STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6105	1	

REFERENCE: U-6105

PROJECT: 48173

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN	XSC	PROFILE
-L-	10+00.00 to 34+66.65	4-6	11-31	7-8
-Y2-	10+00.00 to 13+01.80	6	32-34	9
-Y3-	10+00.00 to 12+76.15	6	35-36	9
-Y4-	10+00.00 to 10+85.00	6	37-38	10
-RDBT-	10+00.00 to 12+95.31	6	39-42	-
-G1-	10+20.05 to 13+00.00	5	43-45	10
-G2-	10+00.00 to 14+12.77	5	46-48	10

APPENDICES

APPENDIX	TITLE	SHEETS
A	SOILS LABORATORY TESTS RESULTS SUMMARY	49-50
B	CONSOLIDATION & TRIAXIAL TEST RESULTS	51-54

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *MECKLENBURG*

PROJECT DESCRIPTION *SR 2415 (BAILEY ROAD) FROM POOLE PLACE DRIVE TO US 21 (STATESVILLE ROAD) – CONSTRUCT ROADWAY ON NEW LOCATION*

INVENTORY

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. 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.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. 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 ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS 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

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CG2 Exploration, LLC

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DATE *March 2023*

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SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-6105	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	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
MATERIAL PASSING #40 LL	—		—	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PI	6 MX		NP	10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
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
GRAIN SIZE 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) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
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
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] DIEDRICH D-50
- [ ] _____

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
- [ ] 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: TIN FILE "u6105_ls_tin.tin" WAS USED TO DETERMINE GROUND ELEVATION FOR ALL BORINGS

ELEVATION: FEET

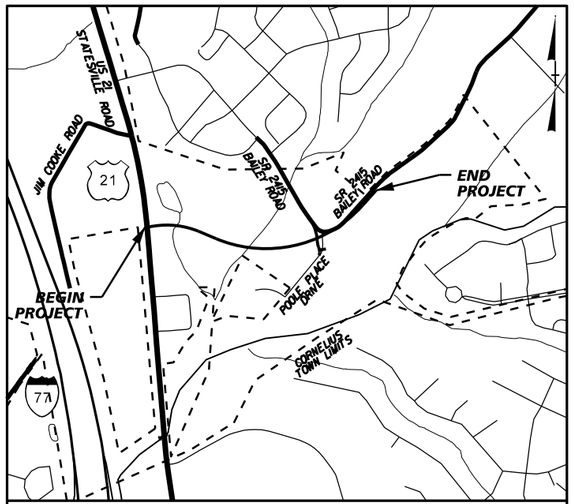
NOTES:

F.I.A.D. FILLED IN AFTER DRILLING

DATE: 8-15-14

TIP PROJECT: U-6105

SEE SHEET 1A FOR INDEX OF SHEETS
SEE SHEET 1B FOR CONVENTIONAL SYMBOLS
SEE SHEET 1C SERIES FOR SURVEY CONTROL



VICINITY MAP

Note: Not to Scale

25% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

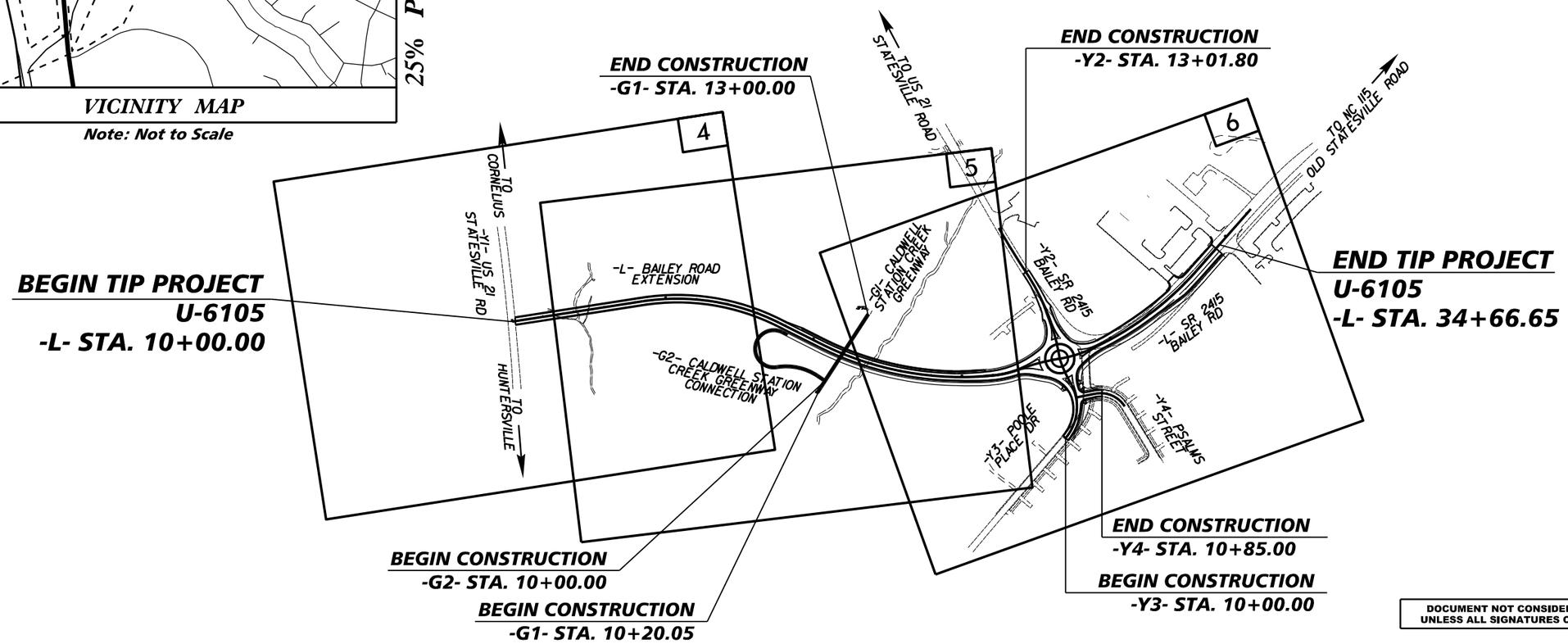
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6105	3	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
48173.1.1		PE
		UTILITIES
		R/W

LOCATION: SR 2415 (BAILEY ROAD) FROM POOLE PLACE DRIVE TO US 21 (STATESVILLE ROAD)
CONSTRUCT ROADWAY ON NEW LOCATION

TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT AND SIGNING

NAD 83/
NA 2011



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF CORNELIUS.

CONTRACT:

$FILE$

$DATE$

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

AADT 2020	=	N/A
AADT 2040	=	5,100
K	=	4%
D	=	51%
T	=	3%*
V	=	40 MPH

PROJECT LENGTH

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2021
NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 28, 2022

LETTING DATE:
JUNE 30, 2023

JASON D. LAWING, P.E.
PROJECT ENGINEER

ANDREW WEEKS, E.I.T.
PROJECT DESIGN ENGINEER

DONALD C. GRIFFITH
DM-STIP PROJECT MANAGER
NCDOT HIGHWAY DIVISION 10

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

March 6, 2023

STATE PROJECT NO.: 48173.1.1
TIP: U-6105
COUNTY: Mecklenburg
DESCRIPTION: SR 2415 (Bailey Road) From Poole Place Drive to US 21 (Statesville Road) - Construct Roadway on New Location
SUBJECT: Geotechnical Report – Roadway Inventory - Revised

Project Description

This proposed project is located in Cornelius, North Carolina. The project begins at -L- Station 10+00.00, which is at the east side of US 21 (Statesville Road), and continues to -L- Station 34+66.65, which is approximately 644 feet east of the intersection of -L-, -Y2- (Existing Bailey Road), and -Y3- (Poole Place Drive). The total length of the project is approximately 0.469 mile. The existing Bailey Road and Poole Place Drive are two-lane roads. The portion of the project on new location is either agricultural or wooded, and Caldwell Station Creek Greenway (-G1-) crosses the -L- alignment at approximately -L- Station 21+40. The portion of the project along Poole Place Drive (-Y3-) is residential while the portion of the project from approximately -L- Station 30+00 to the end of the project is commercial.

The proposed project construction consists of the following:

- The construction of a two-lane roadway on new alignment from -L- Station 10+00 to approximately -L- Station 27+50.
- The construction of a roundabout (-RDBT-) for the new intersection of -L-, -Y2- (Existing Bailey Road), and -Y3- (Poole Place Drive).
- The realignment of the existing Bailey Road and Poole Place Drive in the vicinity of the proposed roundabout.
- The widening of the existing Bailey Road west (upstation) of the proposed roundabout
- The extension of Psalms Street (-Y4-) to tie in with the new alignment of Poole Place Drive (-Y3-)
- The construction of a multi-use path on the right side of -L- from approximately Station 19+00 to approximately Station 11+80 on -Y3-, and on the right side of -L- from approximately Station 10+85 on -Y4- to approximately Station 34+50 on -L-.
- The construction of the Caldwell Station Creek Greenway Connector (-G2-) on the right side of -L- between approximately -L- Stations 18+40 and 21+00.
- The construction of an approximately 80-foot-long, 10 foot by 10 foot reinforced concrete pedestrian box culvert crossing -L- at approximately Station 21+05 for the Caldwell Station Creek Greenway (-G1-) to cross under -L-.
- A slight realignment of the existing Caldwell Station Creek Greenway (-G1-) to align with the new pedestrian culvert location.
- The construction of a concrete reinforced double-barrel box culvert with each barrel measuring 14 feet wide and 7 feet high for the Unnamed Tributary to Caldwell Station Creek that will be approximately 130 feet in length and will cross -L- at approximately Station 22+02.

The proposed maximum new embankment fill heights are approximately 25 feet. The maximum cuts proposed for the project are approximately 8 feet.

The drainage along the portion of the project along existing roadways is generally handled by side ditches or concrete curb and gutter.

The intersections along the project are as follows:

- -Y2- (Existing Bailey Road) and -Y3- (Poole Place Drive)
- -Y3 (Poole Place Drive) and -Y4- (Psalms Street)

This geotechnical investigation was confined to the areas of proposed construction.

Initial site scoping was performed on November 10, 2021. The field roadway investigation was performed from January 6 to January 10, 2022. Standard Penetration Test borings were advanced with a Dietrich D50 drill machine equipped with an automatic hammer. Representative soil samples were collected for visual classification in the field and for laboratory analyses.

The following alignments were investigated. Subsurface cross sections of these alignments, as well as a subsurface profile for -L-, -G1-, -G2-, -Y2-, -Y3-, and -Y4-, are included in this report:

Alignment	Station (±)
-L-	10+00 to 34+67
-G1-	10+00 to 13+00
-G2-	10+00 to 14+13
-Y2-	10+00 to 13+02
-Y3-	10+00 to 12+76
-Y4-	10+00 to 10+85
-RDBT-	10+00 to 12+95

Physiography and Geography

The project corridor is located in the Kings Mountain Belt of the Piedmont physiographic province. “The Kings Mountain Belt includes metasedimentary sequences with interlayered quartzite, metaconglomerate, marble, and schists derived from both sedimentary and volcanic protoliths” (*The Geology of the Carolinas*, Horton and Zullo, 1991). Rocks of the Kings Mountain Belt are intensely deformed, and it is dominated by steeply dipping units striking northeast to north-northeast. The age of the rocks are Paleozoic to late Proterozoic, and the deformation on the leading edge of the Carolina terrane as it collided with North America may be recorded in the deformation of the rocks in the Kings Mountain Belt. Coring of the bedrock was outside the scope of this project, but according to the Geologic Map of North Carolina, 1985, the rock underlying the project corridor consists of metamorphosed quartz diorite.

The topography along the project corridor generally consists of gently rolling hills. The proposed roadway along Bailey Road Extension (-L-) slopes steeply down from the existing Statesville Road roadway embankment (starting elevation of approximately 748 feet MSL) at the beginning of the project to a low-lying area with an elevation of approximately 725 feet MSL. This low-lying area extends to approximately -L- Station 12+50 at which point the elevation increases to approximately -L- Station 14+50 where the elevation is approximately 745 feet MSL. From approximately -L- Station 14+50, the topography generally slopes down to the creek area around -L- Station 22+00 to an elevation of approximately 716 feet MSL at the bottom of Caldwell Creek. From Caldwell Creek, the -L- topography slopes upward to near the existing Bailey Road (near Station 28+50) at which point the elevation is approximately 732 feet MSL. The topography along -L- from approximately Station

28+50 to the end of the project is fairly level with only minor changes in elevation. The topography along -Y2- (Existing Bailey Road) generally slopes down from the beginning of -Y2- to the end of -Y2- with elevations ranging from approximately 760 feet MSL to approximately 741 feet MSL. The topography of -Y3- (Poole Place Drive) slopes up from the beginning to the end with the elevations ranging from approximately 749 feet to approximately 760 feet MSL, while the topography for -Y4- (Psalms Street) slopes down from the beginning to the end with elevations ranging from approximately 757 feet MSL to approximately 753 feet MSL.

Soil Properties

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

Roadway embankment in the form of existing pavement was encountered at Boring Y4_1050 and consisted of 4 inches of asphalt overlying 7 inches of ABC stone.

Soils identified as alluvial deposits were encountered beginning at the existing ground surface in the vicinity of the major drainage features that cross under the -L- centerline at approximately Stations 10+50 to 12+50 and 21+00 to 23+50. The alluvium extends to depths ranging from approximately 7 feet to approximately 14 feet below the existing ground surface. The alluvial deposits encountered generally consist of very loose to loose sand (A-1-b), silty sand (A-2-4), and clayey sand (A-2-6), and of soft clayey silt (A-5) and silty clay (A-7-5).

Residual soils were encountered in all of the borings drilled for this project. The residual soils consisted of loose to very dense, silty sand (A-2-4), and very soft to very stiff silty clay (A-7-5 and A-7-6). Plasticities within the cohesive residual soils range from non-plastic to highly plastic with laboratory plasticity index results ranging from 4 to 37.

Weathered rock classified as Metamorphosed Quartz Diorite was encountered underlying the residual soils within the depths explored in 7 borings drilled for this project. The top of the weathered rock was encountered at depths ranging from 19.0 feet to 33.5 feet below the existing ground surface and at elevations ranging from 705.6 feet to 684.9 feet above sea level.

Rock Properties

Crystalline rock classified as Metamorphosed Quart Diorite was encountered underlying the weathered rock in 6 of the borings drilled for this project. The depth to the top of the crystalline rock ranged from 20.0 feet to 38.2 feet, and at elevations ranging from 703.1 feet to 680.2 feet above sea level. The crystalline rock was not encountered at depths that should affect project construction based on the 25 percent project plans.

Groundwater Properties

Ground water data was collected in January 2022. Twenty-four-hour ground water depths ranged from 1.1± to 13.9± feet below the existing ground surface, and groundwater elevations ranged from 730.0± to 713.8± feet above sea level.

Areas of Special Geotechnical Interest

1) The following areas contain soft, cohesive soils and/or loose sands within 3 feet of the proposed grade or at the base of proposed embankments which have the potential to cause embankment, subgrade, and/or slope stability problems during construction:

Alignment	STA (±) to STA (±)	Offset (±)
-L-	10+50 to 12+75	Across extents of construction
-L-	21+10 to 23+25	Across extents of construction

2) The following areas contain wet to saturated soils within 3 feet of the proposed grade or at the base of proposed embankments which have the potential to cause embankment, subgrade, and/or slope stability problems during construction:

Alignment	STA (±) to STA (±)	Offset (±)
-L-	10+50 to 12+75	Across extents of construction
-L-	21+10 to 23+25	Across extents of construction

3) The following areas contain soils with plasticity indexes greater than 25, liquid limits greater than 70, and/or percent passing the no. 200 sieve greater than 70 within 3 feet of the proposed grade which have the potential to cause embankment, subgrade, and/or slope stability problems during construction:

Alignment	STA (±) to STA (±)	Offset (±)
-L-	13+90 to 15+25	Across extents of construction
-L-	16+25 to 18+75	Across extents of construction
-L-	28+90 to 34+50	Across extents of construction
-Y3-	10+00 to 12+76	Across extents of construction
-Y4-	10+00 to 10+85	Across extents of construction
-G1-	10+00 to 13+00	Across extents of construction
-G2-	10+00 to 14+13	Across extents of construction

The following area contains groundwater within 6 feet of the proposed grade:

Alignment	STA (±) to STA (±)
-G1-	11+25 to 13+00

Water Wells

Water wells were identified on the project plans within 100 feet of the proposed centerline at the following locations:

Alignment	STA (±)	Offset (±)
-L-	35+60	80’ Left
-Y2-	13+04	70’ Right

The remnants of an apparent water well enclosure (pump house) was encountered during our field investigation on the east side of the abandoned house located within the footprint of the proposed roundabout.

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RIGHT-OF-WAY REV.

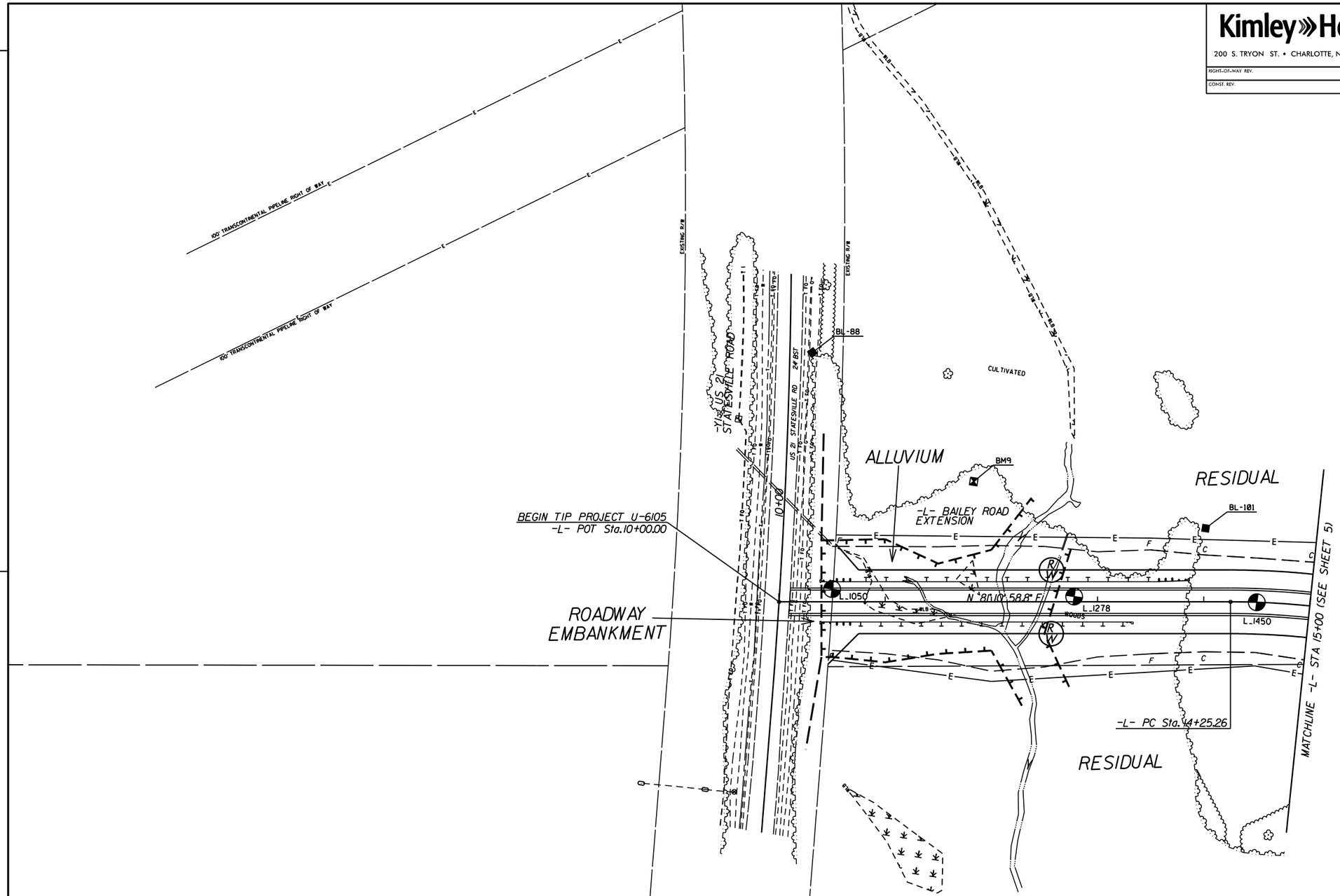
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-6105	4
R/W SHEET NO.	
ROADWAY ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "15405-1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 592139.124(ft) EASTING: 1450285.308(ft)
ELEVATION: 706.086(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999844
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "15405-1" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

$FILE$

$DATE$

-L-

PI Sta 16+59.07
Δ = 35° 31' 11.6" (RT)
D = 7° 50' 55.5"
L = 452.56'
T = 233.81'
R = 730.00'
SE = 0.04
R0 = 80'
DS = 40

NOTES:
1. TIE TO EXIST CURB AND GUTTER AT EXIST CONCRETE JOINT TRANSITION 2'-6" C&G TO MATCH EXIST GUTTER WIDTH AS NECESSARY
2. SAWCUT AND REMOVE OR MILL EXISTING ASPHALT PAVEMENT OR CONCRETE PAVEMENT TO TIE-IN DRIVEWAY
3. TIE TO EXISTING CONCRETE SIDEWALK
4. CURB AND GUTTER END TREATMENT

REMOVAL OF EXISTING ASPHALT PAVEMENT

RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED

~~SEE SHEET 7 FOR -L- PROFILE~~

PROJECT REFERENCE NO.	SHEET NO.
U-6105	5
R/W SHEET NO.	
ROADWAY ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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RIGHT-OF-WAY REV.
CONST. REV.

REVISIONS

-L-
PI Sta 16+59.07
△ = 35° 31' 11.6" (RT)
D = 7° 50' 55.5"
L = 452.56'
T = 233.81'
R = 730.00'
SE = 0.04
R0 = 80'
DS = 40

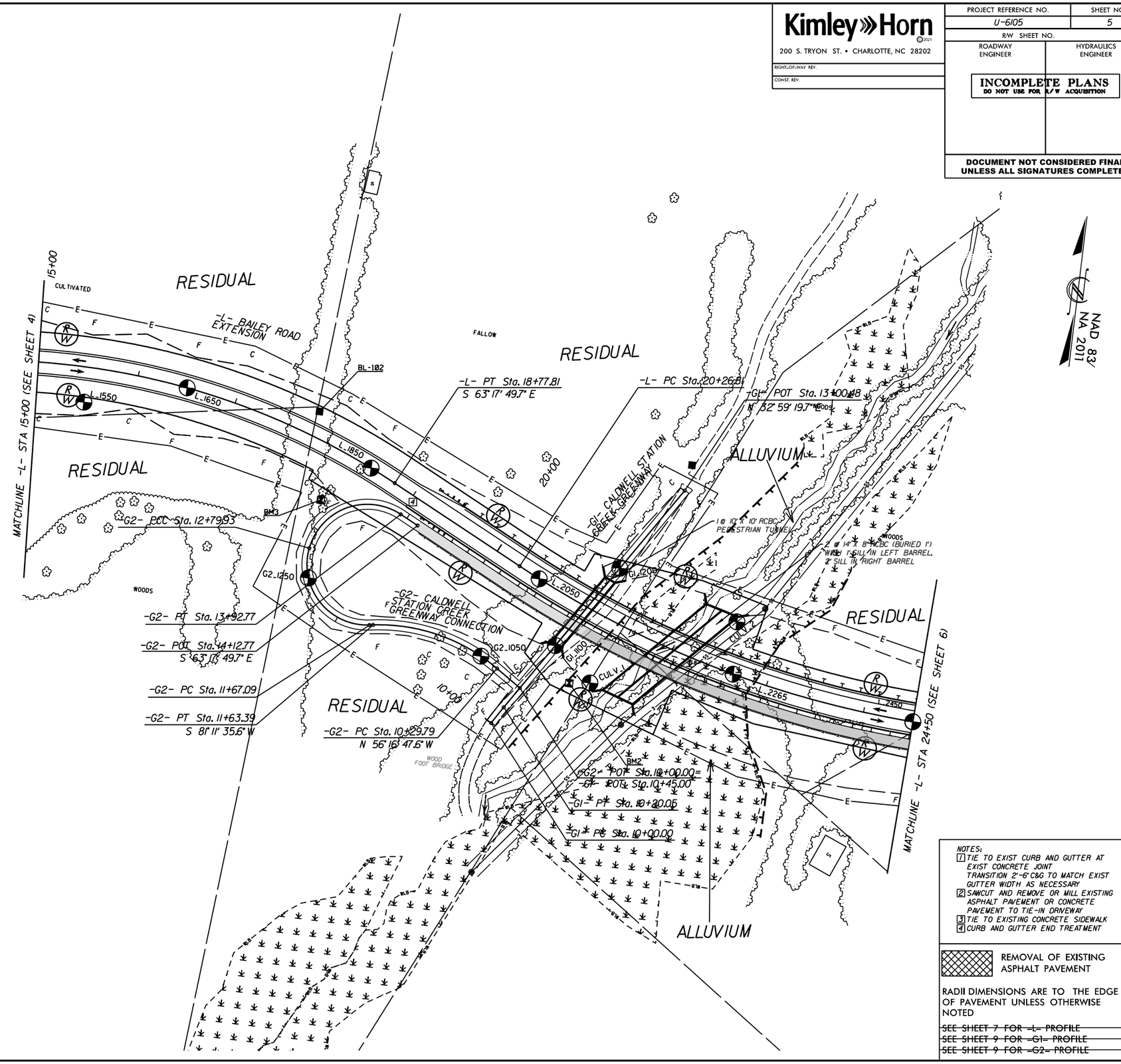
-L-
PI Sta 23+25.18
△ = 32° 54' 56.4" (LT)
D = 5° 40' 22.3"
L = 580.23'
T = 298.37'
R = 1,010.00'
SE = 0.04
R0 = 80'
DS = 40

-G1-
PI Sta 10+10.03
△ = 2° 33' 11.1" (RT)
D = 12° 43' 56.6"
L = 20.05'
T = 10.03'
R = 450.00'

-G2-
PI Sta 10+99.84
△ = 42° 31' 36.8" (LT)
D = 31° 49' 51.6"
L = 133.60'
T = 70.05'
R = 180.00'

-G2-
PI Sta 12+49.31
△ = 107° 45' 17.4" (RT)
D = 95° 29' 34.7"
L = 112.84'
T = 82.21'
R = 60.00'

-G2-
PI Sta 13+62.15
△ = 107° 45' 17.4" (RT)
D = 95° 29' 34.7"
L = 112.84'
T = 82.21'
R = 60.00'



NOTES:
1. TIE TO EXIST CURB AND GUTTER AT EXIST CONCRETE JOINT TRANSITION 2'-6" C&G TO MATCH EXIST GUTTER WIDTH AS NECESSARY
2. SAWCUT AND REMOVE OR MILL EXISTING ASPHALT PAVEMENT OR CONCRETE PAVEMENT TO TIE-IN DRIVEWAY
3. TIE TO EXISTING CONCRETE SIDEWALK
4. CURB AND GUTTER END TREATMENT

REMOVAL OF EXISTING ASPHALT PAVEMENT

RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED

~~SEE SHEET 7 FOR -L- PROFILE~~
~~SEE SHEET 9 FOR -G1- PROFILE~~
~~SEE SHEET 9 FOR -G2- PROFILE~~

$FILE$
$DATE$

PROJECT REFERENCE NO.	SHEET NO.
U-6105	6
R/W SHEET NO.	
ROADWAY ENGINEER	HYDRAULICS ENGINEER

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200 S. TRYON ST. • CHARLOTTE, NC 28202

RIGHT-OF-WAY REV.

CONST. REV.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

$FILE$

$DATE$

-L-
PI Sta 23+25.18
Δ = 32° 54' 56.4" (LT)
D = 5° 40' 22.3"
L = 580.23'
T = 298.37'
R = 1,010.00'
SE = 0.04
RO = 80'
DS = 40

-L-
PI Sta 26+45.46
Δ = 14° 35' 39.9" (LT)
D = 19° 05' 54.9"
L = 76.42'
T = 38.42'
R = 300.00'

-L-
PI Sta 27+53.29
Δ = 11° 59' 17.3" (RT)
D = 8° 36' 57.3"
L = 139.14'
T = 69.82'
R = 665.00'

-L-
PI Sta 28+67.93
Δ = 14° 45' 37.8" (LT)
D = 16° 22' 12.8"
L = 90.17'
T = 45.33'
R = 350.00'

-L-
PI Sta 31+36.74
Δ = 25° 00' 22.6" (LT)
D = 5° 40' 22.3"
L = 440.81'
T = 223.97'
R = 1,010.00'

-Y2-
PI Sta 11+53.28
Δ = 24° 42' 11.1" (LT)
D = 8° 11' 06.4"
L = 301.80'
T = 153.28'
R = 700.00'
SE = 0.03
RO = 51'
DS = 30

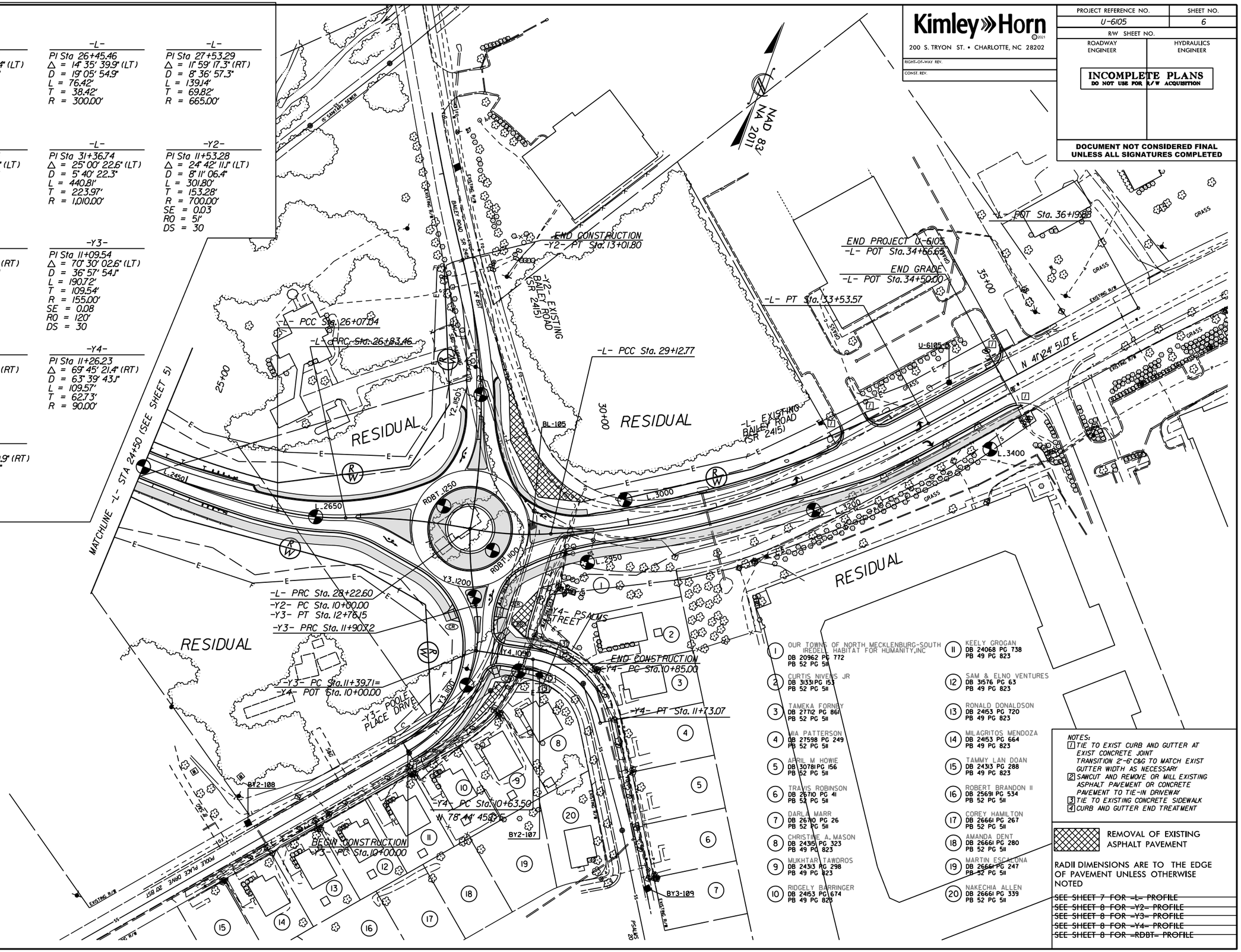
-Y2-
PI Sta 13+85.41
Δ = 4° 09' 50.8" (RT)
D = 2° 29' 28.8"
L = 167.14'
T = 83.61'
R = 2,299.80'

-Y3-
PI Sta 11+09.54
Δ = 70° 30' 02.6" (LT)
D = 36° 57' 54.1"
L = 190.72'
T = 109.54'
R = 155.00'
SE = 0.08
RO = 120'
DS = 30

-Y3-
PI Sta 12+33.60
Δ = 12° 14' 09.9" (RT)
D = 14° 19' 26.2"
L = 85.42'
T = 42.88'
R = 400.00'

-Y4-
PI Sta 11+26.23
Δ = 69° 45' 21.4" (RT)
D = 63° 39' 43.1"
L = 109.57'
T = 62.73'
R = 90.00'

-RDBT-
PI Sta 10+00.00
Δ = 359° 59' 59.9" (RT)
D = 121° 54' 21.3"
L = 295.31'
T = 0.00'
R = 47.00'



1. OUR TOWNS OF NORTH MECKLENBURG-SOUTH IREDELL HABITAT FOR HUMANITY,INC
DB 20962 PG 772
PB 52 PG 511

2. CURTIS NIVENS JR
DB 3331 PG 153
PB 52 PG 511

3. TAMEKA FORNEY
DB 27712 PG 861
PB 52 PG 511

4. MIA PATTERSON
DB 27598 PG 249
PB 52 PG 511

5. APRIL M HOWIE
DB 30781 PG 156
PB 52 PG 511

6. TRAVIS ROBINSON
DB 26710 PG 41
PB 52 PG 511

7. DARLA MARR
DB 26710 PG 26
PB 52 PG 511

8. CHRISTINE A. MASON
DB 24315 PG 323
PB 49 PG 823

9. MUKHTAR TAWDROS
DB 24313 PG 298
PB 49 PG 823

10. RIDGELY BARRINGER
DB 24153 PG 674
PB 49 PG 823

11. KEELY CROGAN
DB 24068 PG 738
PB 49 PG 823

12. SAM & ELNO VENTURES
DB 31576 PG 63
PB 49 PG 823

13. RONALD DONALDSON
DB 24153 PG 720
PB 49 PG 823

14. MILAGRITOS MENDOZA
DB 24153 PG 664
PB 49 PG 823

15. TAMMY LAN DOAN
DB 24313 PG 288
PB 49 PG 823

16. ROBERT BRANDON II
DB 25691 PG 534
PB 52 PG 511

17. COREY HAMILTON
DB 26661 PG 267
PB 52 PG 511

18. AMANDA DENT
DB 26661 PG 280
PB 52 PG 511

19. MARTIN ESCALONA
DB 26661 PG 247
PB 52 PG 511

20. NAKECHIA ALLEN
DB 26661 PG 339
PB 52 PG 511

NOTES:
1. TIE TO EXIST CURB AND GUTTER AT EXIST CONCRETE JOINT TRANSITION 2'-6" C&G TO MATCH EXIST GUTTER WIDTH AS NECESSARY
2. SAWCUT AND REMOVE OR MILL EXISTING ASPHALT PAVEMENT OR CONCRETE PAVEMENT TO TIE-IN DRIVEWAY
3. TIE TO EXISTING CONCRETE SIDEWALK
4. CURB AND GUTTER END TREATMENT

REMOVAL OF EXISTING ASPHALT PAVEMENT

RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED

~~SEE SHEET 7 FOR -L- PROFILE~~
~~SEE SHEET 8 FOR -Y2- PROFILE~~
~~SEE SHEET 8 FOR -Y3- PROFILE~~
~~SEE SHEET 8 FOR -Y4- PROFILE~~
~~SEE SHEET 8 FOR -RDBT- PROFILE~~

- PROFILE TAKEN FROM "U-6105_rdy_wpfl.dgn" FILE PROVIDED BY KIMLEY-HORN ON 02/11/22

0 100 200
FEET
VE = 0.2

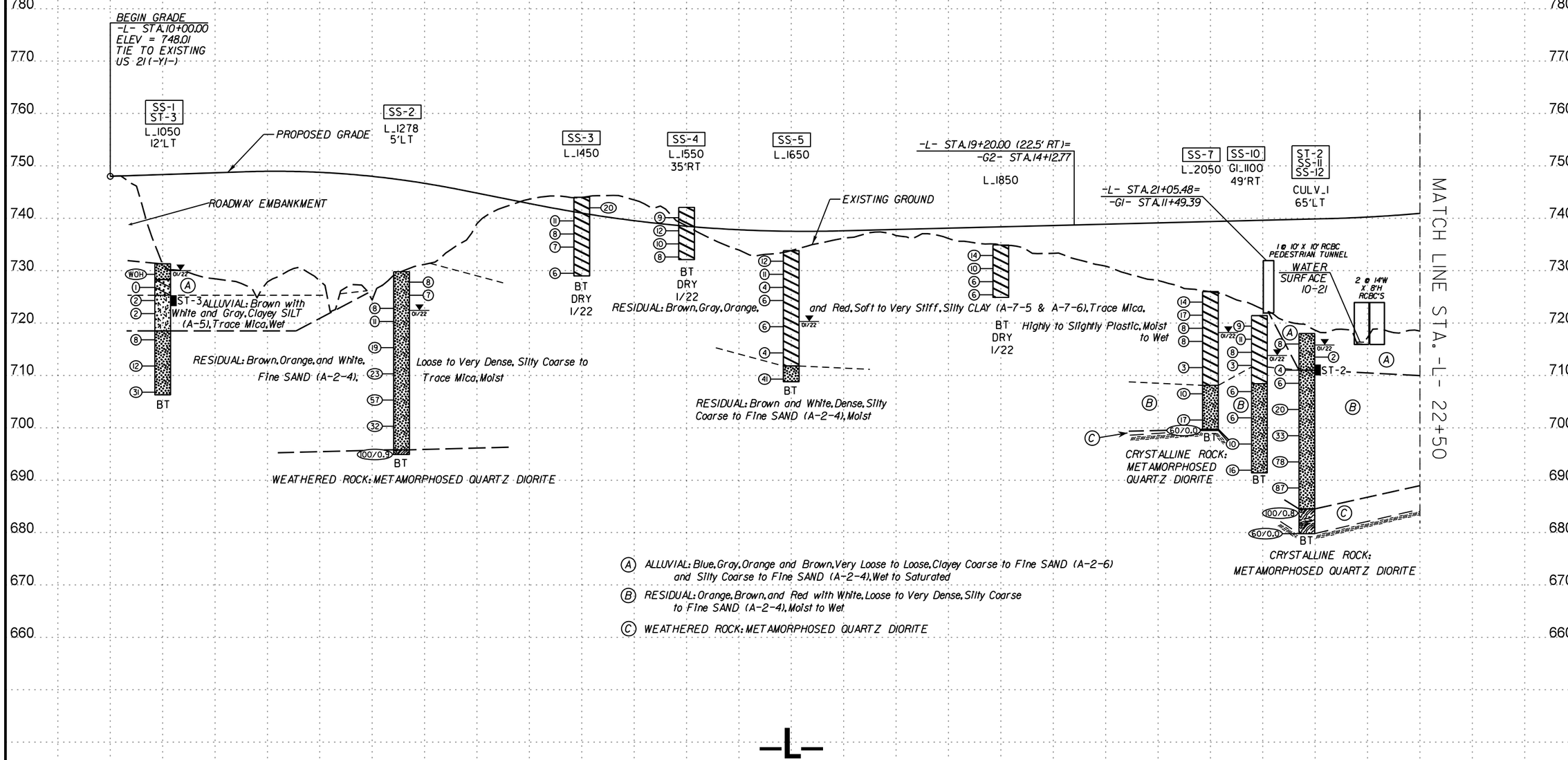
PROJECT REFERENCE NO.	SHEET NO.
U-6105	7

PROFILE ALONG -L-
STA. 10+00.00 TO 22+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- 1	12' LT	10+50	1.0- 2.5	A- 2- 4(0)	22	9	48	22	9	21	100	69	33	17.0	-
ST- 3	12' LT	10+50	6.0- 8.0	A- 5(0)	41	5	42	27	22	9	100	68	38	31.9	-
SS- 2	5' LT	12+78	8.5- 10.0	A- 2- 4(0)	31	4	42	33	17	8	99	70	29	20.5	-
SS- 3	CL	14+50	1.0- 2.5	A- 7- 5(8)	70	33	51	9	3	37	99	60	40	21.9	-
SS- 4	35' RT	15+50	3.5- 5.0	A- 7- 5(6)	61	11	32	20	23	25	100	77	52	31.4	-
SS- 5	CL	16+50	1.0- 2.5	A- 7- 5(24)	71	33	24	9	10	57	99	83	68	25.7	-
SS- 7	CL	20+50	1.0- 2.5	A- 7- 6(16)	57	37	32	15	11	42	98	79	54	17.6	-
SS- 10	CL	11+00	1.0- 2.5	A- 7- 6(14)	55	34	29	17	11	43	94	76	53	23.6	-
ST- 2	65' RT	21+42	3.0- 5.0	A- 2- 4(0)	NP	NP	58	27	5	10	100	63	18	29.1	-
SS- 11	65' RT	21+42	1.0- 2.5	A- 2- 4(0)	37	10	47	22	15	16	100	69	34	21.0	-
SS- 12	65' RT	21+42	8.5- 10.0	A- 2- 4(0)	40	3	40	38	16	6	100	75	28	31.5	-

✱ NOTE: SS- 10 STATION AND OFFSET REFERS TO -G1- ALIGNMENT

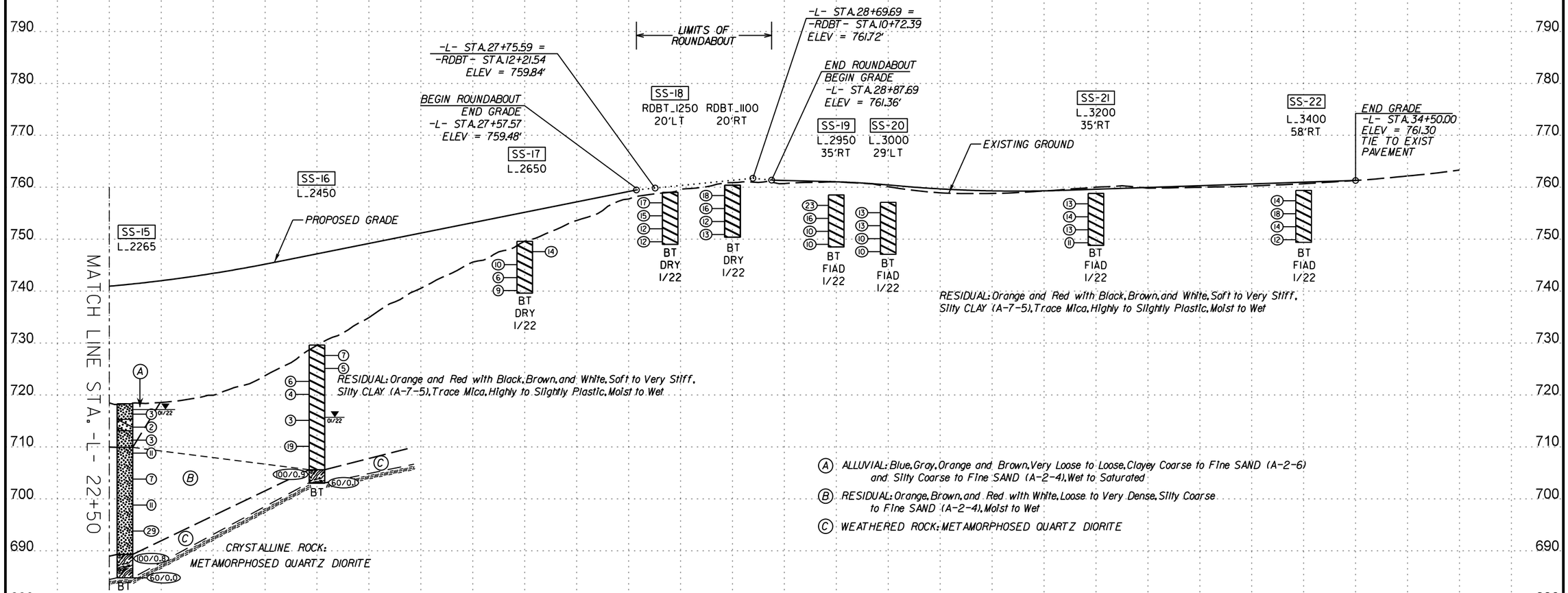


- PROFILE TAKEN FROM "U-6105_rdy_wpfl.dgn" FILE PROVIDED BY KIMLEY-HORN ON 02/11/22

0 100 200
FEET
VE = 0.2

PROJECT REFERENCE NO.	SHEET NO.
U-6105	8

PROFILE ALONG -L-
STA. 22+50.00 TO 34+50.00



(A) ALLUVIAL: Blue, Gray, Orange and Brown, Very Loose to Loose, Clayey Coarse to Fine SAND (A-2-6) and Silty Coarse to Fine SAND (A-2-4), Wet to Saturated

(B) RESIDUAL: Orange, Brown, and Red with White, Loose to Very Dense, Silty Coarse to Fine SAND (A-2-4), Moist to Wet

(C) WEATHERED ROCK: METAMORPHOSED QUARTZ DIORITE

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-15	CL	22+65	3.5-5.0	A-2-6(1)	33	16	52	18	10	20	100	64	32	30.8	-
SS-16	CL	24+50	1.0-2.5	A-7-5(4)	52	12	34	20	18	28	100	80	49	32.0	-
SS-17	CL	26+50	6.0-7.5	A-7-5(5)	50	13	29	21	22	28	98	77	52	25.8	-
SS-18	20' LT	27+90	1.0-2.5	A-7-5(17)	63	22	22	11	16	51	100	84	69	28.0	-
SS-19	35' RT	29+50	1.0-2.5	A-7-5(23)	69	27	18	9	16	57	98	87	73	30.4	-
SS-20	29' LT	30+00	1.0-2.5	A-7-5(17)	62	20	21	10	18	51	100	85	72	31.6	-
SS-21	35' RT	32+00	6.0-7.5	A-7-5(9)	57	14	29	16	19	36	100	80	59	29.1	-
SS-22	58' RT	34+00	1.0-2.5	A-7-5(21)	62	29	23	9	13	55	100	84	70	25.5	-

- PROFILES TAKEN FROM "U-6105_rdy_wpfl.dgn" FILE PROVIDED BY KIMLEY-HORN ON 02/11/22

0 100 200
FEET
VE = 0.2

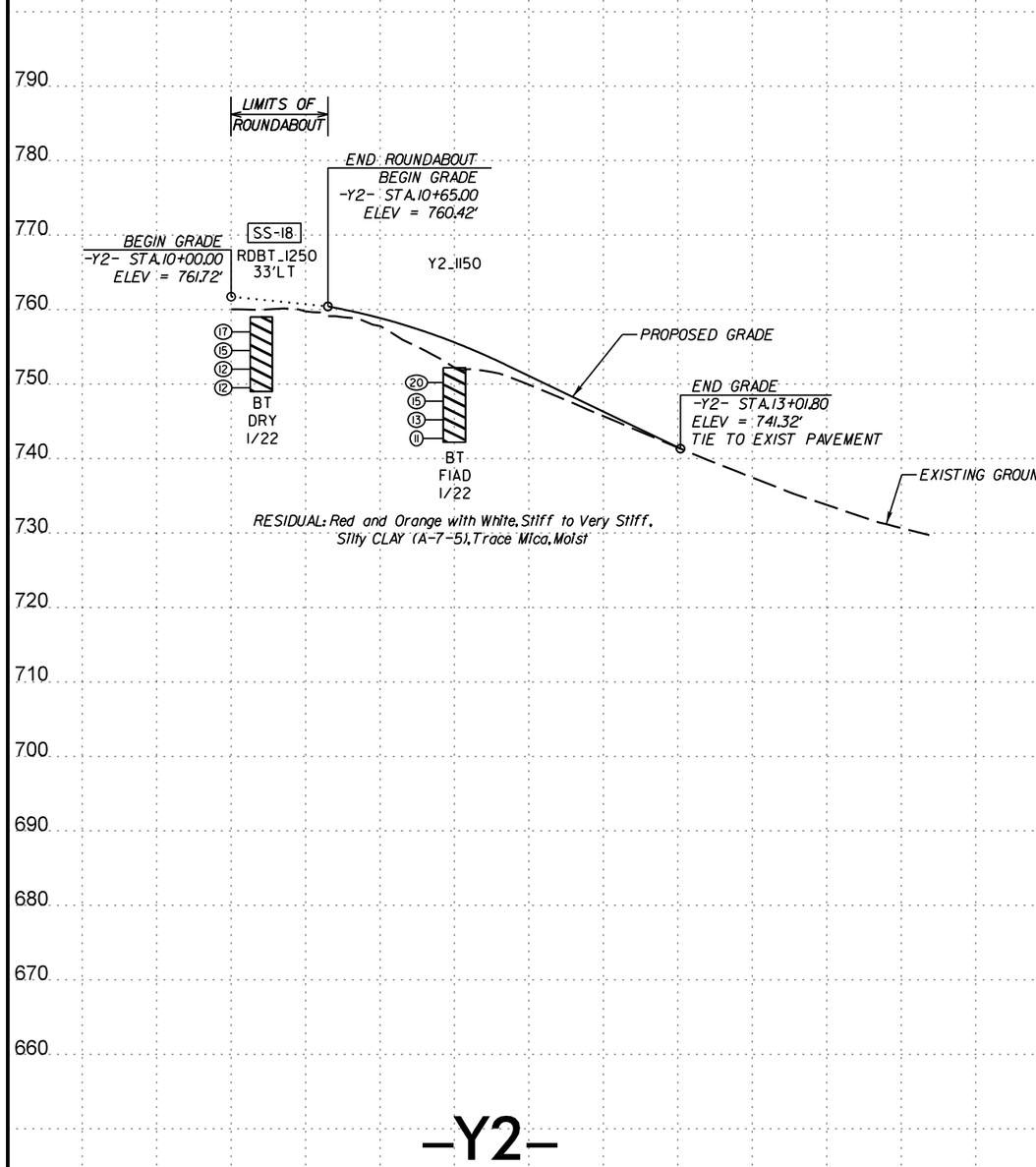
PROJECT REFERENCE NO.	SHEET NO.
U-6105	9

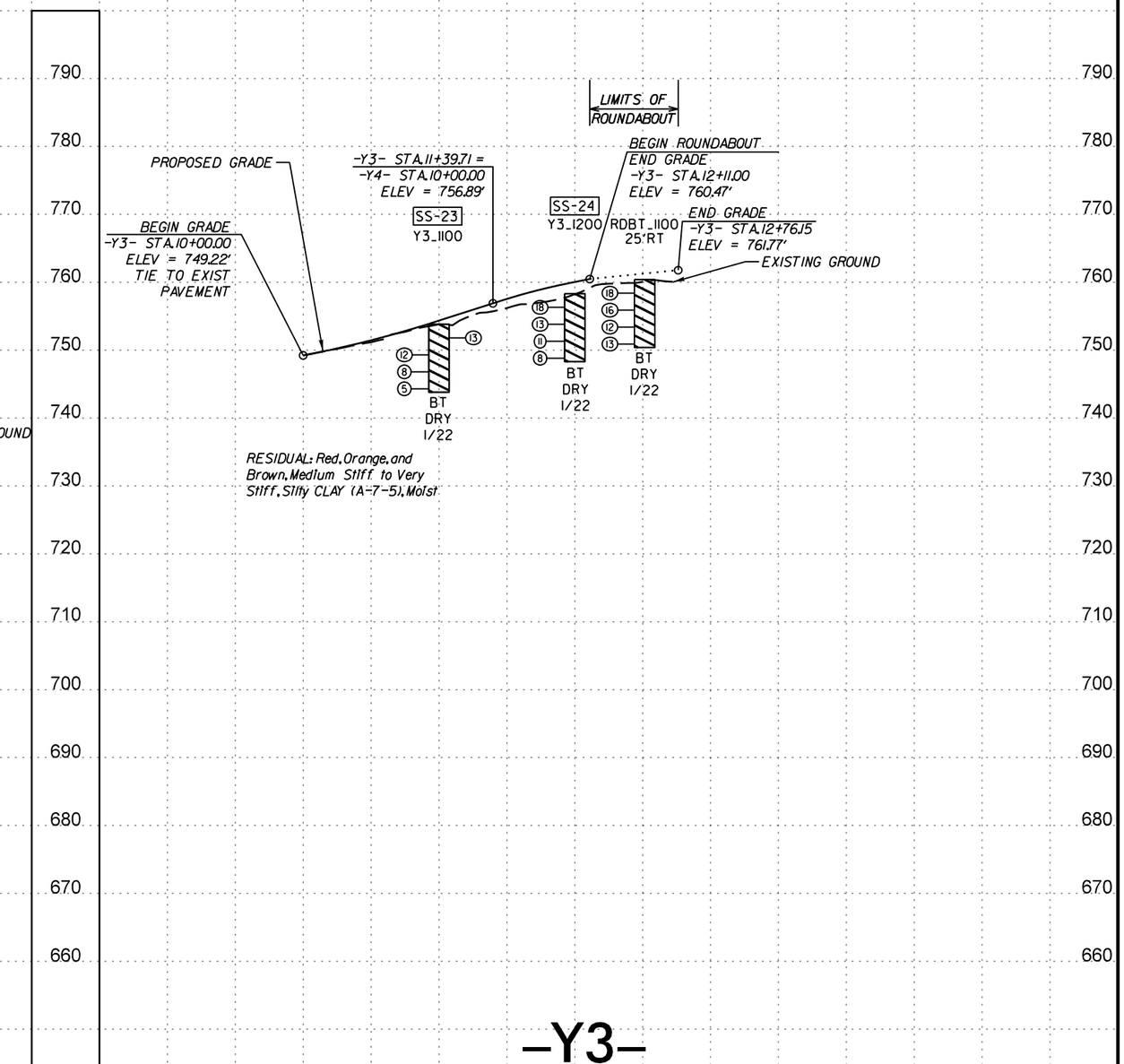
PROFILE ALONG
-Y2- STA. 10+00.00 TO 13+01.80
-Y3- STA. 10+00.00 TO 12+76.15

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-23	CL	11+00	3.5-5.0	A-7-5(28)	67	21	1	11	36	52	100	99	93	34.3	-
SS-24	CL	12+00	1.0-2.5	A-7-5(13)	59	23	28	14	21	37	100	82	60	28.3	-
SS-18	20' LT	27+90	1.0-2.5	A-7-5(17)	63	22	22	11	16	51	100	84	69	28.0	-

✱ NOTE: SS-18 STATION AND OFFSET REFERS TO -L- ALIGNMENT



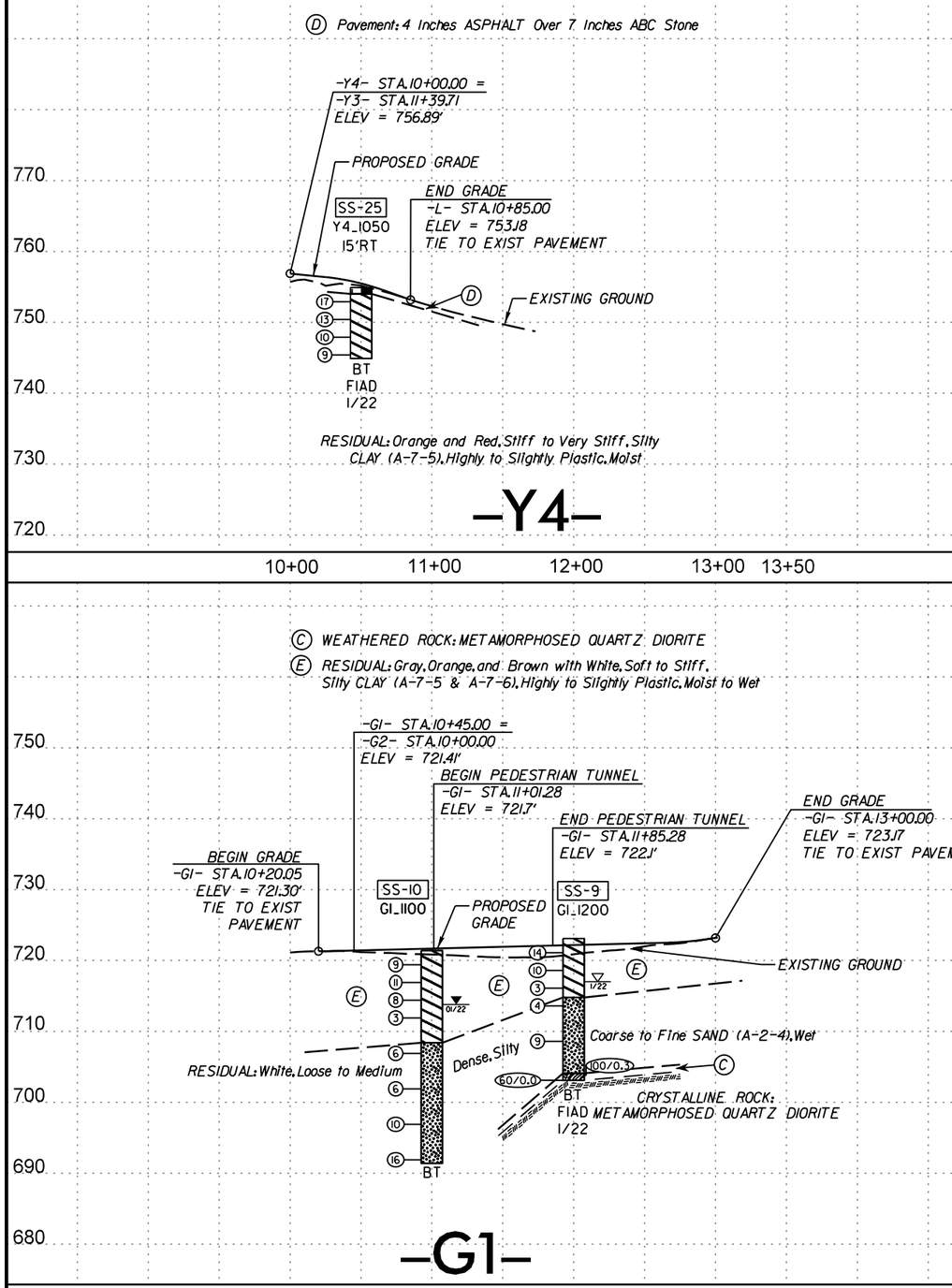


- PROFILES TAKEN FROM "U-6105_rdy_wpfl.dgn" FILE PROVIDED BY KIMLEY-HORN ON 02/11/22

0 100 200
FEET
VE = 0.2

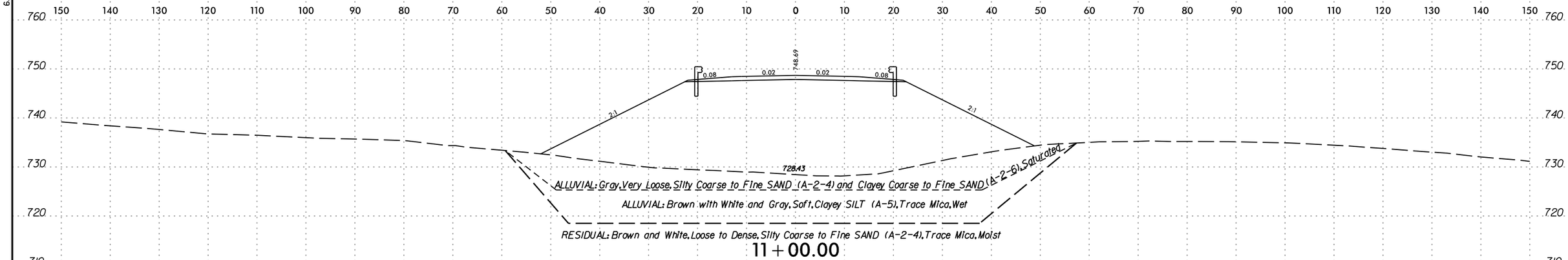
PROJECT REFERENCE NO.	SHEET NO.
U-6105	10

PROFILE ALONG
-Y4- STA. 10+00.00 TO 10+85.00
-G1- STA. 10+20.05 TO 13+00.00
-G2- STA. 10+05.00 TO 14+12.77



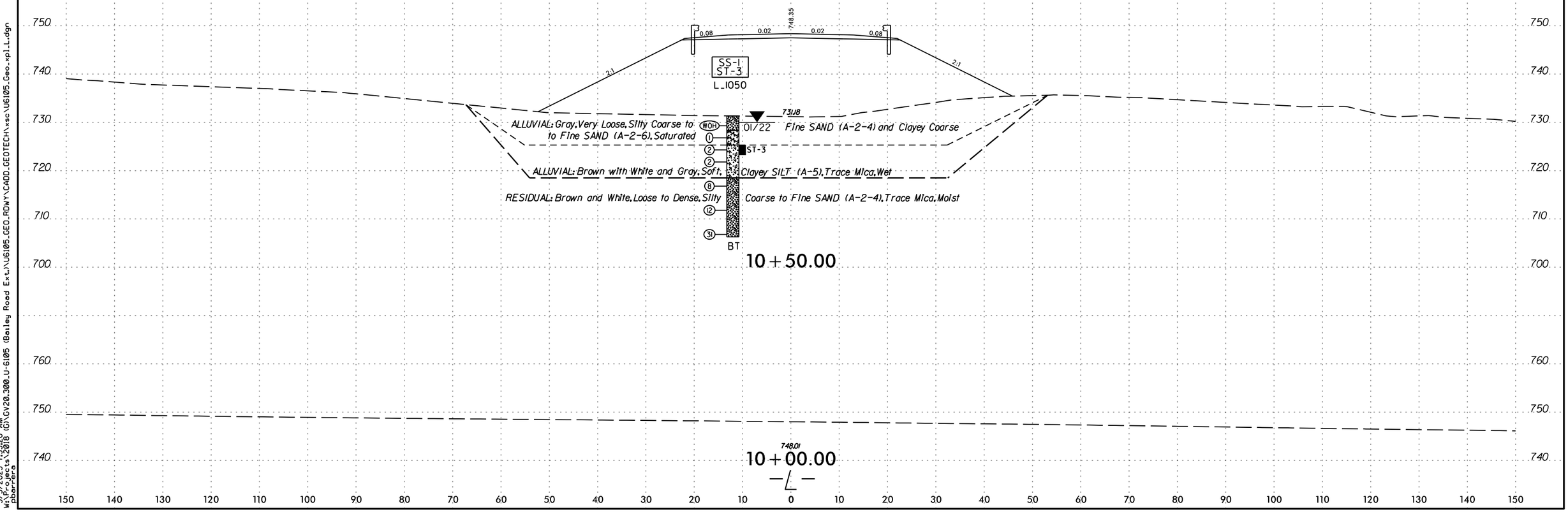
SOIL TEST RESULTS

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-6	CL	12+50	3.5-5.0	A-7-5(23)	79	28	23	10	19	48	99	82	69	42.6	-
SS-8	CL	10+50	3.5-5.0	A-7-6(14)	60	33	30	16	11	43	95	78	52	24.3	-
SS-9	CL	12+00	8.5-10.0	A-2-5(0)	41	3	39	36	17	8	100	75	31	34.9	-
SS-10	CL	11+00	1.0-2.5	A-7-6(14)	55	34	29	17	11	43	94	76	53	23.6	-
SS-25	15' RT	10+50	1.0-2.5	A-7-5(24)	65	27	16	7	20	57	99	87	77	28.7	-



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-1	12' LT	10+50	1.0-2.5	A-2-4(0)	22	9	48	22	9	21	100	69	33	17.0	-
ST-3	12' LT	10+50	6.0-8.0	A-5(0)	41	5	42	27	22	9	100	68	38	31.9	-



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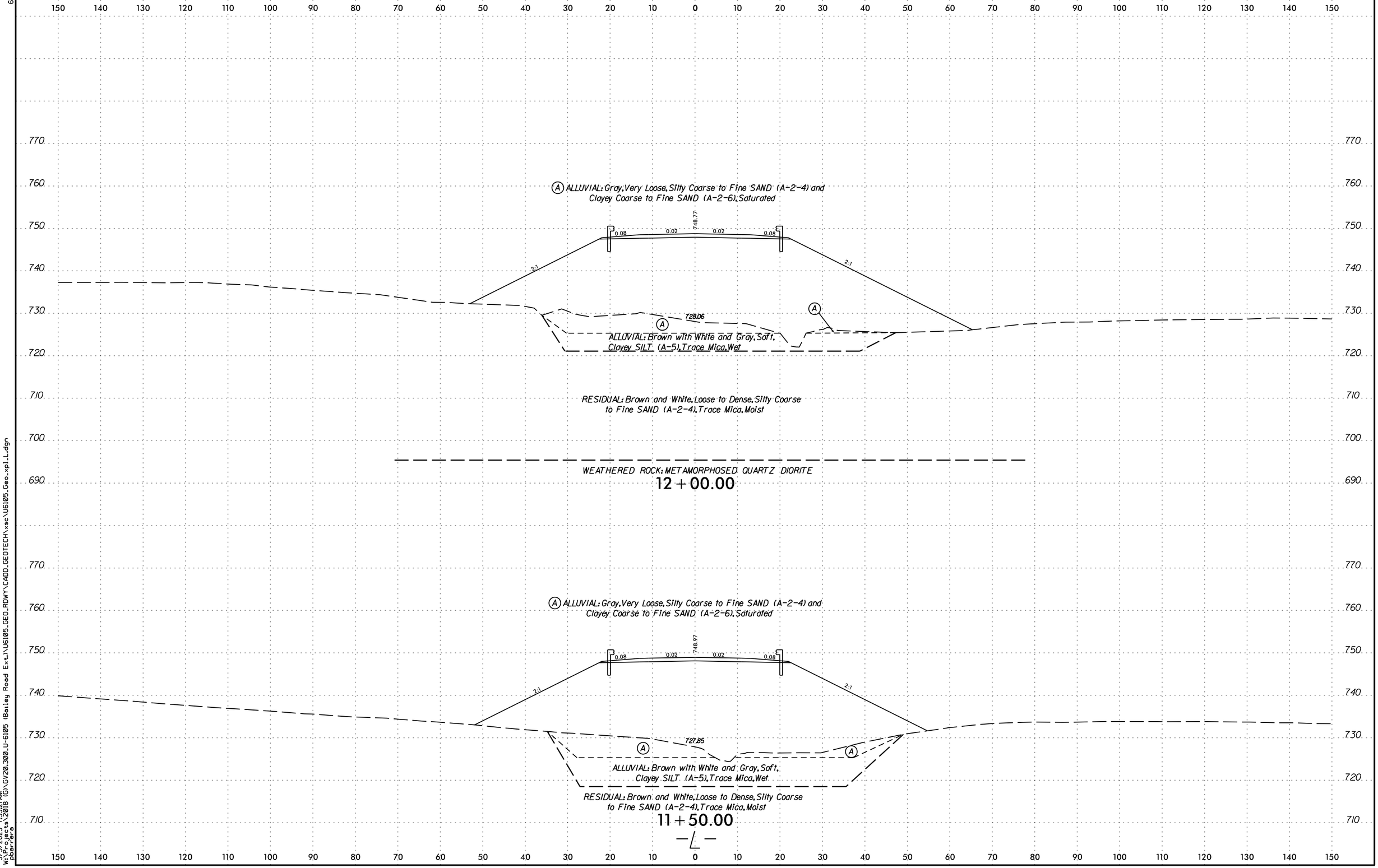
pbarrera

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	12



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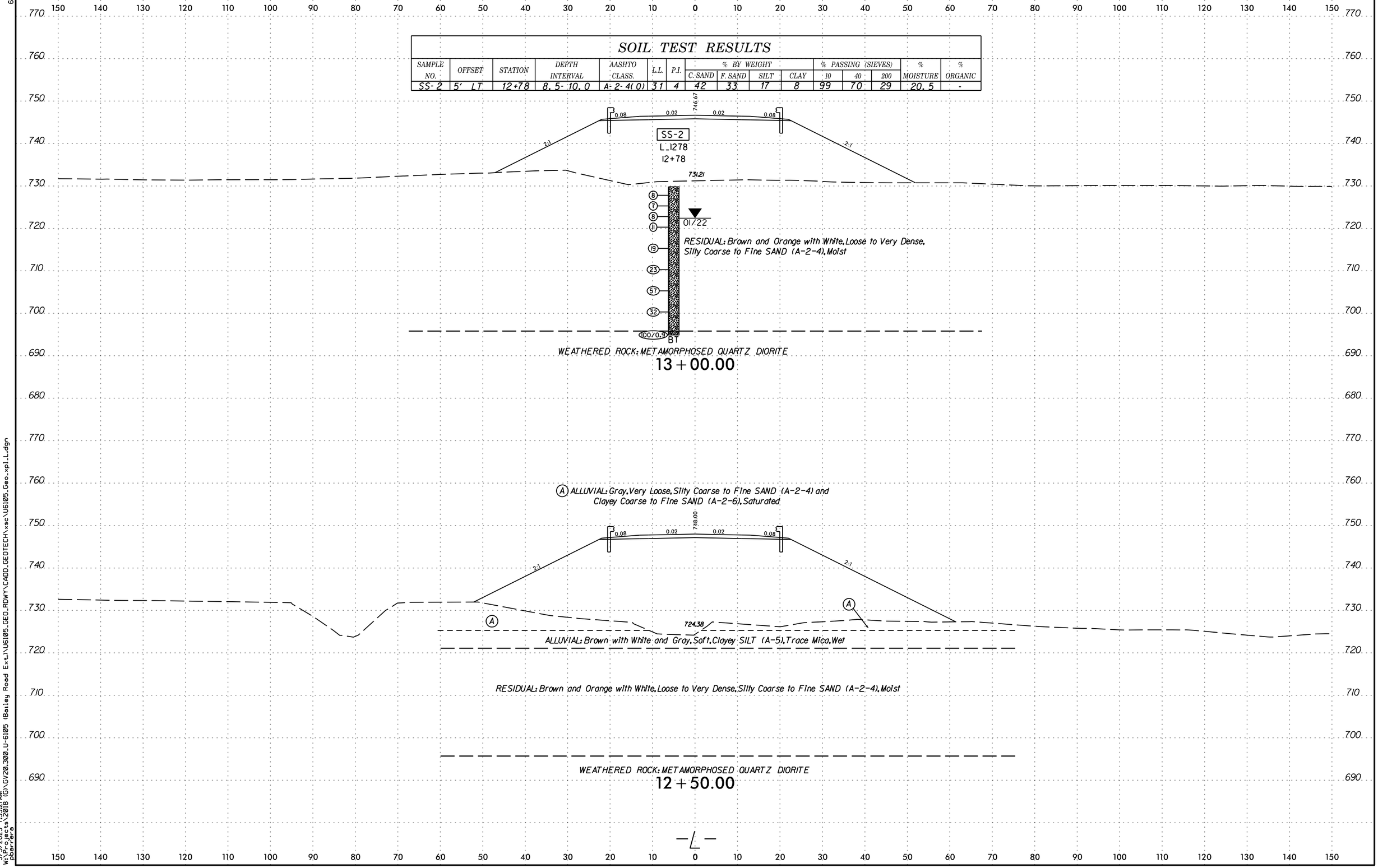
pbarrera

PROJ. REFERENCE NO.	SHEET NO.
U-6105	13

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-2	5' LT	12+78	8.5-10.0	A-2-4(0)	31	4	42	33	17	8	99	70	29	20.5	-



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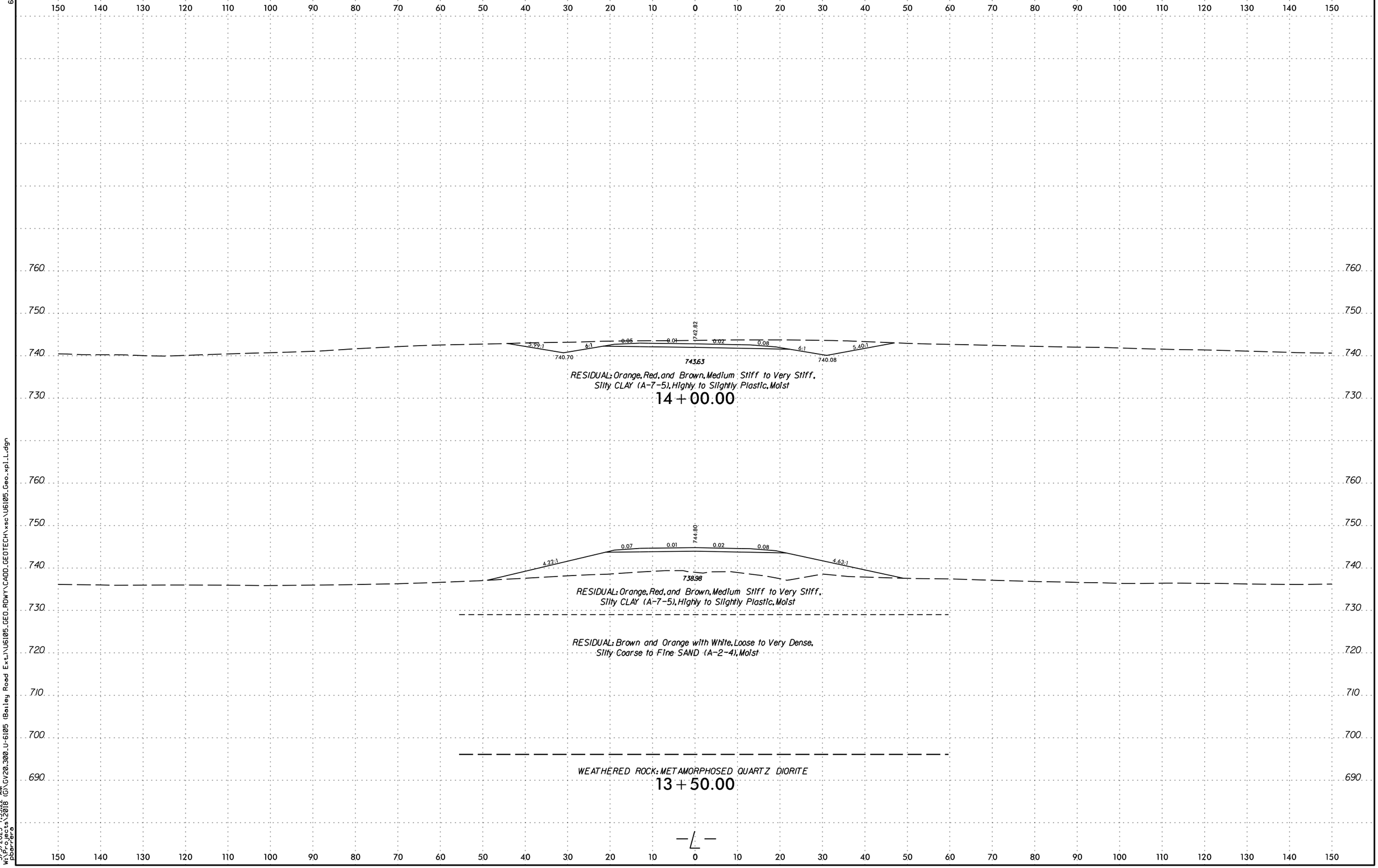
pbarrera

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	14



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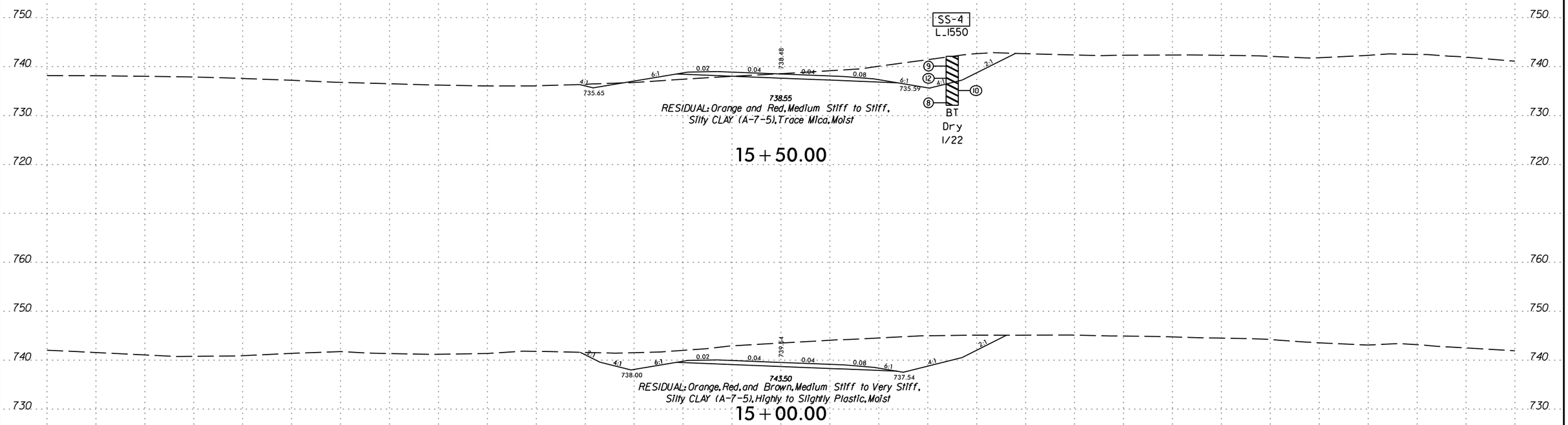
pbarrera

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	15

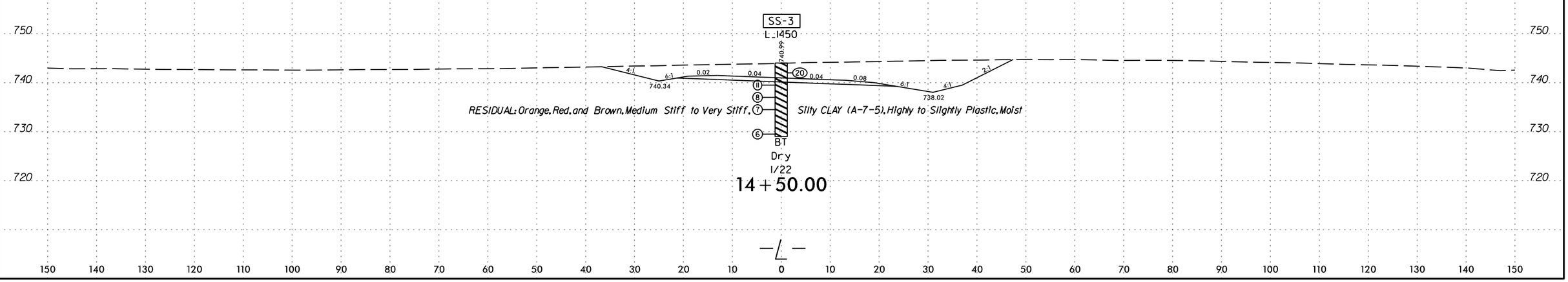
SOIL TEST RESULTS

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-4	35' RT	15+50	3.5-5.0	A-7-5(6)	61	11	32	20	23	25	100	77	52	31.4	-



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-3	CL	14+50	1.0-2.5	A-7-5(8)	70	33	51	9	3	37	99	60	40	21.9	-



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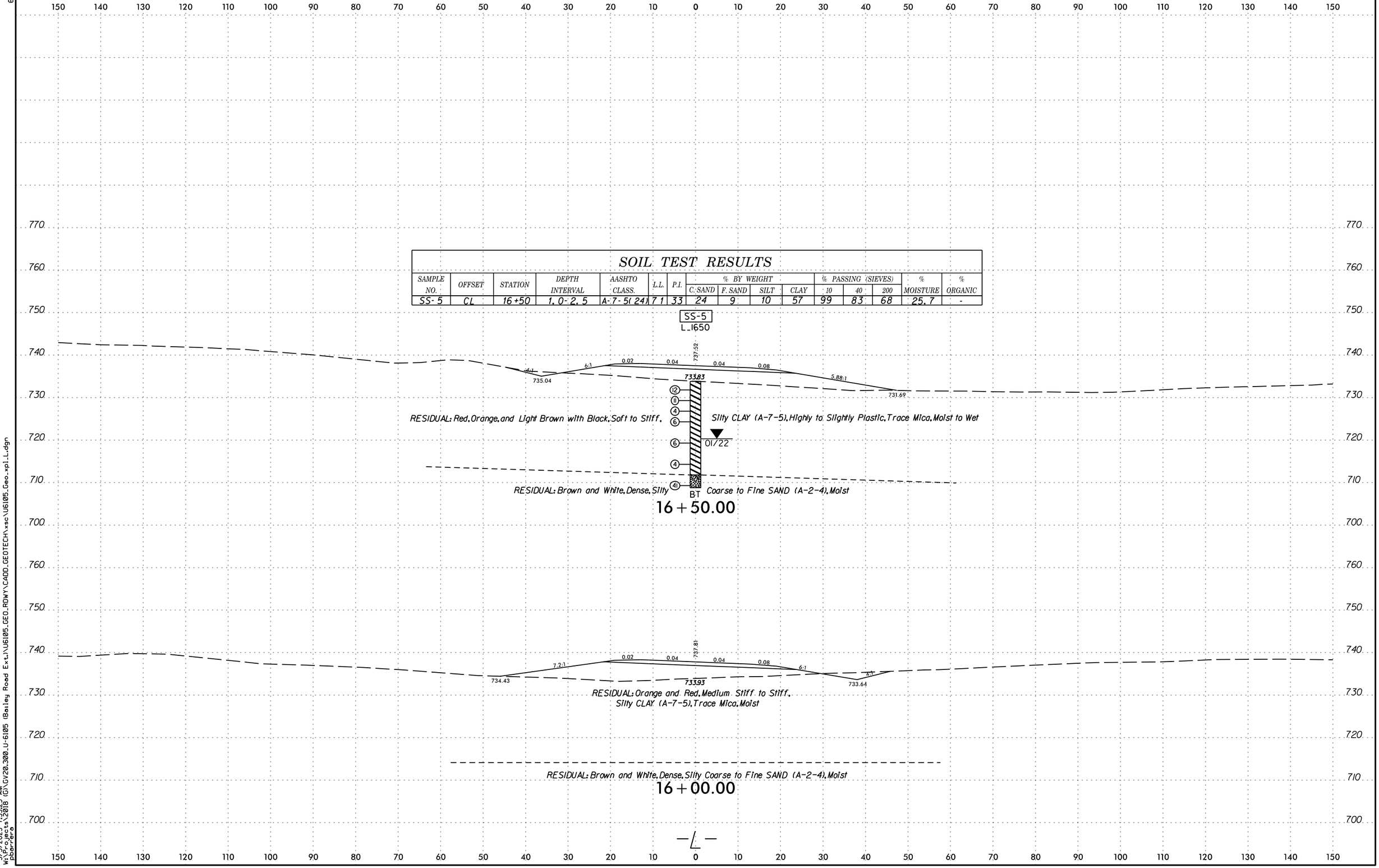
pbarrera

PROJ. REFERENCE NO.	SHEET NO.
U-6105	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-5	CL	16+50	1.0-2.5	A-7-5(24)	71	33	24	9	10	57	99	83	68	25.7	-



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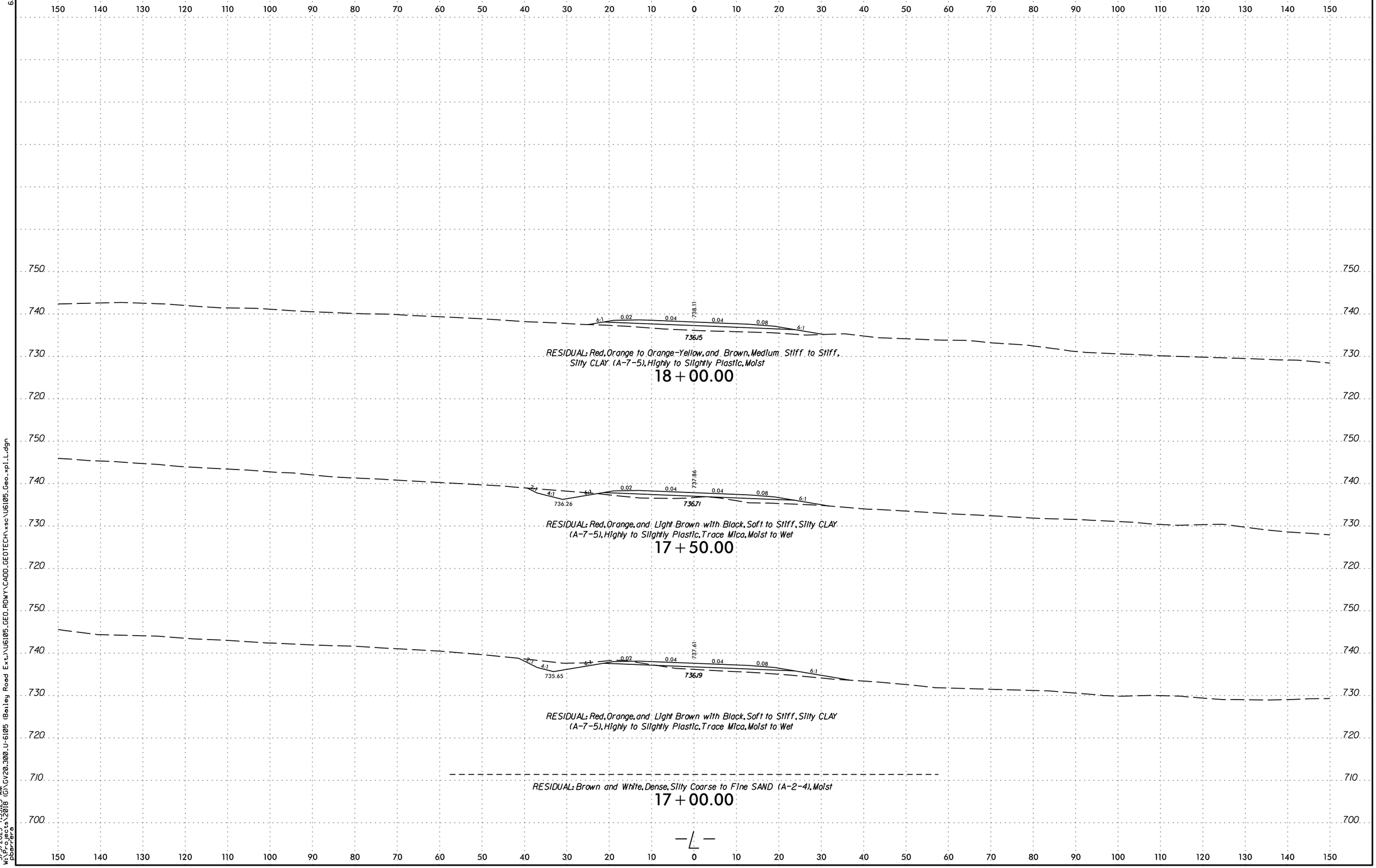
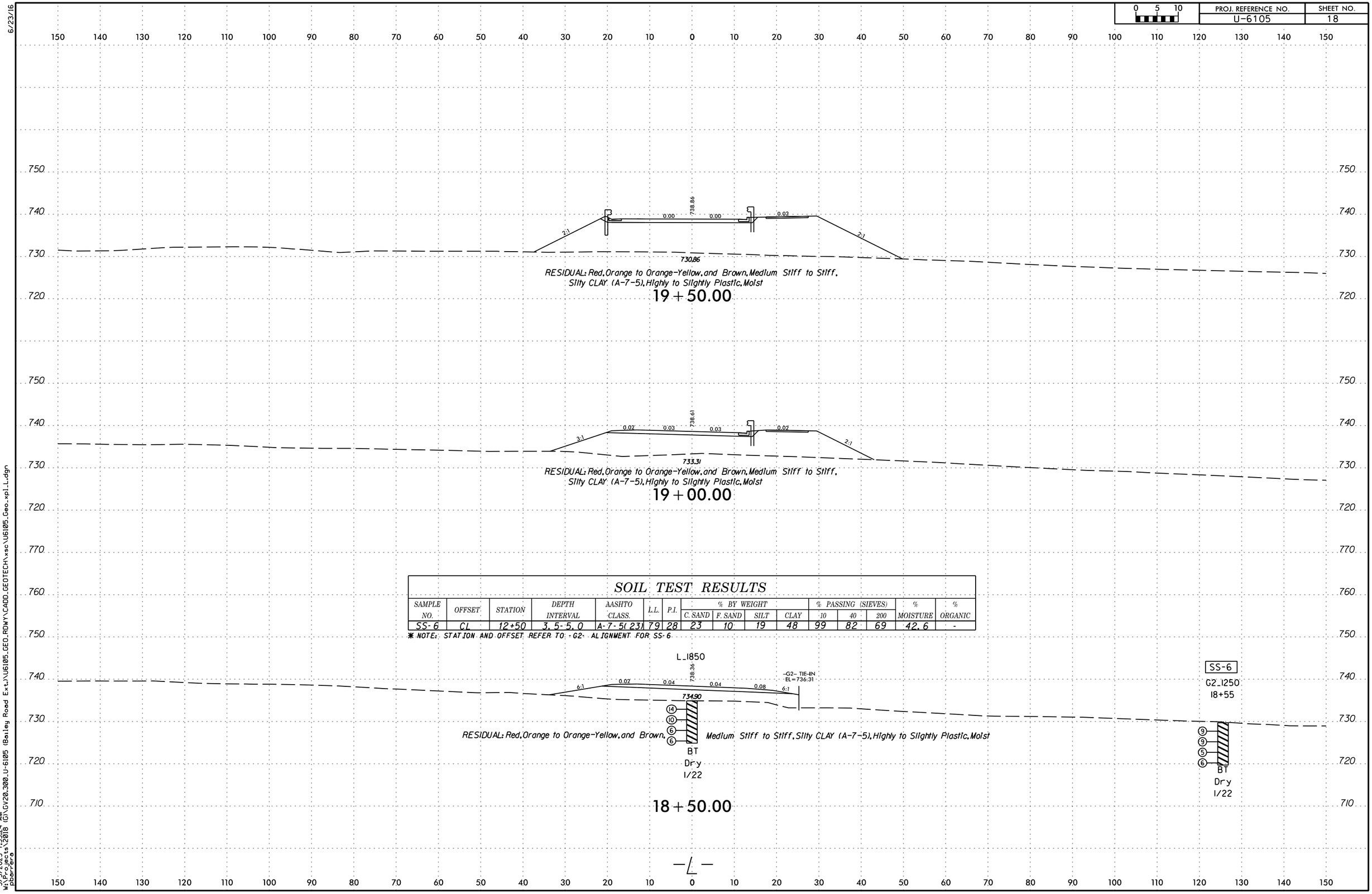
pbarrera

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	17





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-6	CL	12+50	3.5-5.0	A-7-5(23)	79	28	23	10	19	48	99	82	69	42.6	-

✱ NOTE: STATION AND OFFSET REFER TO -G2- ALIGNMENT FOR SS-6

3/3/2023 7:53:24 AM
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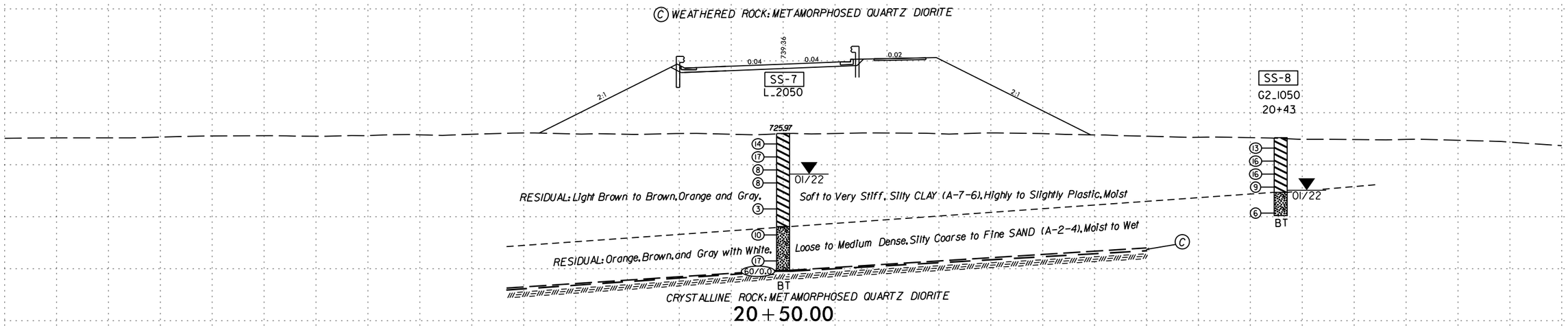
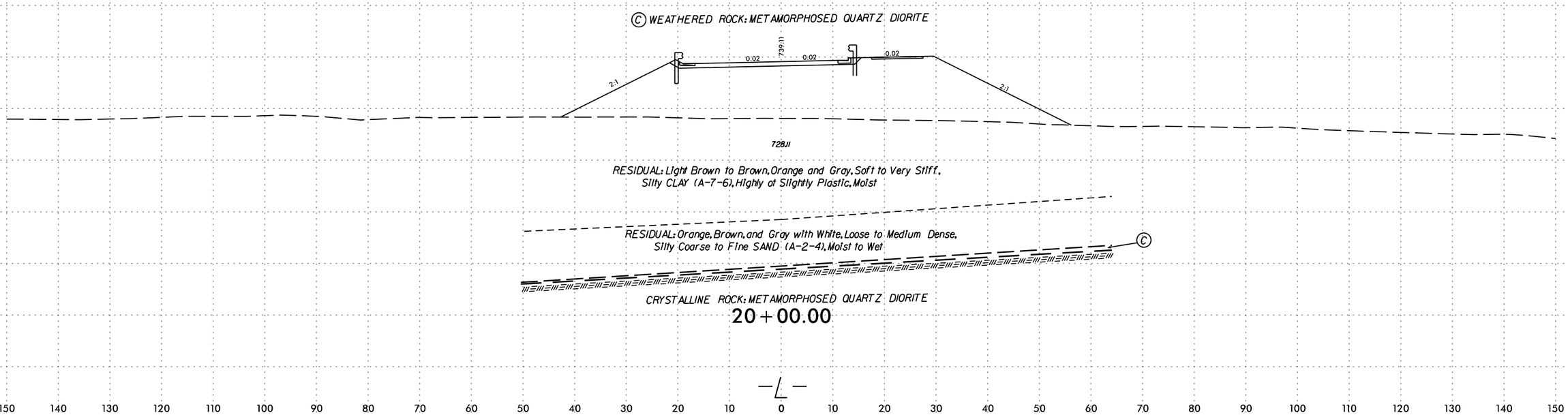
pbarrera

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-7	CL	20+50	1.0-2.5	A-7-6(16)	57	37	32	15	11	42	98	79	54	17.6	-
SS-8	CL	10+50	3.5-5.0	A-7-6(14)	60	33	30	16	11	43	95	78	52	24.3	-

✱ NOTE: STATION AND OFFSET REFER TO -G2- ALIGNMENT FOR SS-8





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pbarrera

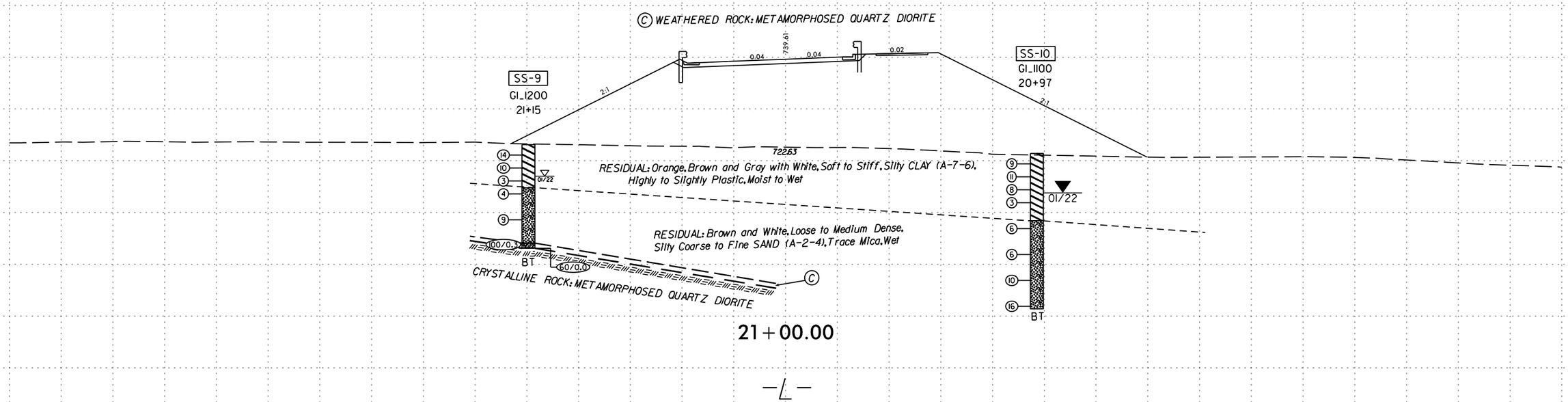
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	20

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-9	CL	12+00	8.5-10.0	A-2-5(0)	41	3	39	36	17	8	100	75	31	34.9	-
SS-10	CL	11+00	1.0-2.5	A-7-6(14)	55	34	29	17	11	43	94	76	53	23.6	-

✱ NOTE: STATIONS AND OFFSETS REFER TO -G1- ALIGNMENT



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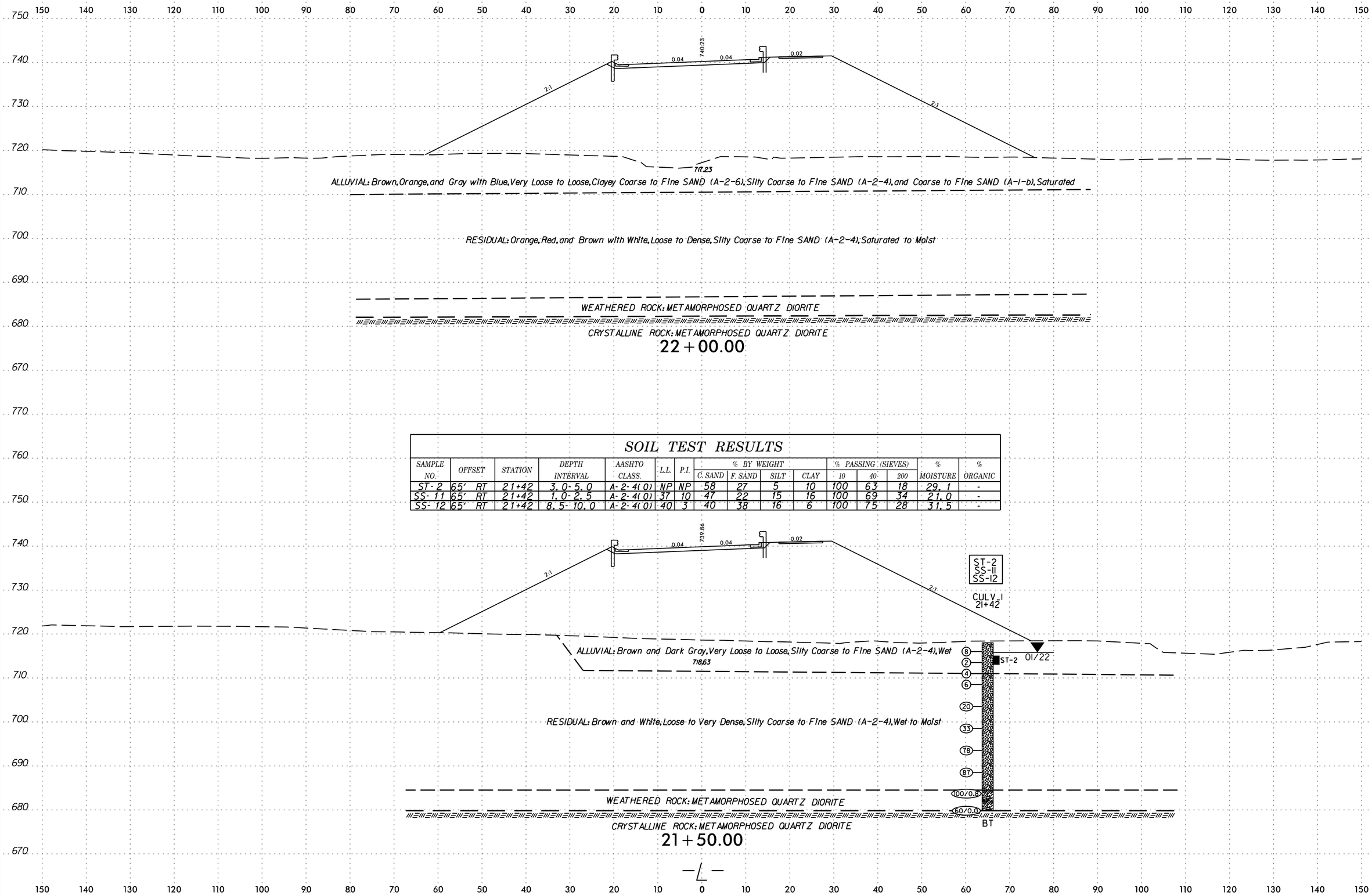
pbarrera

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	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
ST-2	65' RT	21+42	3.0-5.0	A-2-4(0)	NP	NP	58	27	5	10	100	63	18	29.1	-
SS-11	65' RT	21+42	1.0-2.5	A-2-4(0)	37	10	47	22	15	16	100	69	34	21.0	-
SS-12	65' RT	21+42	8.5-10.0	A-2-4(0)	40	3	40	38	16	6	100	75	28	31.5	-

6/23/16

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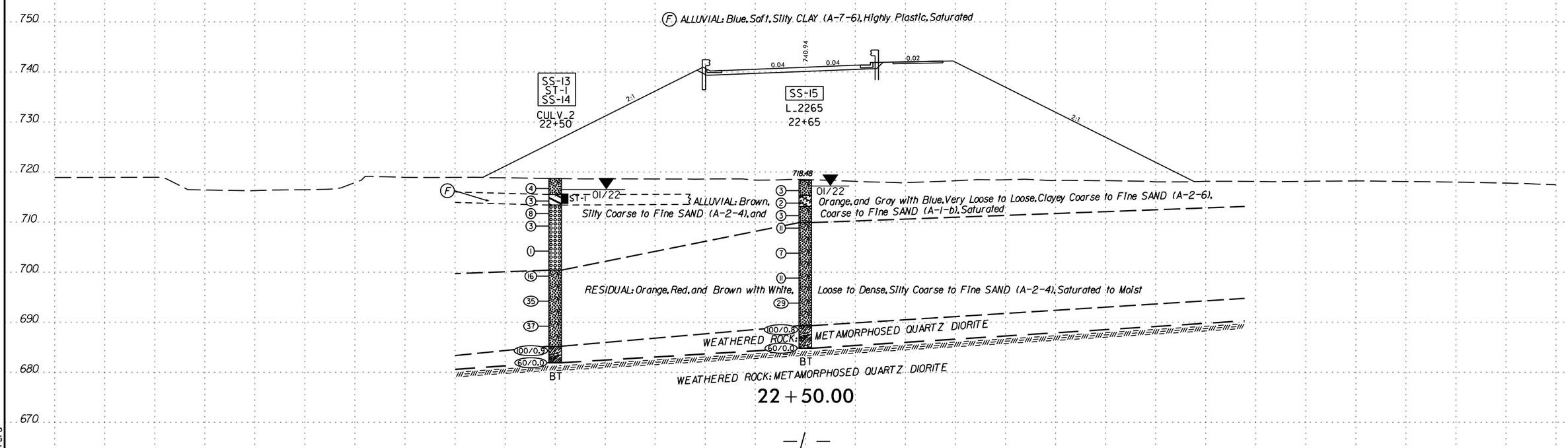
pbarrero

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	50' LT	22+50	1.0-2.5	A-2-4(0)	22	2	60	22	6	12	100	60	20	24.1	-
ST-1	50' LT	22+50	3.0-5.0	A-7-6(27)	54	31	4	17	27	52	100	99	83	21.6	-
SS-14	50' LT	22+50	8.5-10.0	A-1-b(0)	NP	NP	72	20	2	6	100	49	10	-	-
SS-15	CL	22+65	3.5-5.0	A-2-6(1)	33	16	52	18	10	20	100	64	32	30.8	-



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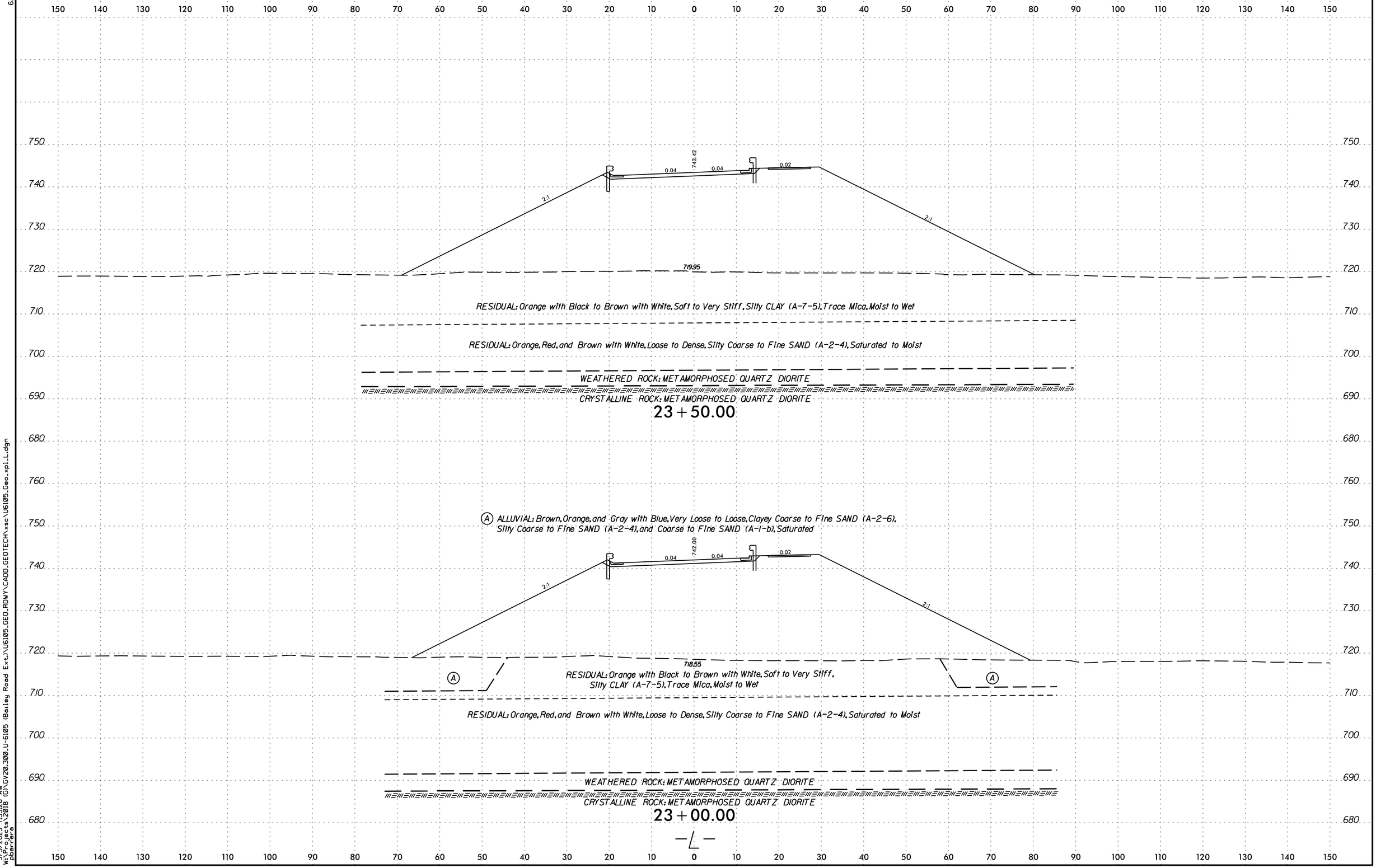
pbarrera

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	23



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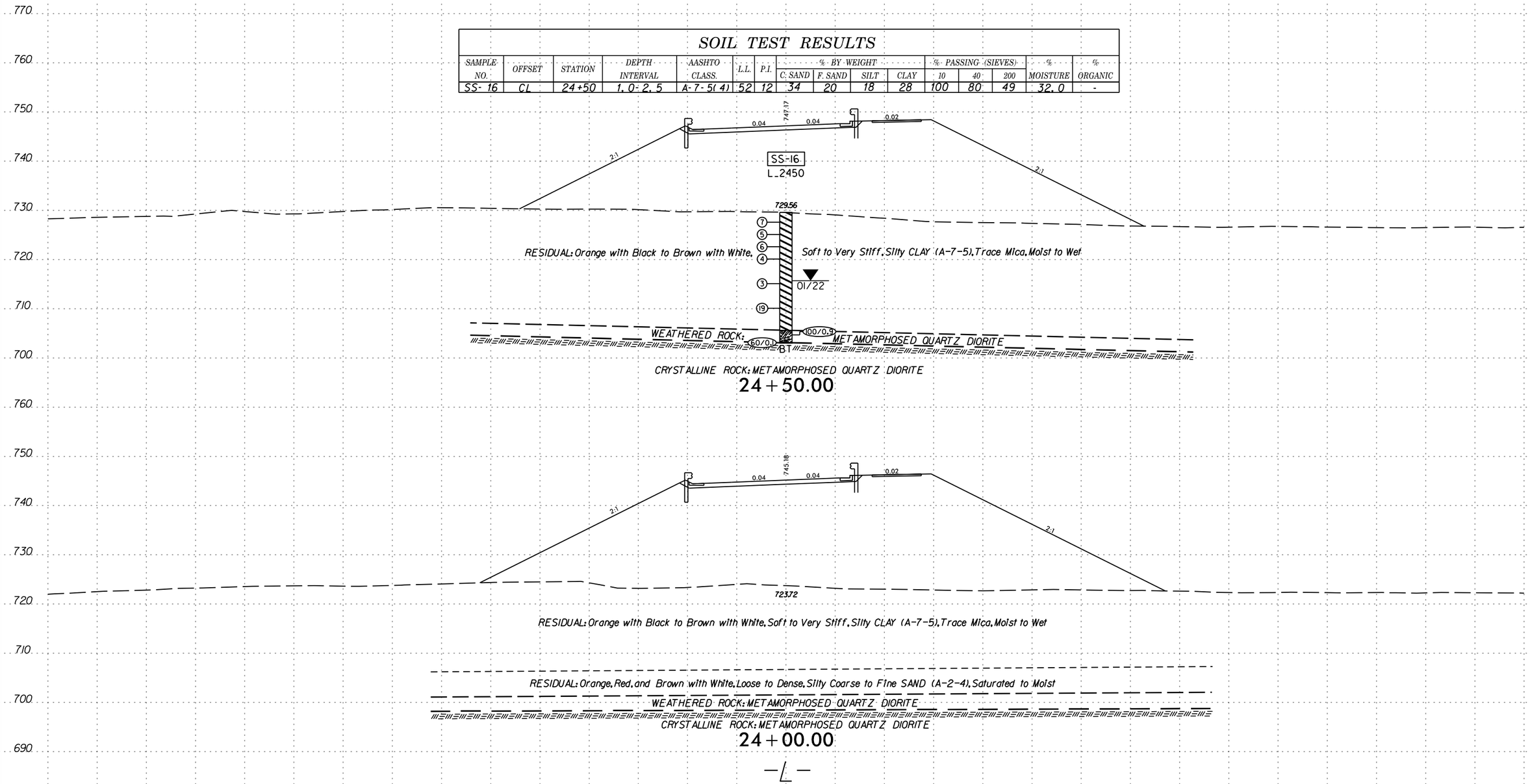
pbarrera

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	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- 16	CL	24+50	1.0- 2.5	A-7-5(4)	52	12	34	20	18	28	100	80	49	32.0	-



6/23/16

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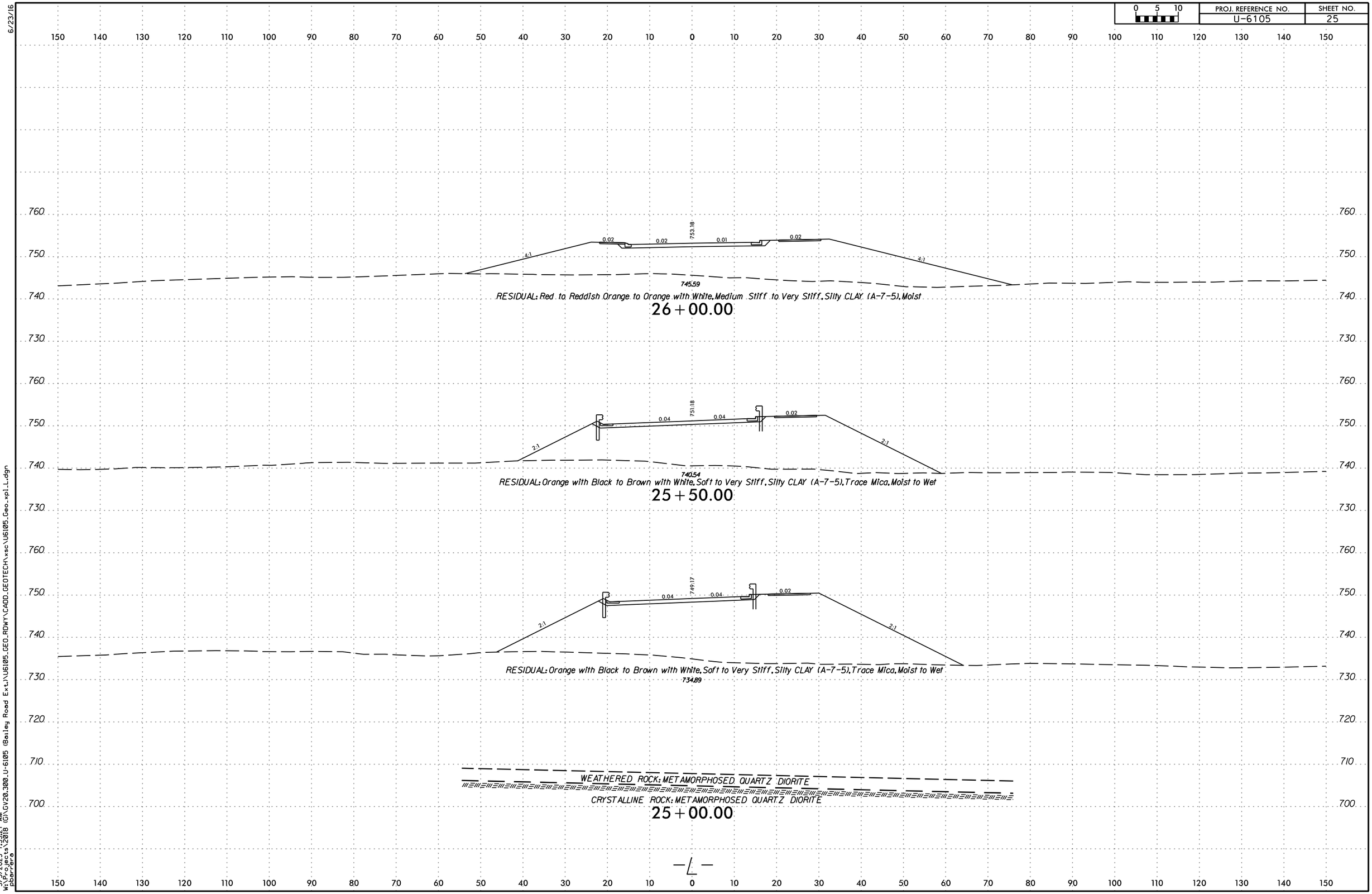
pbarrera

PROJ. REFERENCE NO.	SHEET NO.
U-6105	25



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pbarrera

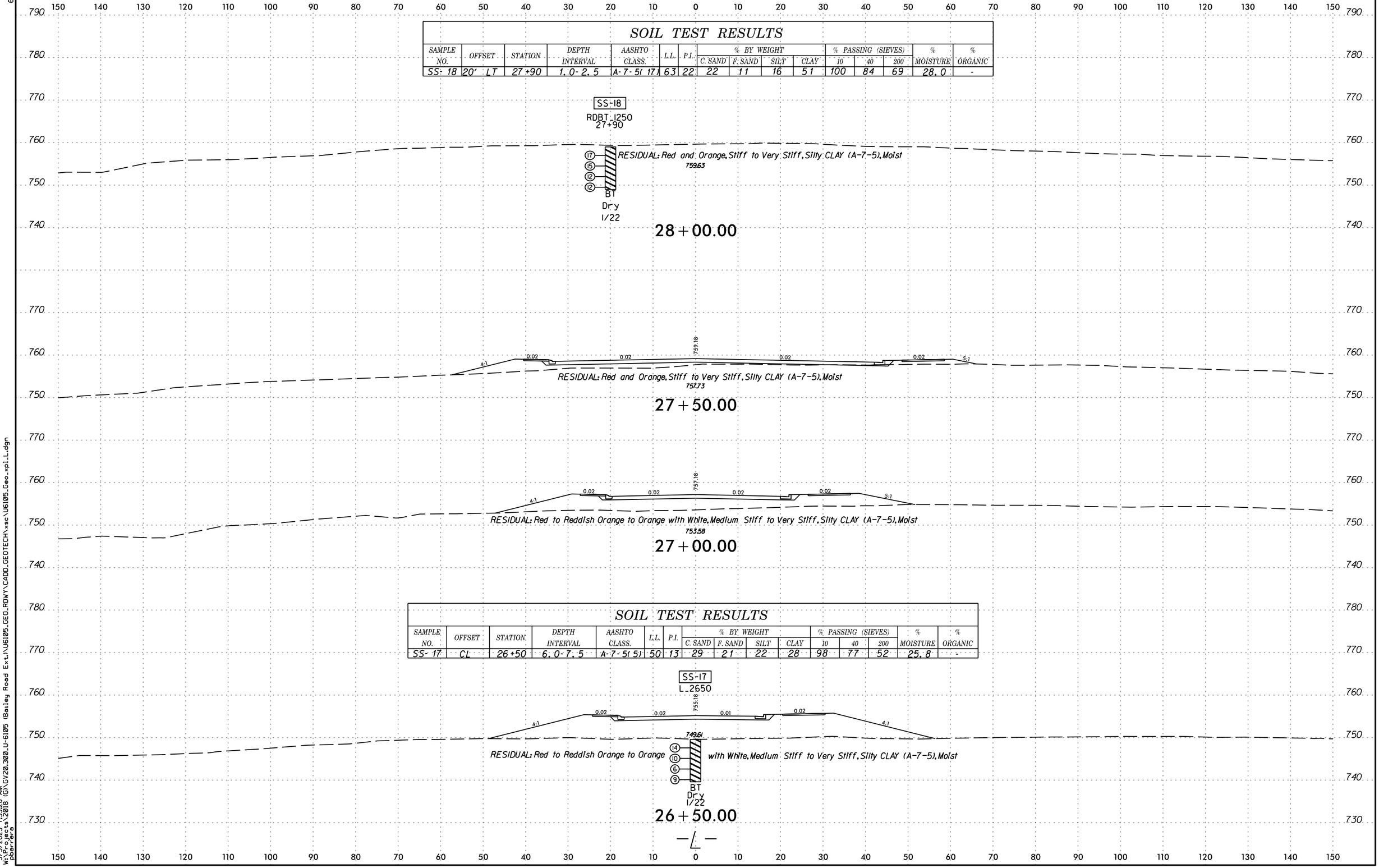
6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-6105	26

0 5 10

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- 18	20' LT	27+90	1.0-2.5	A-7-5(17)	63	22	22	11	16	51	100	84	69	28.0	-



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- 17	CL	26+50	6.0-7.5	A-7-5(5)	50	13	29	21	22	28	98	77	52	25.8	-

3/3/2023 7:53:28 AM
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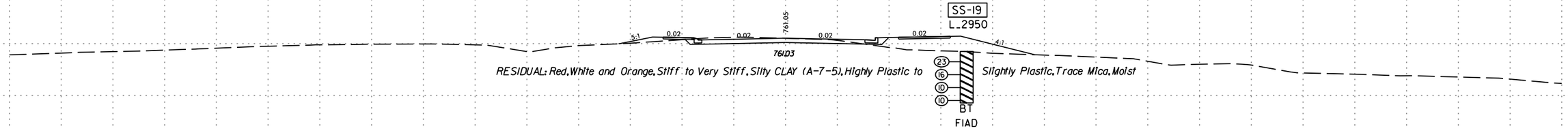
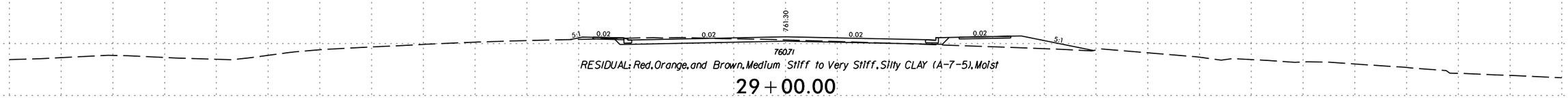
pbarrera

PROJ. REFERENCE NO.	SHEET NO.
U-6105	27

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	35' RT	29+50	1.0-2.5	A-7-5(23)	69	27	18	9	16	57	98	87	73	30.4	-

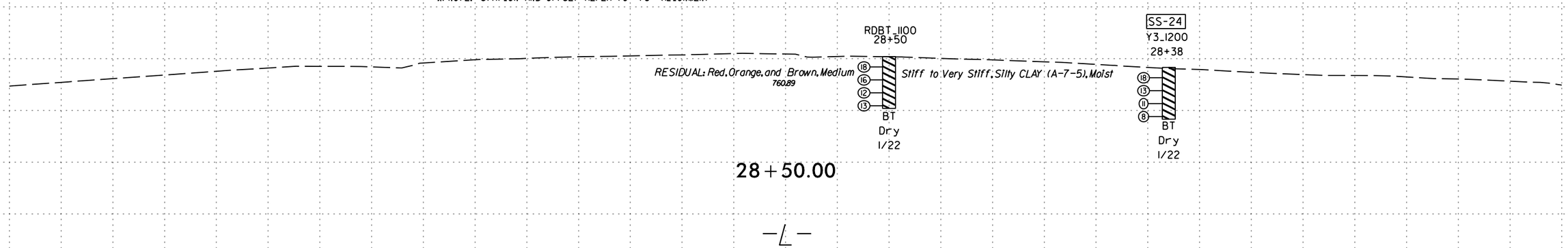




SOIL TEST RESULTS

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-24	CL	12+00	1.0-2.5	A-7-5(13)	59	23	28	14	21	37	100	82	60	28.3	-

✱ NOTE: STATION AND OFFSET REFER TO -Y3- ALIGNMENT



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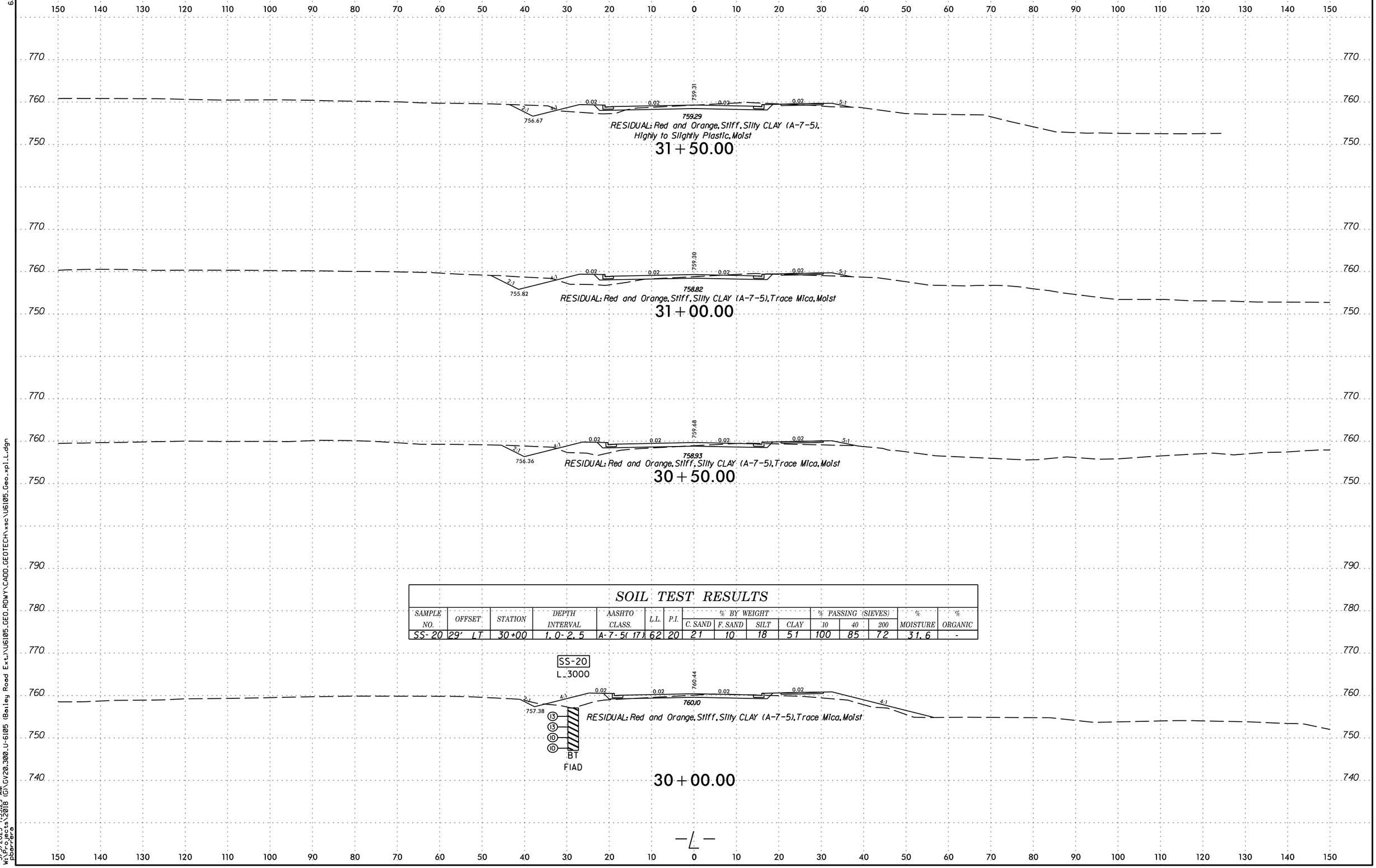
pbarrera

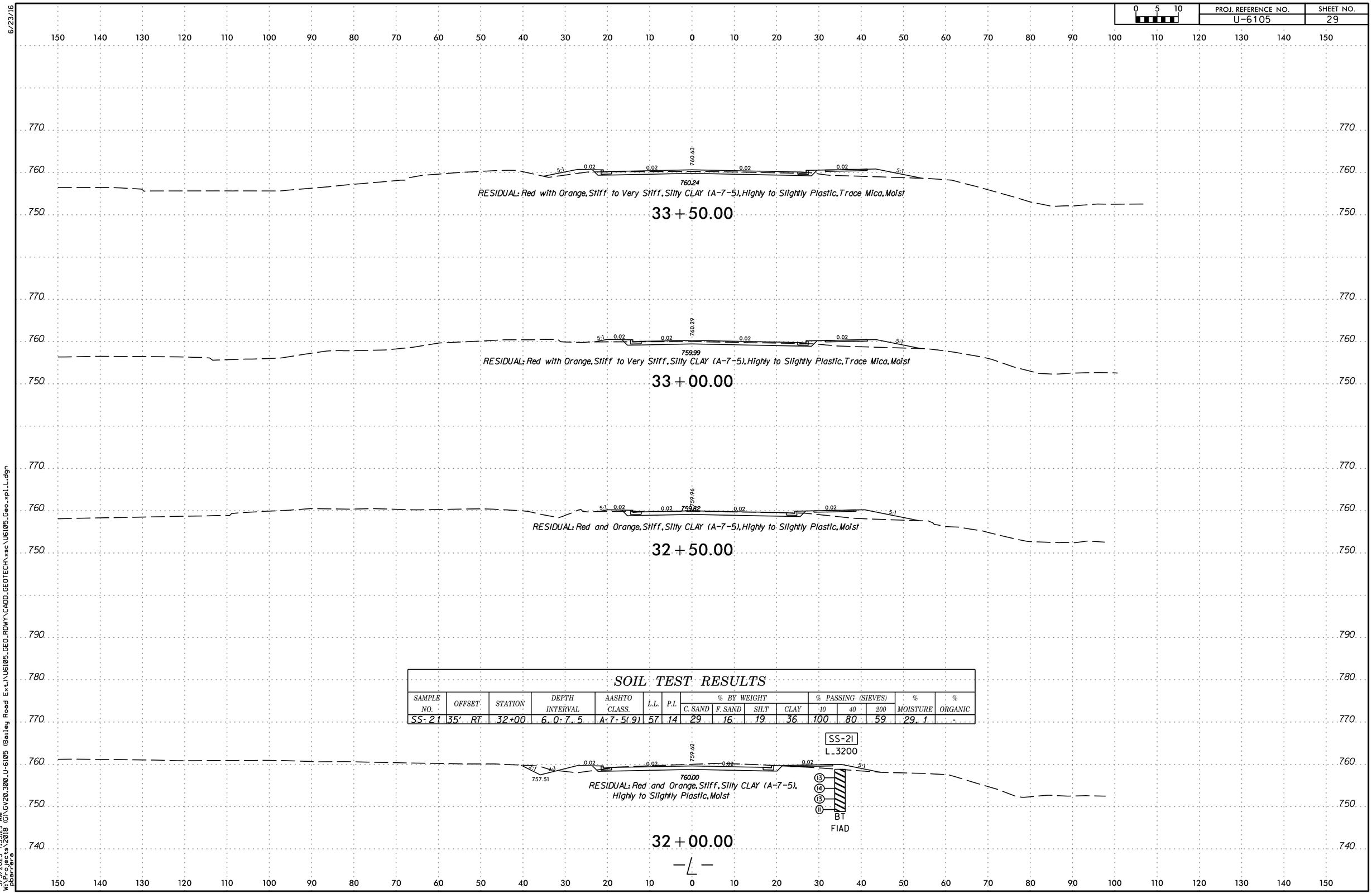
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	28



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-20	29' LT	30+00	1.0-2.5	A-7-5(17)	62	20	21	10	18	51	100	85	72	31.6	-

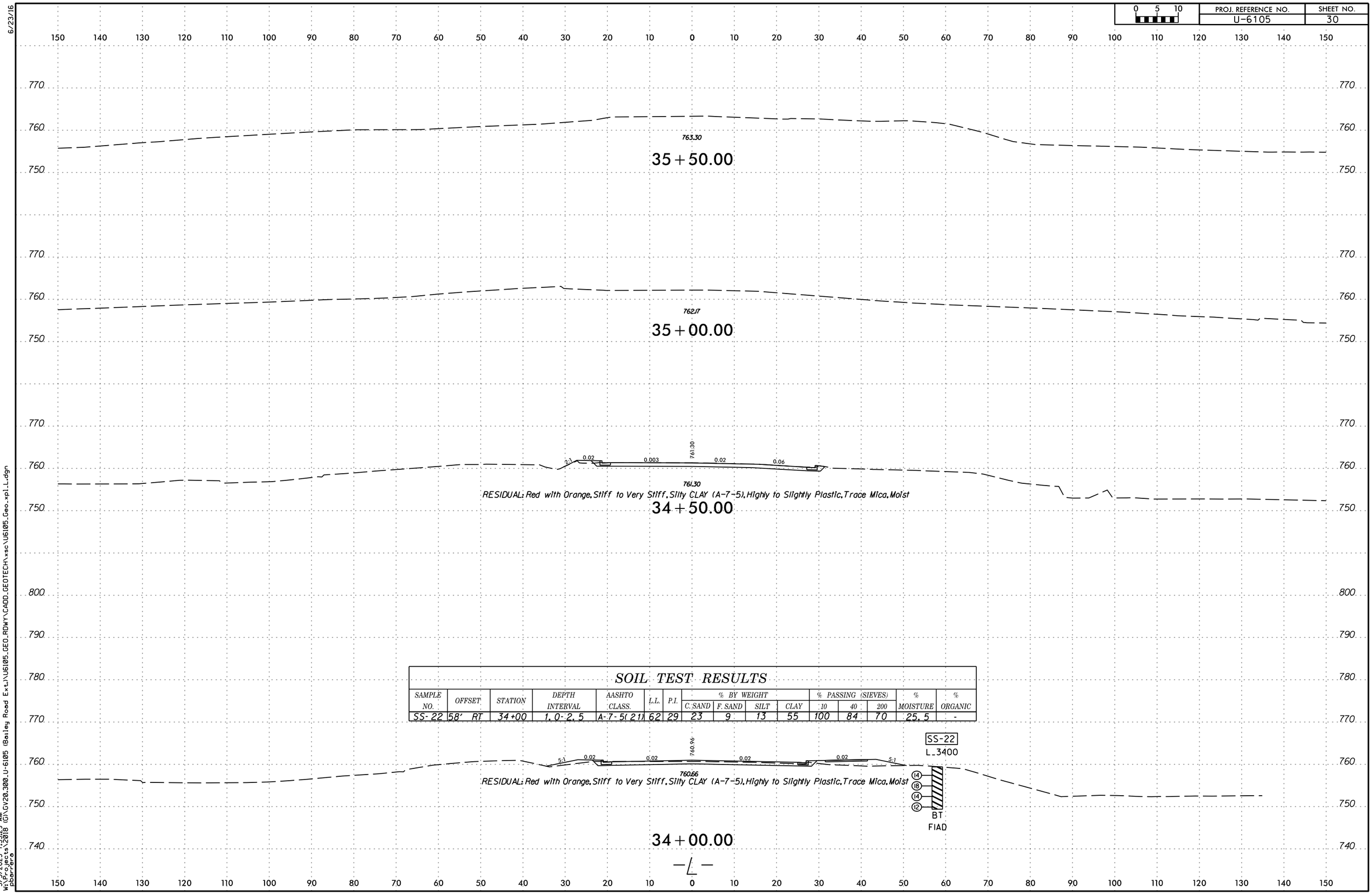
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	29



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-21	35' RT	32+00	6.0-7.5	A-7-5(9)	57	14	29	16	19	36	100	80	59	29.1	-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	30

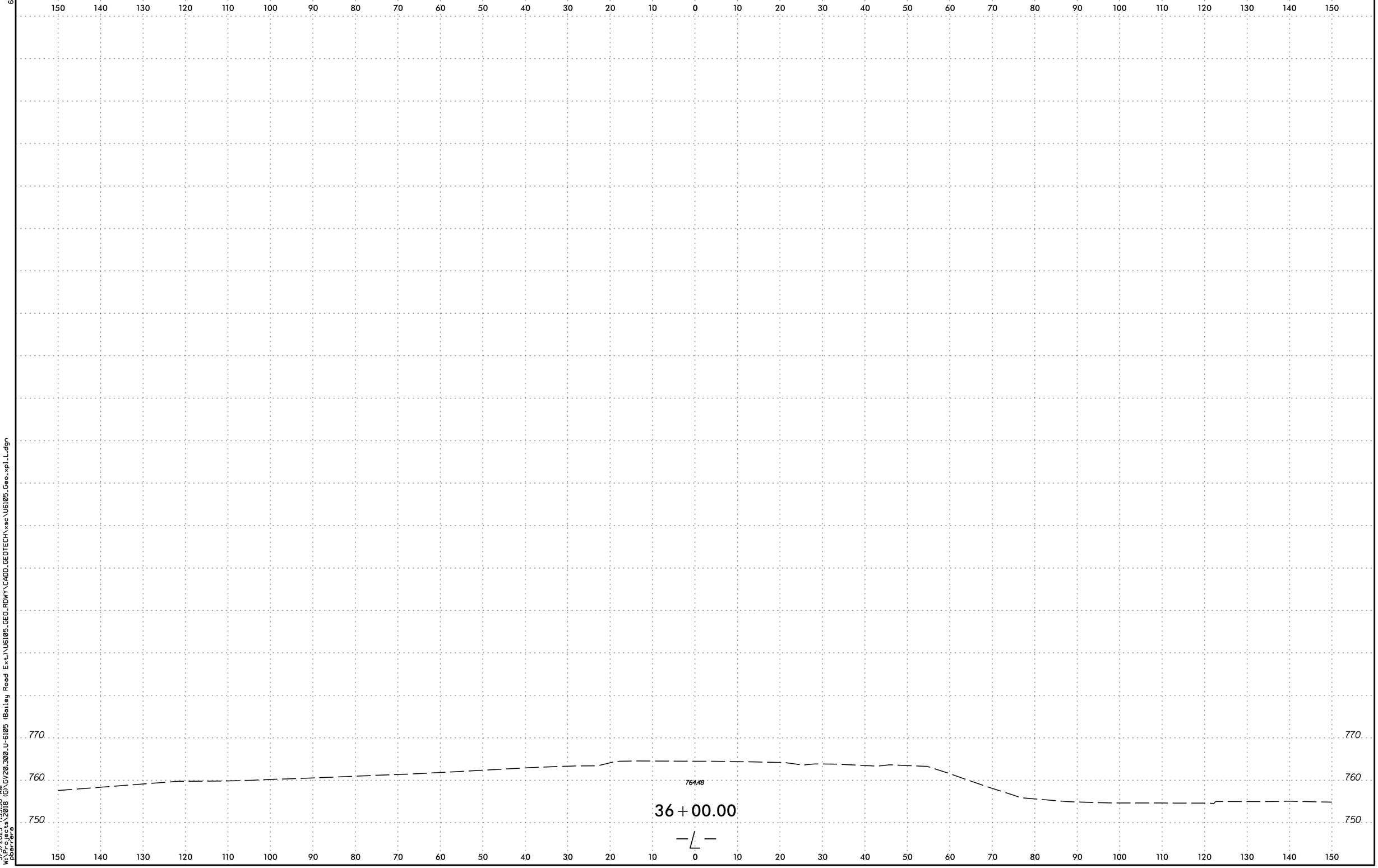


SOIL TEST RESULTS

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-22	58' RT	34+00	1.0-2.5	A-7-5(21)	62	29	23	9	13	55	100	84	70	25.5	-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	31



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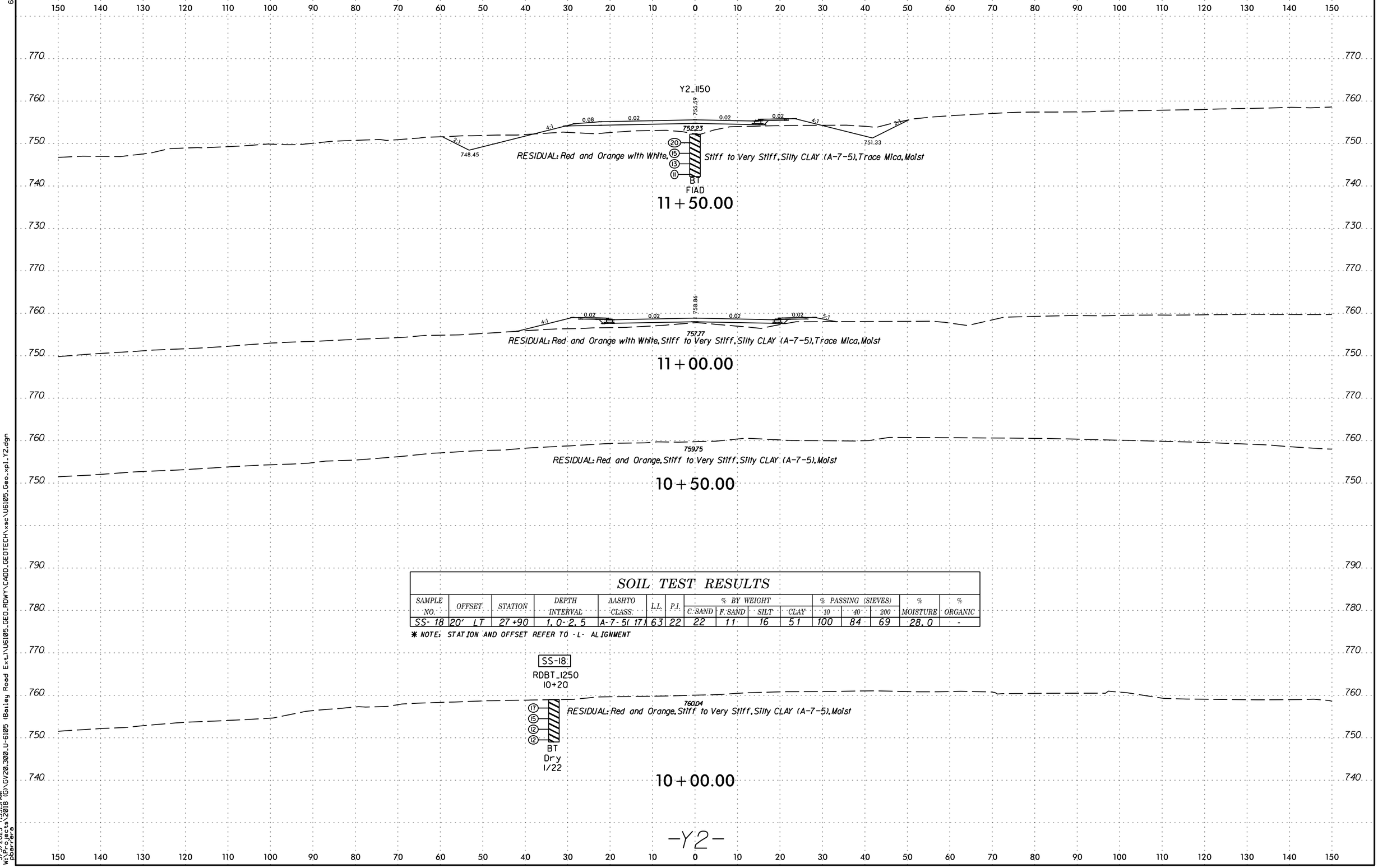
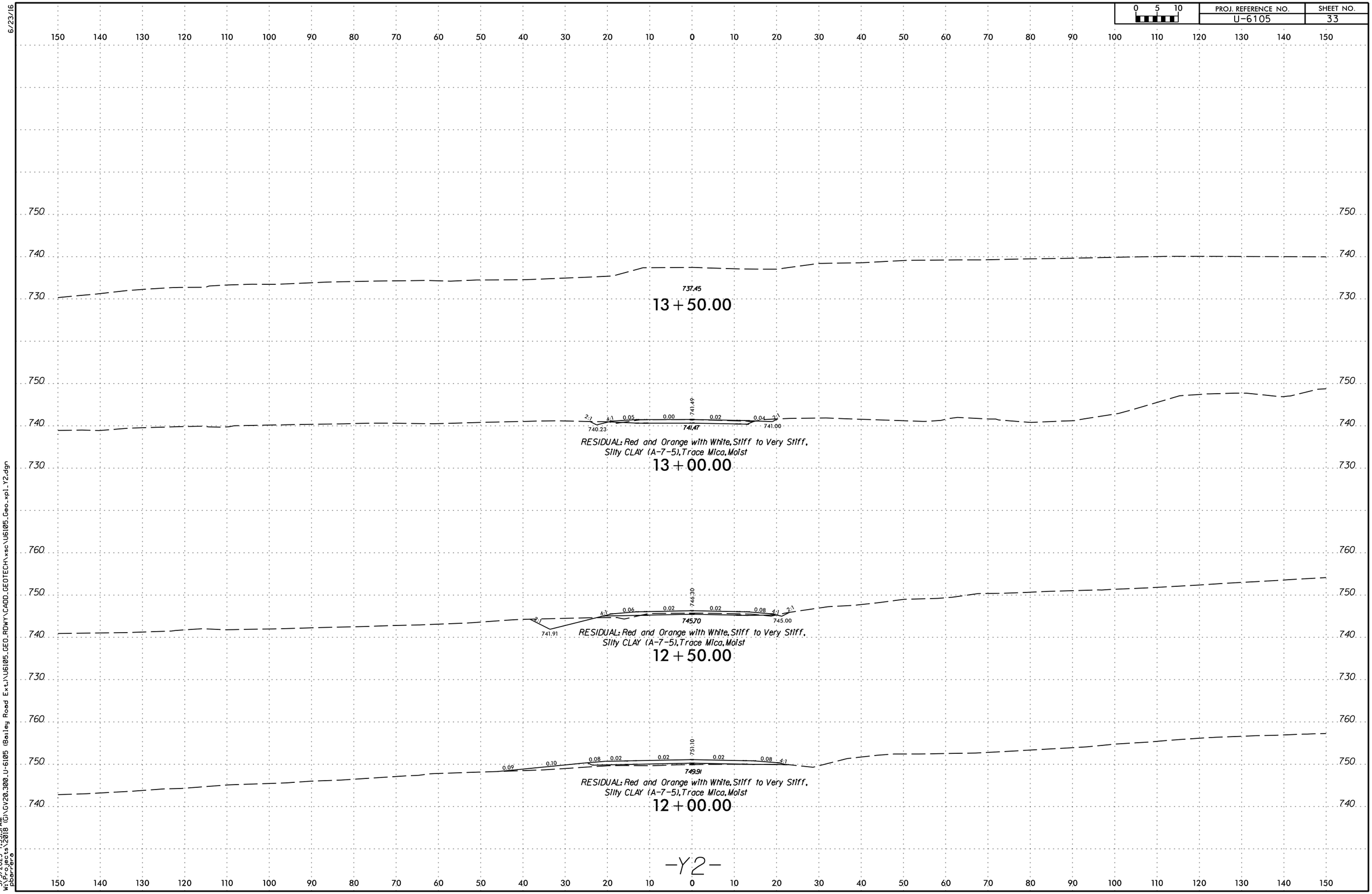


SOIL TEST RESULTS

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	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-18	20' LT	27+90	1.0-2.5	A-7-5(17)	63	22	22	11	16	51	100	84	69	28.0	-

* NOTE: STATION AND OFFSET REFER TO -L- ALIGNMENT

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	33



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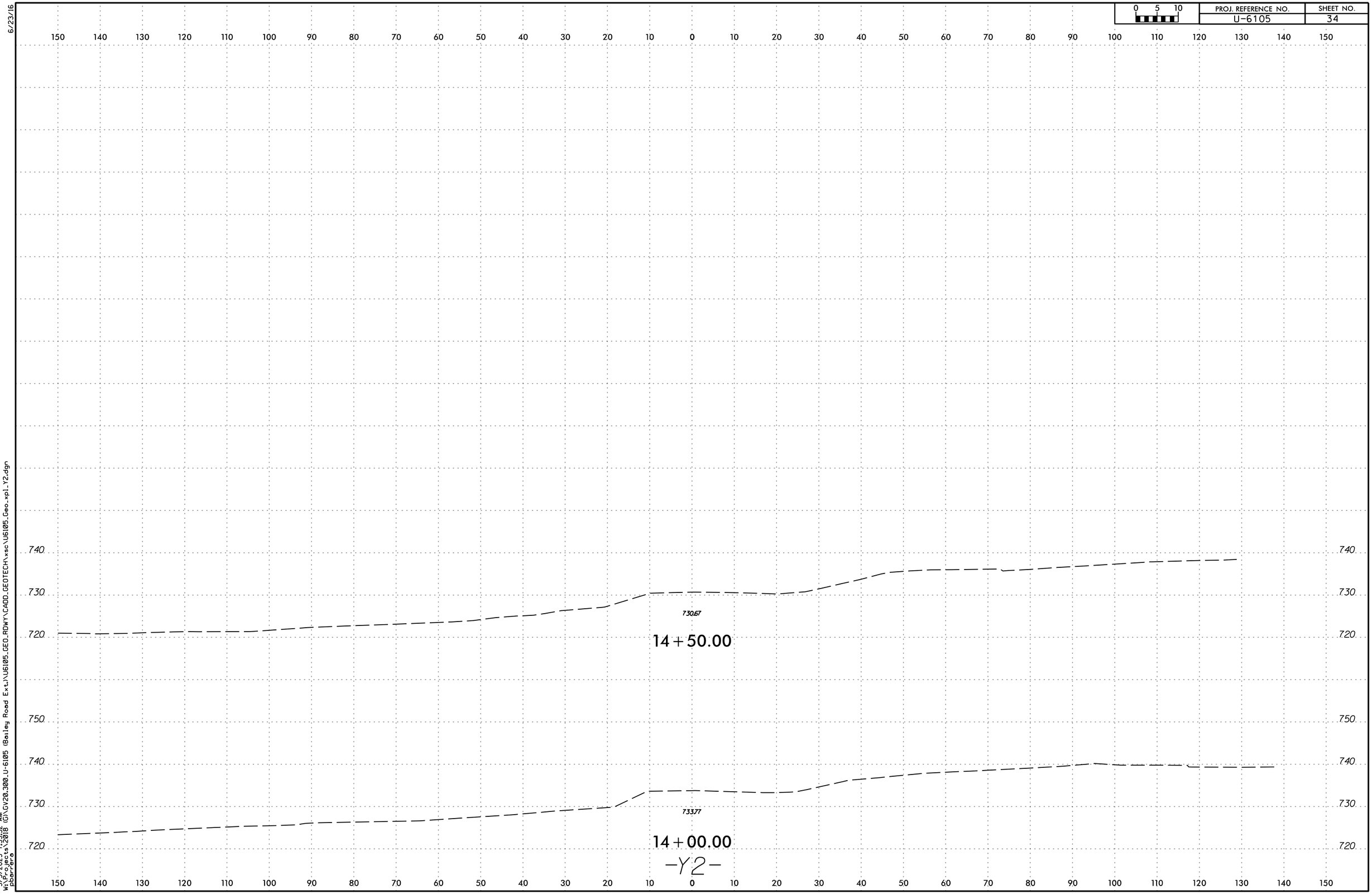

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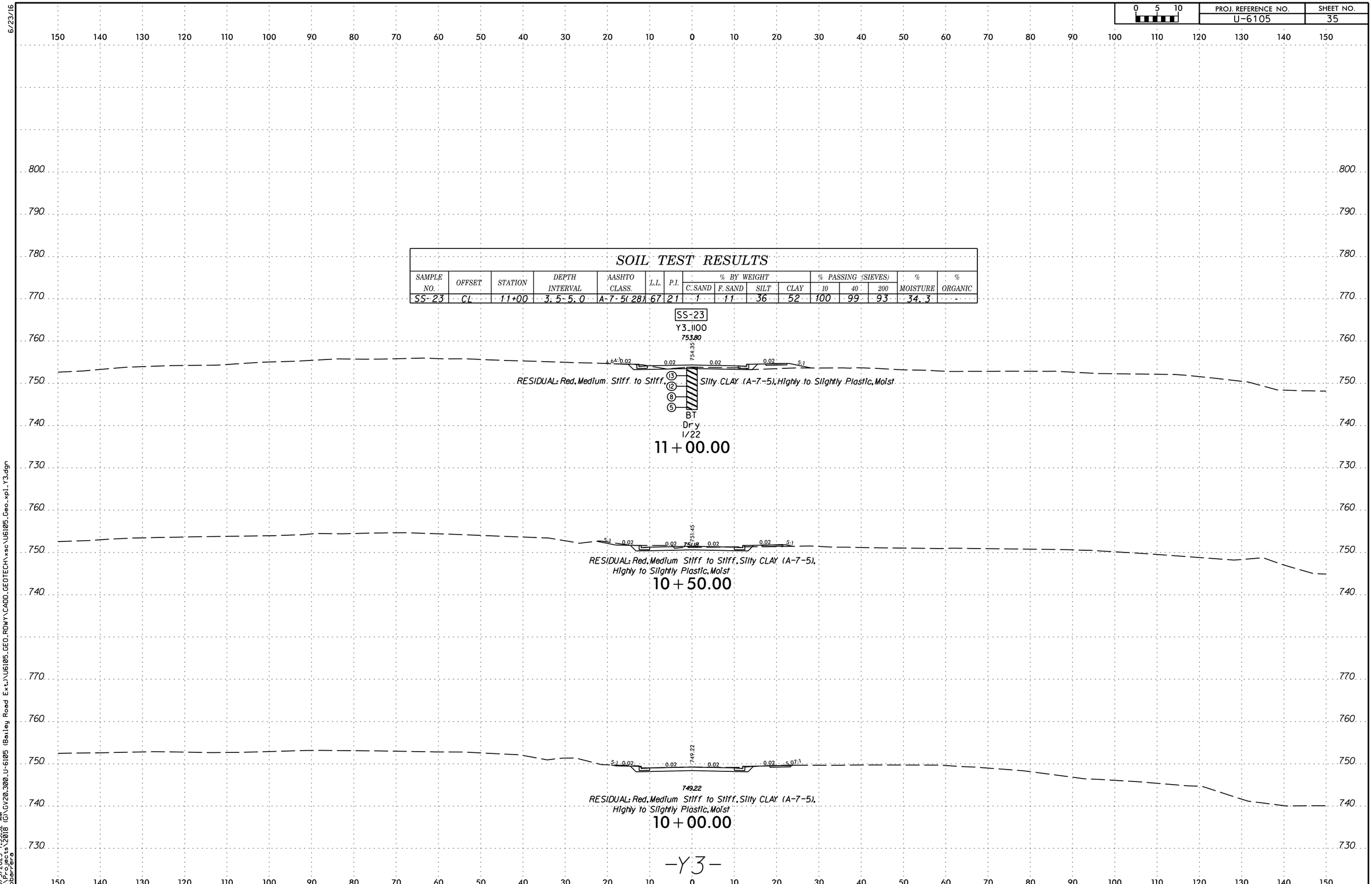
pbarrera

PROJ. REFERENCE NO.	SHEET NO.
U-6105	35

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-23	CL	11+00	3.5-5.0	A-7-5(28)	67	21	1	11	36	52	100	99	93	34.3	-



6/23/16

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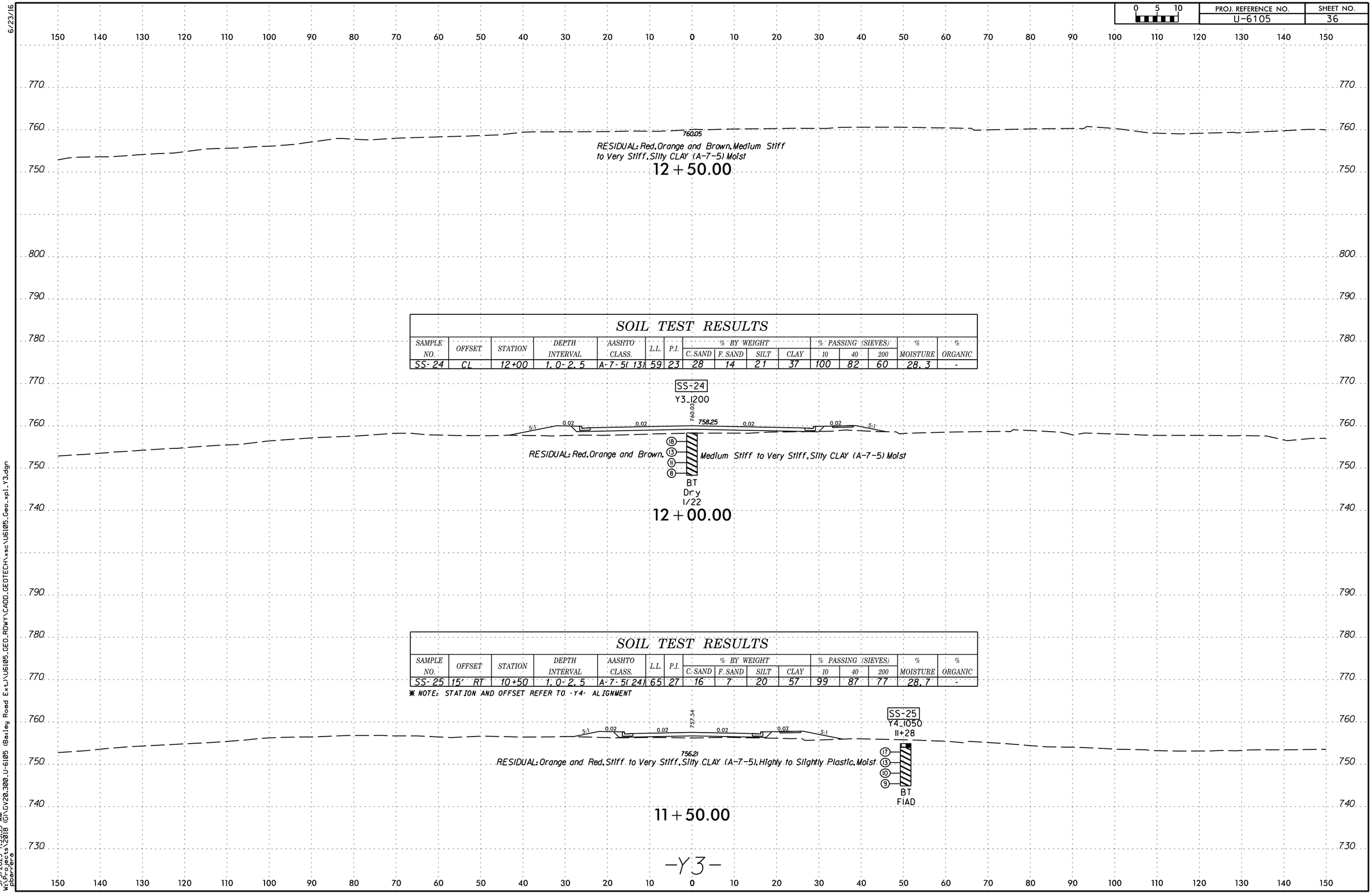


SOIL TEST RESULTS

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-24	CL	12+00	1.0-2.5	A-7-5(13)	59	23	28	14	21	37	100	82	60	28.3	-

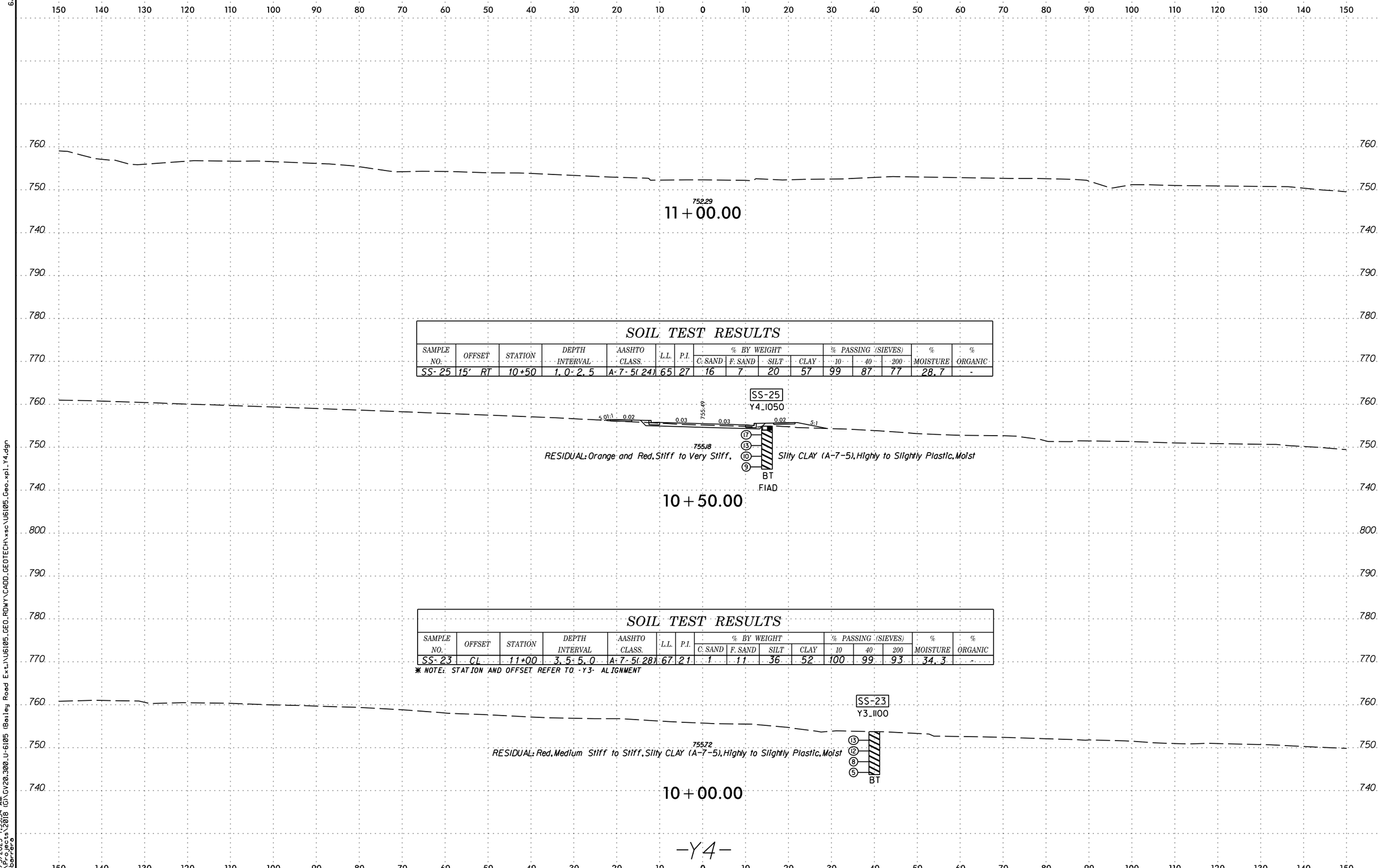
SOIL TEST RESULTS

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-25	15' RT	10+50	1.0-2.5	A-7-5(24)	65	27	16	7	20	57	99	87	77	28.7	-

✱ NOTE: STATION AND OFFSET REFER TO -Y4- ALIGNMENT

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	37



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-25	15' RT	10+50	1.0-2.5	A-7-5(24)	65	27	16	7	20	57	99	87	77	28.7	-

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-23	CL	11+00	3.5-5.0	A-7-5(28)	67	21	1	11	36	52	100	99	93	34.3	-

✱ NOTE: STATION AND OFFSET REFER TO -Y3- ALIGNMENT

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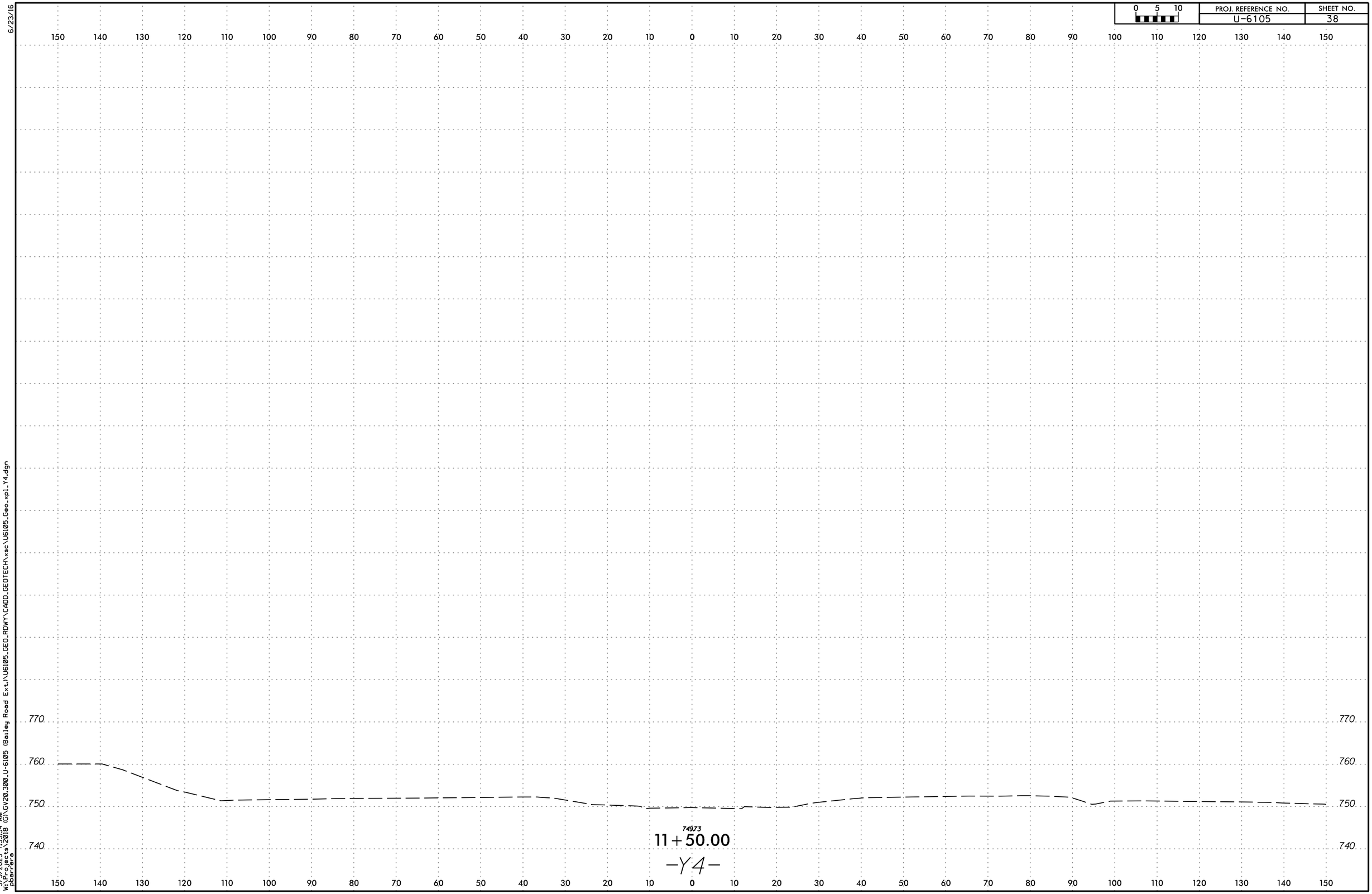
pbarrera

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	38



6/23/16

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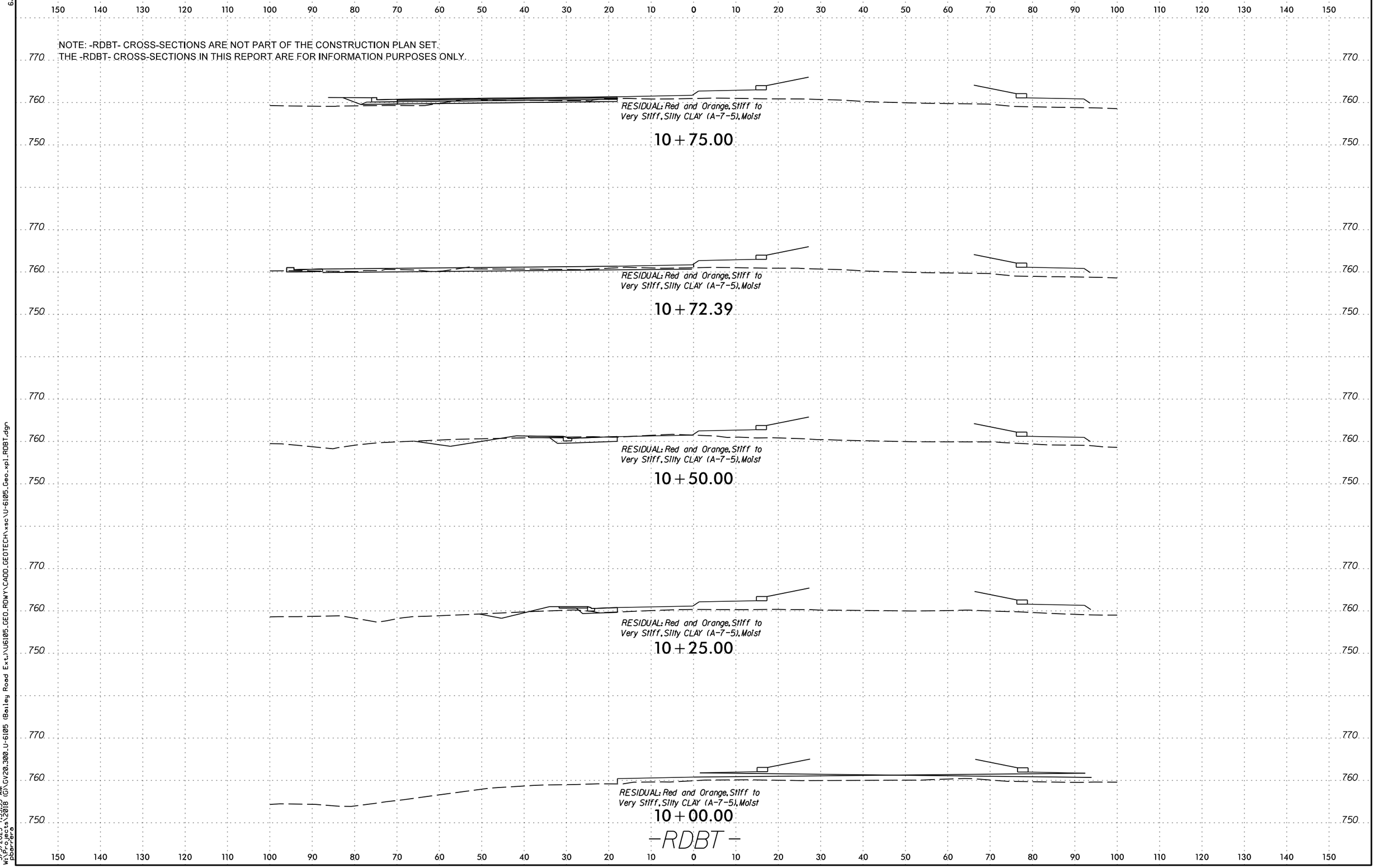
pbarrera

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	39

NOTE: -RDBT- CROSS-SECTIONS ARE NOT PART OF THE CONSTRUCTION PLAN SET.
THE -RDBT- CROSS-SECTIONS IN THIS REPORT ARE FOR INFORMATION PURPOSES ONLY.



6/23/16

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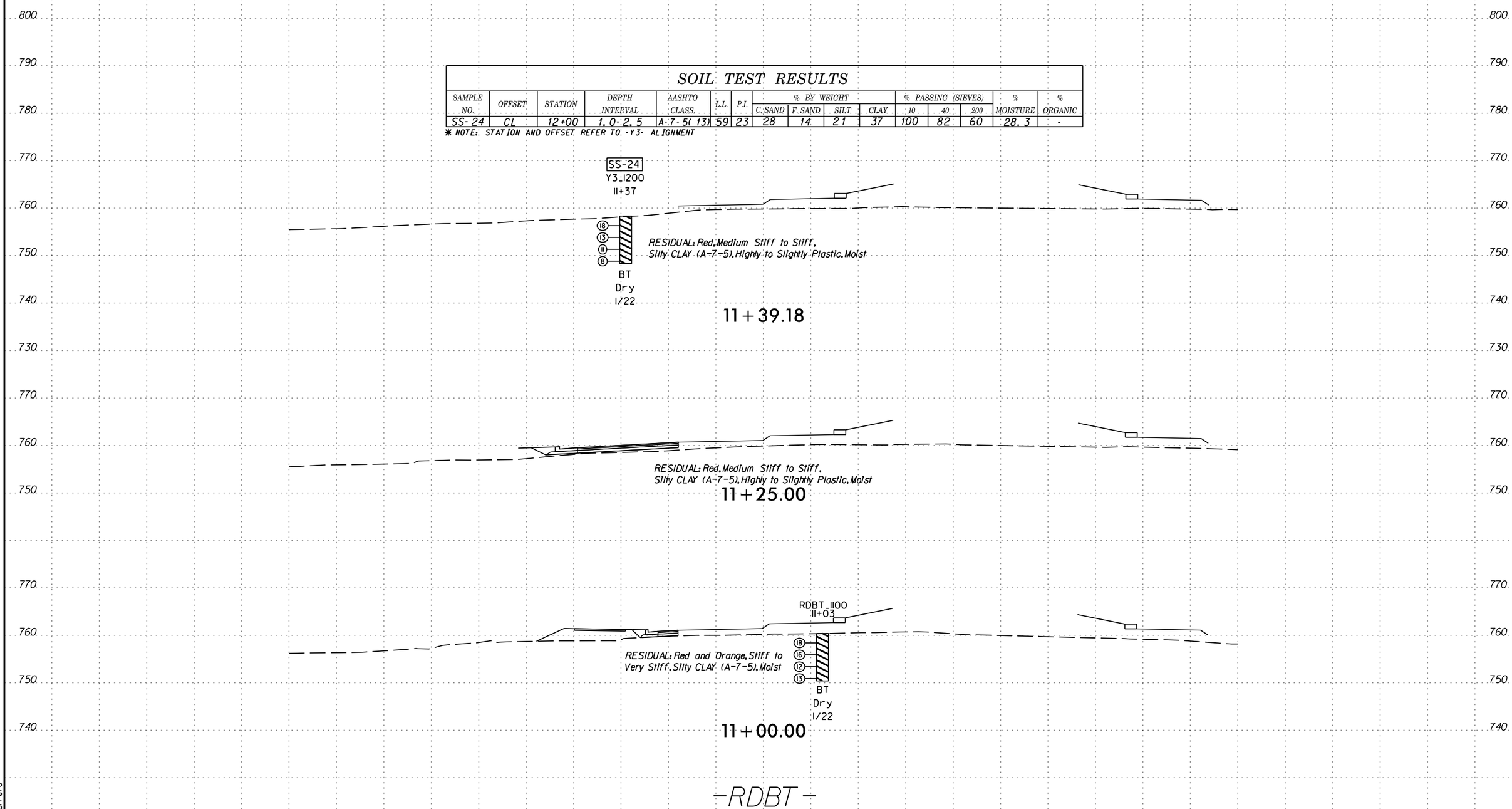
pbarrero

NOTE: -RDBT- CROSS-SECTIONS ARE NOT PART OF THE CONSTRUCTION PLAN SET.
THE -RDBT- CROSS-SECTIONS IN THIS REPORT ARE FOR INFORMATION PURPOSES ONLY.

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-24	CL	12+00	1.0-2.5	A-7-5(13)	59	23	28	14	21	37	100	82	60	28.3	-

✱ NOTE: STATION AND OFFSET REFER TO -Y3- ALIGNMENT



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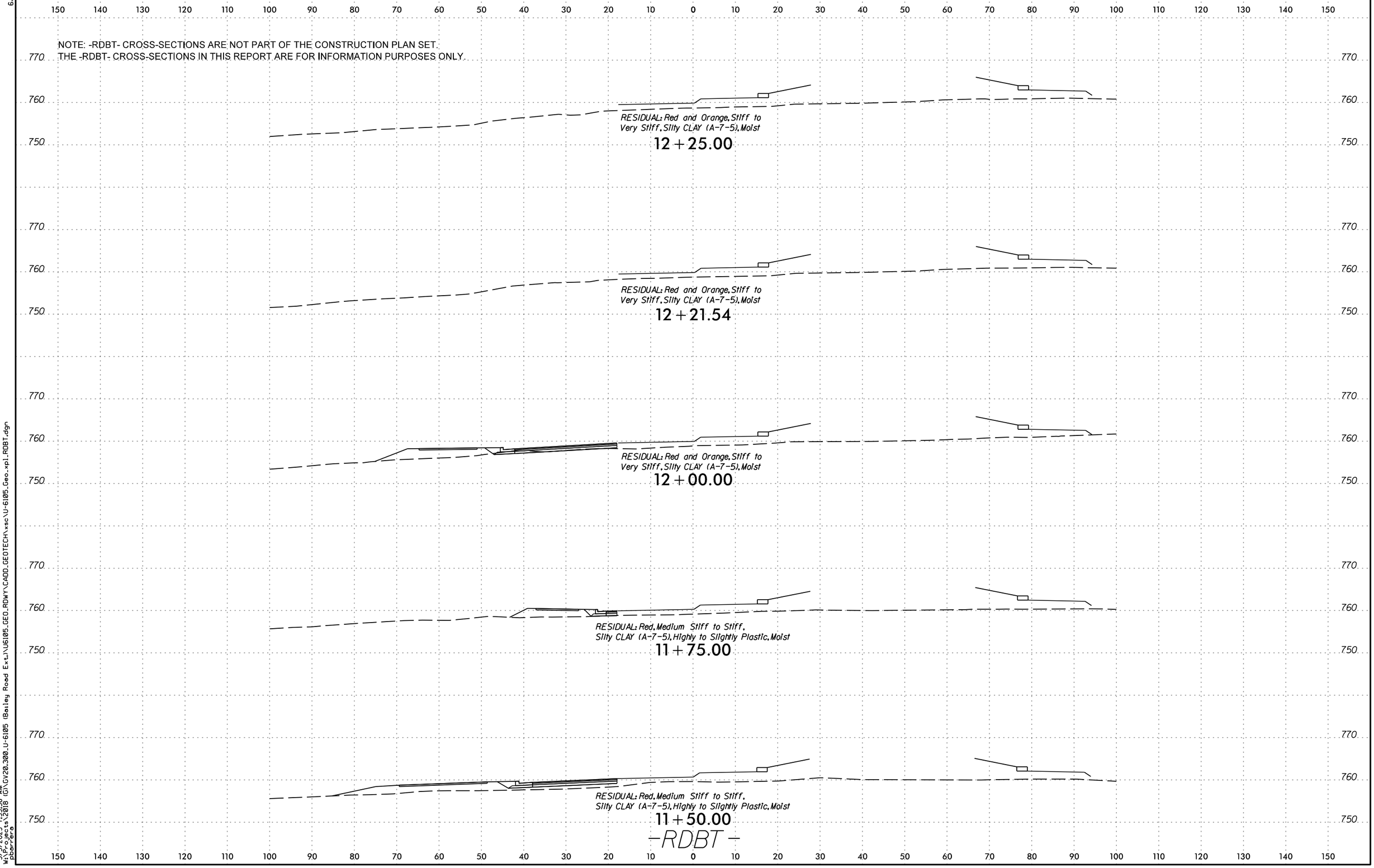
pbarrera

PROJ. REFERENCE NO.	SHEET NO.
U-6105	41

NOTE: -RDBT- CROSS-SECTIONS ARE NOT PART OF THE CONSTRUCTION PLAN SET.
THE -RDBT- CROSS-SECTIONS IN THIS REPORT ARE FOR INFORMATION PURPOSES ONLY.



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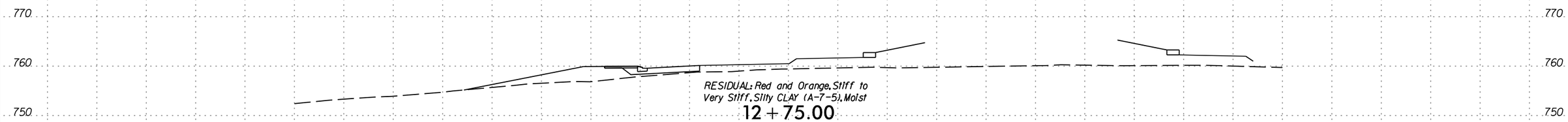
pbarrera

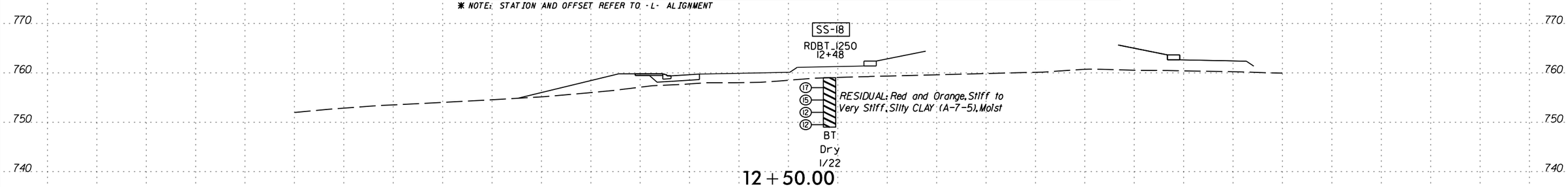
NOTE: -RDBT- CROSS-SECTIONS ARE NOT PART OF THE CONSTRUCTION PLAN SET.
THE -RDBT- CROSS-SECTIONS IN THIS REPORT ARE FOR INFORMATION PURPOSES ONLY.



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-18	20' LT	27+90	1.0-2.5	A-7-5(17)	63	22	22	11	16	51	100	84	69	28.0	-

✱ NOTE: STATION AND OFFSET REFER TO -L- ALIGNMENT



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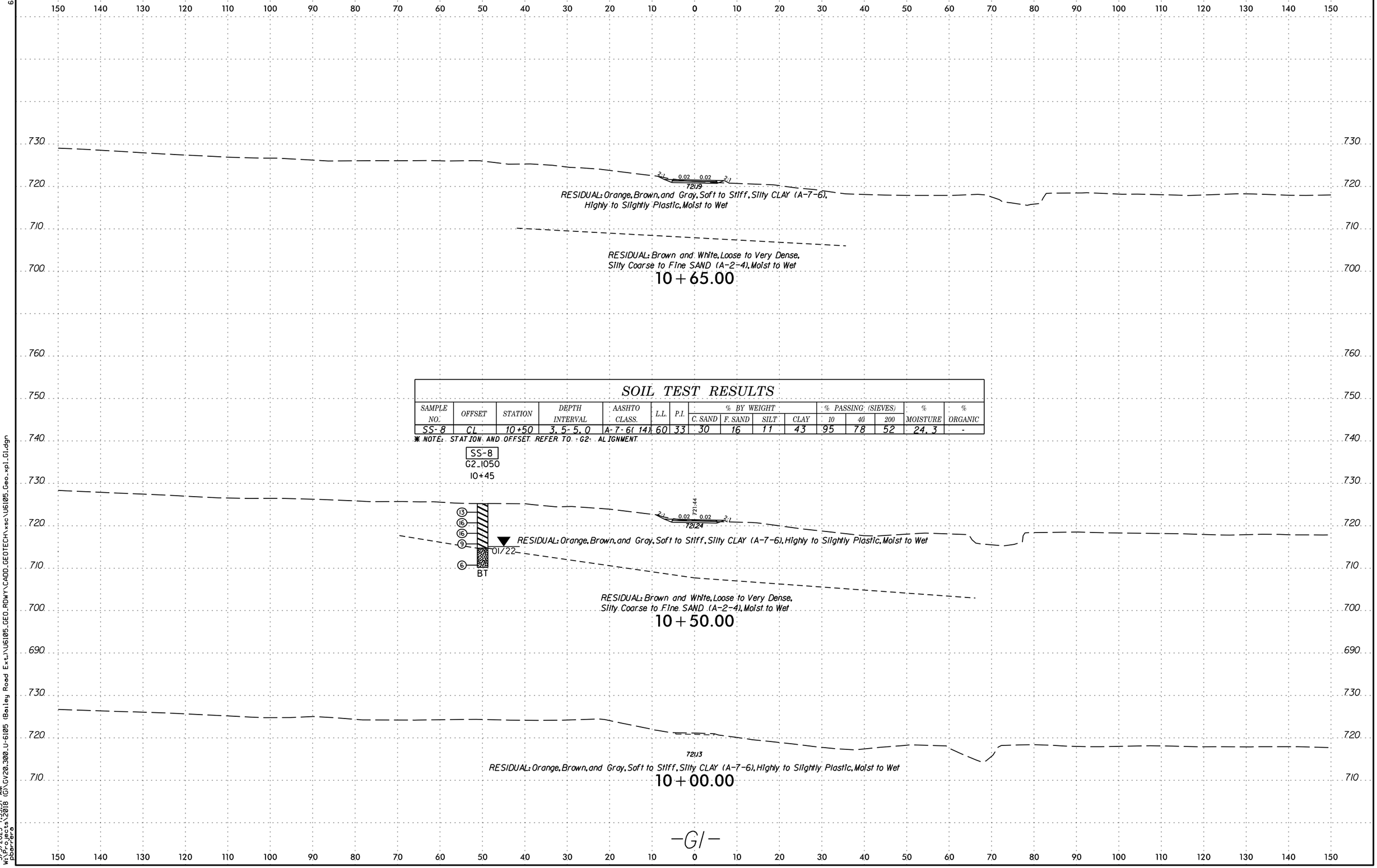
	U-6105	43



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-8	CL	10+50	3.5-5.0	A-7-6(14)	60	33	30	16	11	43	95	78	52	24.3	-

* NOTE: STATION AND OFFSET REFER TO -G2- ALIGNMENT

6/23/16

3/3/2023 7:53:37 AM
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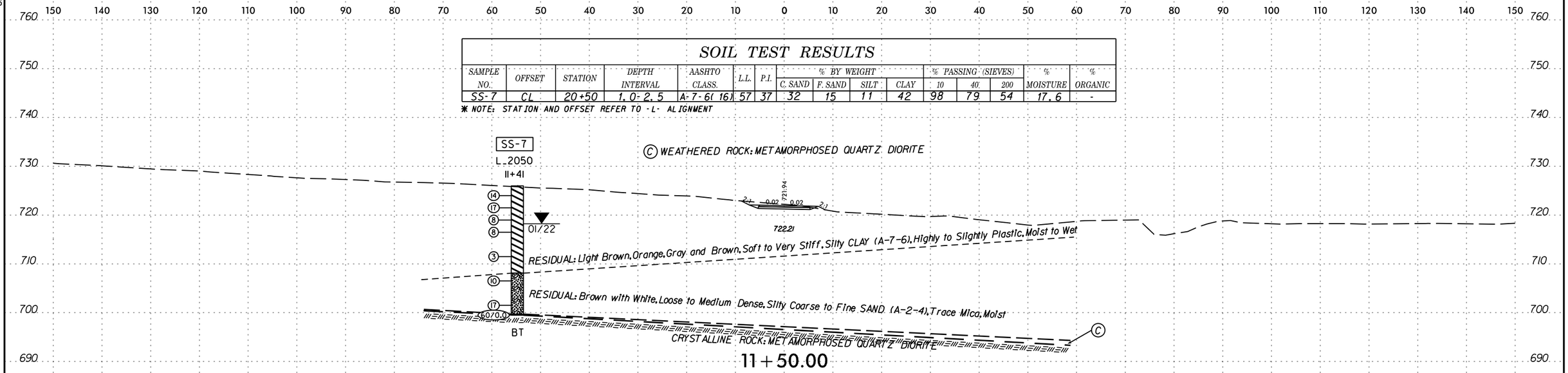
pbarrera

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-7	CL	20+50	1.0-2.5	A-7-6(16)	57	37	32	15	11	42	98	79	54	17.6	-

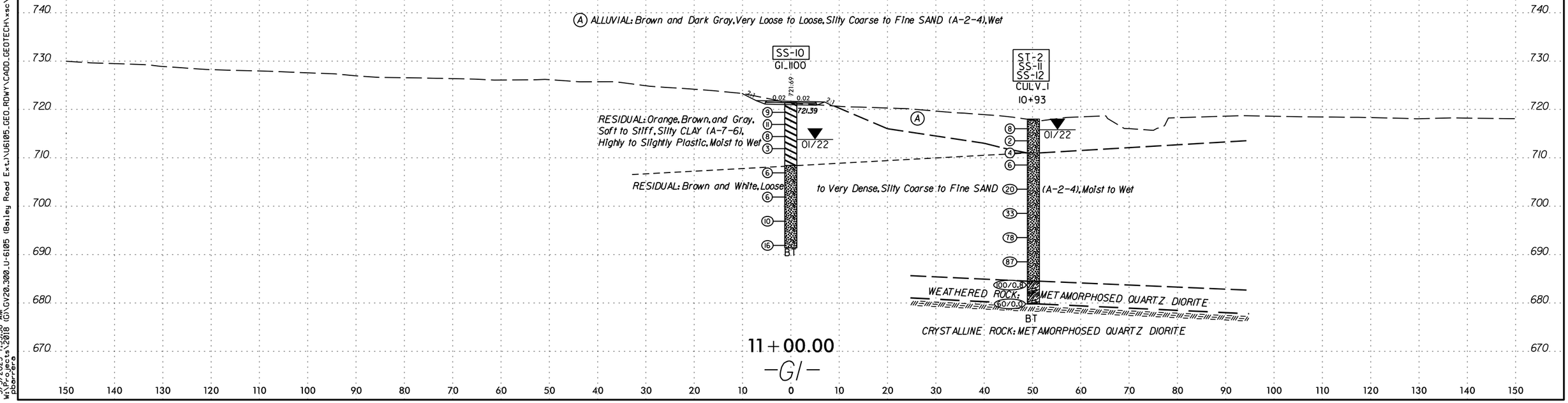
✱ NOTE: STATION AND OFFSET REFER TO -L- ALIGNMENT



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
ST-2	65' RT	21+42	3.5-5.0	A-2-4(0)	NP	NP	58	27	5	10	100	63	18	29.1	-
SS-10	CL	11+00	1.0-2.5	A-7-6(14)	55	34	29	17	11	43	94	76	53	23.6	-
SS-11	65' RT	21+42	1.0-2.5	A-2-4(0)	37	10	47	22	15	16	100	69	34	21.0	-
SS-12	65' RT	21+42	8.5-10.0	A-2-4(0)	40	3	40	38	16	6	100	75	28	31.5	-

✱ NOTE: STATION AND OFFSET REFER TO -L- ALIGNMENT FOR ST-2, SS-11 AND SS-12



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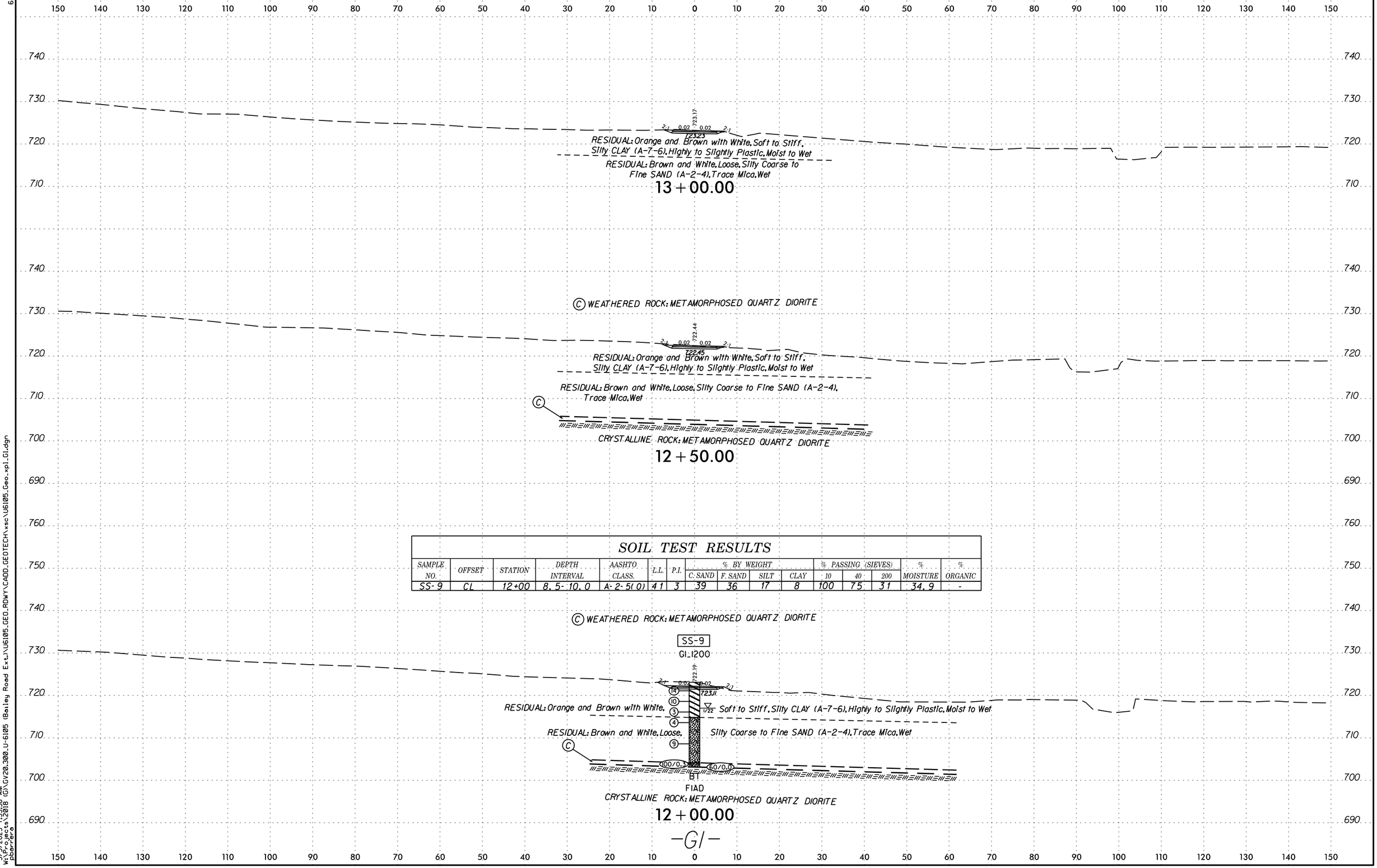
pbarrera

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	45



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-9	CL	12+00	8.5-10.0	A-2-5(0)	41	3	39	36	17	8	100	75	31	34.9	-

6/23/16

3/3/2023 1:53:38 AM
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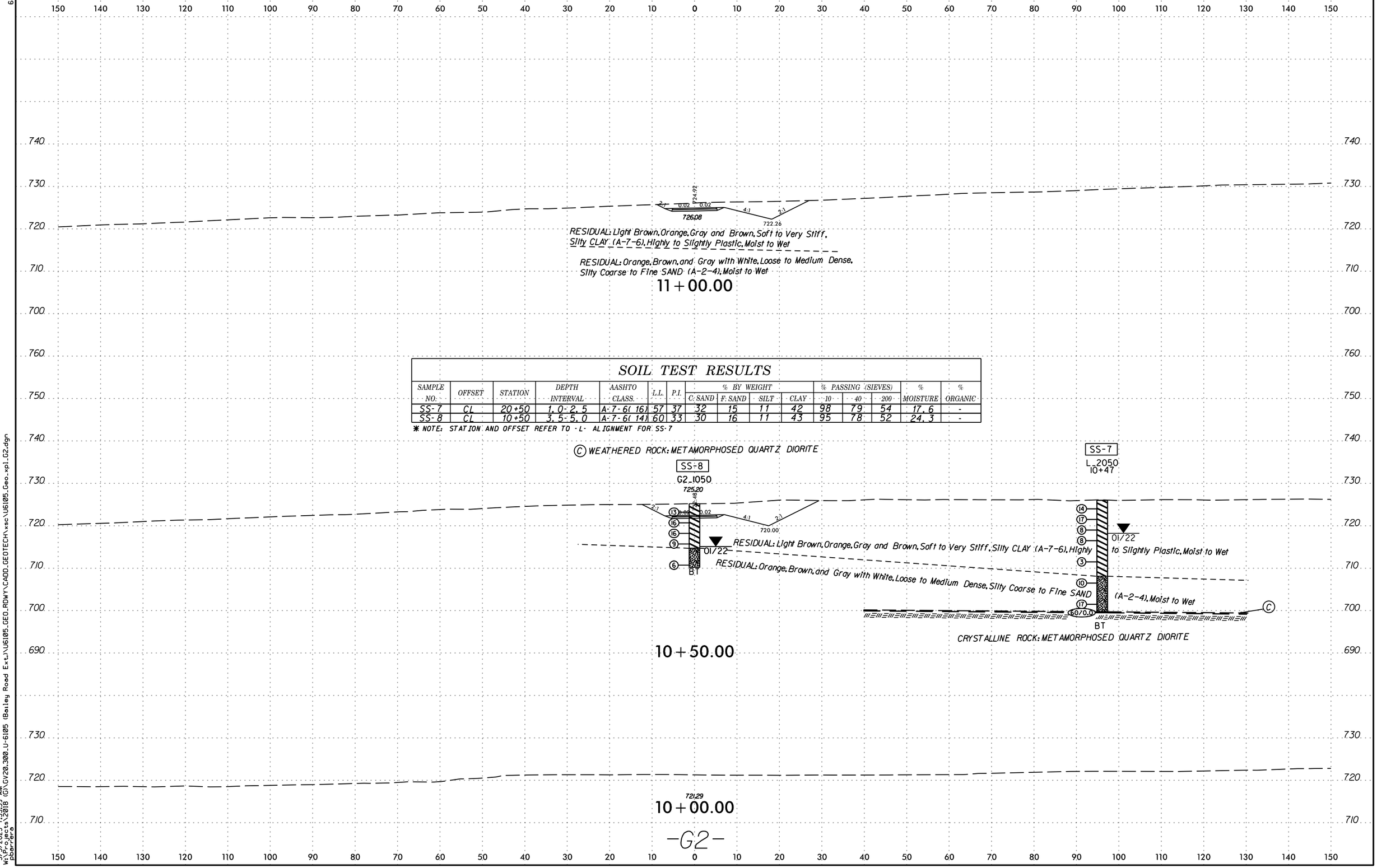

SOIL TEST RESULTS

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-7	CL	20+50	1.0-2.5	A-7-6(16)	57	37	32	15	11	42	98	79	54	17.6	-
SS-8	CL	10+50	3.5-5.0	A-7-6(14)	60	33	30	16	11	43	95	78	52	24.3	-

✱ NOTE: STATION AND OFFSET REFER TO -L- ALIGNMENT FOR SS-7

-G2-

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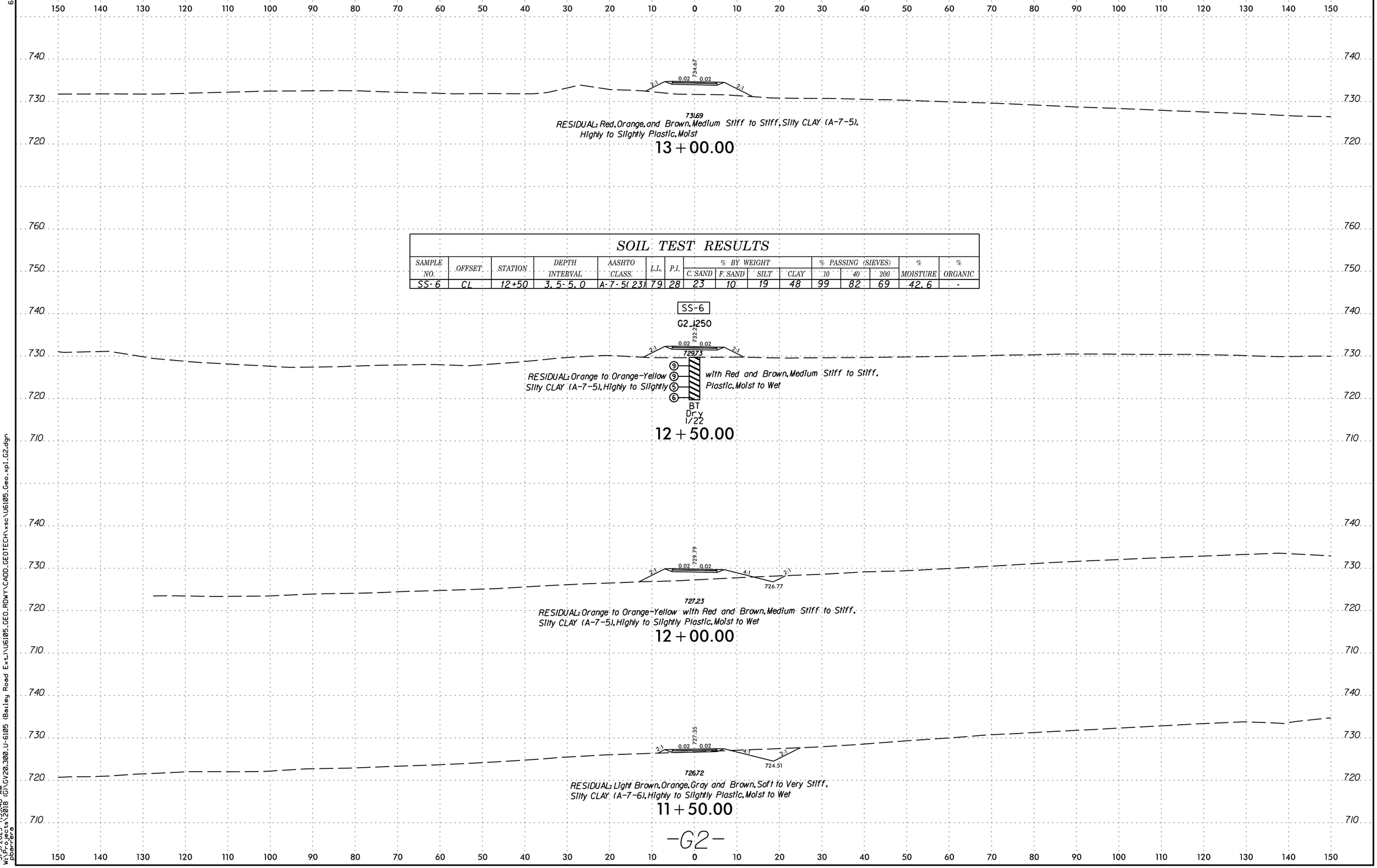
pbarrera



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-6	CL	12+50	3.5-5.0	A-7-5(23)	79	28	23	10	19	48	99	82	69	42.6	-

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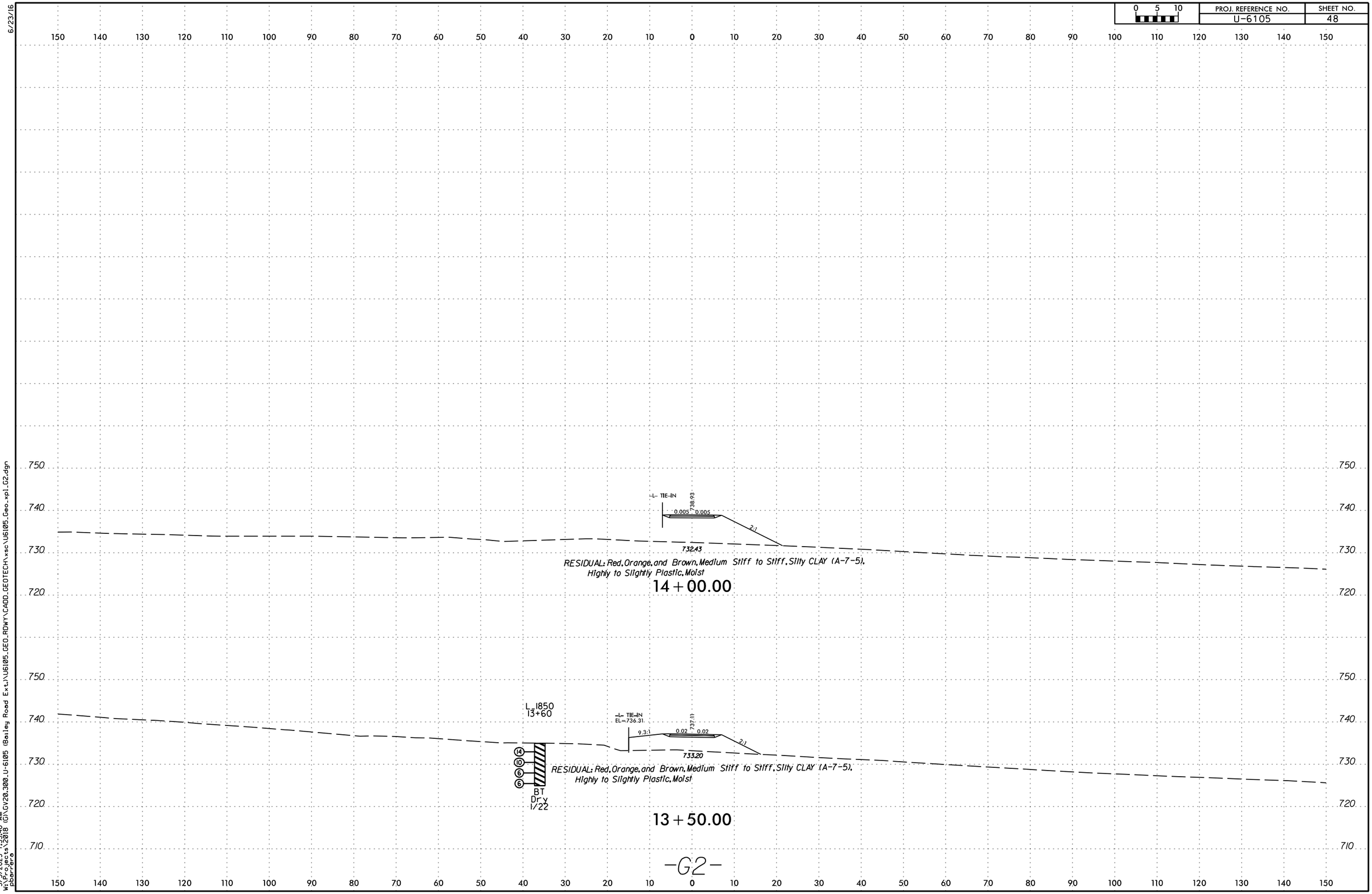
pbarrera

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-6105	48



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pbarrera

REFERENCE: U–6105

PROJECT: 48173

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
LABORATORY TEST RESULTS SUMMARY

ESP

ESP ASSOCIATES, INC.
7011 ALBERT PICK RD
SUITE E
GREENSBORO, NC 27409
WWW.ESPASSOCIATES.COM

SOILS LABORATORY TESTS RESULTS

WBS NO.: 48173.1.1

TIP NO.: U-6105

COUNTY: Mecklenburg

SITE DESCRIPTION: SR 2415 (Bailey Road) From Poole Place Drive to US 21 (Statesville Road) - Construct Roadway on New Location

BORING NO.	SAMPLE NO.	BORING LOCATION	DEPTH INTERVAL (FT)	AASHTO CLASS	N	L.L	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
								CSE. SAND	F. SAND	SILT	CLAY	10	40	200		
L_1050	SS-1	-L- STA. 10+50, 12' LT	10.-2.5	A-2-4 (0)	WOH	22	9	48	22	9	21	100	69	33	17.0	-
L_1050	ST-3	-L- STA. 10+50, 12' LT	6.0-8.0	A-5 (0)	2	41	5	42	27	22	9	100	68	38	31.9	-
L_1278	SS-2	-L- STA. 12+78, 5' LT	8.5-10.0	A-2-4 (0)	11	31	4	42	33	17	8	99	70	29	20.5	-
L_1450	SS-3	-L- STA. 14+50, CL	1.0-2.5	A-7-5 (8)	20	70	33	51	9	3	37	99	60	40	21.9	-
L_1550	SS-4	-L- STA. 15+50, 35' RT	3.5-5.0	A-7-5 (6)	12	61	11	32	20	23	25	100	77	52	31.4	-
L_1650	SS-5	-L- STA. 16+50, CL	1.0-2.5	A-7-5 (24)	12	71	33	24	9	10	57	99	83	68	25.7	-
G2_1250	SS-6	-G2- STA. 12+50, CL	3.5-5.0	A-7-5 (23)	9	79	28	23	10	19	48	99	82	69	42.6	-
L_2050	SS-7	-L- STA. 20+50, CL	1.0-2.5	A-7-6 (16)	14	57	37	32	15	11	42	98	79	54	17.6	-
G2_1050	SS-8	-G2- STA. 10+50, CL	3.5-5.0	A-7-6 (14)	16	60	33	30	16	11	43	95	78	52	24.3	-
G1_1200	SS-9	-G1- STA. 12+00, CL	8.5-10.0	A-2-5 (0)	4	41	3	39	36	17	8	100	75	31	34.9	-
G1_1100	SS-10	-G1- STA. 11+00, CL	1.0-2.5	A-7-6 (14)	9	55	34	29	17	11	43	94	76	53	23.6	-
CULV-1	ST-2	-L- STA. 21+42, 65' RT	3.0-5.0	A-2-4 (0)	2	NP	NP	58	27	5	10	100	63	18	29.1	-
CULV-1	SS-11	-L- STA. 21+42, 65' RT	1.0-2.5	A-2-4 (0)	8	37	10	47	22	15	16	100	69	34	21.0	-
CULV-1	SS-12	-L- STA. 21+42, 65' RT	8.5-10.0	A-2-4 (0)	6	40	3	40	38	16	6	100	75	28	31.5	-
CULV-2	SS-13	-L- STA. 22+50, 50' LT	1.0-2.5	A-2-4 (0)	4	22	2	60	22	6	12	100	60	20	24.1	-
CULV-2	ST-1	-L- STA. 22+50, 50' LT	3.0-5.0	A-7-6 (27)	3	54	31	4	17	27	52	100	99	83	21.6	-
CULV-2	SS-14	-L- STA. 22+50, 50' LT	8.5-10.0	A-1-b (0)	3	NP	NP	72	20	2	6	100	49	10	-	-
L_2265	SS-15	-L- STA. 22+65, CL	3.5-5.0	A-2-6 (1)	2	33	16	52	18	10	20	100	64	32	30.8	-
L_2450	SS-16	-L- STA. 24+50, CL	1.0-2.5	A-7-5 (4)	7	52	12	34	20	18	28	100	80	49	32.0	-
L_2650	SS-17	-L- STA. 26+50, CL	6.0-7.5	A-7-5 (5)	6	50	13	29	21	22	28	98	77	52	25.8	-
RDBT_1250	SS-18	-L- STA. 27+90, 20' LT	1.0-2.5	A-7-5 (17)	17	63	22	22	11	16	51	100	84	69	28.0	-
L_2950	SS-19	-L- STA. 29+50, 35' RT	1.0-2.5	A-7-5 (23)	23	69	27	18	9	16	57	98	87	73	30.4	-
L_3000	SS-20	-L- STA. 30+00, 29' LT	1.0-2.5	A-7-5 (17)	13	62	20	21	10	18	51	100	85	72	31.6	-
L_3200	SS-21	-L- STA. 32+00, 35' RT	6.0-7.5	A-7-5 (9)	13	57	14	29	16	19	36	100	80	59	29.1	-
L_3400	SS-22	-L- STA. 34+00, 58' RT	1.0-2.5	A-7-5 (21)	14	62	29	23	9	13	55	100	84	70	25.5	-
Y3_1100	SS-23	-Y3- STA. 11+00, CL	3.5-5.0	A-7-5 (28)	12	67	21	1	11	36	52	100	99	93	34.3	-
Y3_1200	SS-24	-Y3- STA. 12+00, CL	1.0-2.5	A-7-5 (13)	18	59	23	28	14	21	37	100	82	60	28.3	-
Y4_1050	SS-25	-Y4- STA. 10+50, 15' RT	1.0-2.5	A-7-5 (24)	17	65	27	16	7	20	57	99	87	77	28.7	-

Tony Dumonea

Certification No. 121-01-1108

REFERENCE: U–6105

PROJECT: 48173

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX B
CONSOLIDATION & TRIAXIAL TEST RESULTS

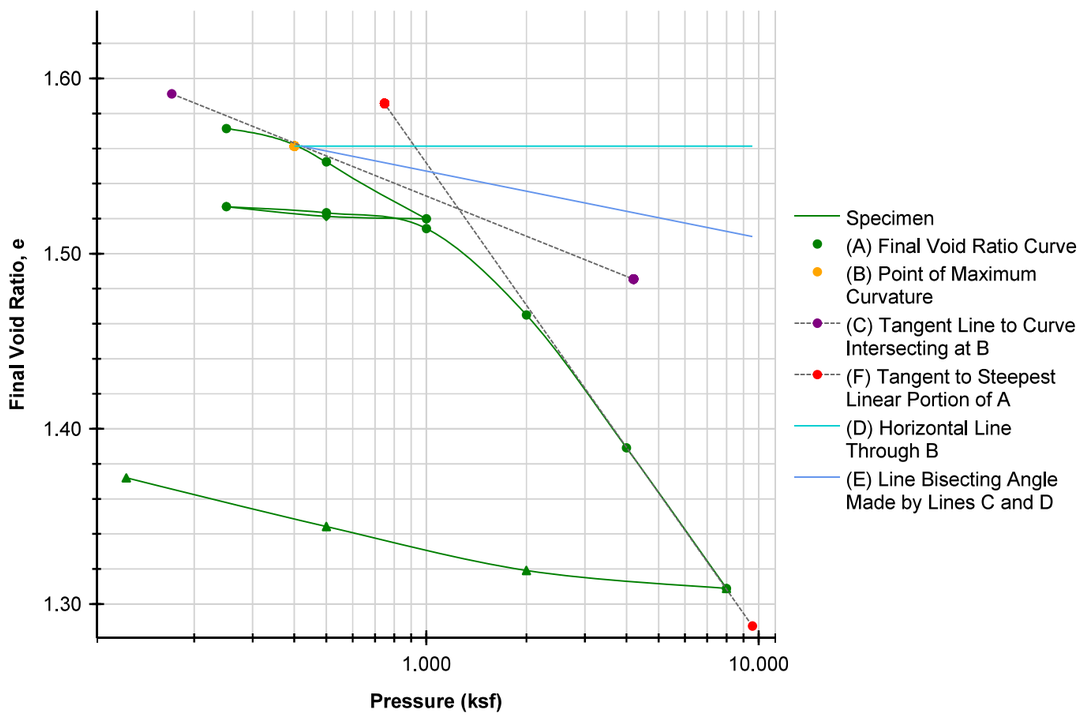
ESP

ESP ASSOCIATES, INC.
7011 ALBERT PICK RD
SUITE E
GREENSBORO, NC 27409
WWW.ESPASSOCIATES.COM

ESP Associates Inc.
3475 Lakemont Boulevard
Fort Mill, South Carolina 29708
803-802-2440

Final Voids [Log]

AASHTO T-216



Preconsolidation Stress (ksf)	1.048		Cc	0.269	Cr 0.016

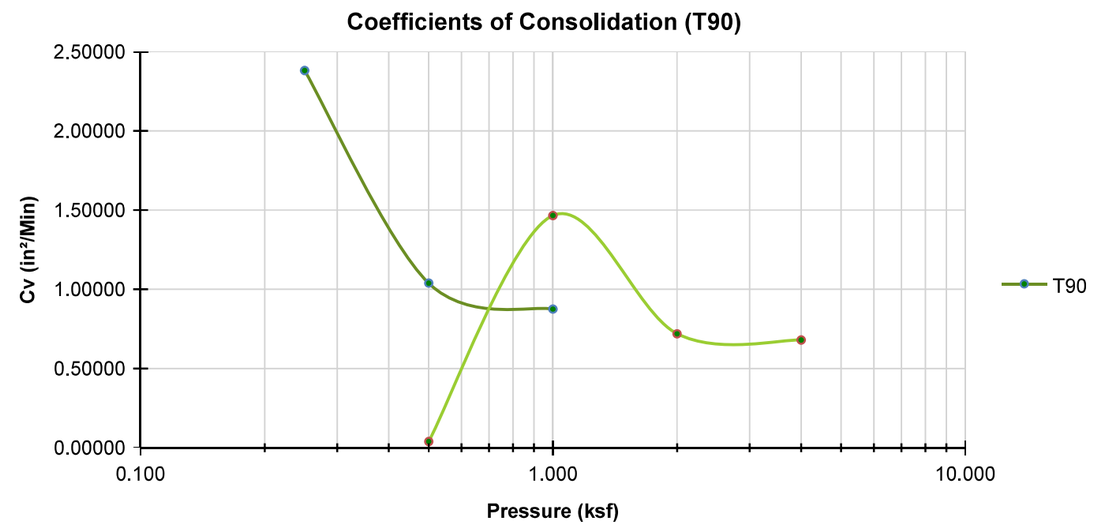
	BEFORE	AFTER			
Moisture (%)	26.4	33.5	Liquid Limits	0	Test Date 2/4/2022
Dry Density (pcf)	89.1	82.9	Plastic Limits	0	
Saturation (%)	79.2	86.9			
Void Ratio	0.91	1.05	Specific Gravity	2.72	ASSUMED

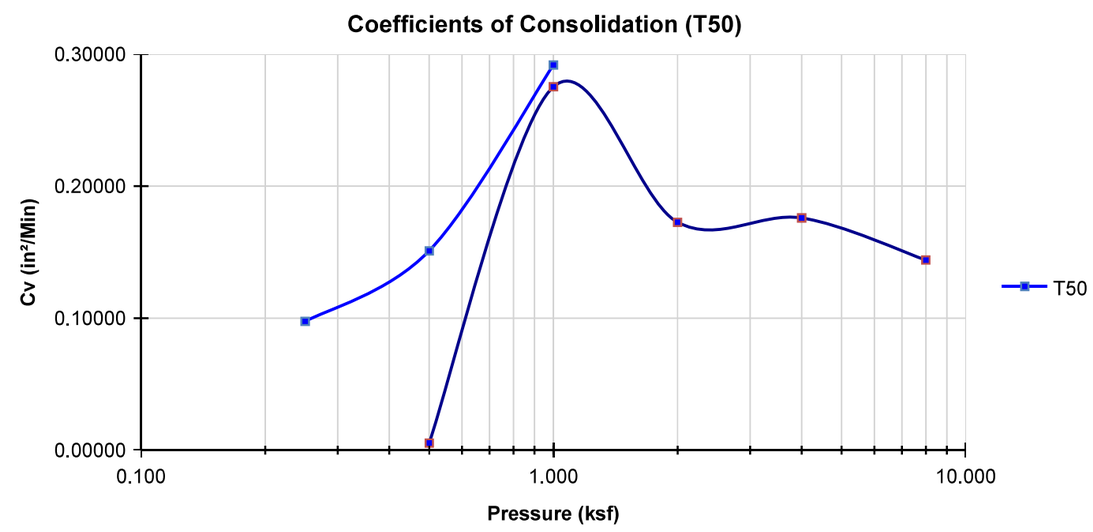
Sample Description	Dark Gray Silty Sand A-2-4 (0)			
Project Number	GV20.300	Depth (ft)	3-5	Remarks
Sample Number	ST-2	Boring Number	CULV-1	Shelby Tube
Project	U-6105			
Client				
Location	CULV-1 ST-2 (3-5 ft)			

ESP Associates Inc.
3475 Lakemont Boulevard
Fort Mill, South Carolina 29708
803-802-2440

Coefficients of Consolidation

AASHTO T-216





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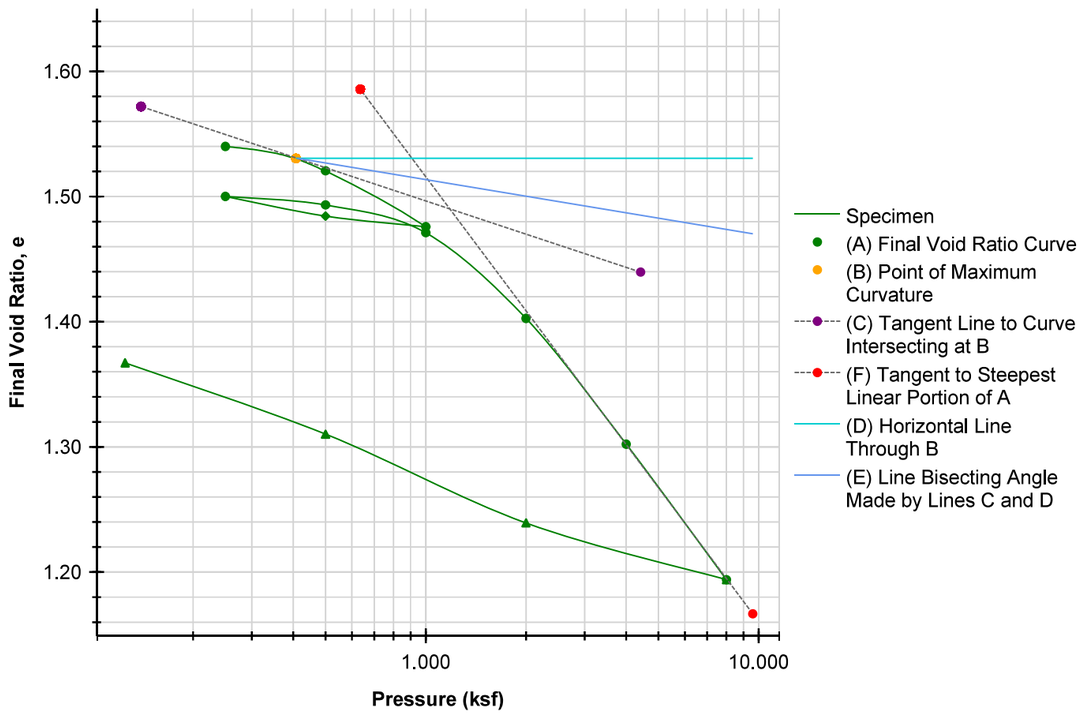
Fort Mill, South Carolina 29708
803-802-2440

Final Voids [Log]

AASHTO T-216



Preconsolidation Stress (ksf)	1.017		Cc	0.368	Cr 0.040

	BEFORE	AFTER			
Moisture (%)	39.1	36.2	Liquid Limits	54	Test Date 2/15/2022
Dry Density (pcf)	80.0	82.1	Plastic Limits	23	
Saturation (%)	94.6	92.2			
Void Ratio	1.12	1.07	Specific Gravity	2.72	ASSUMED

Sample Description	Blue Gray Elastic Silt with Sand A-7-6(27)				
Project Number	GV20.300	Depth (ft)	3-5	Remarks	
Sample Number	ST-1	Boring Number	CULV-2	Shelby Tube	
Project	U-6105				
Client					
Location	CULV-2 ST-1 (3-5 ft)				

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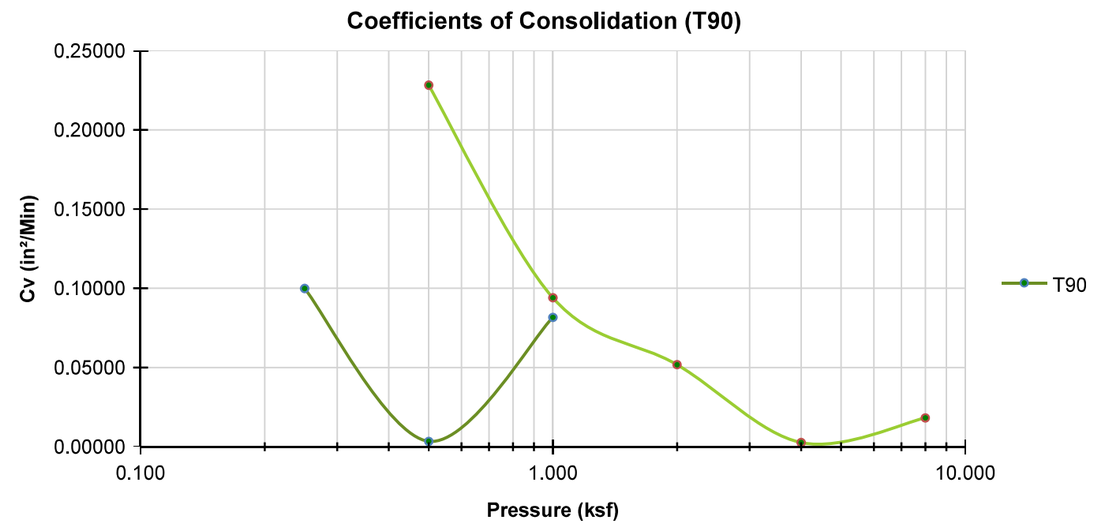
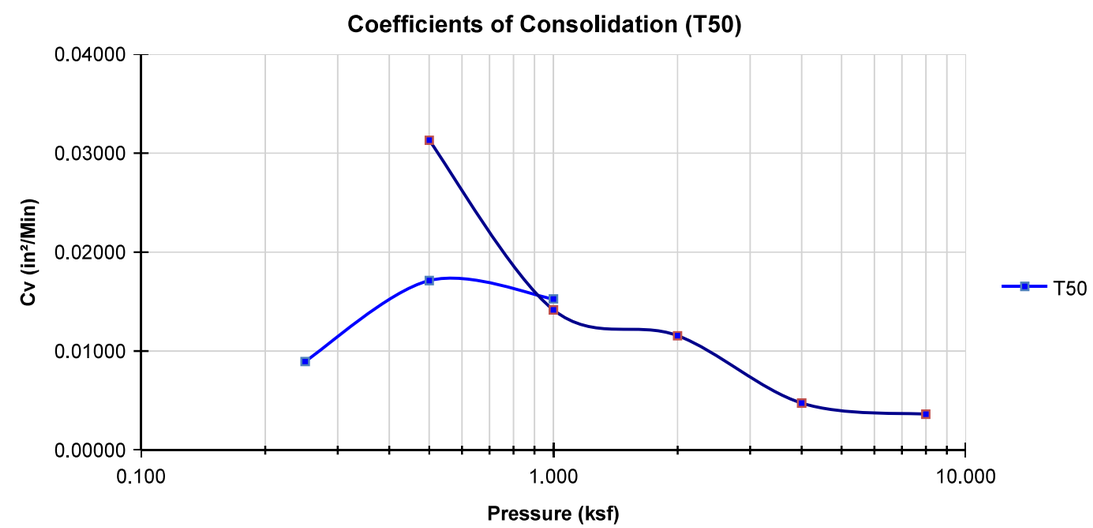
Coefficients of Consolidation

AASHTO T-216





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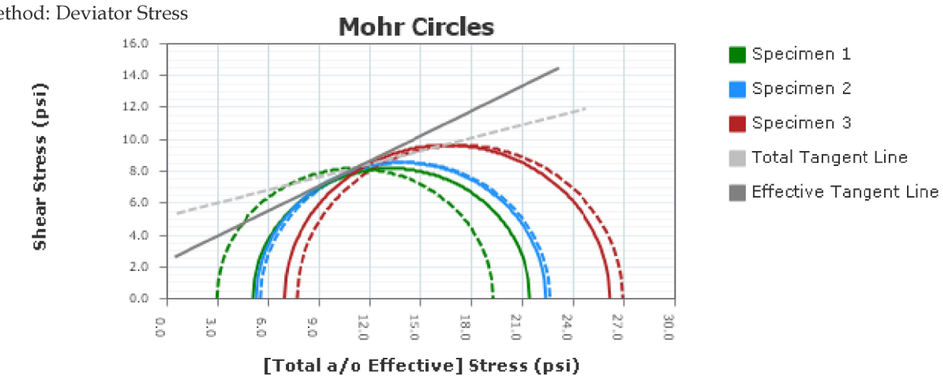
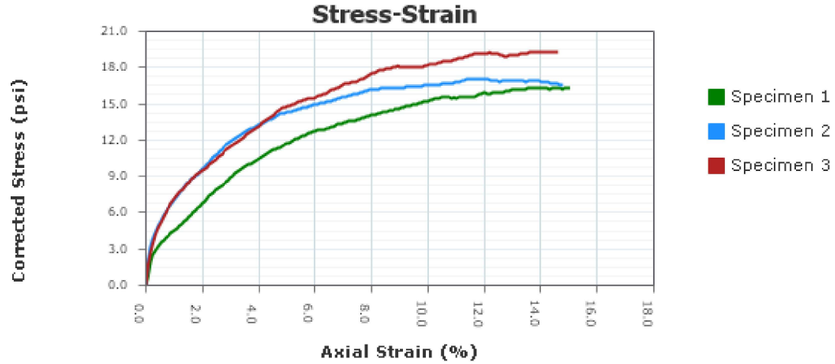
Consolidated Undrained Test

AASHTO T-297

Calculation Method: Deviator Stress



Total Strength Intercept (psi):	5.2	Effective Strength Intercept (psi):	2.4
Total Friction Angle (°):	15.2	Effective Friction Angle (°):	27.6



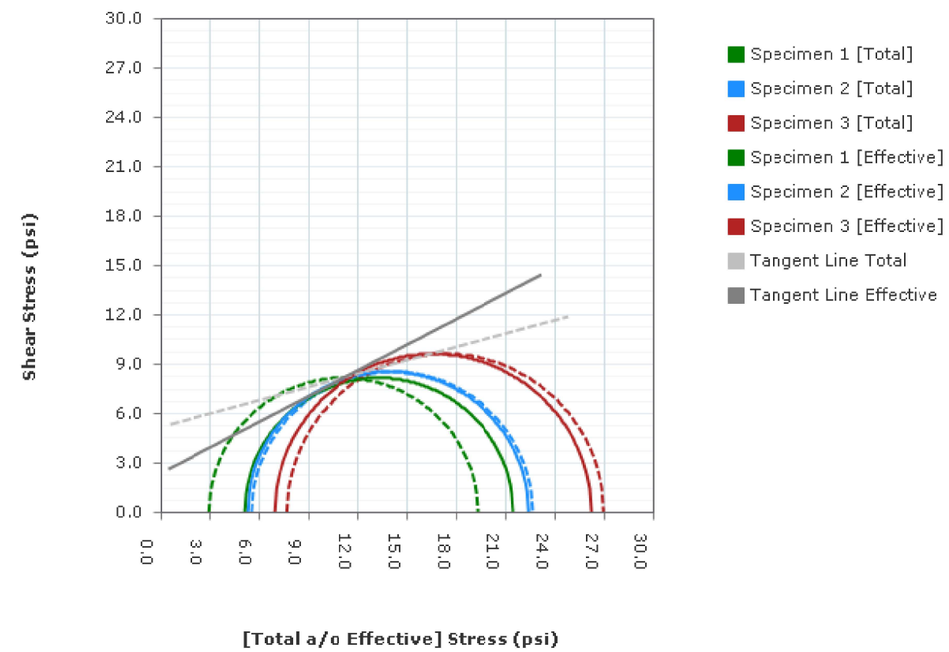
After Shear	Specimen Number 1	2	3	4	5	6	7	8
σ'1 at Failure (psi)	21.4	22.4	26.2					
σ'3 at Failure (psi)	5.1	5.3	6.9					

Project:	U-6105
Project Number:	GV20.300
Sampling Date:	1/14/2022
Sample Number:	ST-3
Sample Depth:	6-8 ft
Location:	L-1050 ST-3 (6-8 ft)
Remarks:	Shelby Tube

ESP Associates Inc.
3475 Lakemont Boulevard
Fort Mill, South Carolina 29708
803-802-2440

Graph - Mohr Circle

AASHTO T-297



Tangent Line Results	TOTAL	EFFECTIVE
Strength Intercept (psi)	5.2	2.4
Friction Angle (°)	15.188	27.577

Calculation Method: Deviator Stress