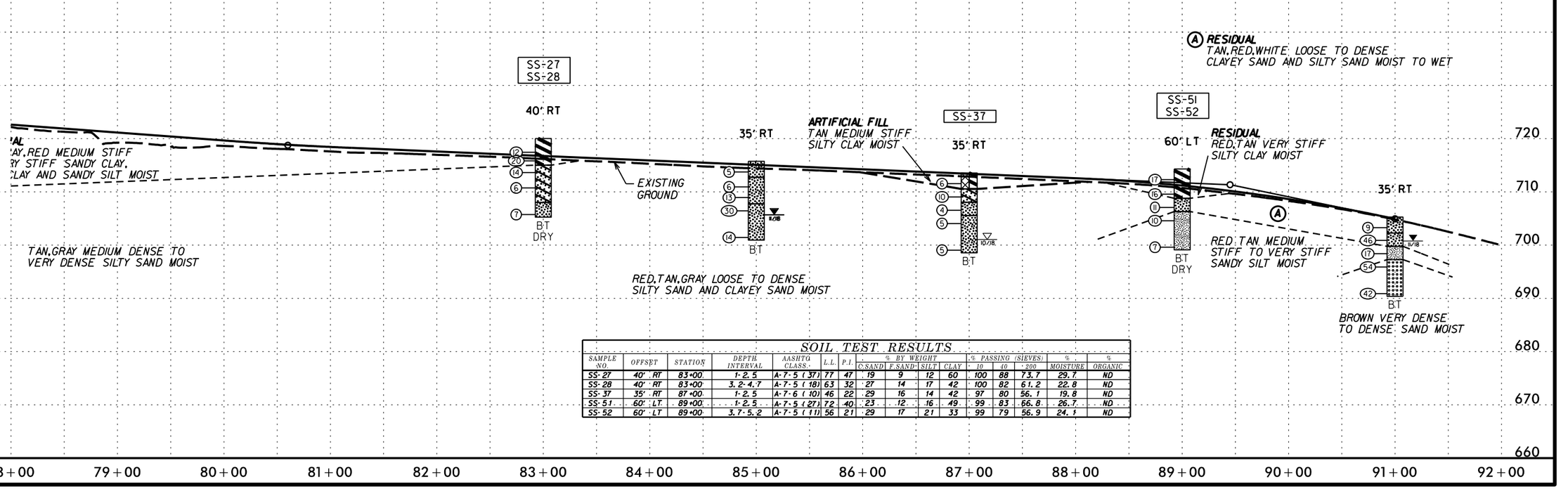

SOIL TEST RESULTS

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-27	40' RT	83+00	1-2.5	A-7-5 (37)	77	47	19	9	12	60	100	88	73.7	29.7	ND
SS-28	40' RT	83+00	3.2-4.7	A-7-5 (18)	63	32	27	14	17	42	100	82	61.2	22.8	ND
SS-37	35' RT	87+00	1-2.5	A-7-6 (10)	46	22	29	16	14	42	97	80	56.1	19.8	ND
SS-51	60' LT	89+00	1-2.5	A-7-5 (27)	72	40	23	12	16	49	99	83	66.8	26.7	ND
SS-52	60' LT	89+00	3.7-5.2	A-7-5 (11)	56	21	29	17	21	33	99	79	56.9	24.1	ND

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-2581BA	14

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

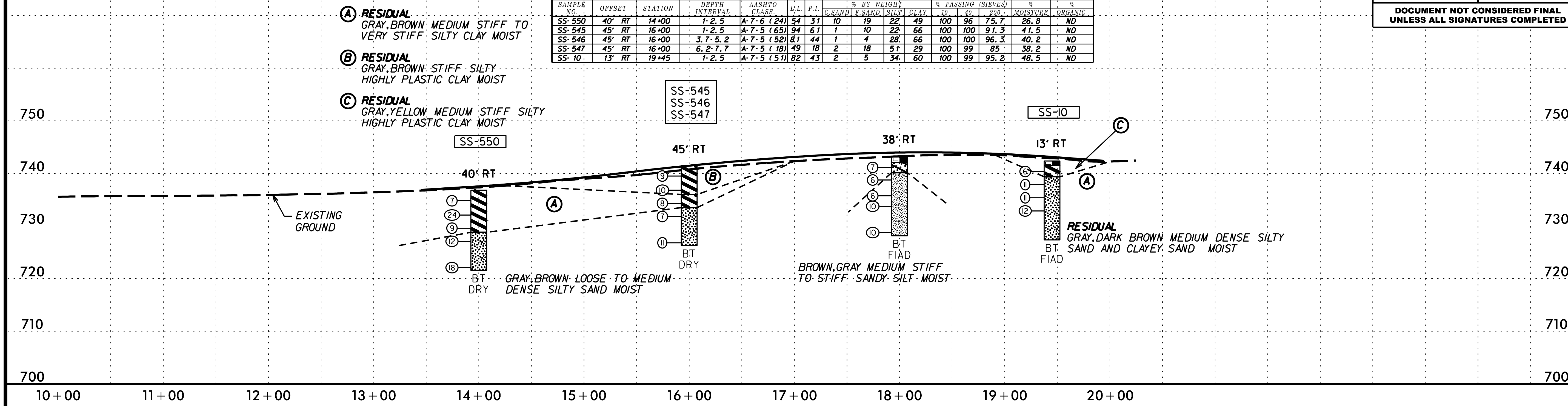
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y1-

SOIL TEST RESULTS

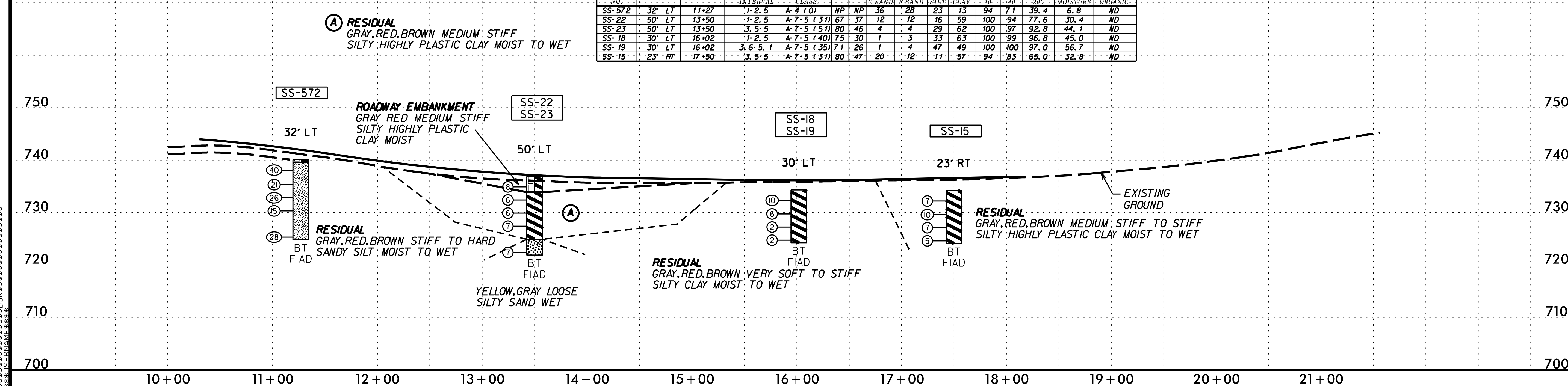
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-550	40' RT	14+00	1-2.5	A-7-6 (24)	54	31	10	19	22	49	100	96	75.7	26.8	ND
SS-545	45' RT	16+00	1-2.5	A-7-5 (65)	94	61	1	10	22	66	100	100	91.3	41.5	ND
SS-546	45' RT	16+00	3.7-5.2	A-7-5 (52)	81	44	1	4	28	66	100	100	96.3	40.2	ND
SS-547	45' RT	16+00	6.2-7.7	A-7-5 (18)	49	18	2	18	51	29	100	99	85	38.2	ND
SS-10	13' RT	19+45	1-2.5	A-7-5 (51)	82	43	2	5	34	60	100	99	95.2	48.5	ND



-Y2-

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-572	32' LT	11+27	1-2.5	A-4 (0)	NP	NP	36	28	23	13	94	71	39.4	6.8	ND
SS-22	50' LT	13+50	1-2.5	A-7-5 (31)	67	37	12	12	16	59	100	94	77.6	30.4	ND
SS-23	50' LT	13+50	3.5-5	A-7-5 (51)	80	46	4	4	29	62	100	97	92.8	44.1	ND
SS-18	30' LT	16+02	1-2.5	A-7-5 (40)	75	30	1	3	33	63	100	99	96.8	45.0	ND
SS-19	30' LT	16+02	3.6-5.1	A-7-5 (35)	71	26	1	4	47	49	100	100	97.0	56.7	ND
SS-15	23' RT	17+50	3.5-5	A-7-5 (31)	80	47	20	12	11	57	94	83	65.0	32.8	ND



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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-2581BA	15

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

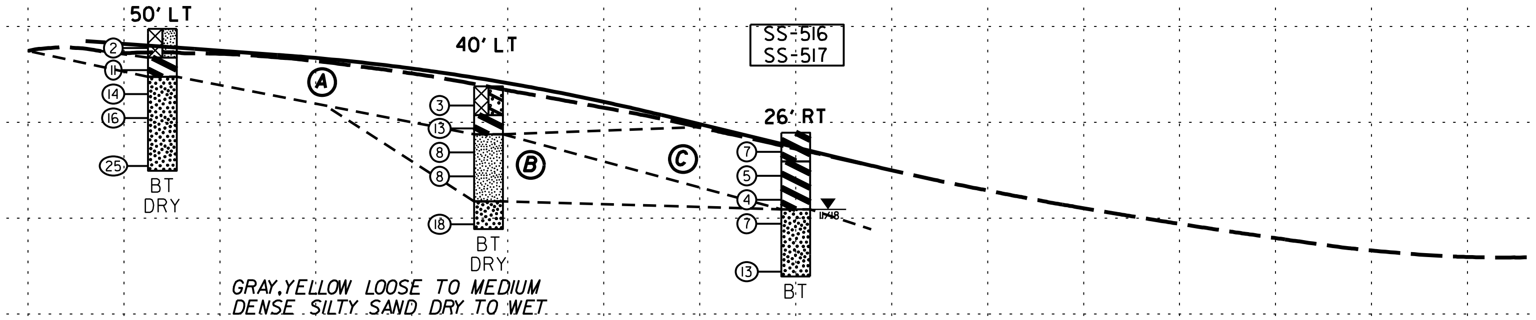
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y3-

(A) **RESIDUAL**
GRAY,RED,BROWN STIFF SILTY HIGH PLASTIC CLAY MOIST

(B) **RESIDUAL**
BROWN,RED MEDIUM STIFF SANDY SILT MOIST

(C) **RESIDUAL**
GRAY,YELLOW MEDIUM STIFF TO SOFT SILTY CLAY MOIST



SOIL TEST RESULTS

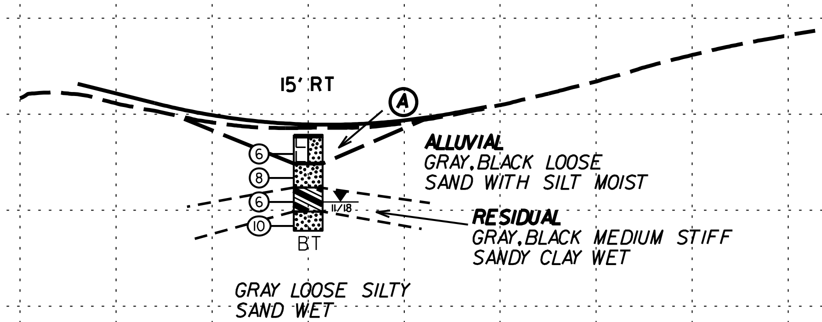
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-521	50' LT	10+70	1-2.5	A-4 (0)	23	7	33	28	13	26	96	78	41.3	16.6	ND
SS-522	50' LT	10+70	3.3-4.8	A-7-5 (41)	81	50	16	9	12	63	100	90	76.3	32.4	ND
SS-527	40' LT	12+40	3.4-4.9	A-7-5 (32)	71	39	15	11	19	56	100	91	76	29.9	ND
SS-516	26' RT	14+00	1-2.5	A-7-5 (26)	65	35	19	11	22	47	99	86	71.3	34.3	ND
SS-517	26' RT	14+00	3.5-5	A-7-5 (13)	56	22	24	18	28	30	98	82	61.4	38	ND

690 680

10+00 11+00 12+00 13+00 14+00 15+00

-Y4-

(A) **ROADWAY EMBANKMENT**
GRAY BLACK LOOSE SILTY SAND MOIST



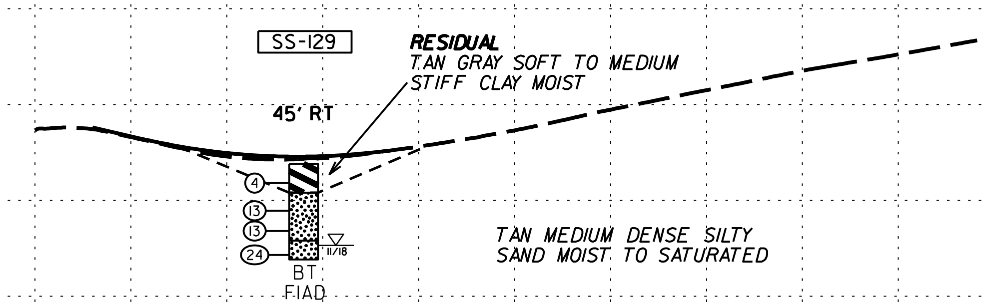
730 720 710 700 690 680

10+00 11+00 12+00 13+00 14+00

-Y5-

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-129	45' RT	11+40	1-2.5	A-7-6 (9)	41	29	30	25	17	28	99	82	48.8	15.7	ND



730 720 710 700 690 680

10+00 11+00 12+00 13+00 14+00 15+00

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PROJECT REFERENCE NO.	SHEET NO.
U-2581BA	16

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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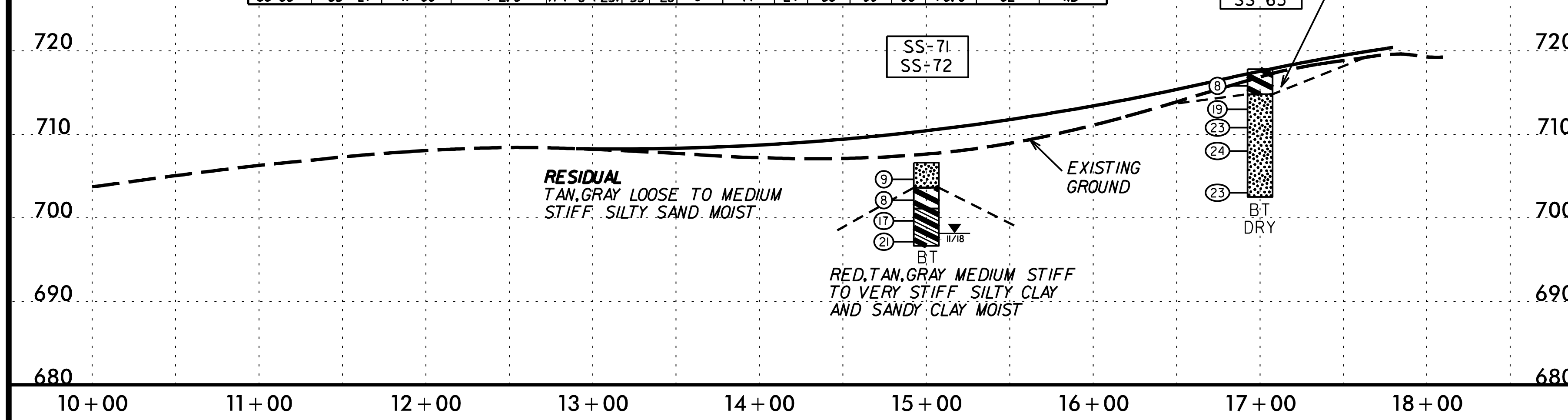
5/28/99

-Y6-

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-71	15' LT	15+00	3.5-5	A-7-6 (23)	63	34	22	11	14	52	100	87	68.3	29.2	ND
SS-72	15' LT	15+00	6-7.5	A-6 (7)	33	20	20	32	18	31	100	92	54.3	14.8	ND
SS-65	35' LT	17+00	1-2.5	A-7-6 (23)	55	28	9	14	21	56	99	96	78.6	32	ND



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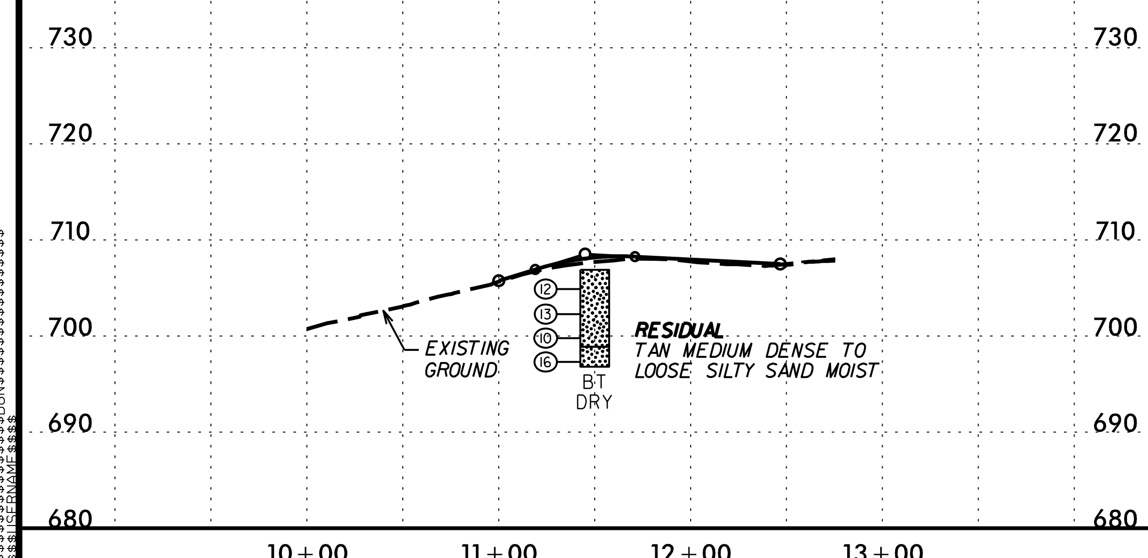

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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	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

770
760
750
740
730

Ⓐ **RESIDUAL**
RED,BROWN STIFF TO VERY STIFF
SANDY HIGHLY PLASTIC CLAY WET

PAVEMENT

3:1 Ⓐ 3:1 3:1 Ⓐ

RESIDUAL
GRAY,RED,YELLOW,BROWN LOOSE TO MEDIUM DENSE
CLAYEY SAND AND SILTY SAND MOIST TO WET

24+00.00

770
760
750
740
730

PAVEMENT

3:1 3:1 3:1

RESIDUAL
RED,BROWN,GRAY STIFF
SILTY CLAY WET

23+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

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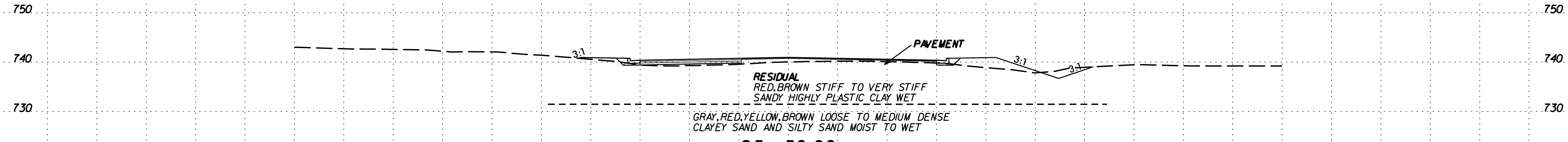
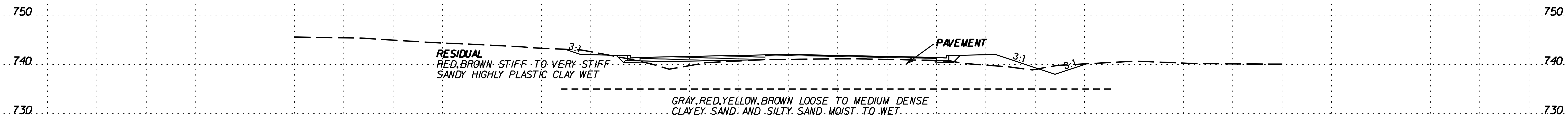


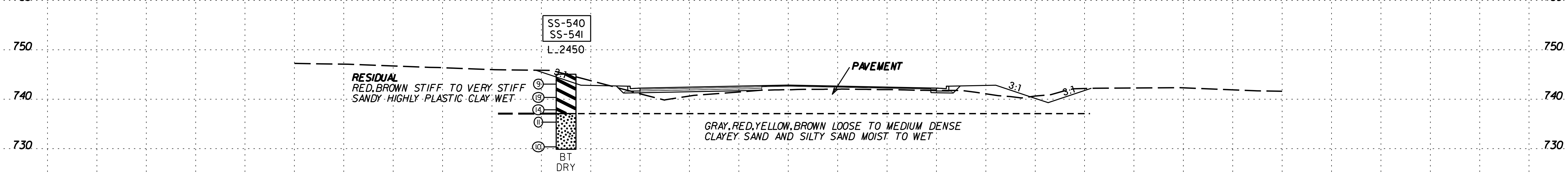
25+50.00



25+00.00

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-540	45' LT	24+50	1-2.5	A-7-6 (36)	76	47	8	20	16	55	100	99	73.4	31.8	ND
SS-541	45' LT	24+50	3.7-5.2	A-7-5 (37)	80	45	17	9	15	58	100	88	75.1	27.1	ND



24+50.00

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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

760 750 740 730 720 710

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-568	38' RT	27+00	3.9-5.4	A-4 (0)	15	5	30	33	19	18	99	86	40.9	11.2	ND

Ⓐ **ALLUVIAL**
GRAY BROWN SOFT SANDY SILT MOIST

Ⓑ **RESIDUAL**
RED,BROWN STIFF TO VERY STIFF SANDY CLAY WET

ROADWAY EMBANKMENT
GRAY BROWN LOOSE SILTY SAND MOIST

PAVEMENT

SS-568
L-2700

3:1

Ⓐ

Ⓑ

RESIDUAL
GRAY,RED,YELLOW,BROWN LOOSE TO MEDIUM DENSE CLAYEY SAND AND SILTY SAND MOIST TO WET

6 4 5 9 12

BT
FIAD

27+00.00

PAVEMENT

3:1 3:1 3:1

RESIDUAL
RED,BROWN STIFF TO VERY STIFF SANDY HIGHLY PLASTIC CLAY WET

GRAY,RED,YELLOW,BROWN LOOSE TO MEDIUM DENSE CLAYEY SAND AND SILTY SAND MOIST TO WET

26+50.00

PAVEMENT

3:1 3:1 3:1

RESIDUAL
RED,BROWN STIFF TO VERY STIFF SANDY HIGHLY PLASTIC CLAY WET

GRAY,RED,YELLOW,BROWN LOOSE TO MEDIUM DENSE CLAYEY SAND AND SILTY SAND MOIST TO WET

26+00.00

-L-

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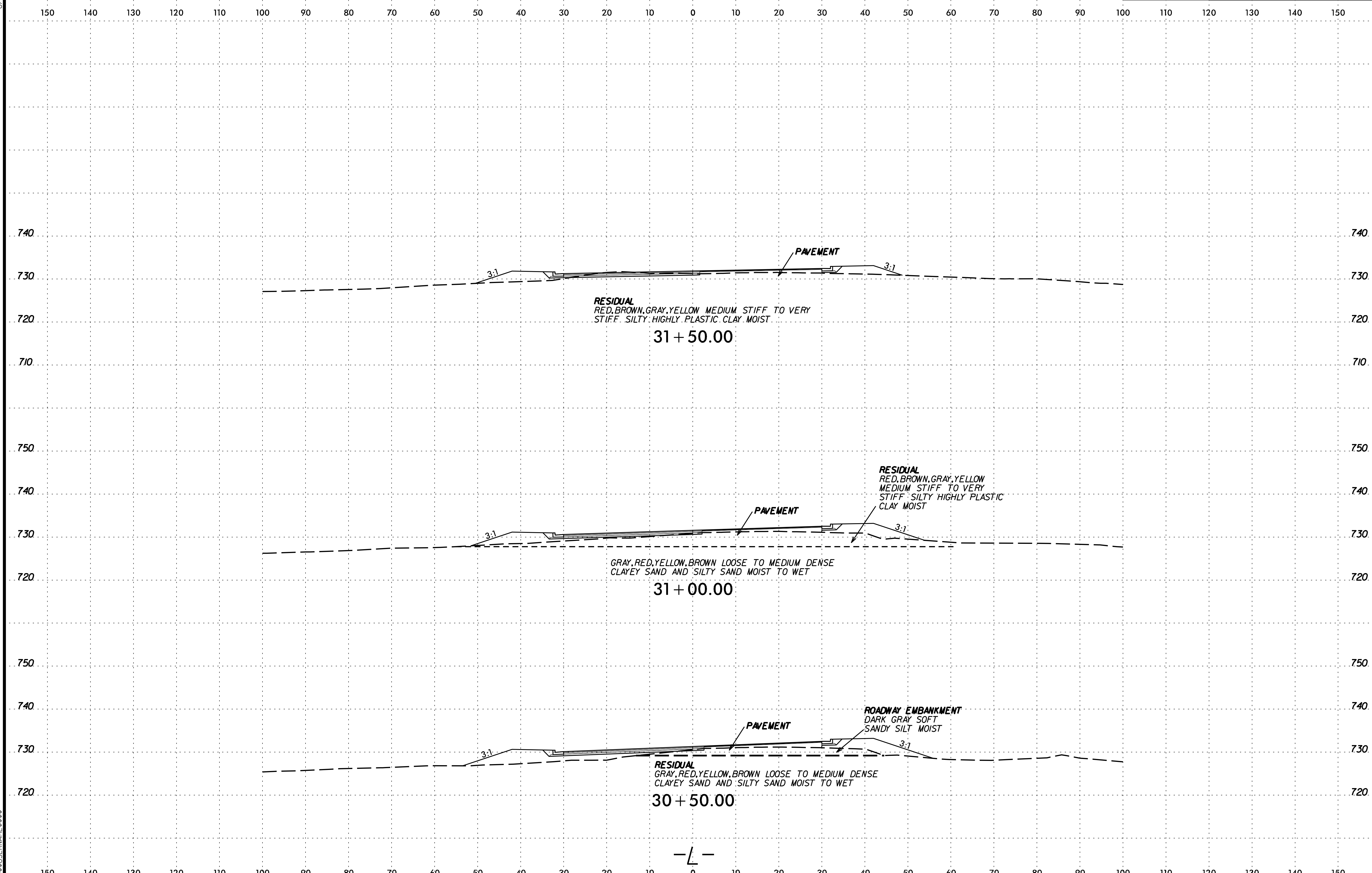
6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	20



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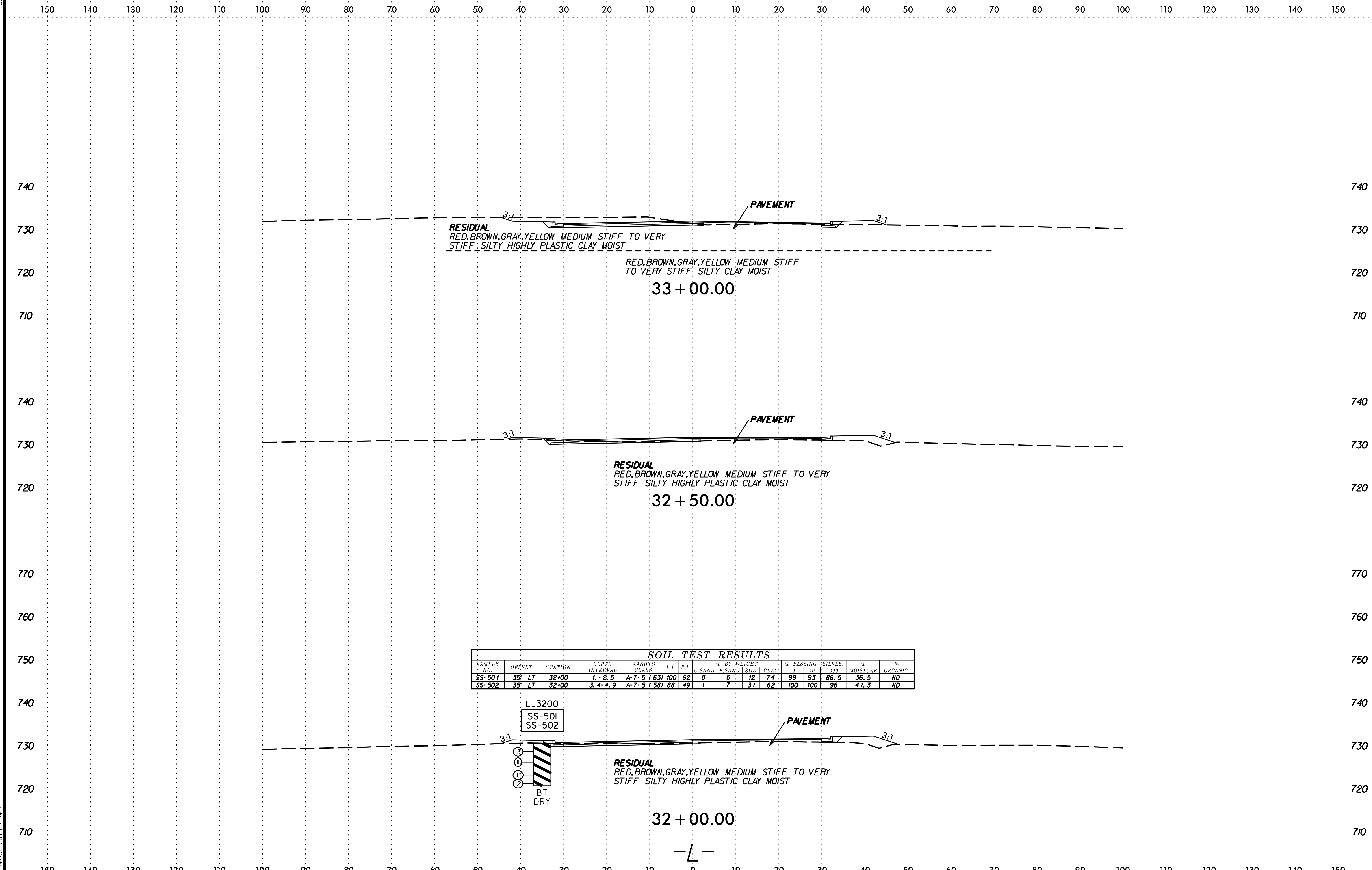
PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	21

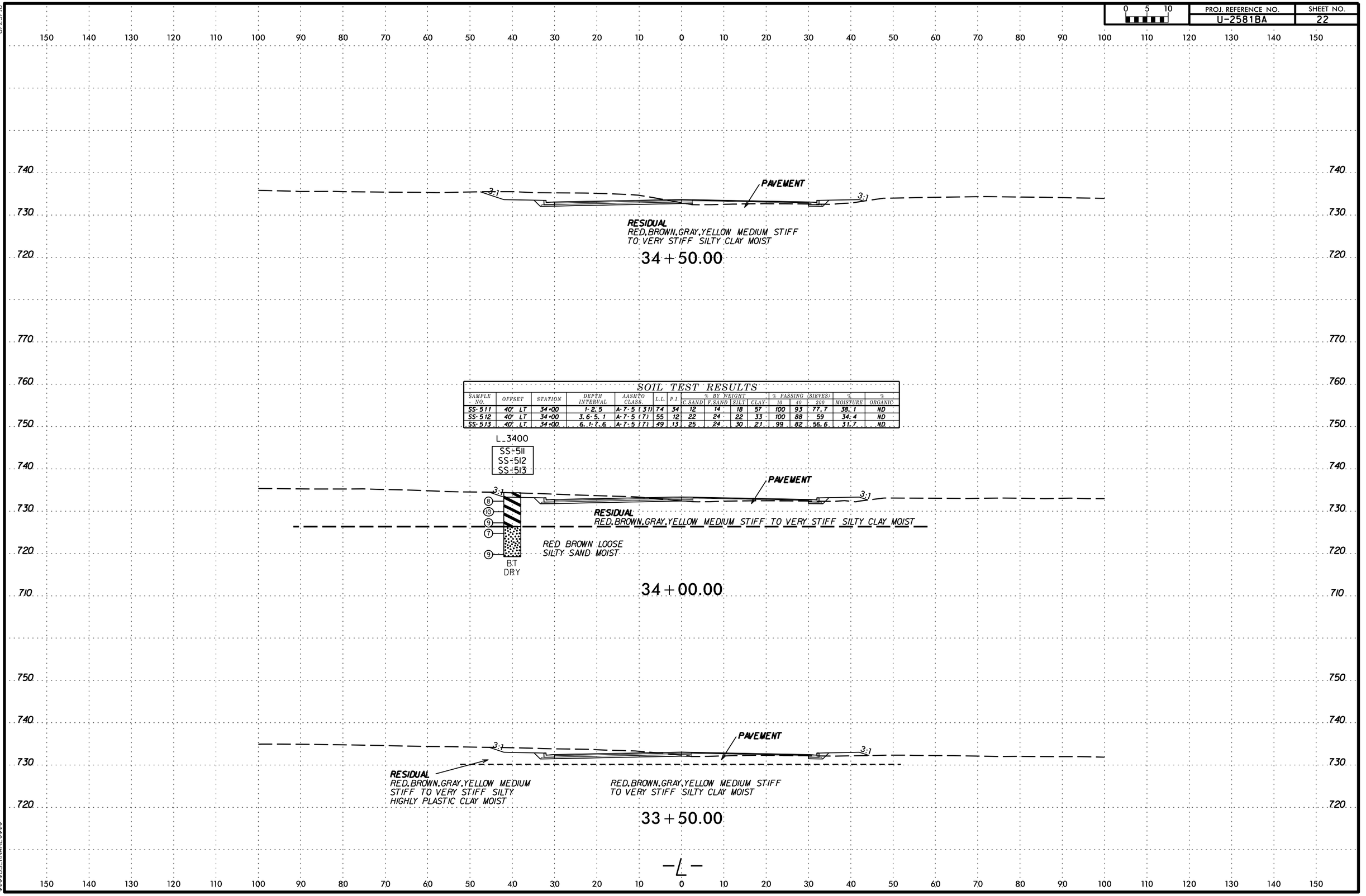


SOIL TEST RESULTS

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-501	35' LT	32+00	1.-2.5	A-7-5 (63)	100	62	8	6	12	74	99	93	86.5	36.5	ND
SS-502	35' LT	32+00	3.4-4.9	A-7-5 (58)	88	49	1	7	31	62	100	100	96	41.3	ND

6/23/16

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

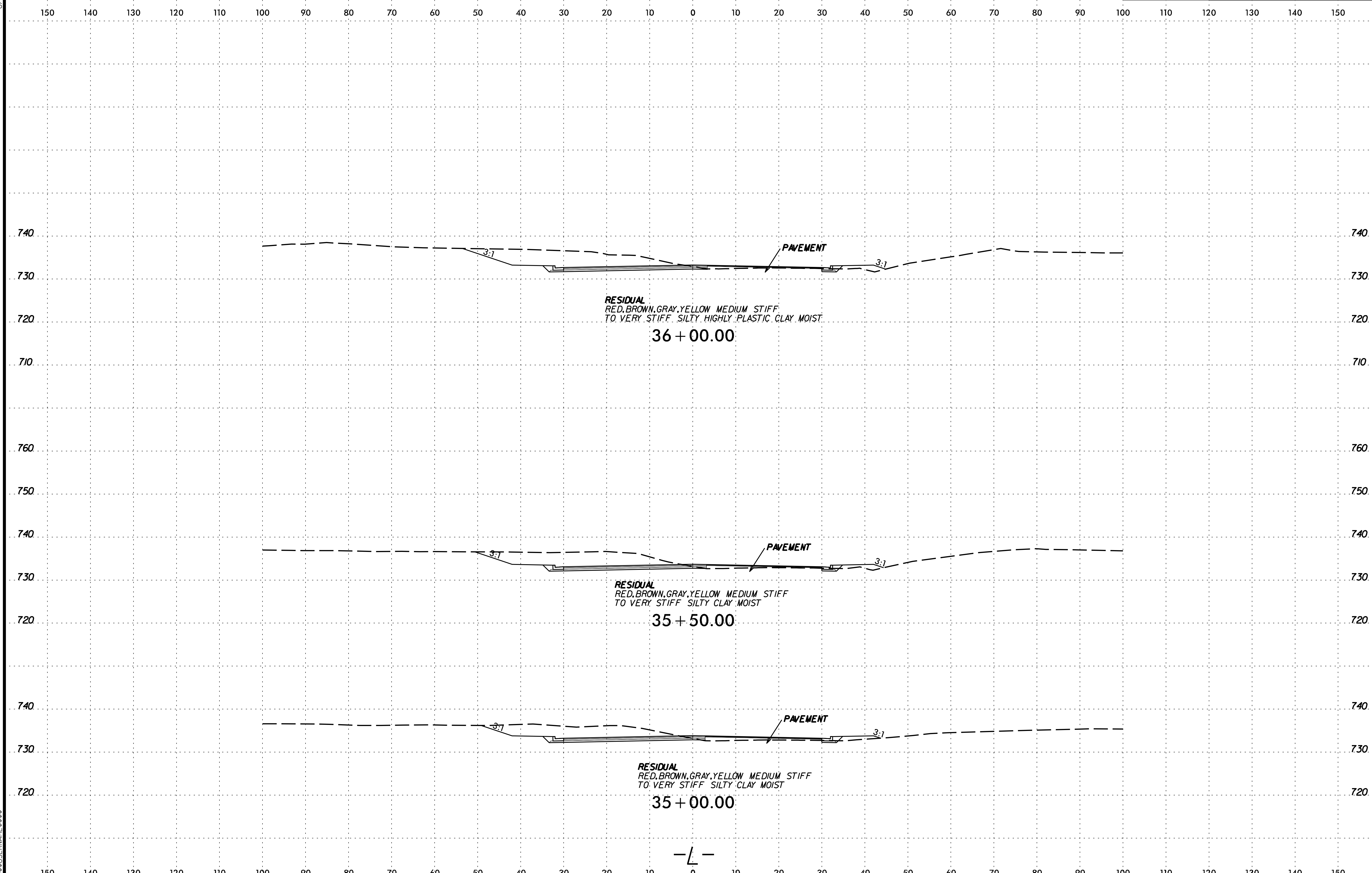


SOIL TEST RESULTS

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-511	40' LT	34+00	1-2.5	A-7-5 (31)	74	34	12	14	18	57	100	93	77.7	38.1	ND
SS-512	40' LT	34+00	3.6-5.1	A-7-5 (7)	55	12	22	24	22	33	100	88	59	34.4	ND
SS-513	40' LT	34+00	6.1-7.6	A-7-5 (7)	49	13	25	24	30	21	99	82	56.6	31.7	ND

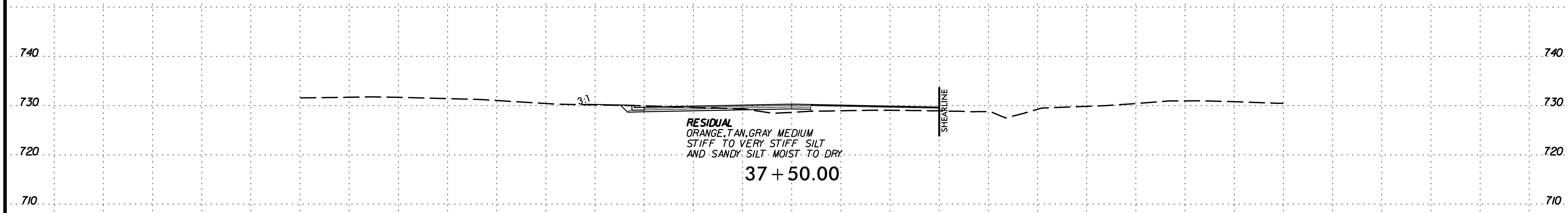
6/23/16

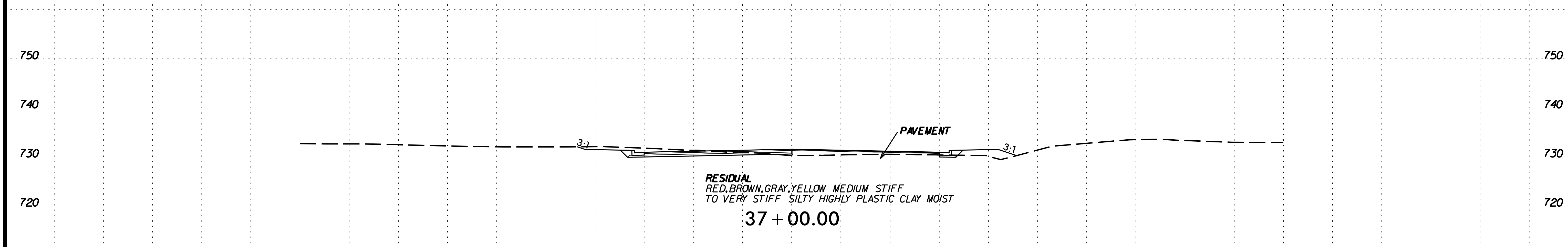
PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	23



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

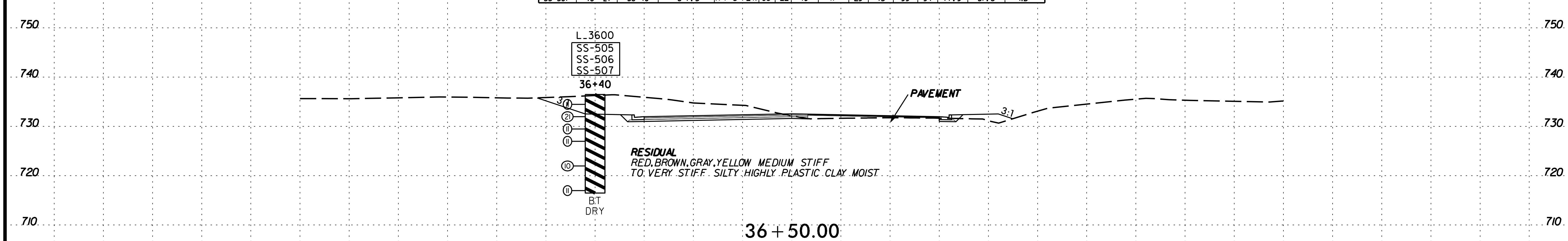
PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	24





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-505	40' LT	36+40	1-2.5	A-7-5 (35)	72	36	6	14	23	57	100	99	82.9	34.9	ND
SS-506	40' LT	36+40	3.5-5.0	A-7-5 (31)	68	29	5	12	15	69	100	99	86.7	39.1	ND
SS-507	40' LT	36+40	6-7.5	A-7-5 (21)	63	22	10	17	29	45	99	94	77.9	37.8	ND



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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	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

690
680
670
660
650
640

3:1

2:1

RESIDUAL
RED TAN SOFT TO STIFF SILTY CLAY AND SANDY SILT MOIST TO WET

TAN,GRAY MEDIUM DENSE TO DENSE SILTY SAND MOIST TO DRY

TAN,GRAY STIFF SANDY CLAY WET

WEATHERED ROCK
[METAMORPHOSED GRANITE]

54+00.00

690
680
670
660

3:1

3:1

RESIDUAL
RED TAN SOFT TO STIFF SILTY CLAY AND SANDY SILT MOIST TO WET

TAN,GRAY MEDIUM DENSE TO DENSE SILTY SAND MOIST TO DRY

53+50.00

700
690
680
670
660

3:1

3:1

RESIDUAL
RED TAN SOFT TO STIFF SILTY CLAY AND SANDY SILT MOIST TO WET

TAN,GRAY MEDIUM DENSE TO DENSE SILTY SAND MOIST TO DRY

53+00.00

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

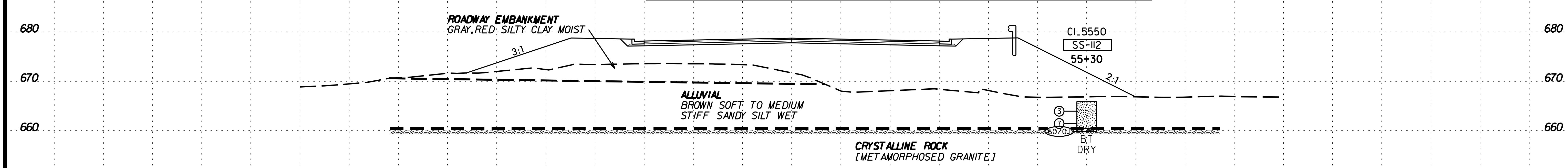
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

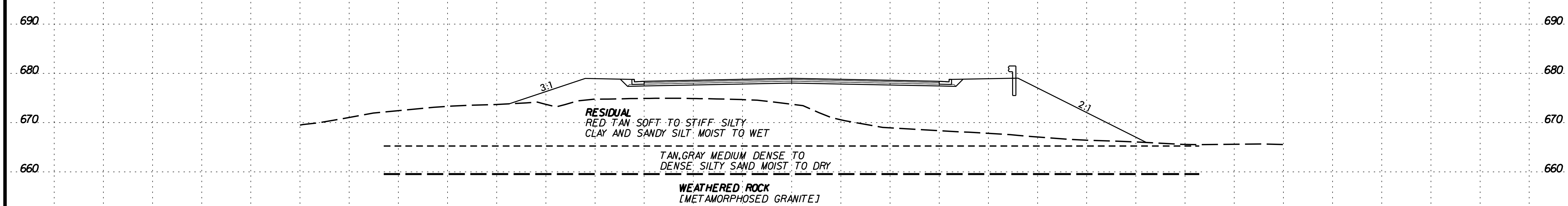
PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	26

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- 112	60' RT	55+30	1-2.5	A-4 (4)	30	9	8	32	33	27	100	99	66.5	ND	ND



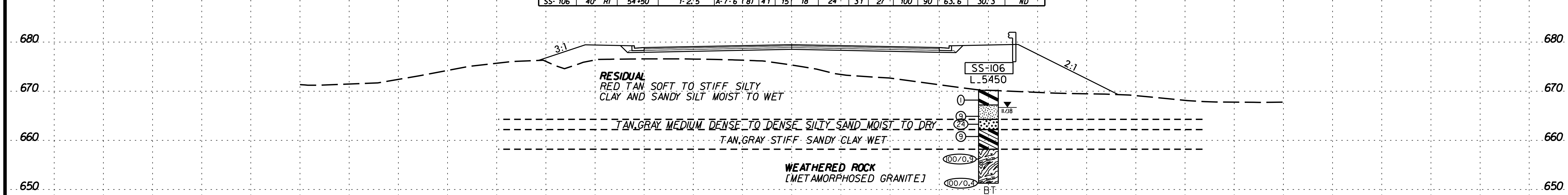
55+50.00



55+00.00

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- 106	40' RT	54+50	1-2.5	A-7-6 (8)	41	15	18	24	31	27	100	90	63.6	30.3	ND



54+50.00

-L-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	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

720 710 700 690 680

PAVEMENT

3:1

3:1

RESIDUAL
TAN,GRAY SOFT TO VERY STIFF SANDY SILT AND SILTY CLAY MOIST

TAN LOOSE TO DENSE SILTY SAND AND CLAYEY SAND WET TO MOIST

WEATHERED ROCK
[METAMORPHOSED GRANITE]

64+50.00

730 720 710 700 690 680

Ⓐ **RESIDUAL**
TAN,GRAY SOFT TO VERY STIFF
SANDY SILT AND SILTY CLAY MOIST

PAVEMENT

3:1

3:1

Ⓐ

TAN LOOSE TO DENSE SILTY SAND
AND CLAYEY SAND WET TO MOIST

WEATHERED ROCK
[METAMORPHOSED GRANITE]

64+00.00

720 710 700 690 680

PAVEMENT

3:1

3:1

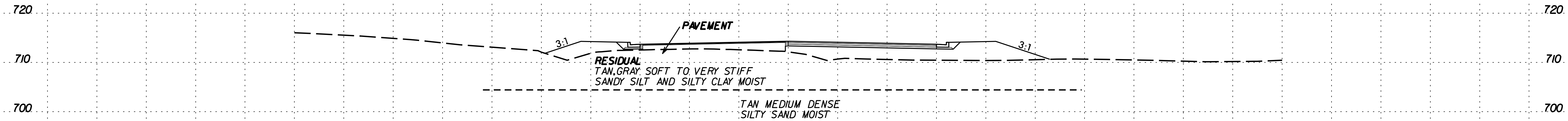
RESIDUAL
TAN LOOSE TO DENSE SILTY SAND
AND CLAYEY SAND WET TO MOIST

WEATHERED ROCK
[METAMORPHOSED GRANITE]

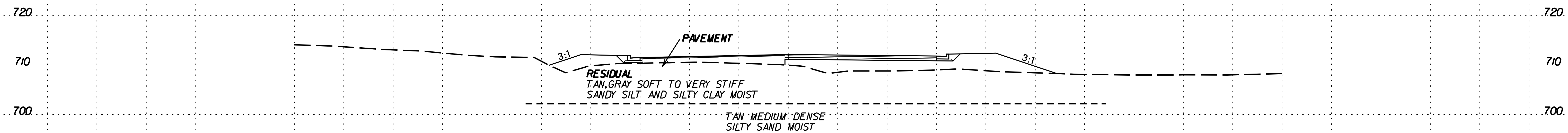
63+50.00

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

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



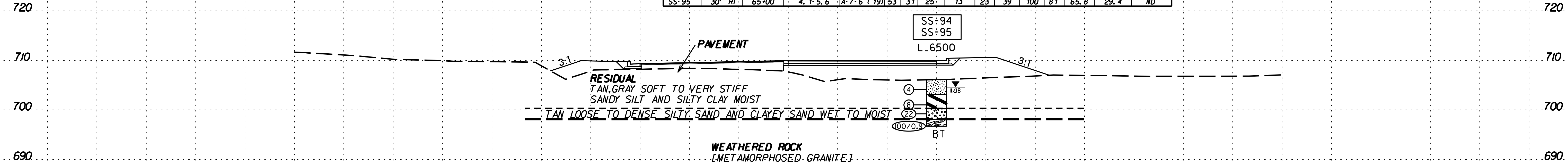
66+00.00



65+50.00

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-94	30' RT	65+00	1-2.5	A-4 (0)	19	4	37	24	20	19	95	72	41.1	17.9	ND
SS-95	30' RT	65+00	4.1-5.6	A-7-6 (19)	53	31	25	13	23	39	100	81	65.8	29.4	ND



65+00.00

-L-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	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

740
730
720
710
700

RESIDUAL
TAN,GRAY STIFF TO VERY STIFF
SILTY HIGH PLASTIC CLAY MOIST

PAVEMENT

RESIDUAL
TAN,GRAY SOFT TO VERY STIFF
SANDY SILT AND SILTY CLAY MOIST

3:1

3:1

TAN,GRAY SOFT TO MEDIUM STIFF SANDY SILT AND SILTY CLAY MOIST

TAN MEDIUM DENSE SILTY SAND MOIST

67 + 50.00

730
720
710
700

RESIDUAL
TAN,GRAY STIFF TO VERY STIFF
SILTY HIGH PLASTIC CLAY MOIST

3:1

PAVEMENT

3:1

RESIDUAL
TAN,GRAY SOFT TO VERY STIFF
SANDY SILT AND SILTY CLAY MOIST

TAN MEDIUM DENSE
SILTY SAND MOIST

67 + 00.00

730
720
710
700

3:1

PAVEMENT

3:1

RESIDUAL
TAN,GRAY SOFT TO VERY STIFF
SANDY SILT AND SILTY CLAY MOIST

TAN MEDIUM DENSE
SILTY SAND MOIST

66 + 50.00

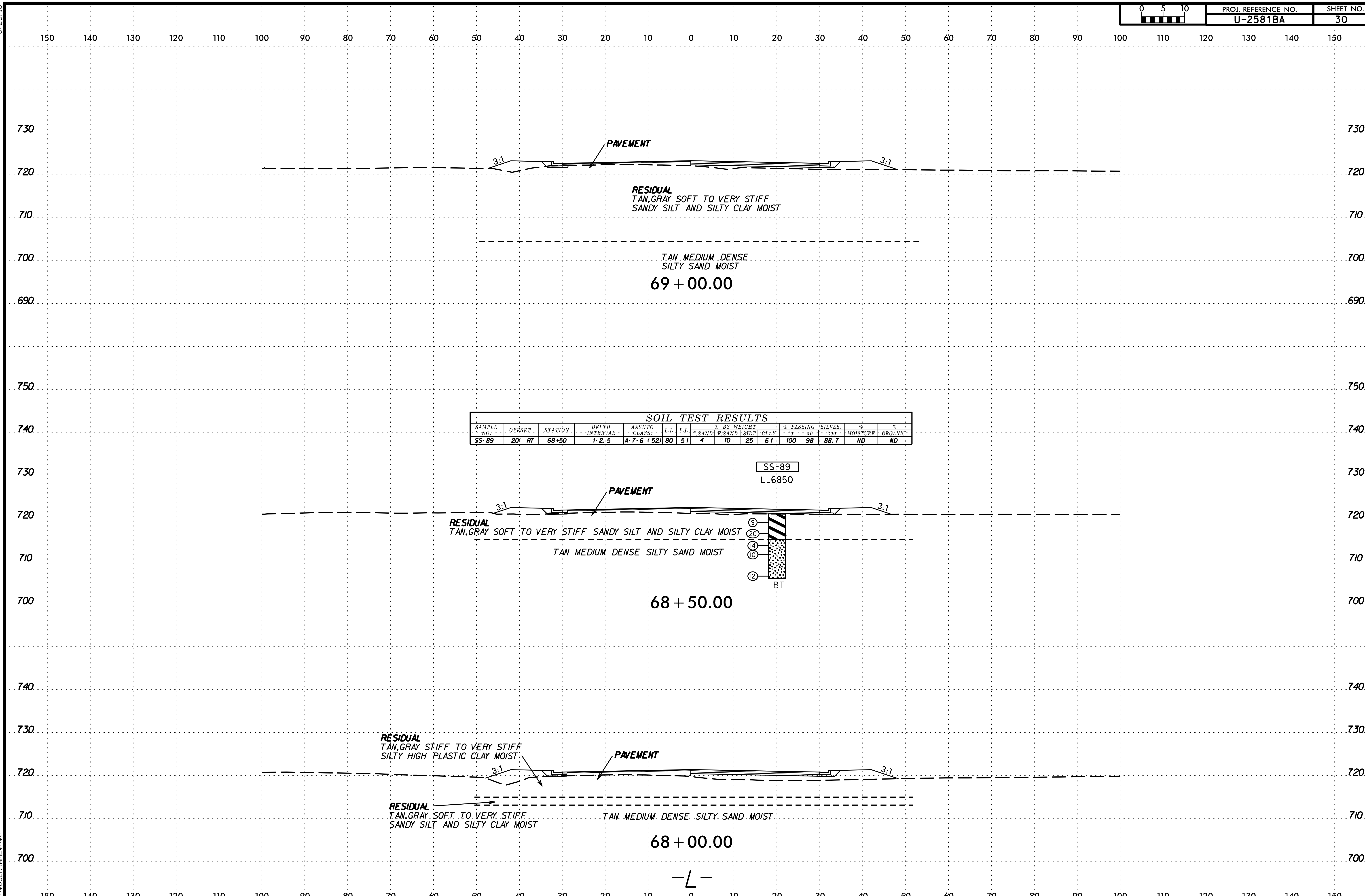
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

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

PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	30

6/23/16

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-89	20' RT	68+50	1-2.5	A-7-6 (52)	80	51	4	10	25	61	100	98	88.7	ND	ND

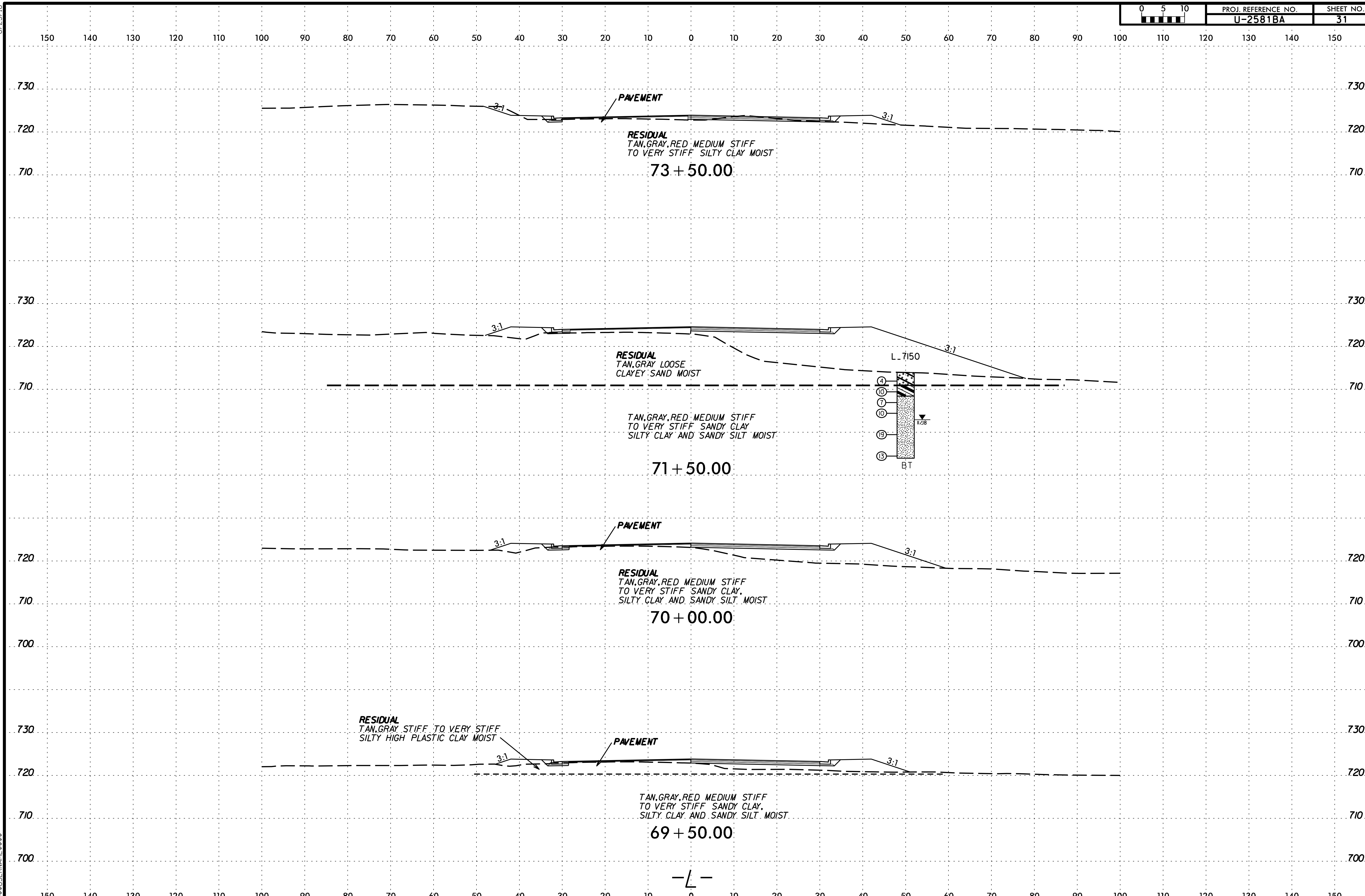


$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

PROJ. REFERENCE NO. U-2581BA

SHEET NO. 31

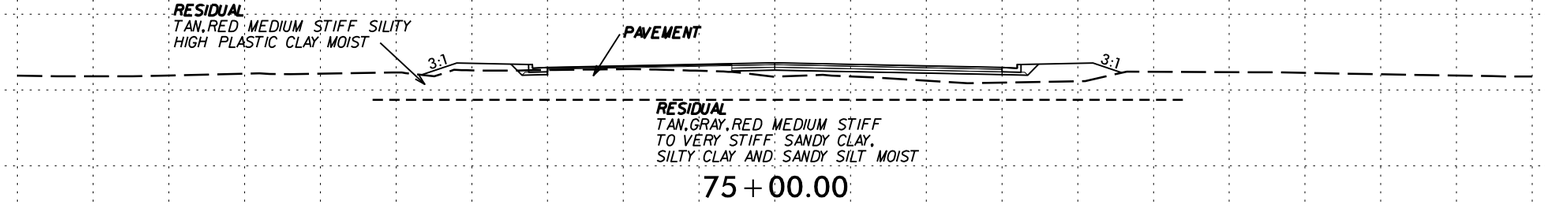


$$$$$SYSTIME$$$$ $$$$$$$$$DGN$$$$$$$$$$$$$$$$$$ $$$USERNAME$$$$

6/23/16

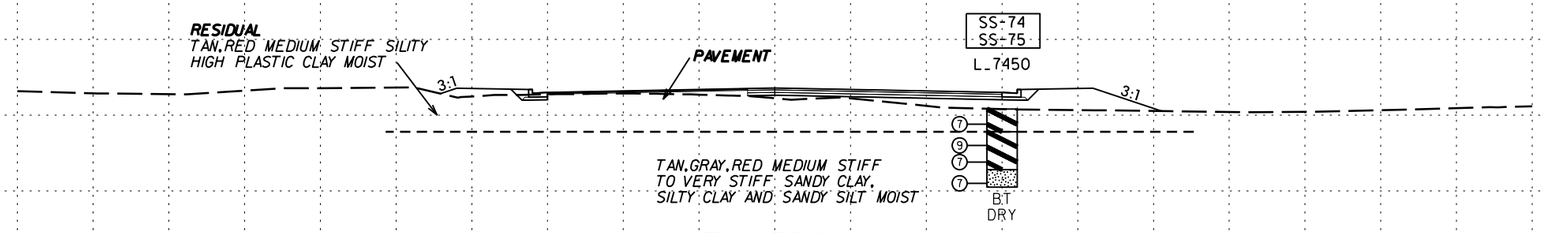
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

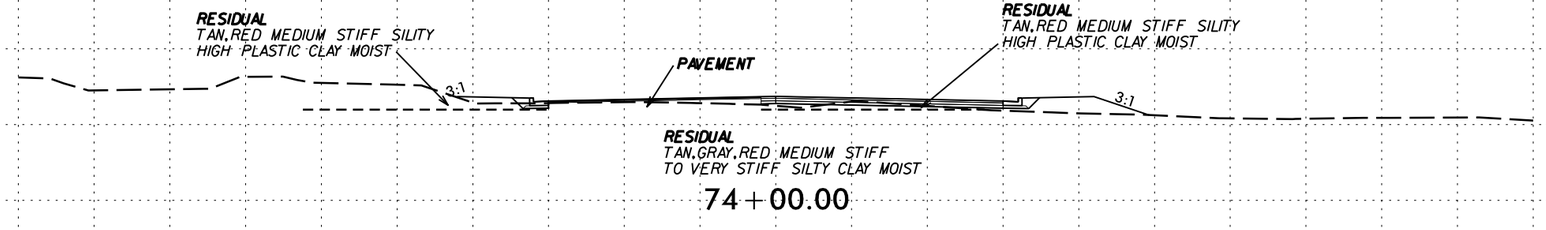
740 730 720 710 700 750



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-74	30' RT	74+50	1-2.5	A-7-6 (62)	94	65	7	10	10	73	100	96	84.8	38.1	ND
SS-75	30' RT	74+50	3.8-5.3	A-7-5 (13)	53	11	4	19	41	36	100	99	83.2	45.2	ND





-L-

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

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	33

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

740
730
720
710

PAVEMENT

3:1

3:1

RESIDUAL
TAN,GRAY,RED MEDIUM STIFF
TO VERY STIFF SANDY CLAY,
SILTY CLAY AND SANDY SILT MOIST

77+00.00

730
720
710

PAVEMENT

3:1

3:1

RESIDUAL
TAN,GRAY,RED MEDIUM STIFF
TO VERY STIFF SANDY CLAY,
SILTY CLAY AND SANDY SILT MOIST

76+50.00

740
730
720
710

RESIDUAL
TAN,RED MEDIUM STIFF SILITY
HIGH PLASTIC CLAY MOIST

PAVEMENT

3:1

3:1

RESIDUAL
TAN,GRAY,RED MEDIUM STIFF
TO VERY STIFF SANDY CLAY,
SILTY CLAY AND SANDY SILT MOIST

76+00.00

740
730
720
710
700

RESIDUAL
TAN,RED MEDIUM STIFF SILITY
HIGH PLASTIC CLAY MOIST

PAVEMENT

3:1

3:1

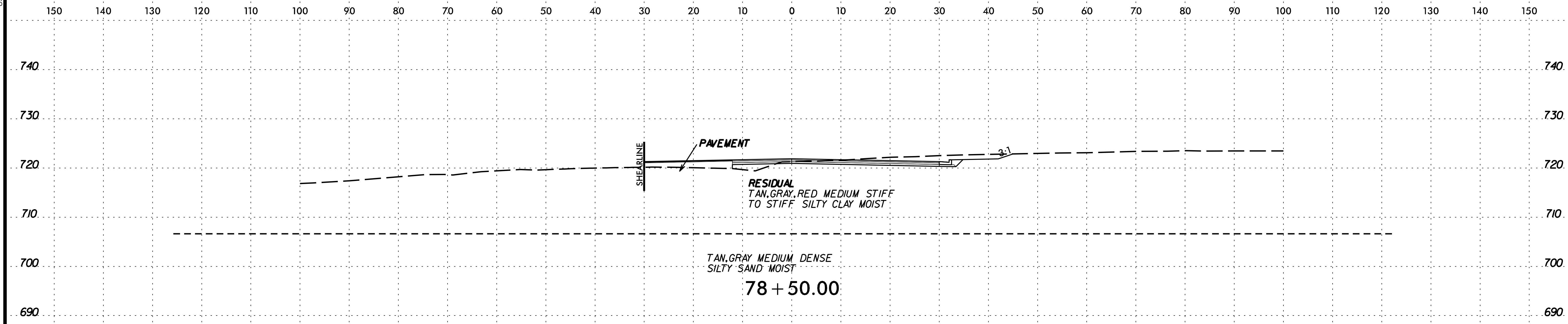
RESIDUAL
TAN,GRAY,RED MEDIUM STIFF
TO VERY STIFF SANDY CLAY,
SILTY CLAY AND SANDY SILT MOIST

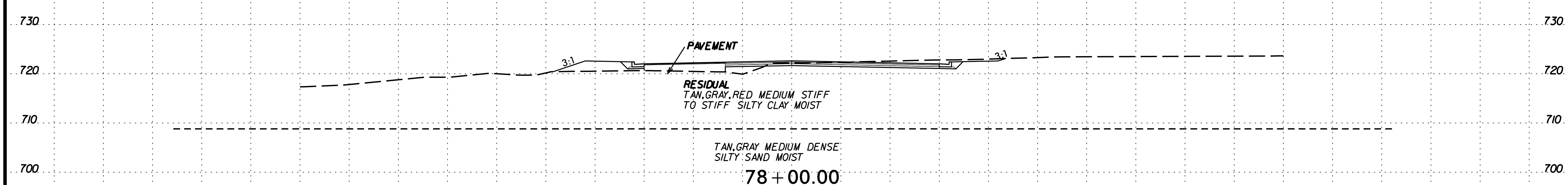
75+50.00

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

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

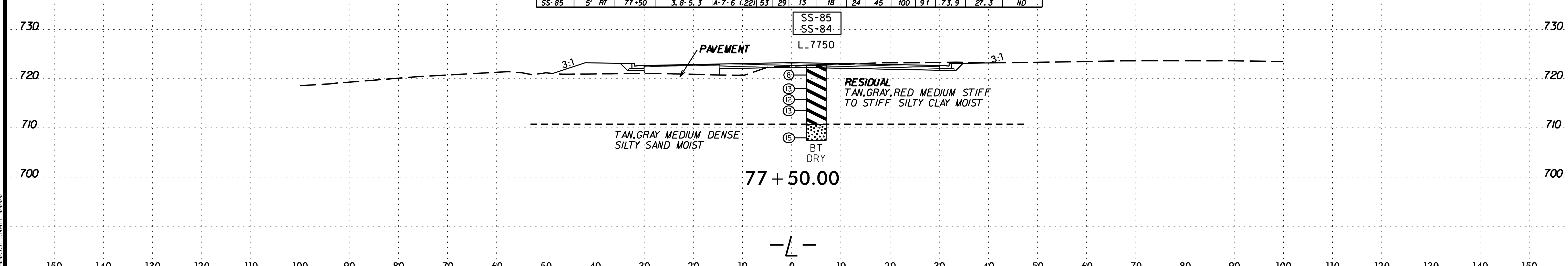
6/23/16



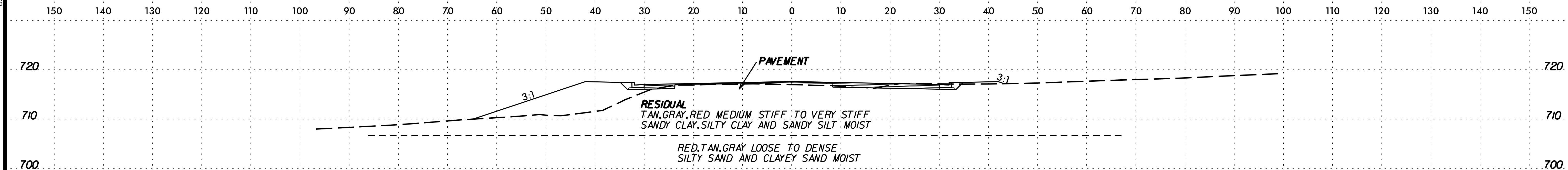


SOIL TEST RESULTS

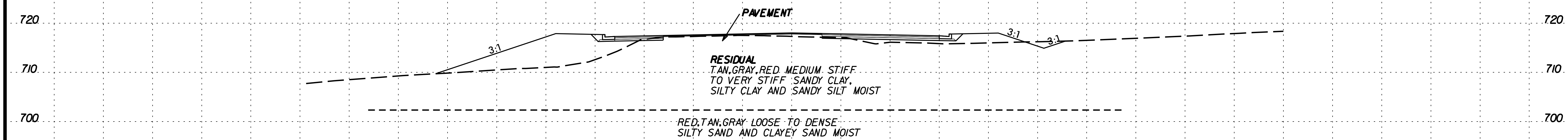
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-84	5' RT	77+50	1-2.5	A-7-6 (25)	61	35	16	15	14	55	99	90	70.8	29.4	ND
SS-85	5' RT	77+50	3.8-5.3	A-7-6 (22)	53	29	13	18	24	45	100	91	73.9	27.3	ND



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



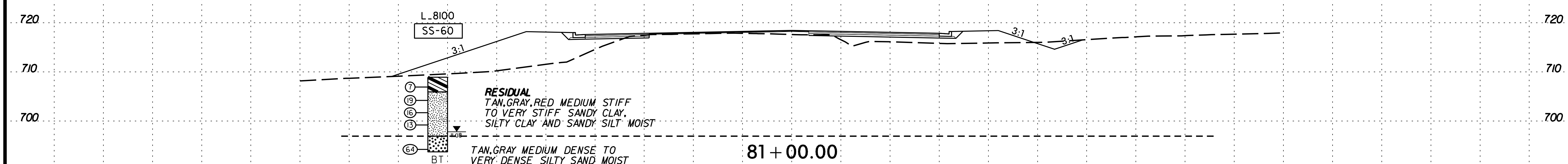
82+00.00



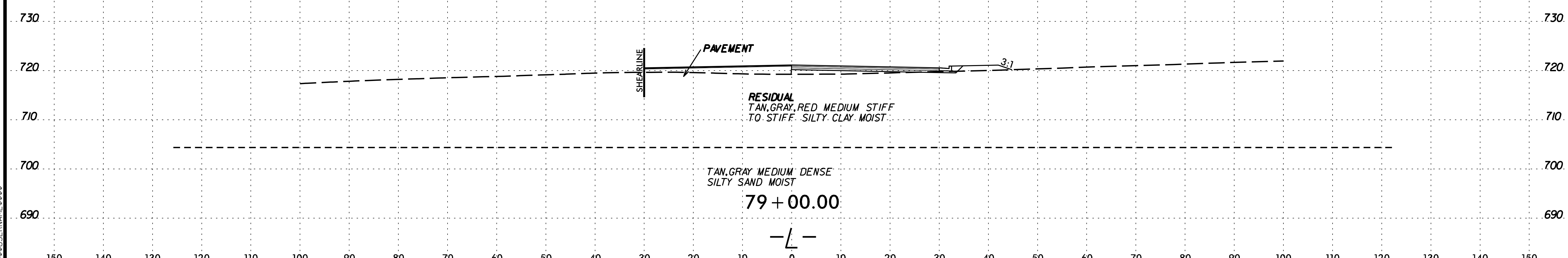
81+50.00

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-60	72' LT	80+85	1-2.5	A-6 (4)	31	16	35	21	15	29	98	77	46.6	14.7	ND

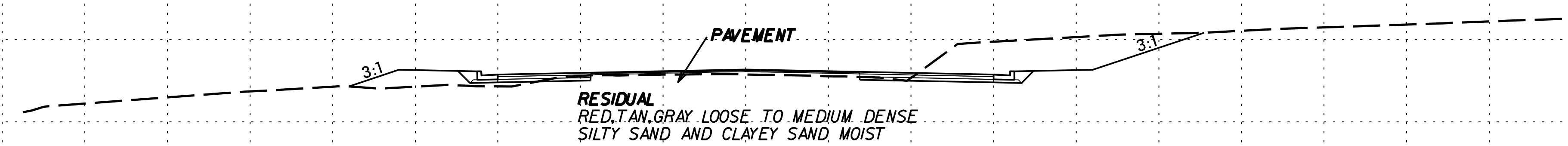


81+00.00



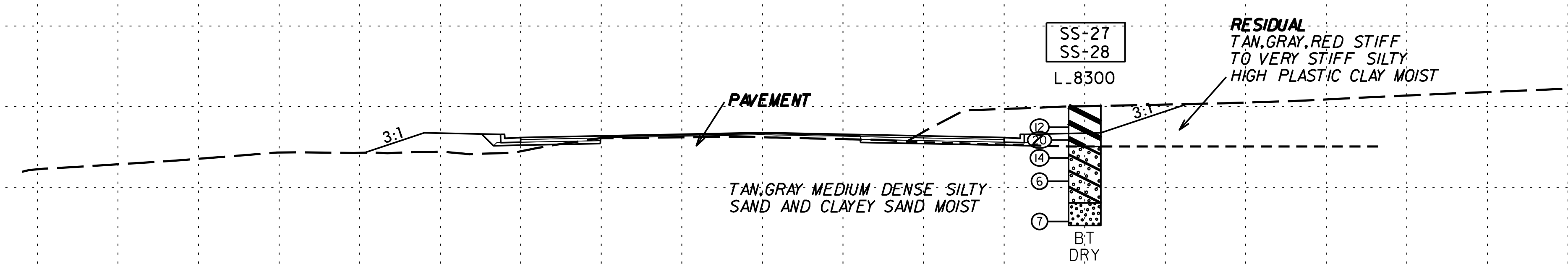
79+00.00

-L-

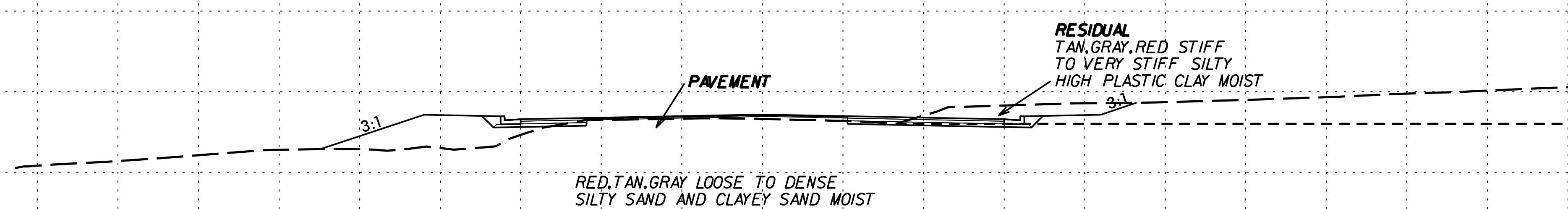


83 + 50.00

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-27	40' RT	83+00	1-2.5	A-7-5 (37)	77	47	19	9	12	60	100	88	73.7	29.7	ND
SS-28	40' RT	83+00	3.2-4.7	A-7-5 (18)	63	32	27	14	17	42	100	82	61.2	22.8	ND



83 + 00.00

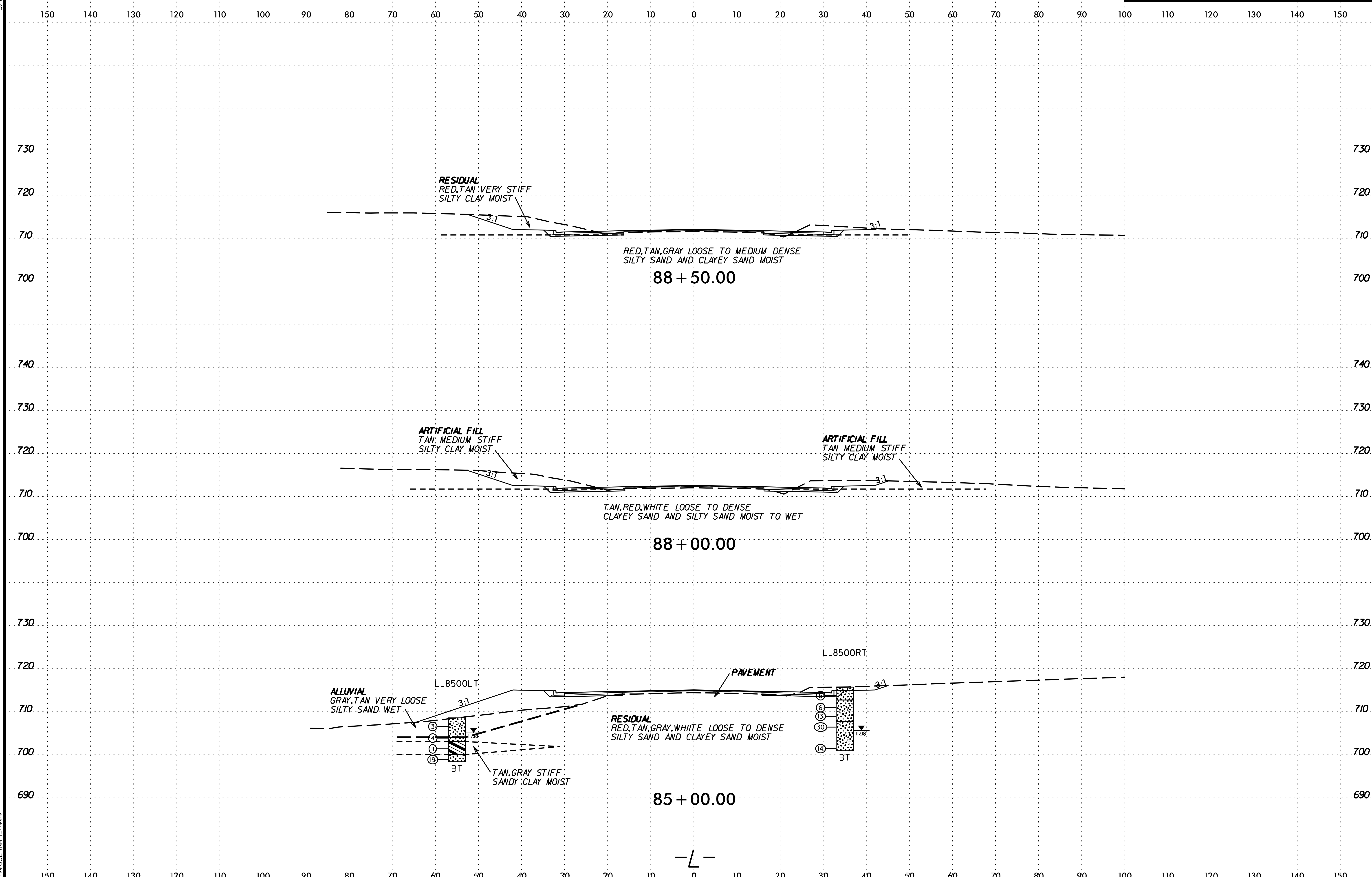


82 + 50.00

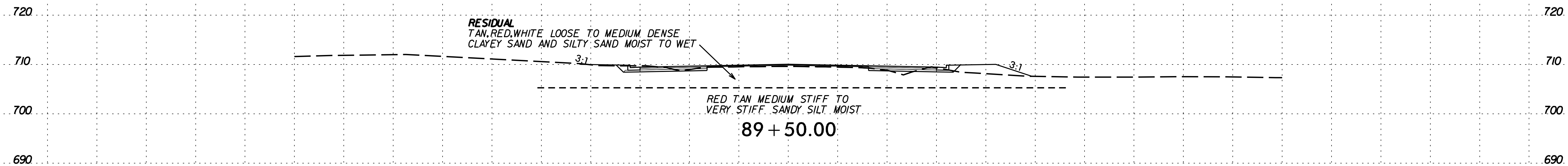
-L-

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	37



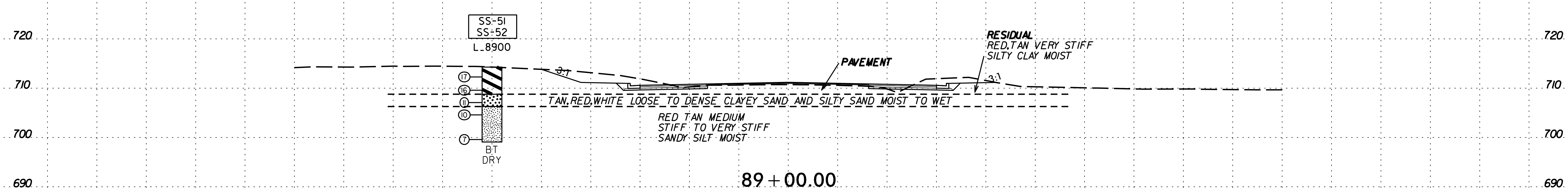
$$$$SYSTIME$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$



89+50.00

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-51	60' LT	89+00	1-2.5	A-7-5 (27)	72	40	23	12	16	49	99	83	66.8	26.7	ND
SS-52	60' LT	89+00	3.7-5.2	A-7-5 (11)	56	21	29	17	21	33	99	79	56.9	24.1	ND



89+00.00

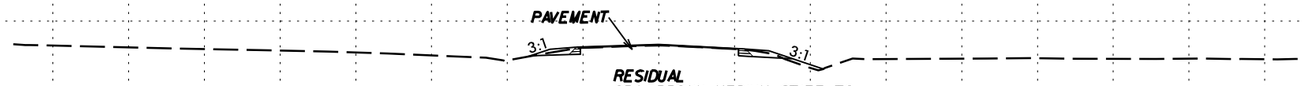
-L-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	39

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

750
740
730
720

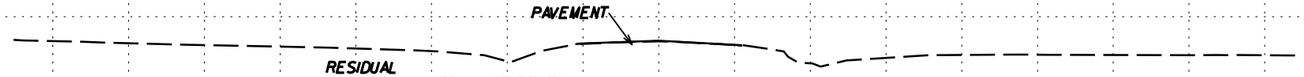


RESIDUAL
GRAY,BROWN MEDIUM STIFF TO VERY STIFF SILTY CLAY MOIST

GRAY,BROWN LOOSE TO MEDIUM DENSE SILTY SAND MOIST

13+50.00

760
750
740
730
720



RESIDUAL
GRAY,BROWN MEDIUM STIFF TO VERY STIFF SILTY CLAY MOIST

GRAY,BROWN LOOSE TO MEDIUM DENSE SILTY SAND MOIST

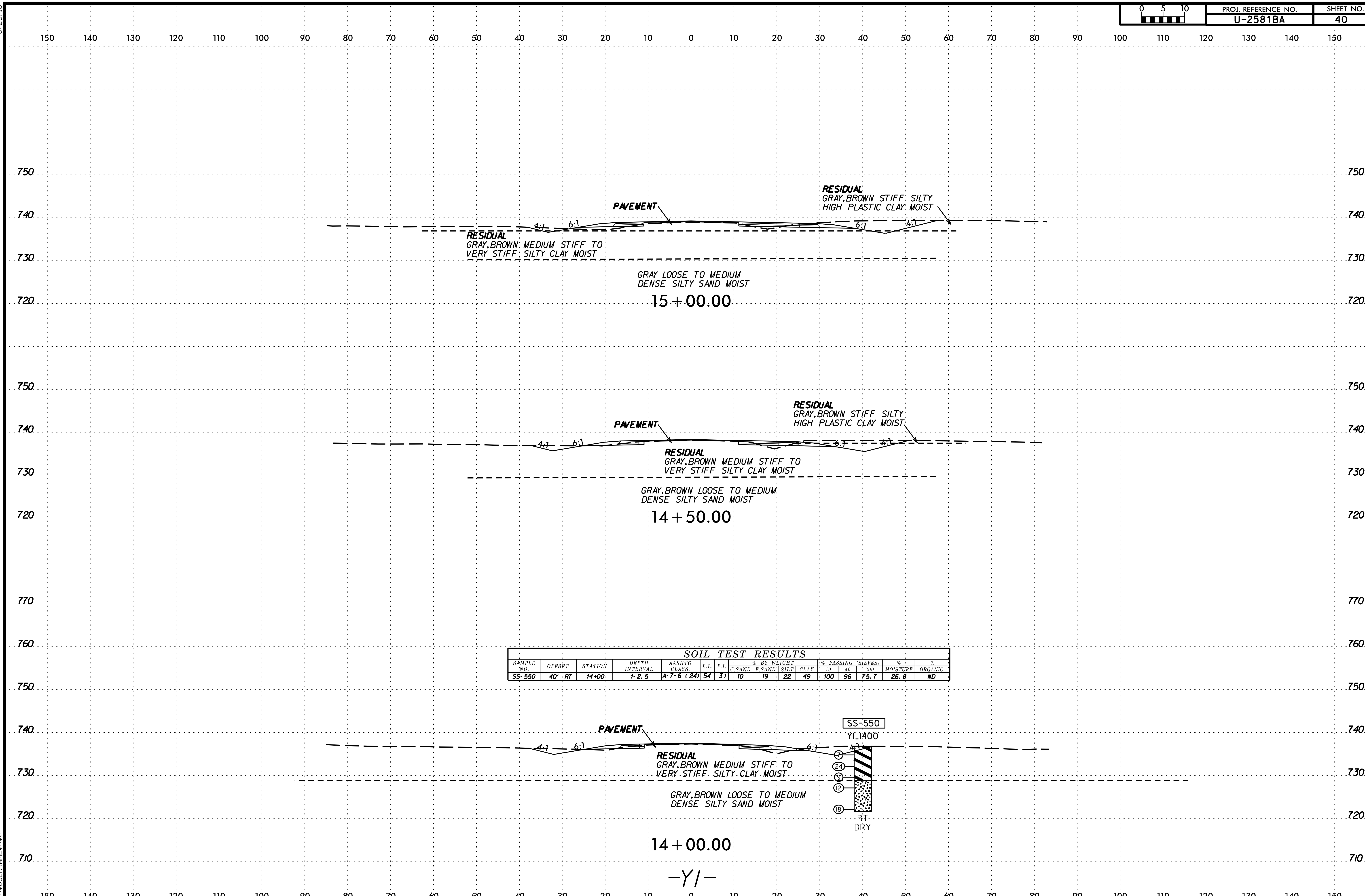
13+45.00

-Y/-

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

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

PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	40



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-550	40' RT	14+00	1-2.5	A-7-6 (24)	54	31	10	19	22	49	100	96	75.7	26.8	ND

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

760
750
740
730

RESIDUAL
GRAY, BROWN MEDIUM STIFF TO
VERY STIFF SILTY CLAY MOIST

PAVEMENT

4:1 6:1 6:1 4:1

GRAY, BROWN LOOSE TO MEDIUM
DENSE SILTY SAND MOIST

16 + 50.00

770
760

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-545	45' RT	16+00	1-2.5	A-7-5 (65)	94	61	1	10	22	66	100	100	91.3	41.5	ND
SS-546	45' RT	16+00	3.7-5.2	A-7-5 (52)	81	44	1	4	28	66	100	100	96.3	40.2	ND
SS-547	45' RT	16+00	6.2-7.7	A-7-5 (18)	49	18	2	18	51	29	100	99	85	38.2	ND

750
740
730
720

RESIDUAL
GRAY, BROWN STIFF SILTY
HIGH PLASTIC CLAY MOIST

RESIDUAL
GRAY, BROWN MEDIUM STIFF TO
VERY STIFF SILTY CLAY MOIST

PAVEMENT

SS-545
SS-546
SS-547
YI_1600

4:1 6:1 6:1 4:1

9 10 8 7 11

BT
DRY

GRAY, BROWN LOOSE TO MEDIUM
DENSE SILTY SAND MOIST

16 + 00.00

750
740
730
720

PAVEMENT

RESIDUAL
GRAY, BROWN STIFF SILTY
HIGH PLASTIC CLAY MOIST

4:1 6:1 6:1 4:1

RESIDUAL
GRAY, BROWN MEDIUM STIFF TO
VERY STIFF SILTY CLAY MOIST

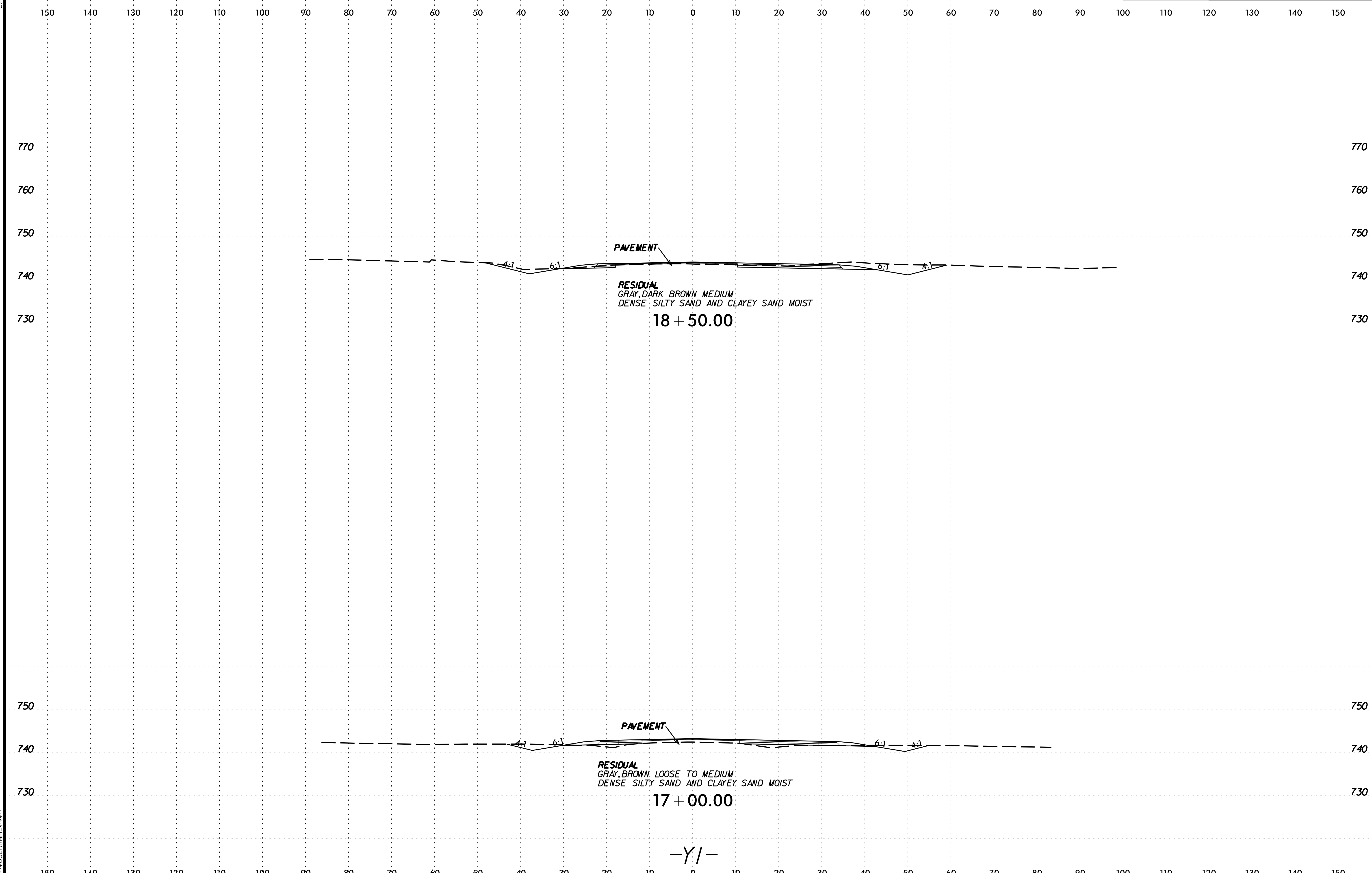
GRAY LOOSE TO MEDIUM
DENSE SILTY SAND MOIST

15 + 50.00

-Y1-

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

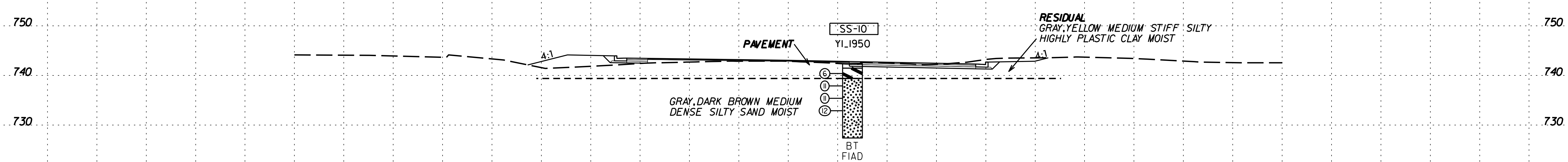
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



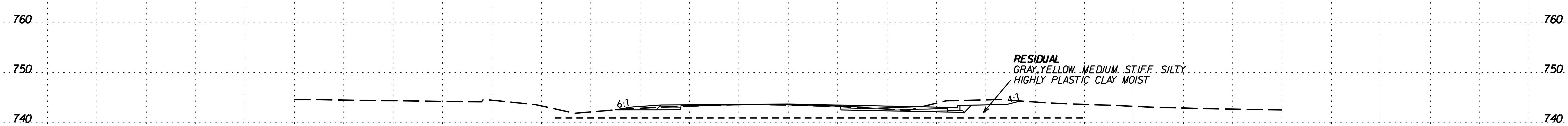
6/23/16

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

SOIL TEST RESULTS																
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS- 10	13' RT	19+45	1- 2.5	A-7-5 (51)	82	43	2	5	34	60	100	99	95.2	48.5	ND



19+50.00



19+00.00

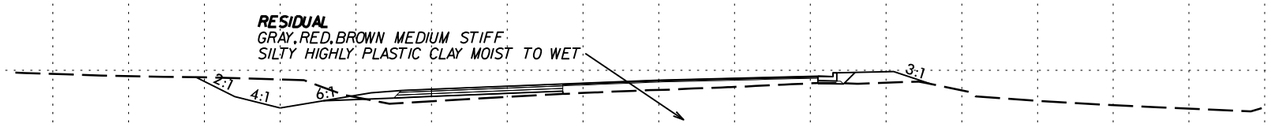
-Y1-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	44

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

750
740
730
720

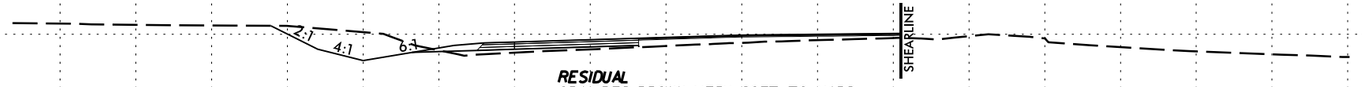


RESIDUAL
GRAY, RED, BROWN MEDIUM STIFF
SILTY HIGHLY PLASTIC CLAY MOIST TO WET

GRAY, RED, BROWN STIFF TO HARD
SANDY SILT MOIST TO WET

12 + 50.00

770
760
750
740
730
720



RESIDUAL
GRAY, RED, BROWN VERY SOFT TO HARD
SILTY CLAY MOIST TO WET

12 + 00.00

-Y2-

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

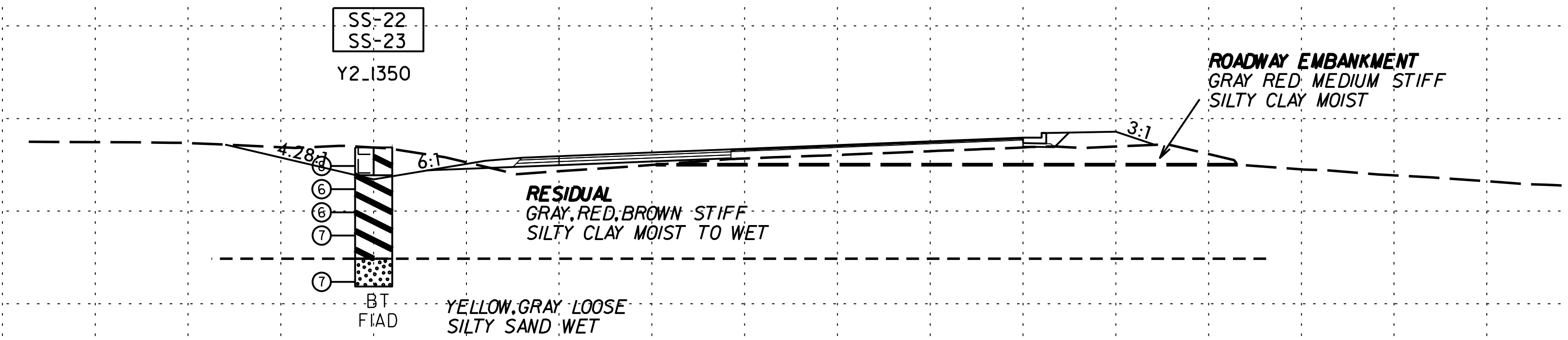
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	45

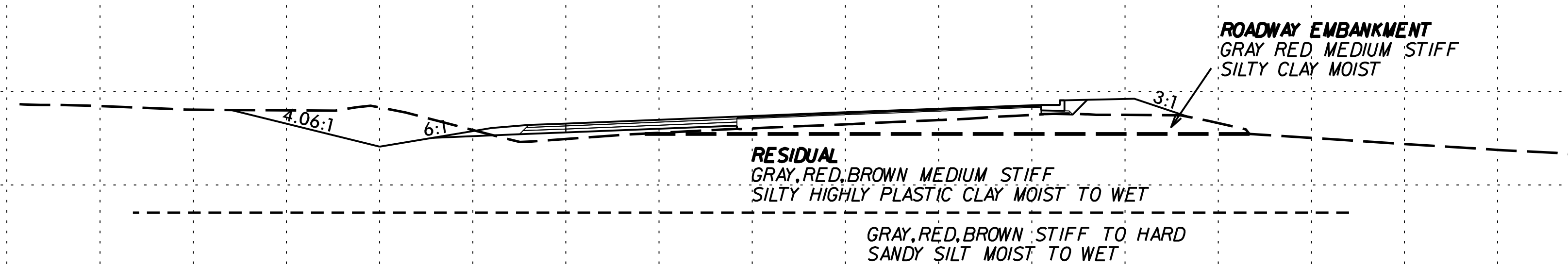
6/23/16

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-22	50' LT	13+50	1-2.5	A-7-5 (31)	67	37	12	12	16	59	100	94	77.6	30.4	ND
SS-23	50' LT	13+50	3.5-5	A-7-5 (51)	80	46	4	4	29	62	100	97	92.8	44.1	ND



13 + 50.00

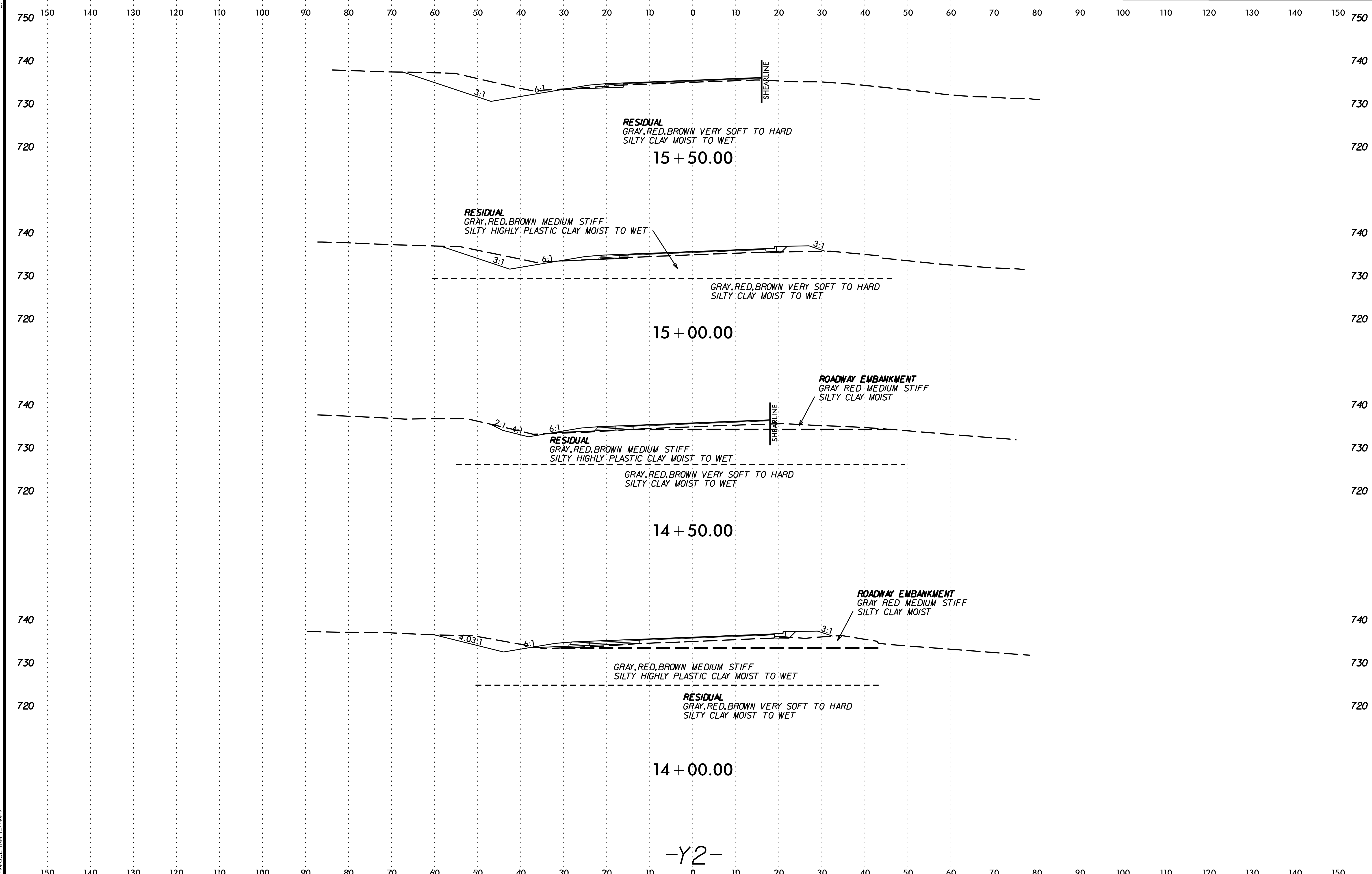


13 + 00.00

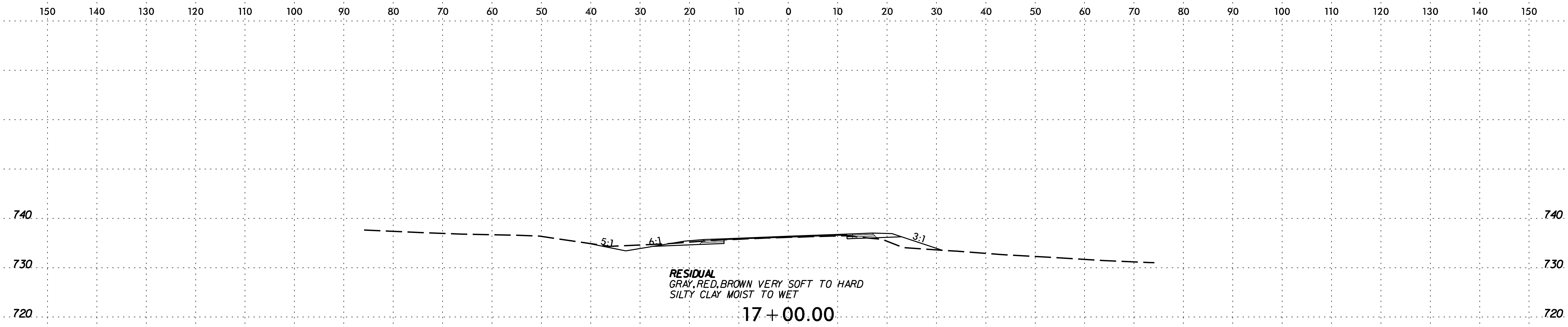
-Y2-

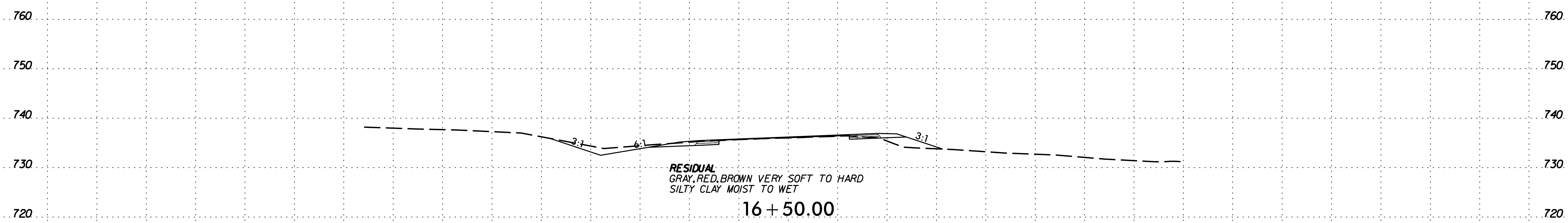
$$$$$SYSTIME$$$$$
$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

0 5 10



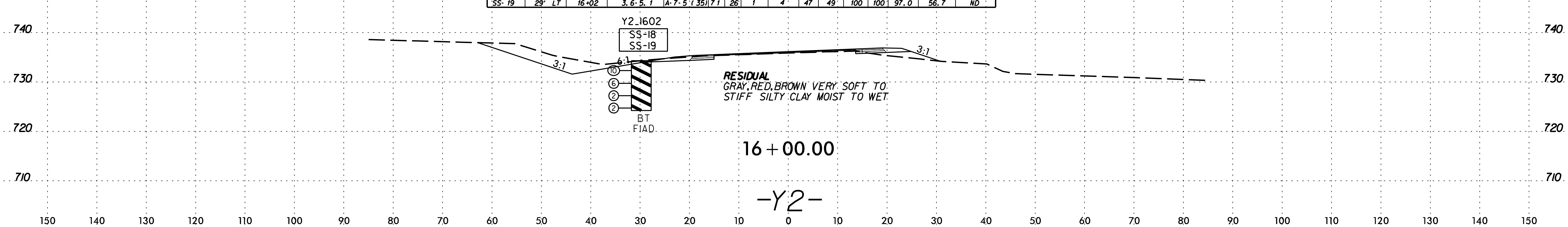
6/23/16
$$$$$SYSTIME$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$





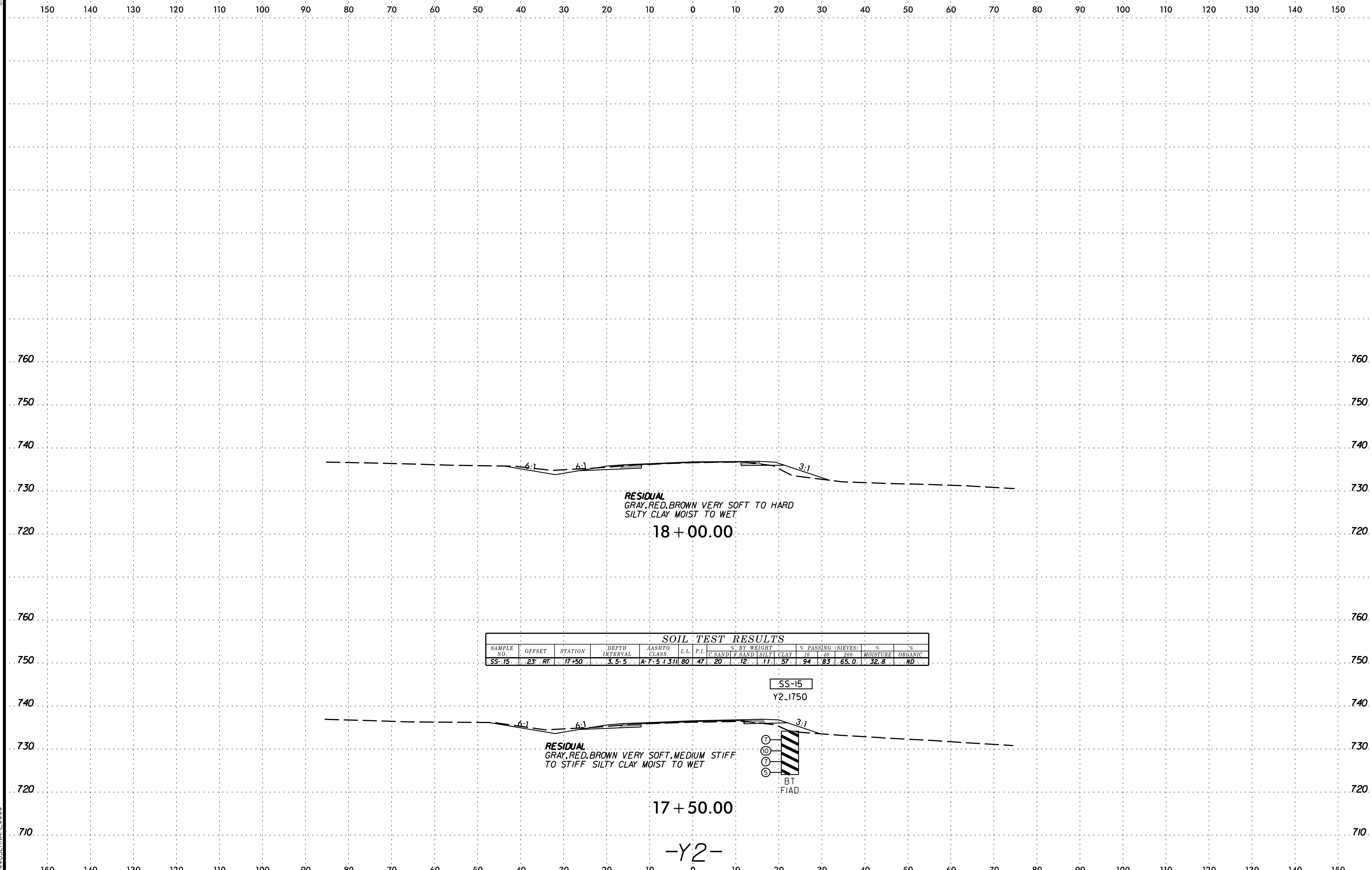
SOIL TEST RESULTS

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- 18	29' LT	16+02	1- 2.5	A-7-5 (40)	75	30	1	3	33	63	100	99	96.8	45.0	ND
SS- 19	29' LT	16+02	3.6-5.1	A-7-5 (35)	71	26	1	4	47	49	100	100	97.0	56.7	ND



-Y2-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	48



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-15	23' RT	17+50	3.5-5	A-7-5 (31)	80	47	20	12	11	57	94	83	65.0	32.8	ND

6/23/16

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

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	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

740
730
720
710

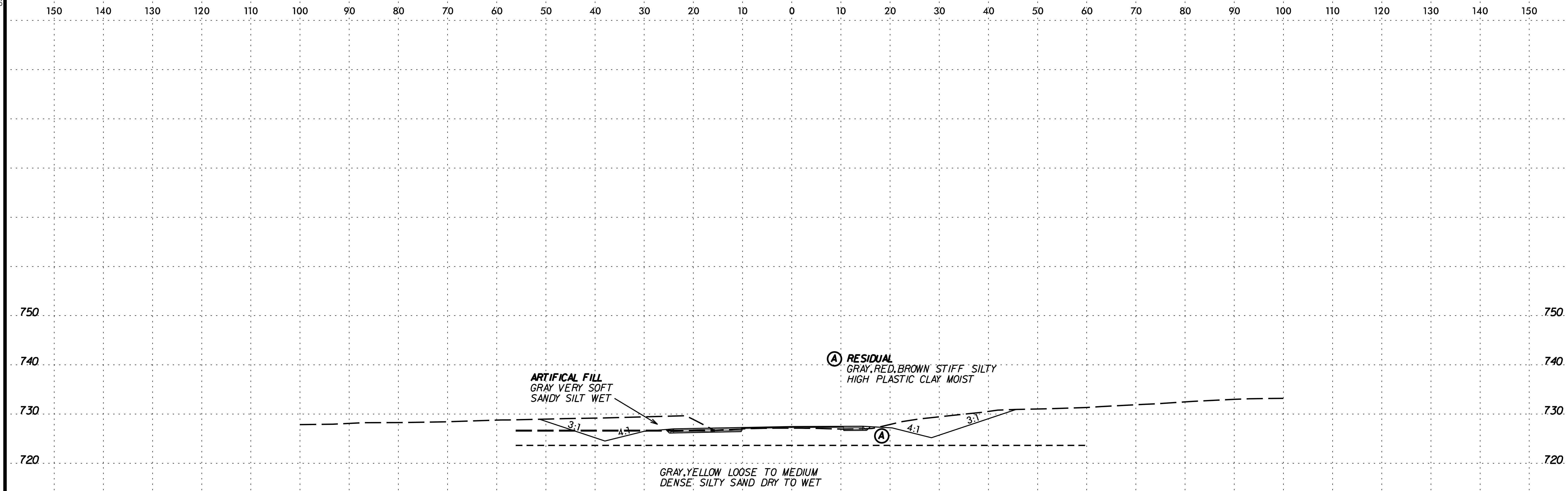
RESIDUAL
GRAY, RED, BROWN VERY SOFT TO HARD
SANDY SILT, SANDY CLAY AND SILTY CLAY
MOIST TO WET

18+50.00

-Y2-

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

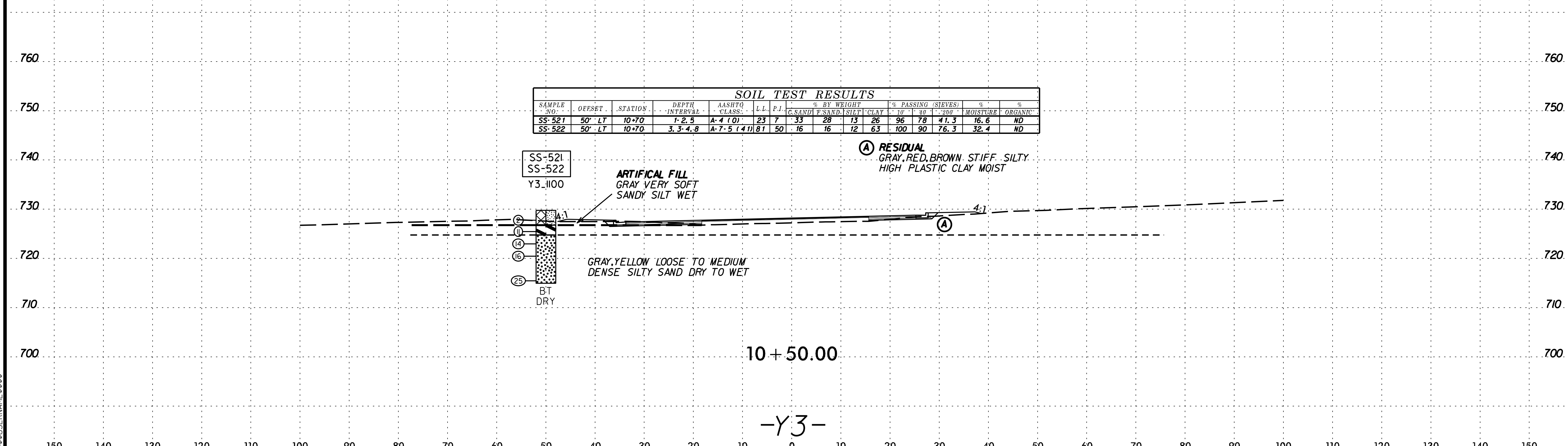
PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	50



11+00.00

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-521	50' LT	10+70	1-2.5	A-4 (0)	23	7	33	28	13	26	96	78	41.3	16.6	ND
SS-522	50' LT	10+70	3.3-4.8	A-7-5 (41)	81	50	16	16	12	63	100	90	76.3	32.4	ND



10+50.00

-Y3-

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

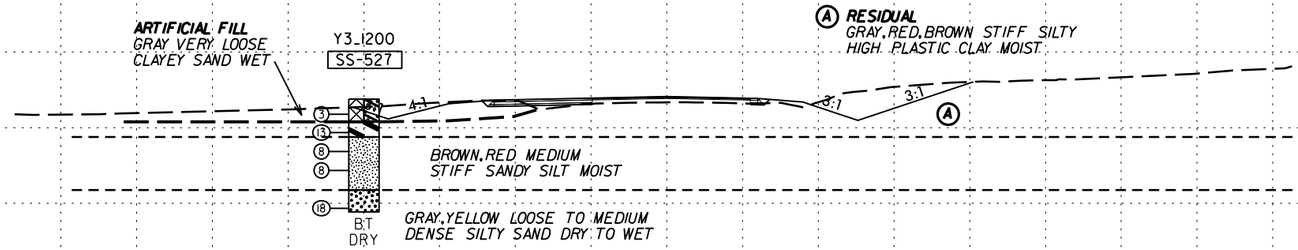
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	51

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

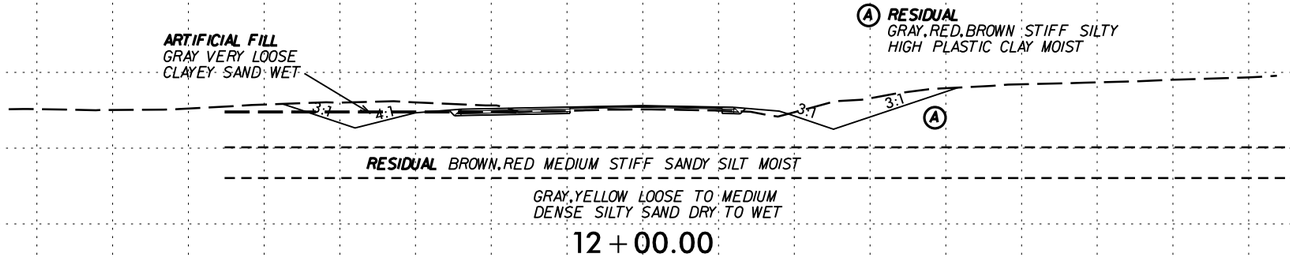
760 750 740 730 720 710 700

SOIL TEST RESULTS

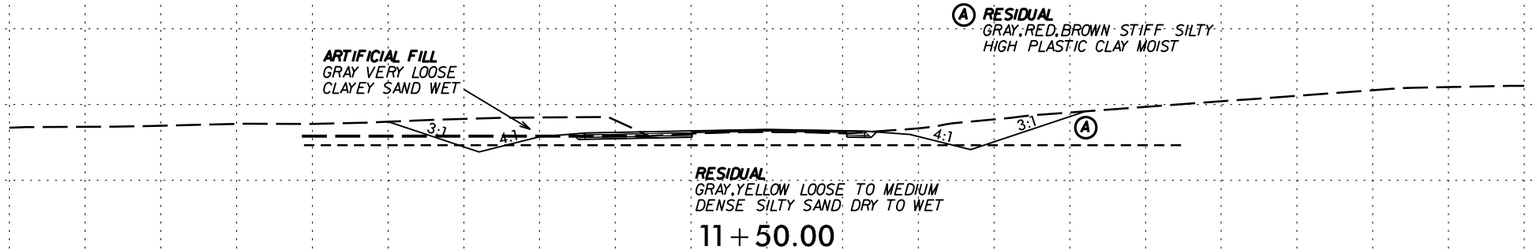
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-527	40' LT	12+40	3.4-4.9	A-7-5 (32)	71	39	15	11	19	56	100	91	76	29.9	ND



12+50.00



12+00.00



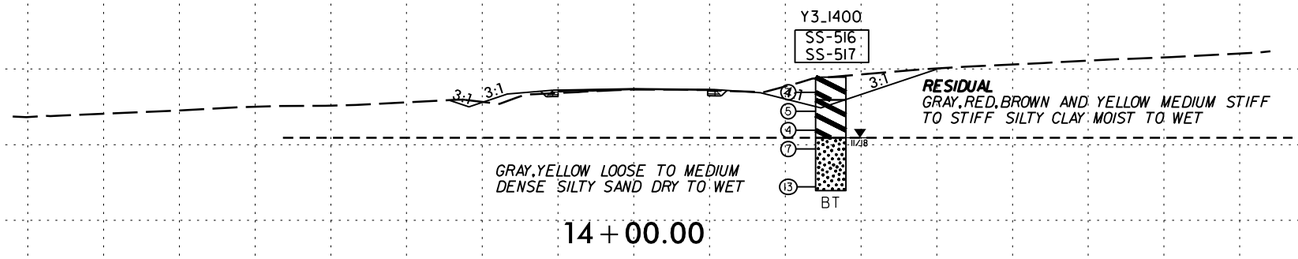
11+50.00

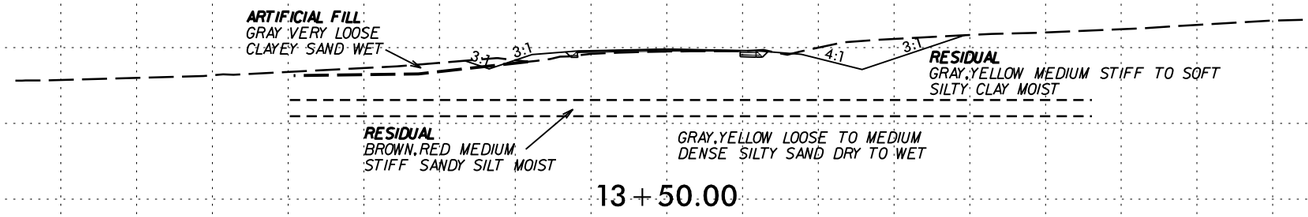
-Y3-

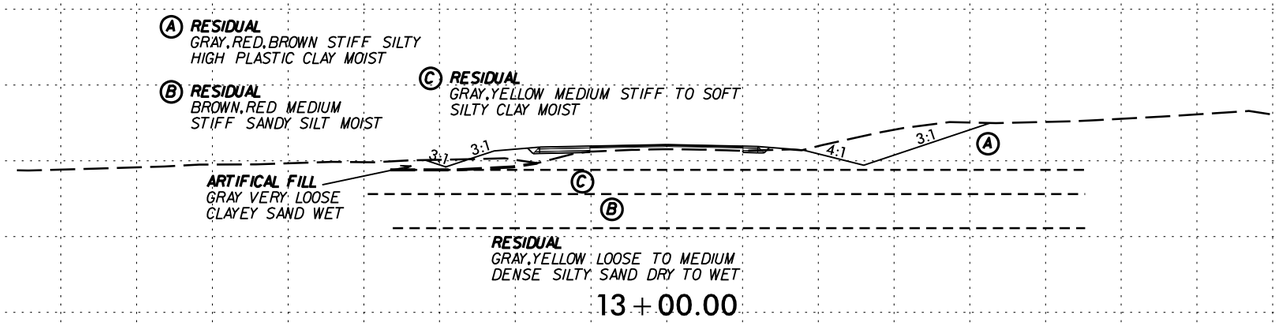
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	52

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-516	26' RT	14+00	1-2.5	A-7-5 (26)	65	35	19	11	22	47	99	86	71.3	34.3	ND
SS-517	26' RT	14+00	3.5-5	A-7-5 (13)	56	22	24	18	28	30	98	82	61.4	38	ND

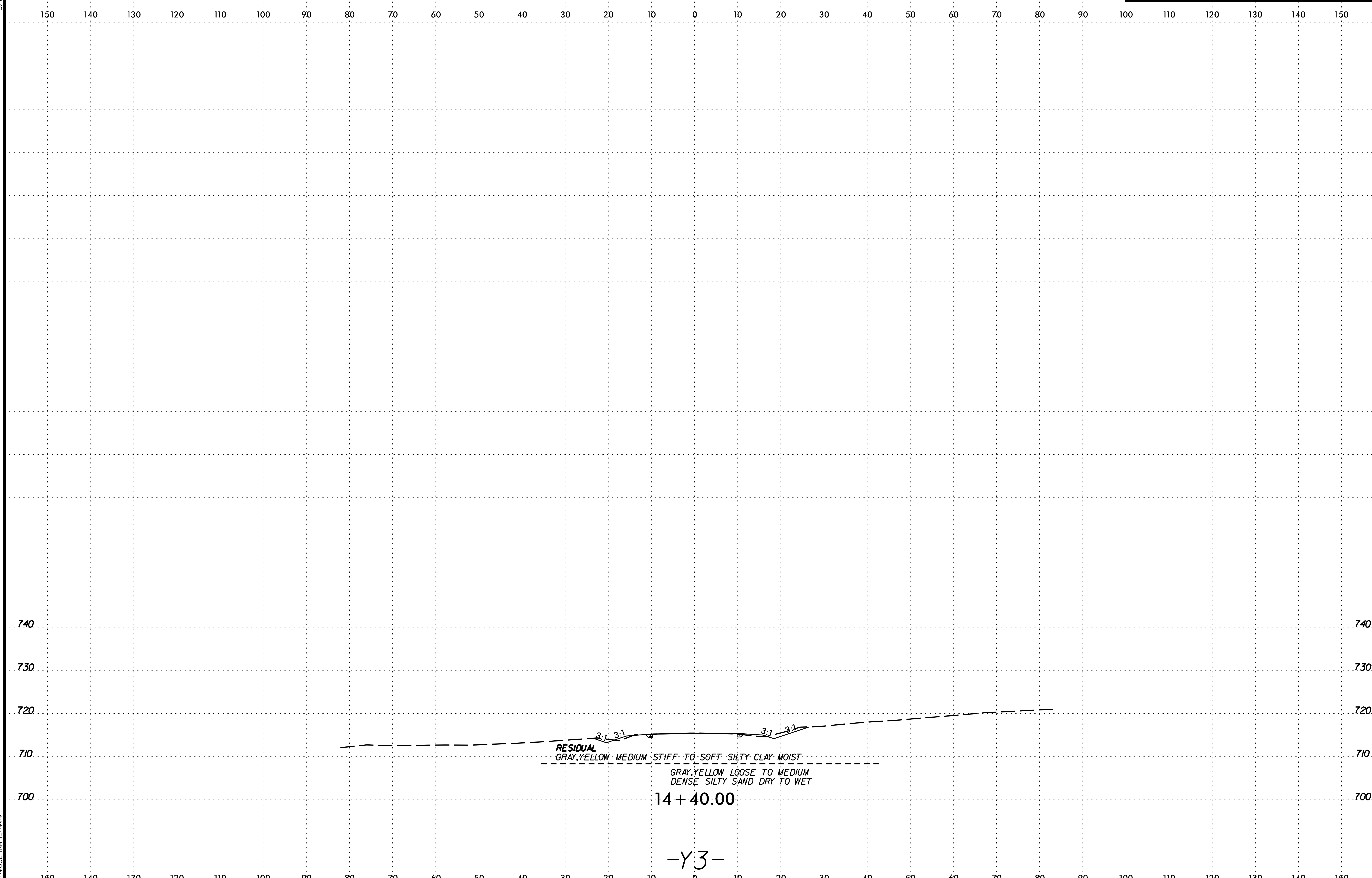






-Y3-

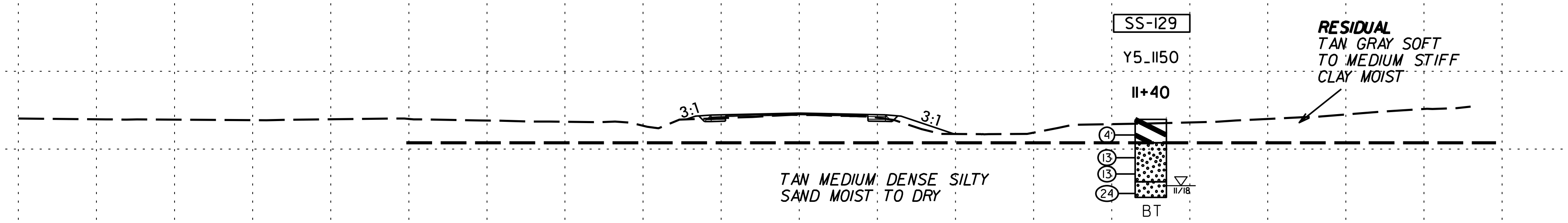
PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	53



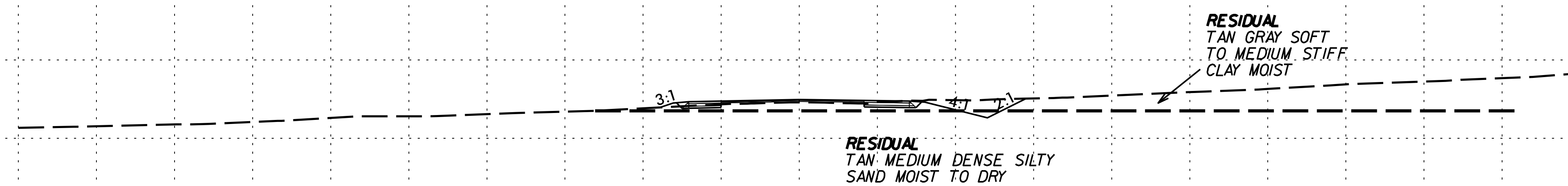
6/23/16

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

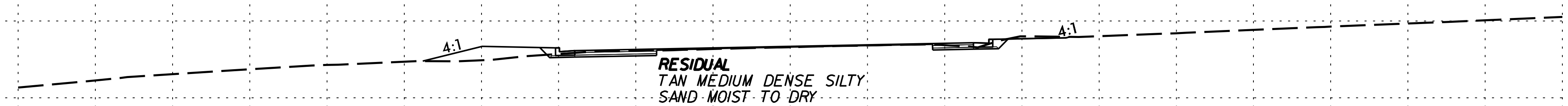
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-129	45' RT	11+40	1-2.5	A-7-6 (9)	41	29	30	25	17	28	99	82	48.8	15.7	ND



11+50.00



11+00.00



10+50.00

-Y5-

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

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	55

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

700

690

680

TAN MEDIUM DENSE SILTY
SAND MOIST TO DRY

11+85.00

-Y5-

700

690

680

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

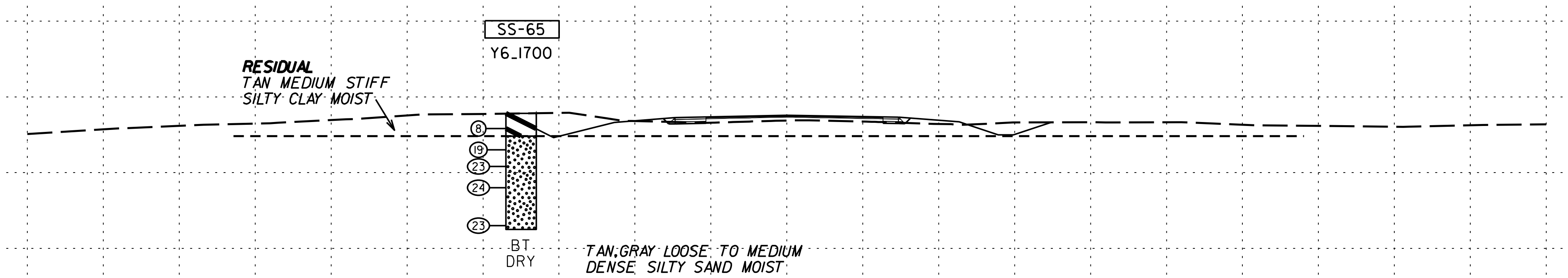
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

6/23/16

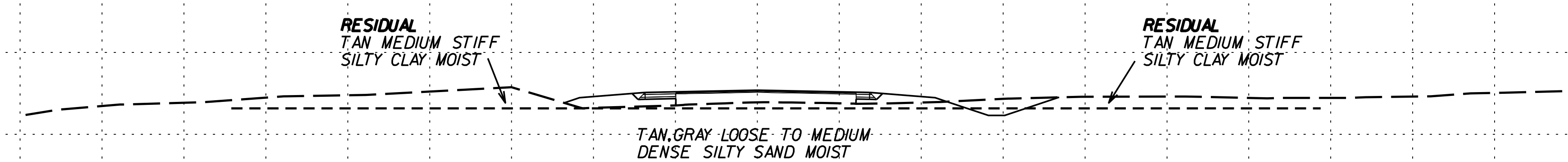
PROJ. REFERENCE NO.	SHEET NO.
U-2581BA	56

SOIL TEST RESULTS

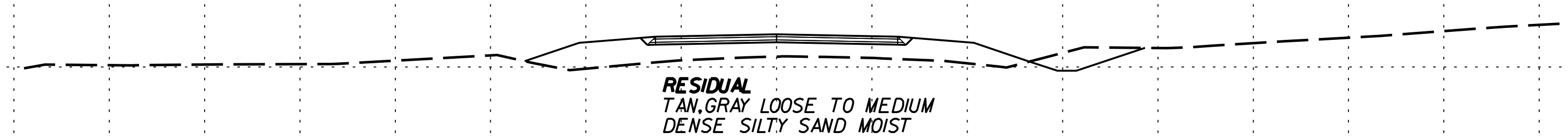
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-65	35' LT	17+00	1-2.5	A-7-6 (23)	55	28	9	14	21	56	99	96	78.6	32	ND



17+00.00



16+50.00



16+00.00

-Y6-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2581BA	57

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

740
730
720
710

RESIDUAL
TAN MEDIUM STIFF
SILTY CLAY MOIST

TAN,GRAY LOOSE TO MEDIUM
DENSE SILTY SAND MOIST

17+50.00

-Y6-

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

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

Form No. TR-D698-2
Revision No. : 1
Revision Date: 07/25/17

MOISTURE - DENSITY REPORT

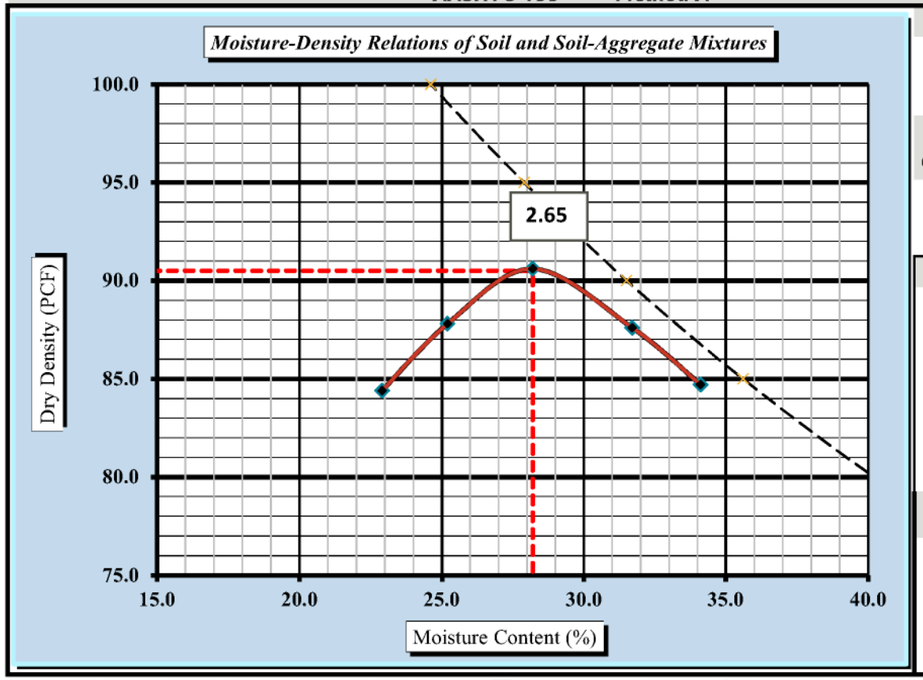
Quality Assurance

S&ME, Inc. Charlotte: 9751 Southern Pine Boulevard, Charlotte, NC 28273

S&ME Project #:	6235-18-024 Phase 01			Report Date:	11/30/18
Project Name:	US 70, Burlington Rd., from SR 3045/SR 2819 to just			Test Date(s):	11/12-28/18
Client Name:	NCDOT GEU				
Client Address:	NI				
Boring #:	L-3602	Sample #:	Bulk 01	Sample Date:	10/31-11/7/18
Location:	NI	Offset:	NI	Depth:	1.0-6.0'
Sample Description:	A-7-5				

Maximum Dry Density **90.5** **PCF.** **Optimum Moisture Content** **28.2%**

AASHTO T99 - - Method A



Soil Properties	
Natural Moisture Content	34.7%
Specific Gravity of Soil	ND
Liquid Limit	62
Plastic Limit	38
Plastic Index	24
% Passing	
#4	100.0%
#10	100.0%
#20	99.0%
#40	95.0%
#60	90.0%
#100	84.0%
#200	78.2%
#270	75.1%
Oversize Fraction	

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Rammer ☒ Manual Rammer ☐ Moist Preparation ☐ Dry Preparation ☒
References / Comments / Deviations: ND: Not Determined NI: No Information Provided

AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Rammer and a 12" Drop

Stacie Mitchell, P.E. — *Technical Responsibility*
Signature
Project Manager — *Position*
Date

Form No. TR-D1883-T193-3
Revision No. 2
Revision Date: 08/11/17

CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL

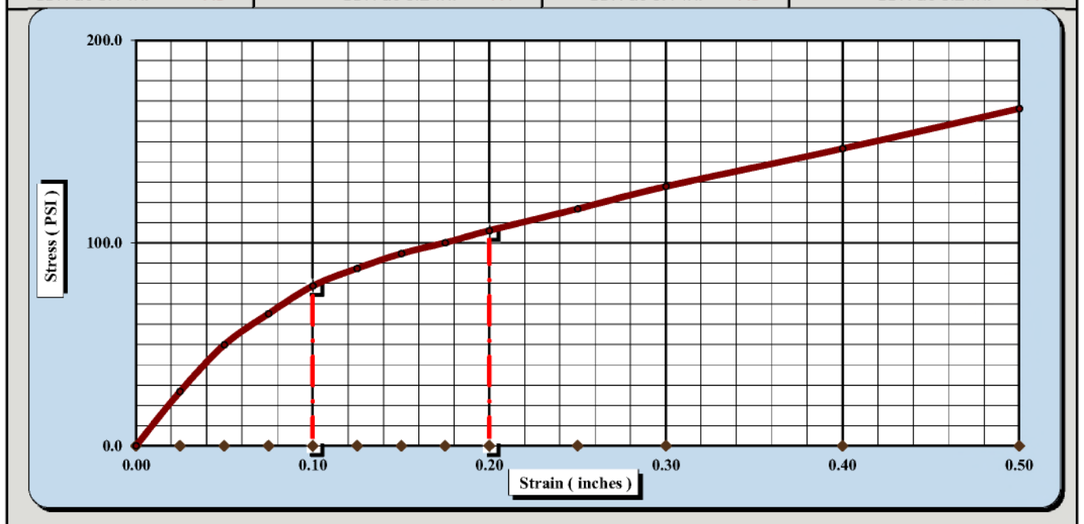
AASHTO T 193

S&ME, Inc. Charlotte: 9751 Southern Pine Boulevard, Charlotte, NC 28273

Project #:	6235-18-024 Phase 01			Report Date:	12/6/18
Project Name:	US 70, Burlington Rd., from S 3045/SR 2819 to just East of SR 3175			Test Date(s)	11/12-20/18
Client Name:	NCDOT GEU				
Client Address:	NI				
Boring #:	L-3602	Sample #:	**Bulk 01 (A)**	Sample Date:	10/31-11/7/18
Location:	NI	Offset:	NI	Elevation:	1.0-6.0'
Sample Description:	A-7-5 (22)				

AASHTO T99 *Method A* Maximum Dry Density: 90.5 PCF Optimum Moisture Content: 28.2%
Line 20: Use an alternate discription here if applicable % Retained on the 3/4" sieve: 0.0%

Uncorrected CBR Values				Corrected CBR Values			
CBR at 0.1 in.	7.9	CBR at 0.2 in.	7.1	CBR at 0.1 in.	7.9	CBR at 0.2 in.	7.1



CBR Sample Preparation:
Grading was in accordance with the above method and compacted using the 6" diameter CBR mold.

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	56		
Initial Dry Density (PCF)	90.9	Final Dry Density (PCF)	89.7
Moisture Content of the Compacted Specimen	28.1%	Moisture Content (top 1" after soaking)	34.9%
Percent Compaction	100.4%	Percent Swell	1.4%

Soak Time:	96 Hours	Surcharge Weight	10.0	Surcharge Wt. per sq. Ft.	50.8
Liquid Limit	62	Plastic Index	24	Apparent Relative Density	ND

Notes/Deviations/References: Test Performed as Modifided by NCDOT

Stacie Mitchell, P.E. — *Technical Responsibility*
Signature
Project Manager — *Position*
Date

Form No. TR-D1883-T193-3
Revision No. 2
Revision Date: 08/11/17

CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL

AASHTO T 193

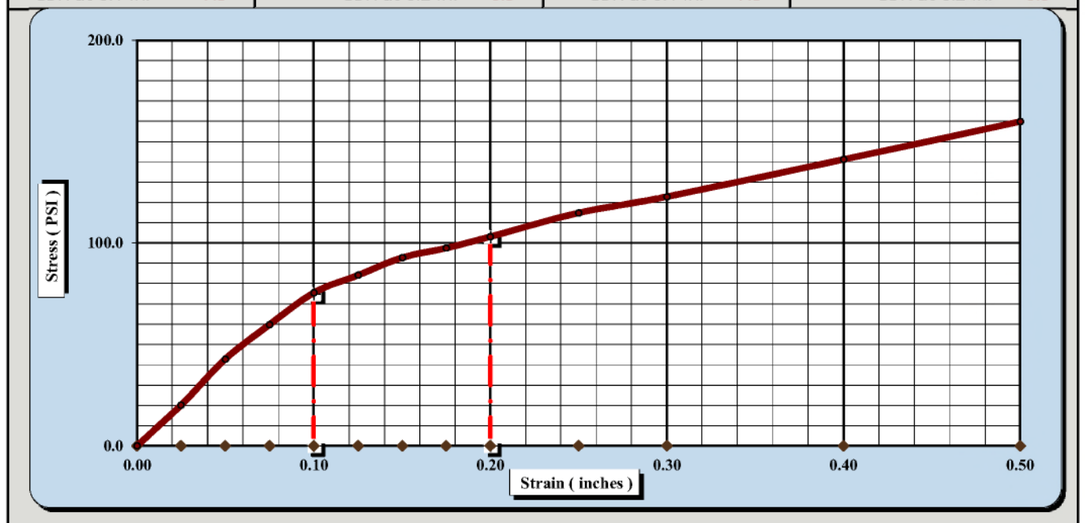
S&ME, Inc. Charlotte: 9751 Southern Pine Boulevard, Charlotte, NC 28273

Project #:	6235-18-024 Phase 01	Report Date:	12/6/18
Project Name:	US 70, Burlington Road. from SR 3045/SR 2819 to just East of SR 3175	Test Date(s)	11/12-20/18
Client Name:	NCDOT GEU		
Client Address:	NI		
Boring #:	L-3602	Sample #: **Bulk 01 (B)**	Sample Date: 10/31-11/7/18
Location:	NI	Offset: NI	Elevation: 1.0-6.0'
Sample Description:	A-7-5 (22)		

AASHTO T99 *Method A* Maximum Dry Density: 90.5 PCF Optimum Moisture Content: 28.2%

Line 20: Use an alternate discription here if applicable % Retained on the 3/4" sieve: 0.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in. 7.5	CBR at 0.2 in. 6.9	CBR at 0.1 in. 7.5	CBR at 0.2 in. 6.9



CBR Sample Preparation:

Grading was in accordance with the above method and compacted using the 6" diameter CBR mold.

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	56		
Initial Dry Density (PCF)	90.6	Final Dry Density (PCF)	89.1
Moisture Content of the Compacted Specimen	28.1%	Moisture Content (top 1" after soaking)	35.3%
Percent Compaction	100.1%	Percent Swell	1.3%

Soak Time:	96 Hrs.	Surcharge Weight	10.0	Surcharge Wt. per sq. Ft.	50.8
Liquid Limit	62	Plastic Index	24	Apparent Relative Density	ND

Notes/Deviations/References: Test Perfored As Modified by NCDOT

Stacie Mitchell, P.E. _____ Project Manager _____

Technical Responsibility *Signature* *Position* *Date*

Form No. TR-D698-2
Revision No. : 1
Revision Date: 07/25/17

MOISTURE - DENSITY REPORT

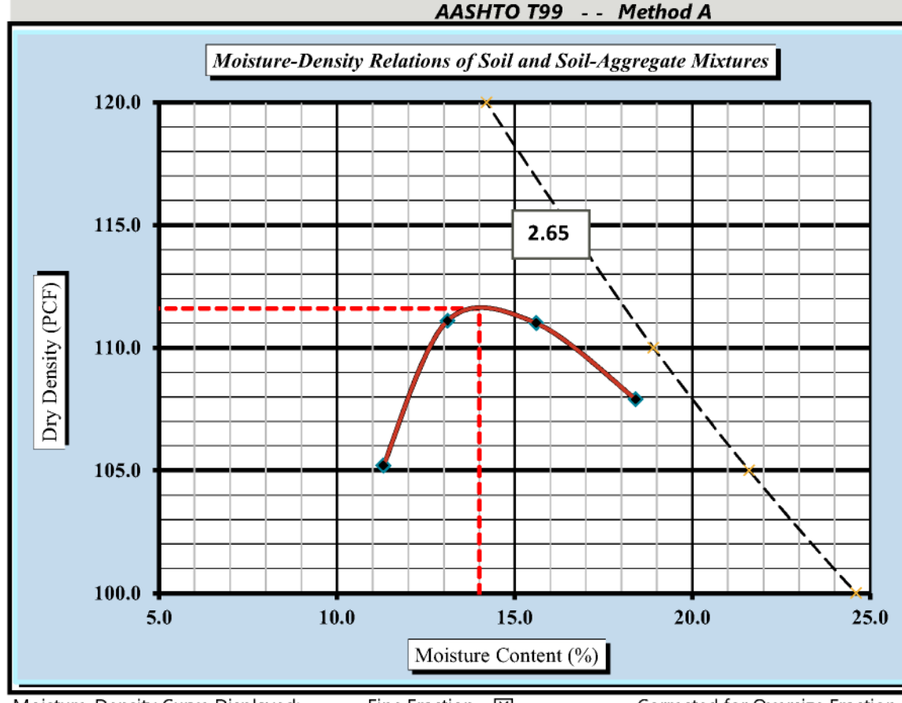
Quality Assurance

S&ME, Inc. Charlotte: 9751 Southern Pine Boulevard, Charlotte, NC 28273

S&ME Project #:	6235-18-024 Phase 01			Report Date:	11/30/18
Project Name:	US 70, Burlington Road from SR 3045/SR 2819 to just			Test Date(s):	11/12-28/18
Client Name:	NCDOT GEU				
Client Address:	NI				
Boring #:	Y1-1400	Sample #:	Bulk 02	Sample Date:	10/31-11/7/18
Location:	NI	Offset:	NI	Depth:	1.0-6.0
Sample Description:	A-6				

Maximum Dry Density **111.6** **PCF.** **Optimum Moisture Content** **14.0%**

AASHTO T99 - - Method A



Soil Properties	
Natural Moisture Content	19.2%
Specific Gravity of Soil	ND
Liquid Limit	34
Plastic Limit	19
Plastic Index	15
% Passing	
#4	99.0%
#10	98.0%
#20	95.0%
#40	88.0%
#60	77.0%
#100	66.0%
#200	53.8%
#270	48.7%
Oversize Fraction	

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☒

Mechanical Rammer ☒ Manual Rammer ☐ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations: ND: Not Determined NI: No Information Provided

AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Rammer and a 12" Drop

Stacie Mitchell, P.E. Project Manager

Technical Responsibility *Signature* *Position* *Date*

Form No. TR-D1883-T193-3
Revision No. 2
Revision Date: 08/11/17

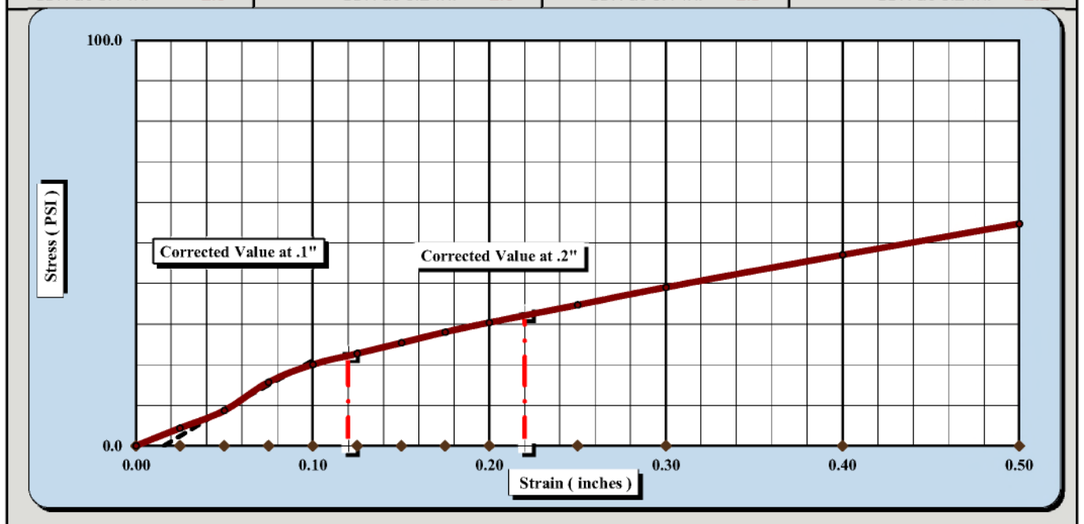
CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL

AASHTO T 193

S&ME, Inc. Charlotte: 9751 Southern Pine Boulevard, Charlotte, NC 28273

Project #:	6235-18-024 Phase 01	Report Date:	12/6/18
Project Name:	US 70, Burlington Rd., from SR 3045/SR 2819 to just East of SR 3175	Test Date(s)	11/12-20/18
Client Name:	NCDOT GEU		
Client Address:	NI		
Boring #:	Y1-1400	Sample #: **Bulk 02 (A)**	Sample Date: 10/31-11/7/18
Location:	NI	Offset: NI	Elevation: 1.0-6.0'
Sample Description:	A-6 (5)		
AASHTO T99	*Method A*	Maximum Dry Density: 111.6 PCF	Optimum Moisture Content: 14.0%
			% Retained on the 3/4" sieve: 0.0%

Uncorrected CBR Values				Corrected CBR Values			
CBR at 0.1 in.	2.0	CBR at 0.2 in.	2.0	CBR at 0.1 in.	2.3	CBR at 0.2 in.	2.2



CBR Sample Preparation:
Grading was in accordance with the above method and compacted using the 6" diameter CBR mold.

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	56		
Initial Dry Density (PCF)	113.0	Final Dry Density (PCF)	109.0
Moisture Content of the Compacted Specimen	13.9%	Moisture Content (top 1" after soaking)	23.9%
Percent Compaction	101.2%	Percent Swell	3.5%

Soak Time:	96 Hours	Surcharge Weight	10.0	Surcharge Wt. per sq. Ft.	50.9
Liquid Limit	34	Plastic Index	15	Apparent Relative Density	ND

Notes/Deviations/References: Test Performed as Modified by NCDOT

Karen Warner		Stacie Mitchell, P.E.	
Technical Responsibility	*Signature*	*Position*	*Date*

Form No. TR-D1883-T193-3
Revision No. 2
Revision Date: 08/11/17

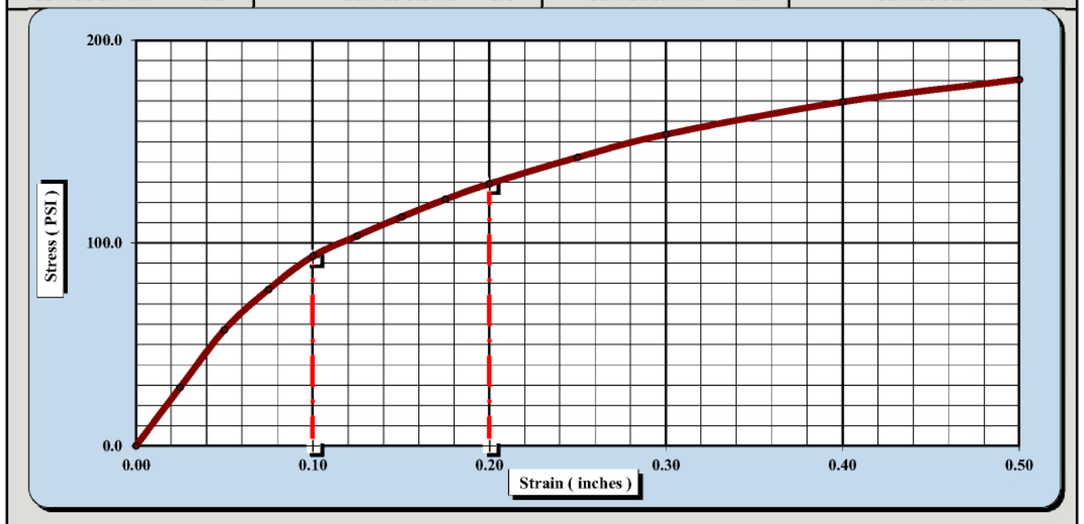
CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL

AASHTO T 193

S&ME, Inc. Charlotte: 9751 Southern Pine Boulevard, Charlotte, NC 28273

Project #:	6235-18-024 Phase 01	Report Date:	12/6/18
Project Name:	US 70, Burlington Road from SR 3045/SR 2819 to just East of SR3175	Test Date(s)	11/12-12/3/18
Client Name:	NCDOT GEU		
Client Address:	NI		
Boring #:	Y1-1400	Sample #: **Bulk 02 (B)**	Sample Date: 10/31-11/7/18
Location:	NI	Offset: NI	Elevation: 1-6'
Sample Description:	A-6 (5)		
AASHTO T99	*Method A*	Maximum Dry Density: 111.6 PCF	Optimum Moisture Content: 14.0%
			% Retained on the 3/4" sieve: 0.0%

Uncorrected CBR Values				Corrected CBR Values			
CBR at 0.1 in.	9.3	CBR at 0.2 in.	8.6	CBR at 0.1 in.	9.3	CBR at 0.2 in.	8.6



CBR Sample Preparation:
Grading was in accordance with the above method and compacted using the 6" diameter CBR mold.

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	56		
Initial Dry Density (PCF)	112.2	Final Dry Density (PCF)	108.8
Moisture Content of the Compacted Specimen	14.3%	Moisture Content (top 1" after soaking)	22.9%
Percent Compaction	100.5%	Percent Swell	3.0%

Soak Time:	96 Hours	Surcharge Weight	10.0	Surcharge Wt. per sq. Ft.	50.8
Liquid Limit	34	Plastic Index	15	Apparent Relative Density	ND

Notes/Deviations/References: Test Performed as Modified By NCDOT

Stacie Mitchell, P.E.		Project Manager	
Technical Responsibility	*Signature*	*Position*	*Date*