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CONTRACT:

ID: U-4910

NOTE: SEE SHEETS 3 & 3A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L1-	157+44.41 - 239+28.50	_	_	4-7
-L2-	115+05.55 - 157+44.41	_	_	8-16

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

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. U-4910 F.A. PROJ. SAFETEA-LU

COUNTY CABARRUS

PROJECT DESCRIPTION SR 1445 DERITA ROAD WIDENING FROM NORTH OF SR 2894 CONCORD MILLS BOULEVARD TO SR 1394 POPLAR TENT ROAD

RECOMMENDATIONS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4910	1	17

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
STATE PROJ. NO.		P.E.
		R/W & UTIL.

CAUTION NOTICE

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PERSONNEL

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SDS

INVESTIGATED BY EVANS, T. E.

CHECKED BY NORVILLE, C. V.

SUBMITTED BY FALCON

DATE MARCH 2014

NORTH CAROLINA PROFESSIONAL SEAL 039779 3/6/14 ENGINEER JEREMY R. HAMM

DRAWN BY: EVANS, T. E.

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NOTE - 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.

PROJECT REFERENCE NO.	SHEET NO.
U-4910	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 TO BE THE 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 STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. 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	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	
CLASS.	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													
#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	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
LIQUID LIMIT	6 MX		NP	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
PLASTIC INDEX				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 A 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/FT²)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>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	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE; SL — SHRINKAGE LIMIT	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	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.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES 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 WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
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 W/ CORE
- SPT N-VALUE
- REF — SPT REFUSAL

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:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [X] CME-550X
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -N 02
- [ ] -H_____

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. 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, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS 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 FEET
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 THE 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, 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:

ELEVATION: FT.

NOTES:
FIAD- FILLED IMMEDIATELY AFTER DRILLED

REVISED 09/23/09

09/08/99

TIP PROJECT: U-4910 (SEG. 2)

P.O. NO: 108658

USER: $$USER$$
DATE: $$DATE$$
TIME: $$TIME$$
DGN: $$DGN$$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4910 (SEG. 2)	3A	17

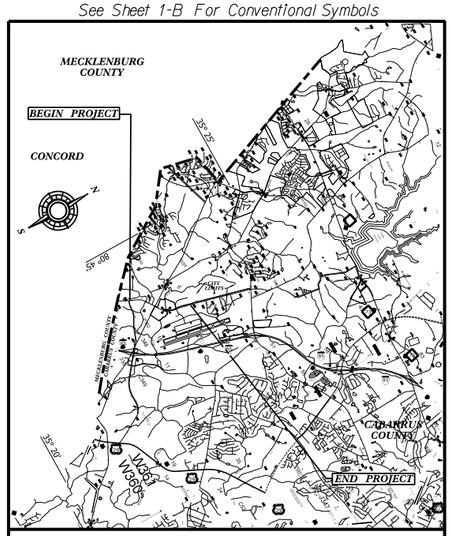
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
403732.1	SAFETEA-LU	R/W

CABARRUS COUNTY

LOCATION: NORTH OF SR 2894 CONCORD MILLS BOULEVARD TO AVIATION BOULEVARD.

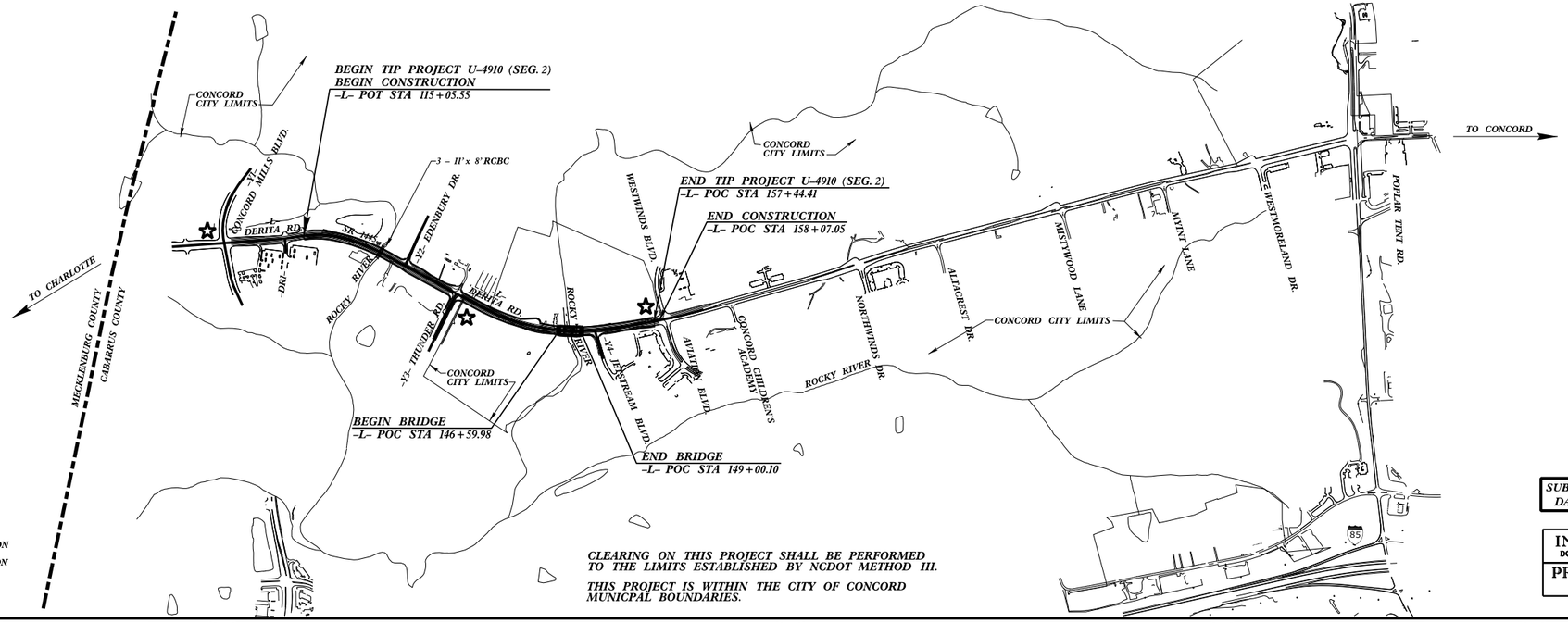
TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES, SIGNALS, & SIGNING

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



VICINITY MAP U-4910 (SEG. 2)

NAD 83



☆ - EXISTING SIGNALIZED INTERSECTION
★ - PROPOSEDSIGNALIZED INTERSECTION

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY NCDOT METHOD III.

THIS PROJECT IS WITHIN THE CITY OF CONCORD MUNICPAL BOUNDARIES.

SUBMITTAL: STRUCTURE RECOMMENDATIONS
DATE:

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2011 = 11,000
ADT 2035 = 28,300
DHV = 12 %
D = 65 %
T = XX % *
V = 50 MPH
* TTST =1% DUAL 3%

FUNC CLASS - ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT	=	0.758 MILES
LENGTH STRUCTURE TIP PROJECT	=	0.045 MILES
TOTAL LENGTH TIP PROJECT	=	0.803 MILES

Prepared in the Office of:
AECOM

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 2014

LETTING DATE: AUGUST 2014

KEVIN M. HAUGHEY, P.E.
PROJECT ENGINEER

KEVIN J. VAN METRE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

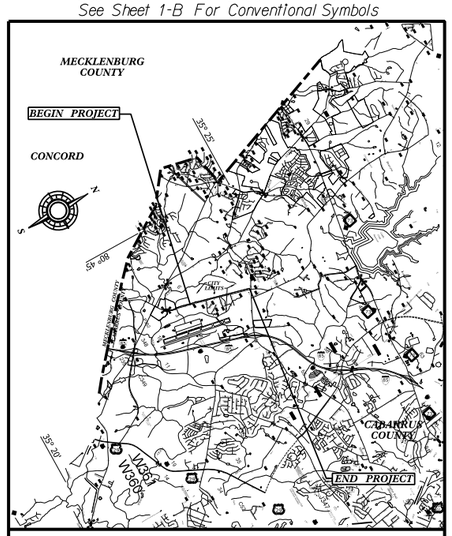
09/08/09

TIP PROJECT: U-4910 (SEG. 1)

P.O. NO: 108658

USER: $$USER$$
DATE: $$DATE$$
TIME: $$TIME$$
DGN: $$DGN$$

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



VICINITY MAP U-4910 (SEG. 1)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

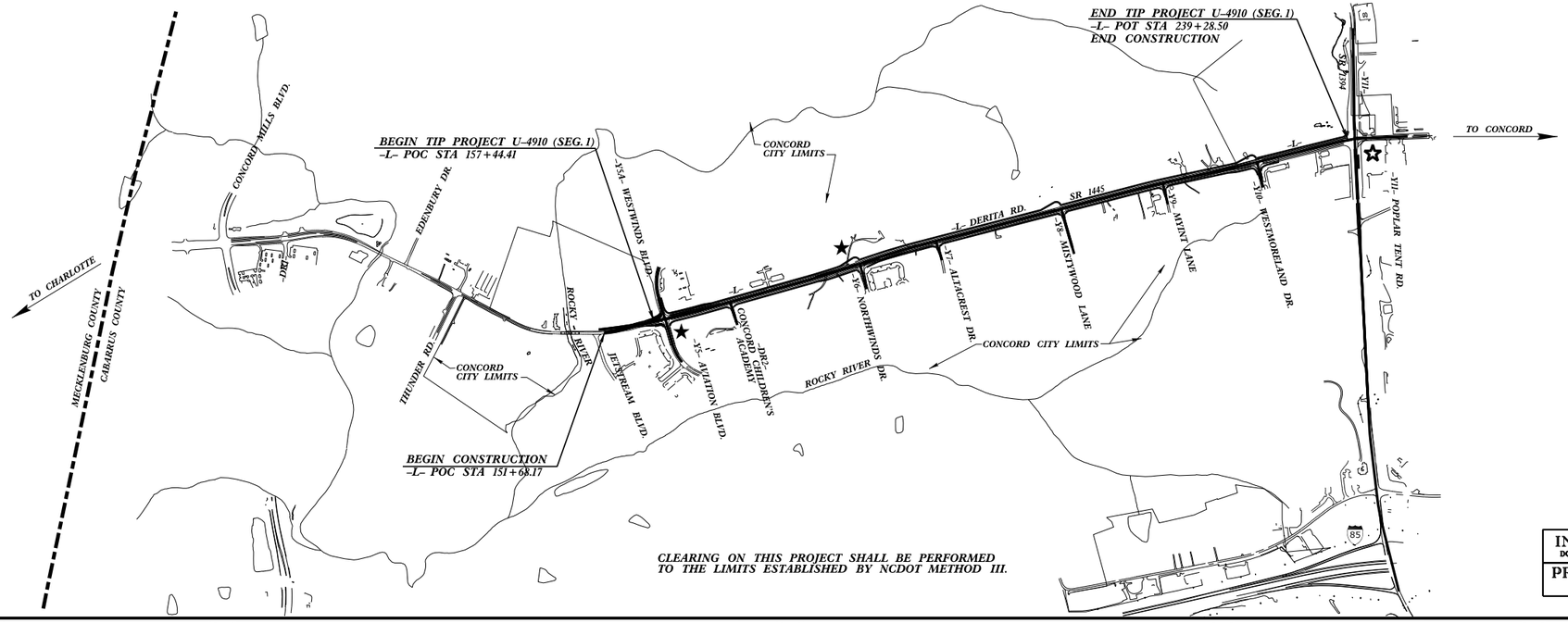
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4910 (SEG. 1)	3	17
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
403732.1	SAFETEA-LU	R/W	

CABARRUS COUNTY

LOCATION: FROM AVIATION BOULEVARD TO THE INTERSECTION OF SR 1394 POPLAR TENT ROAD.

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

NAD 83



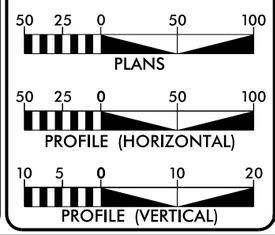
☆ – EXISTING SIGNALIZED INTERSECTION
★ – PROPOSEDSIGNALIZED INTERSECTION

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY NCDOT METHOD III.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2011 = 11,000
ADT 2035 = 28,300
DHV = 12 %
D = 65 %
T = % *
V = 50 MPH
* TTST = 1% DUAL 3%

FUNC CLASS – ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT	=	1.561 MILES
LENGTH STRUCTURE TIP PROJECT	=	0.00 MILES
TOTAL LENGTH TIP PROJECT	=	1.561 MILES

Prepared in the Office of:
AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 2014

LETTING DATE: AUGUST 2014

KEVIN M. HAUGHEY, P.E.
PROJECT ENGINEER

KEVIN J. VAN METRE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

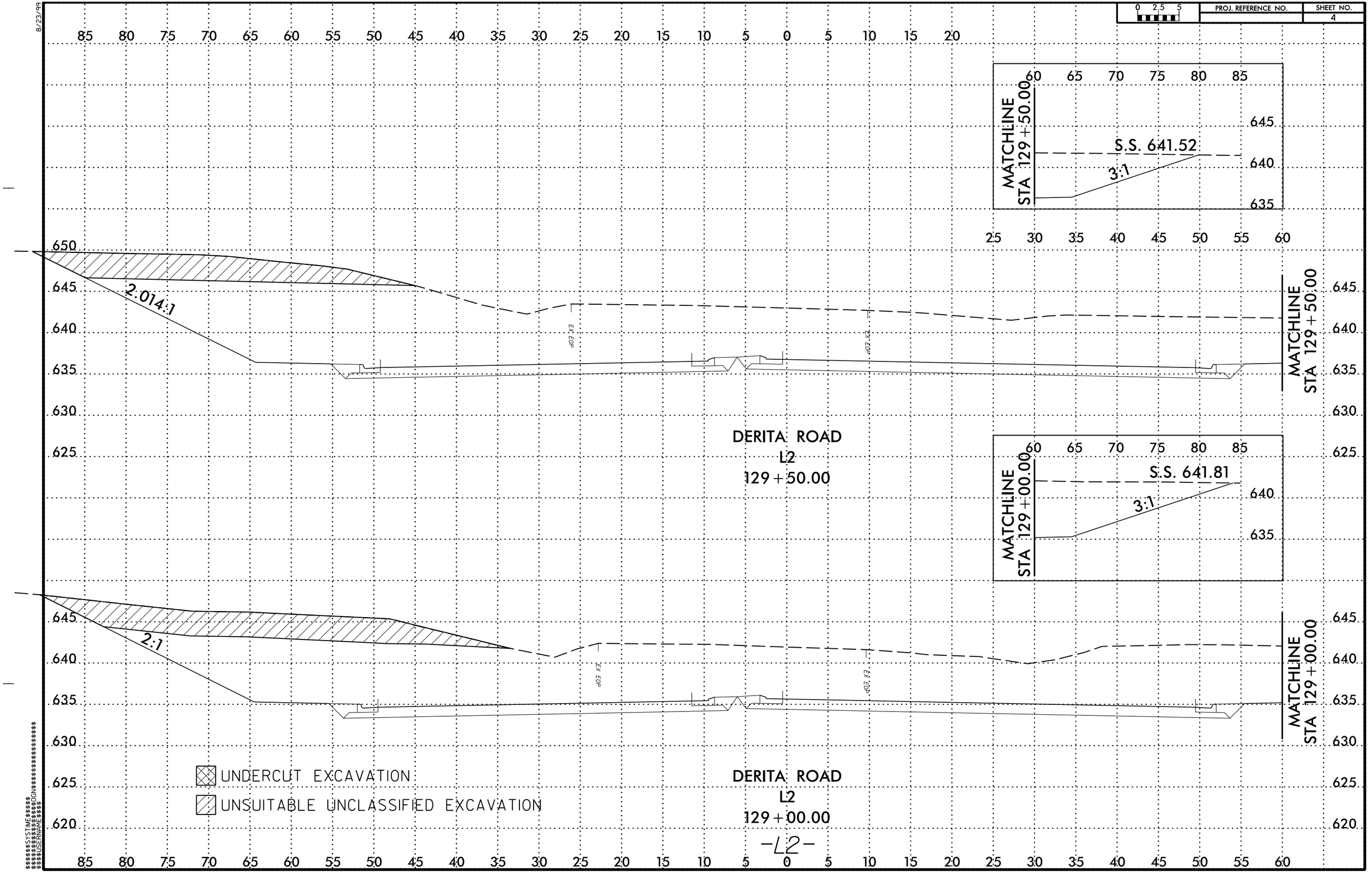
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

8/23/99

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
	4



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

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
	5

DERITA ROAD
L2
130+50.00

DERITA ROAD
L2
130+00.00

-L2-

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

8/23/99

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
	6

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

655 650 645 640 635 630 625

3:1

EX EOP

EX EOP

4:1

DERITA ROAD
L2
131+50.00

S.S. 647.32

650 645 640 635 630 625

3:1

EX EOP

EX EOP

S.S. 641.34

4:1

DERITA ROAD
L2
131+00.00

-L2-

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

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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
		7

DERITA ROAD
L2
157+00.00

DERITA ROAD
L2
156+50.00

DERITA ROAD
L2
156+00.00

-L2-

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

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-4910 (SEG.1)	8

NOTE: SEE -L2- CROSS SECTIONS FOR UNDERCUT RECOMMENDATIONS BEFORE 157+50

▨ UNDERCUT EXCAVATION

▨ UNSUITABLE UNCLASSIFIED EXCAVATION

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

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-4910 (SEG. 1)	9

0 2.5 5

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

635
630
625
620
615

R-32
159+12
45 ft LT, -L1-

9
4
4
7

ARTIFICIAL FILL

RESIDUUM

DERITA ROAD
L1
159+00.00

DERITA ROAD
L1
158+50.00

MATCHLINE 158+00

3.217:1

S.S. 621.22

90 85 80 75 70

R-31
158+00
42 ft RT, -L1-

S.S. 631.13

12
10
10
11
16

ARTIFICIAL FILL

RESIDUUM

4:1

UNDERCUT EXCAVATION

UNSUITABLE UNCLASSIFIED EXCAVATION

DERITA ROAD
L1
158+00.00

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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-4910 (SEG. 1)	10

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

670
665
660
655
650
645
640

2:1

4:1

DERITA ROAD
L1
186+00.00

670
665
660
655
650
645
640

3:1

4:1

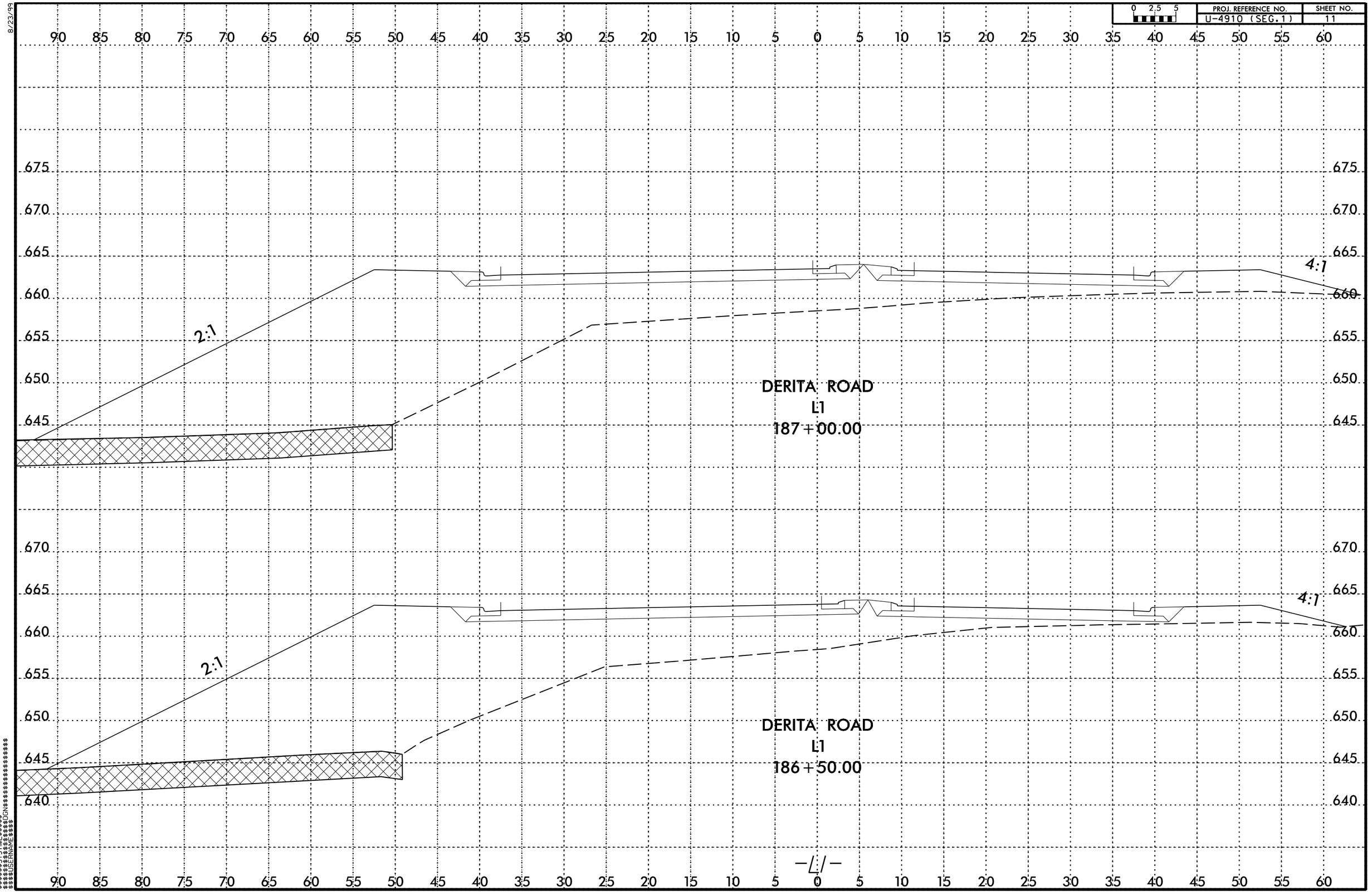
DERITA ROAD
L1
185+50.00

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

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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-4910 (SEG.1)	11



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

8/23/99

DERITA ROAD
L1
208+50.00

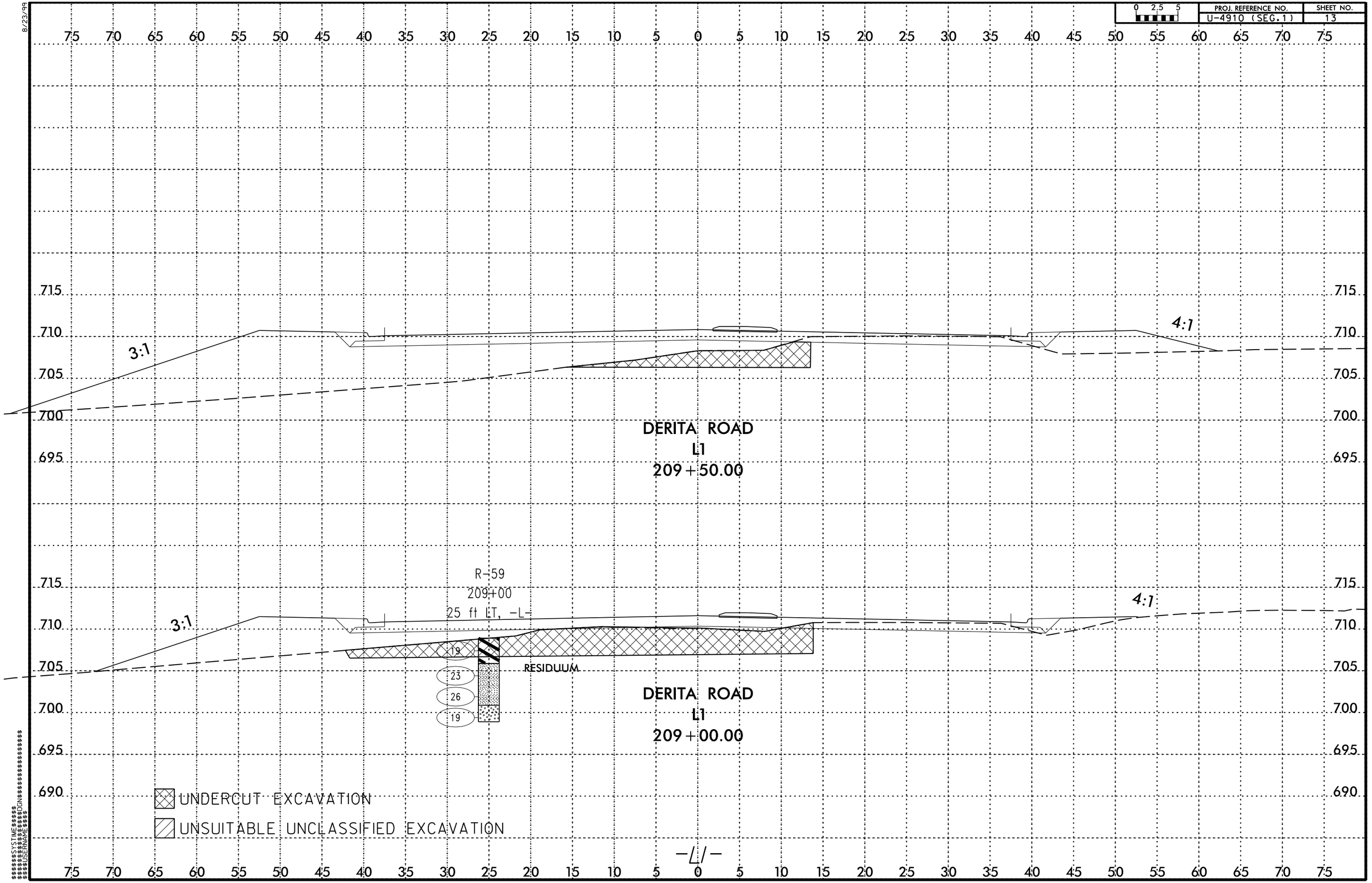
DERITA ROAD
L1
208+00.00

▨ UNDERCUT EXCAVATION

▨ UNSUITABLE UNCLASSIFIED EXCAVATION

-L1-

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



▨ UNDERCUT EXCAVATION

▨ UNSUITABLE UNCLASSIFIED EXCAVATION

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-4910 (SEG.1)	14

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

715
710
705
700
695

4:1

4:1

DERITA ROAD
L1
211+00.00

715
710
705
700
695

3:1

4:1

DERITA ROAD
L1
210+50.00

715
710
705
700
695

3:1

4:1

DERITA ROAD
L1
210+00.00

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

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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-4910 (SEG. 1)	15

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

720 715 710 705 700

R-62
215+00
18 ft LT, -L-

4:1

15
15
12
6

RESIDUUM

4:1

DERITA ROAD
L1
215+00.00

720 715 710 705 700

4:1

4:1

DERITA ROAD
L1
214+50.00

720 715 710 705 700

4:1

4:1

DERITA ROAD
L1
214+00.00

UNDERCUT EXCAVATION

UNSUITABLE UNCLASSIFIED EXCAVATION

-L/-

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

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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-4910 (SEG. 1)	16

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

720
715
710
705

4:1

4:1

DERITA ROAD
L1
216+50.00

720
715
710
705

4:1

4:1

DERITA ROAD
L1
216+00.00

720
715
710
705

4:1

4:1

DERITA ROAD
L1
215+50.00

UNDERCUT EXCAVATION

UNSUITABLE UNCLASSIFIED EXCAVATION

-L1-

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

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	40373.1.1 (U-4910)	1	39

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
		P.E.
		R/W & UTIL.

NOTE: SEE SHEETS 3 & 3A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

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

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 40373.1.1 (U-4910) F.A. PROJ. STP-1445(4)

COUNTY CABARRUS

PROJECT DESCRIPTION SR 1445 (DERITA ROAD) WIDENING FROM NORTH OF SR 2894 (CONCORD MILLS BOULEVARD) TO SR 1394 (POPLAR TENT ROAD)

RECOMMENDATIONS

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. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE 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 THIS 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.

PERSONNEL

NORVILLE, C. V.

HAMM, J. R.

EVANS, T. E.

PAUL, A. S.

SDS

INVESTIGATED BY EVANS, T. E.

CHECKED BY NORVILLE, C. V.

SUBMITTED BY FALCON

DATE JUNE 2014

NORTH CAROLINA PROFESSIONAL SEAL 039779 6/23/14 ENGINEER JEREMY R. HAMM

ID: U-4910

CONTRACT:

DRAWN BY: EVANS, T. E.

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - 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.

PROJECT REFERENCE NO.	SHEET NO.
40373.1.1 (U-4910)	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 TO BE THE 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 STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. 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
LIQUID LIMIT	6 MX			NP	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
PLASTIC INDEX					10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		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 A 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/FT²)
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 0.50 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	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	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.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES 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 WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
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 W/ CORE
- SPT N-VALUE
- REF — SPT REFUSAL

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:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [X] CME-550X
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -N 02
- [ ] -H_____

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. 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, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS 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 FEET
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 THE 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, 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:
BORING ELEVATIONS OBTAINED FROM TOPOGRAPHICAL DATA
AS CONTAINED IN THE *.TIN FILE ELEVATION: FT.

NOTES:
FIAD- FILLED IMMEDIATELY AFTER DRILLED

REVISED 09/23/09

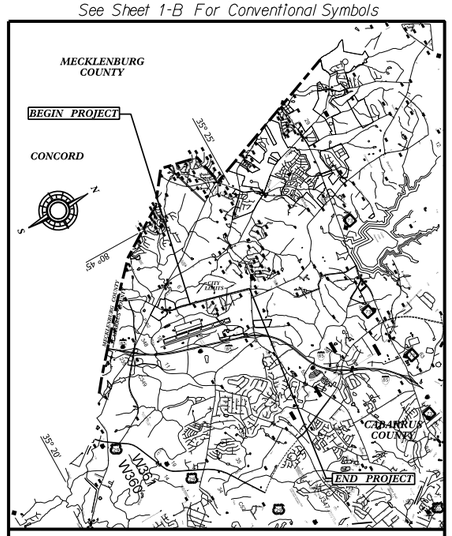
09/08/60

TIP PROJECT: U-4910 (SEG. 1)

P.O. NO: 108658

USER: $$USER$$
DATE: $$DATE$$
TIME: $$TIME$$
DGN: $$DGN$$

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



VICINITY MAP U-4910 (SEG. 1)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

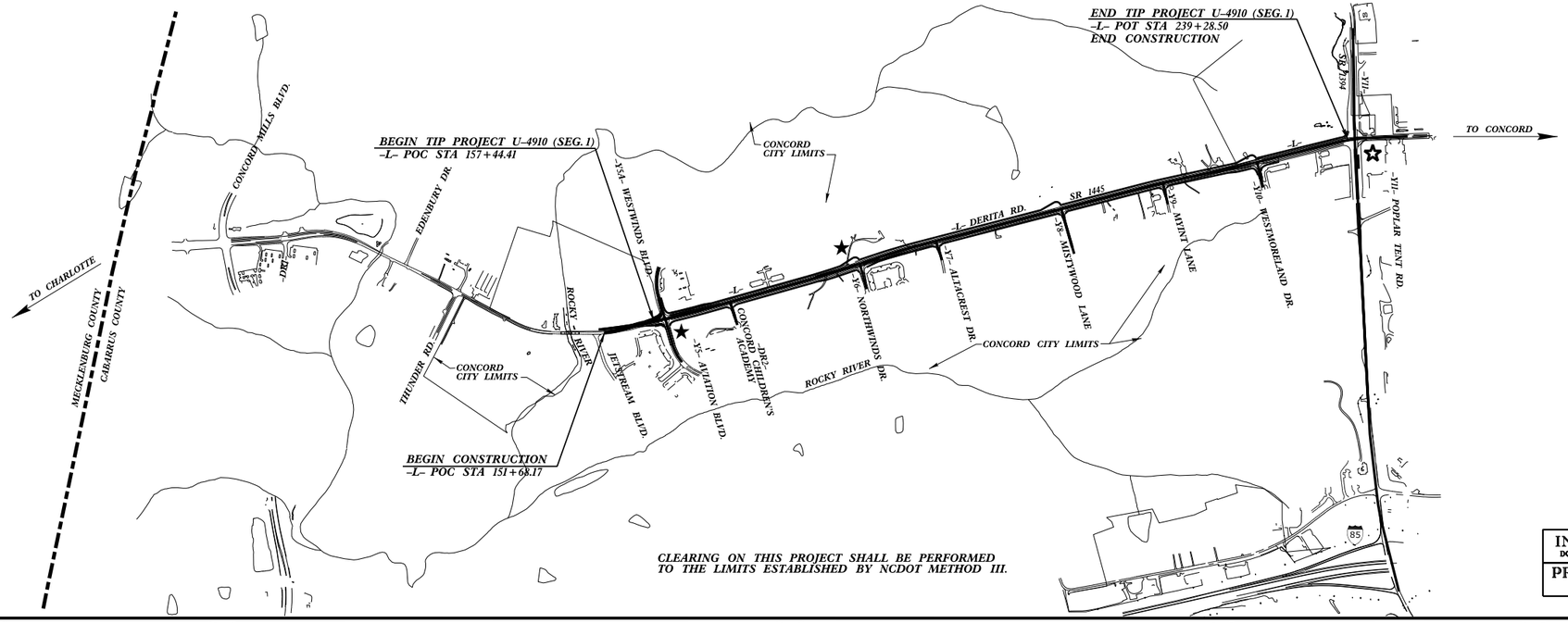
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	40373.1.1 (U-4910)	3	39
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40373.1.1	STP-1445(4)	R/W	

CABARRUS COUNTY

LOCATION: FROM AVIATION BOULEVARD TO THE INTERSECTION OF SR 1394 POPLAR TENT ROAD.

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

NAD 83



☆ – EXISTING SIGNALIZED INTERSECTION
★ – PROPOSEDSIGNALIZED INTERSECTION

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY NCDOT METHOD III.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2011 = 11,000
ADT 2035 = 28,300
DHV = 12 %
D = 65 %
T = % *
V = 50 MPH
* TTST = 1% DUAL 3%

FUNC CLASS – ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT	=	1.561 MILES
LENGTH STRUCTURE TIP PROJECT	=	0.00 MILES
TOTAL LENGTH TIP PROJECT	=	1.561 MILES

Prepared in the Office of:
AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 2014

LETTING DATE:
AUGUST 2014

KEVIN M. HAUGHEY, P.E.
PROJECT ENGINEER

KEVIN J. VAN METRE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

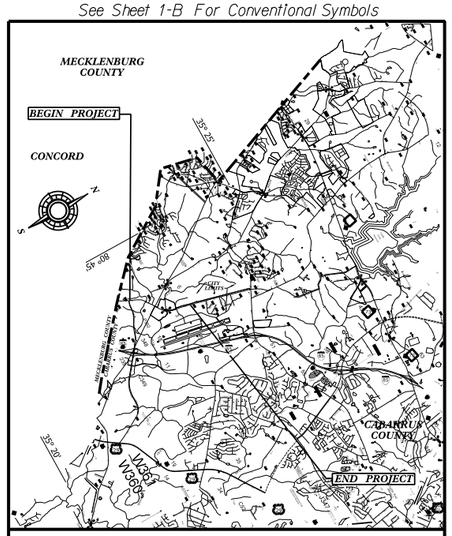
09/08/99

TIP PROJECT: U-4910 (SEG. 2)

P.O. NO: 108658

USER: $$USER$$
DATE: $$DATE$$
TIME: $$TIME$$
DGN: $$DGN$$

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



VICINITY MAP U-4910 (SEG. 2)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	40373.1.1 (U-4910)	3A	39

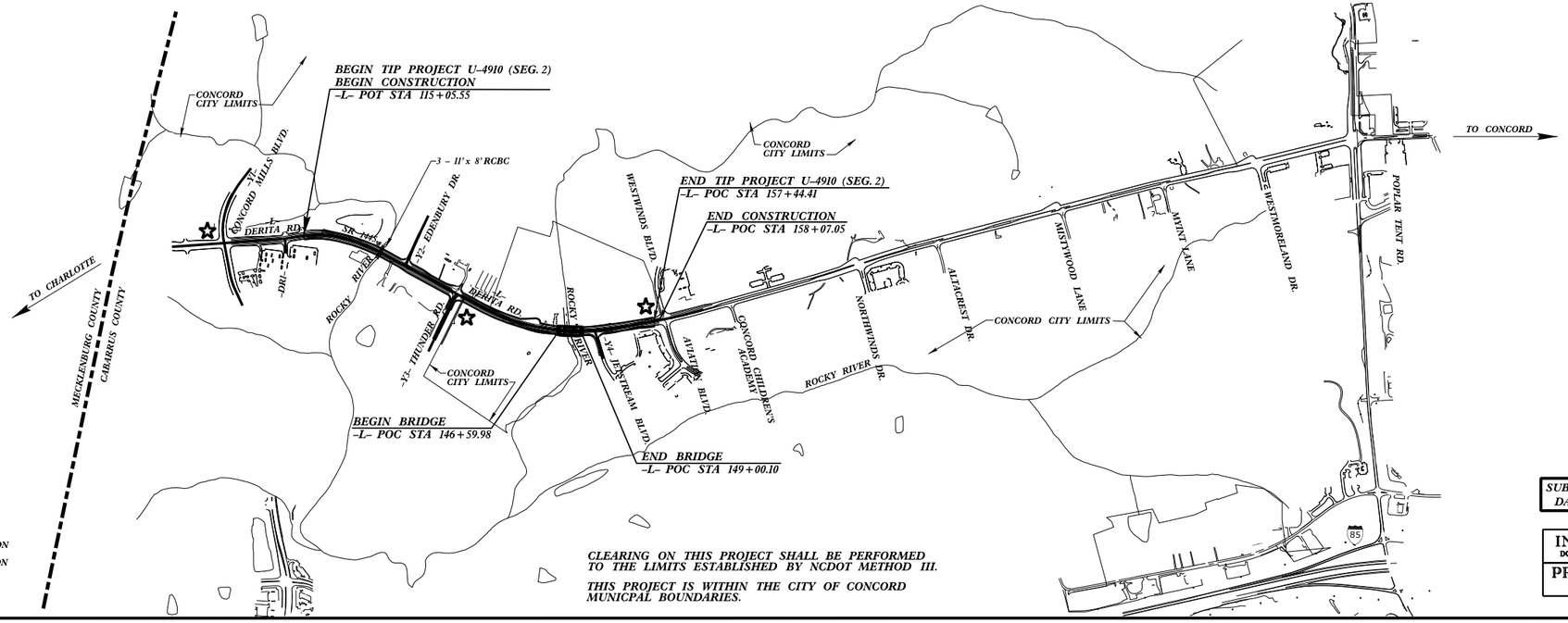
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
40373.1.1	STP-1445(4)	R/W

CABARRUS COUNTY

LOCATION: NORTH OF SR 2894 CONCORD MILLS BOULEVARD TO AVIATION BOULEVARD.

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

NAD 83



☆ - EXISTING SIGNALIZED INTERSECTION
★ - PROPOSEDSIGNALIZED INTERSECTION

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY NCDOT METHOD III.

THIS PROJECT IS WITHIN THE CITY OF CONCORD MUNICPAL BOUNDARIES.

SUBMITTAL: STRUCTURE RECOMMENDATIONS
DATE:

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2011 = 11,000
ADT 2035 = 28,300
DHV = 12 %
D = 65 %
T = XX % *
V = 50 MPH
* TTST =1% DUAL 3%

FUNC CLASS – ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT = 0.758 MILES
LENGTH STRUCTURE TIP PROJECT = 0.045 MILES
TOTAL LENGTH TIP PROJECT = 0.803 MILES

Prepared in the Office of:
AECOM

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 2014

LETTING DATE: AUGUST 2014

KEVIN M. HAUGHEY, P.E.
PROJECT ENGINEER

KEVIN J. VAN METRE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

DERITA ROAD
-L- (SEG.2)
128+00.00

▩ SHALLOW UNDERCUT EXCAVATION
☒ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

-L-

PROJ. REFERENCE NO.	SHEET NO.
40373.1.1(U-4910)	5

DERITA ROAD
-L- (SEG.2)
129+50.00

RES: BLUE-GRAY AND TAN,V.DENSE,DRY,SILTY SAND,W/ ROCK FRAGS.

WR: BROWN GRAY BROWN AND TAN,METADIORITE

Ⓐ **ART.FILL:** TAN,STIFF,DRY,F.SANDY CLAY,W/ ROOTS

Ⓑ **ART.FILL:** GRAY TAN AND BROWN,MED.DENSE, DRY,SILTY SAND,W/GRAVEL

DERITA ROAD
-L- (SEG.2)
129+00.00

RES: BLUE-GRAY AND TAN,V.DENSE,DRY,SILTY SAND, SAPROLITIC,W/ ROCK FRAGS.

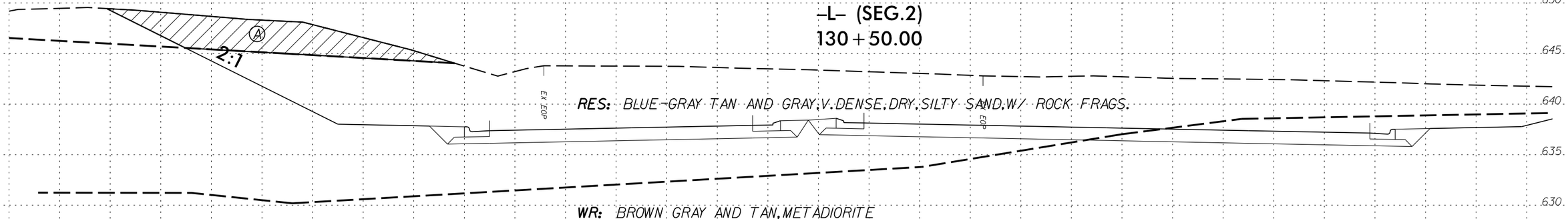
WR: GRAY TAN BLUE-GRAY AND BROWN,METADIORITE

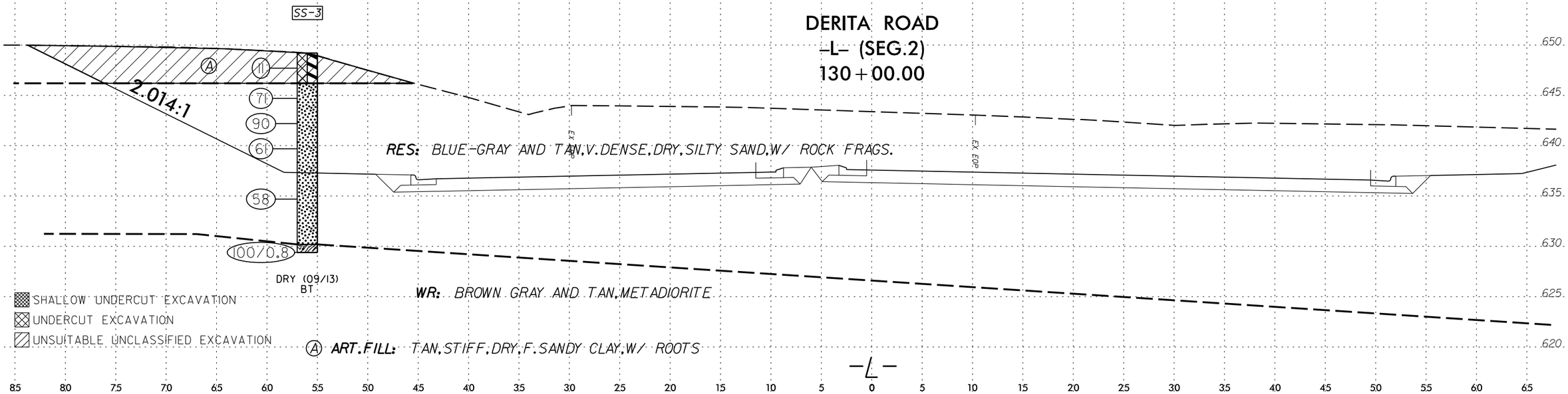
Ⓐ **ART.FILL:** TAN,STIFF,DRY,F.SANDY CLAY,W/ ROOTS

Ⓑ **ART.FILL:** GRAY TAN AND BROWN,MED.DENSE, DRY,SILTY SAND,W/GRAVEL

▩ SHALLOW UNDERCUT EXCAVATION
☒ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

BEGIN UNSUITABLE UNCLASSIFIED EXCAVATION AT 129+00





▩ SHALLOW UNDERCUT EXCAVATION
☒ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	7

DERITA ROAD
–L– (SEG.2)
131+50.00

3:1

4:1

EX EOP

EX EOP

RES: BLUE GRAY TAN AND BROWN, DENSE TO V. DENSE, DRY, SILTY SAND, W/ ROCK FRAGS, SAPROLITIC

WR: GRAY BROWN AND TAN, METADIORITE

END UNSUITABLE UNCLASSIFIED EXCAVATION AT 131+00

DERITA ROAD
–L– (SEG.2)
131+00.00

3:1

Ⓐ

4:1

EX EOP

EX EOP

RES: BLUE-GRAY TAN AND GRAY, V. DENSE, DRY, SILTY SAND, W/ ROCK FRAGS.

58

100/0.5

100/0.2

100/0.4

DRY (09/13)
BT

WR: BROWN GRAY AND TAN, METADIORITE

Ⓐ **ART. FILL:** TAN, STIFF, DRY, F. SANDY CLAY, W/ ROOTS

SHALLOW UNDERCUT EXCAVATION

UNDERCUT EXCAVATION

UNSUITABLE UNCLASSIFIED EXCAVATION

–L–

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

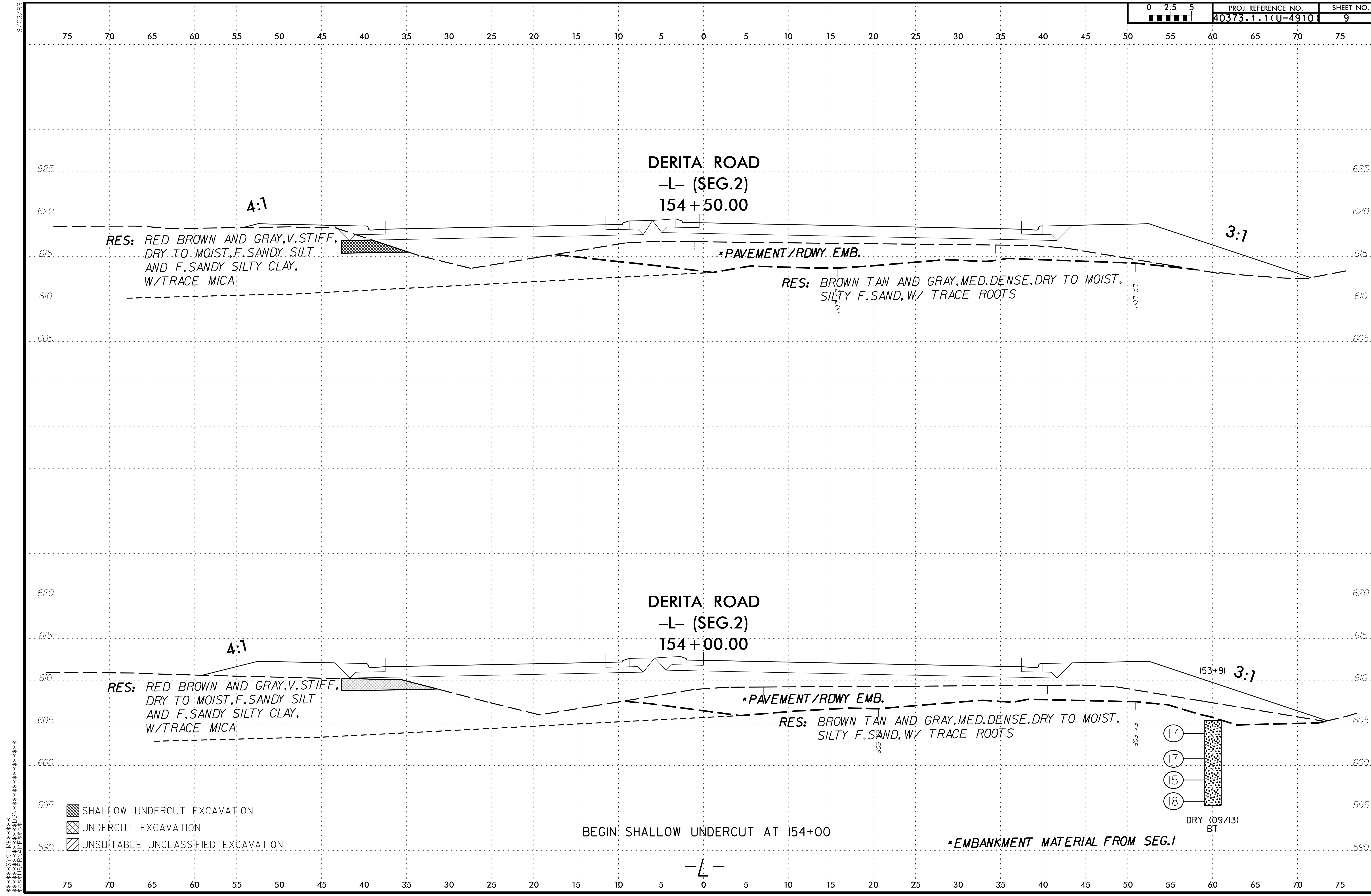
PROJ. REFERENCE NO.	SHEET NO.
40373.1.1(U-4910)	8

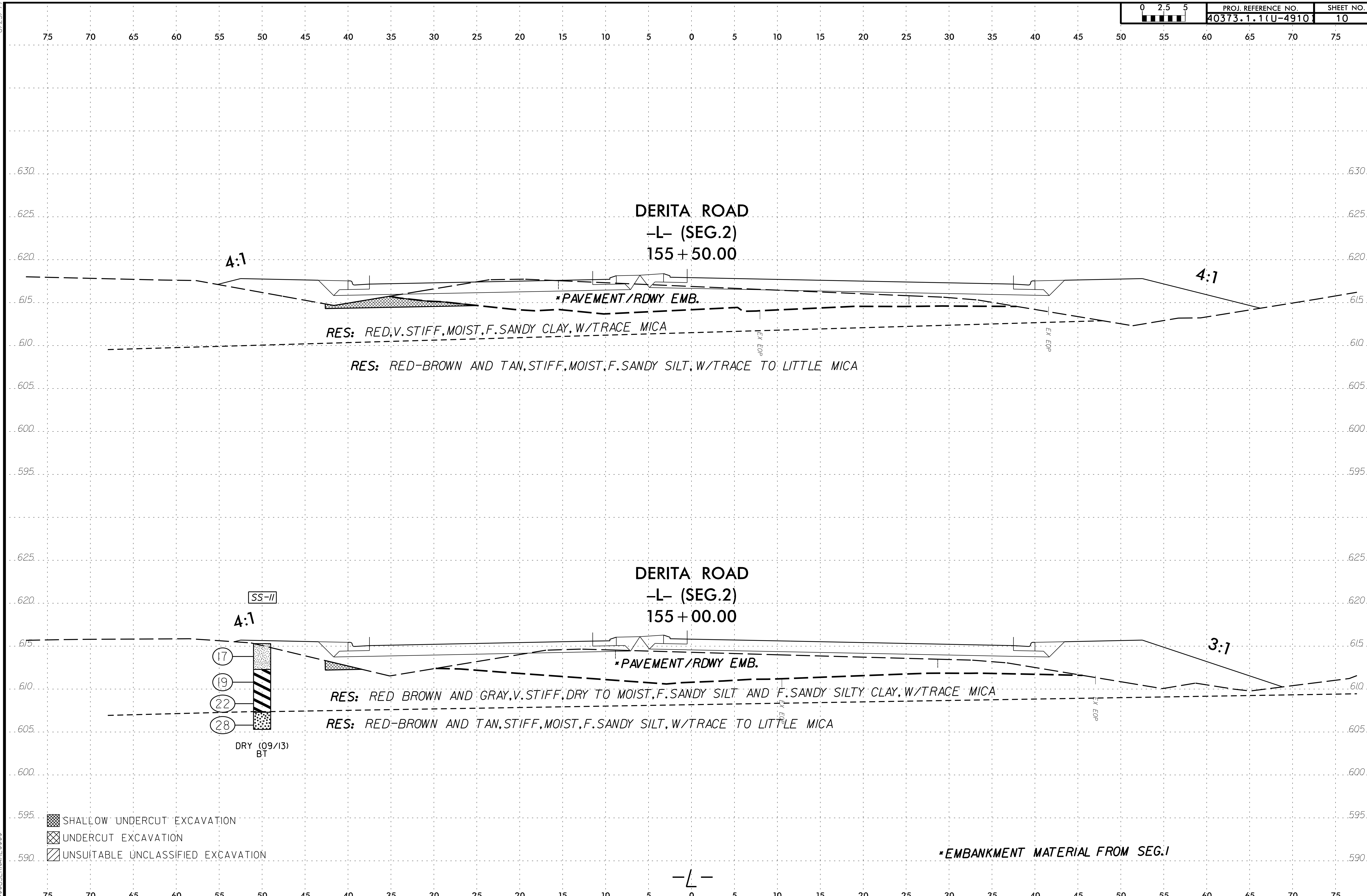
DERITA ROAD
-L- (SEG.2)
153+50.00

DERITA ROAD
-L- (SEG.2)
153+00.00

▩ SHALLOW UNDERCUT EXCAVATION
☒ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

*EMBANKMENT MATERIAL FROM SEG.I


8/23/99
0 2.5 5
PROJ. REFERENCE NO.
40373.1.1(U-4910)
SHEET NO.
9
DERITA ROAD
-L- (SEG.2)
154+50.00
4:1
3:1
RES: RED BROWN AND GRAY, V. STIFF, DRY TO MOIST, F. SANDY SILT AND F. SANDY SILTY CLAY, W/TRACE MICA
*PAVEMENT/RDWY EMB.
RES: BROWN TAN AND GRAY, MED. DENSE, DRY TO MOIST, SILTY F. SAND, W/ TRACE ROOTS
EX EOP
DERITA ROAD
-L- (SEG.2)
154+00.00
4:1
153+91
3:1
RES: RED BROWN AND GRAY, V. STIFF, DRY TO MOIST, F. SANDY SILT AND F. SANDY SILTY CLAY, W/TRACE MICA
*PAVEMENT/RDWY EMB.
RES: BROWN TAN AND GRAY, MED. DENSE, DRY TO MOIST, SILTY F. SAND, W/ TRACE ROOTS
EX EOP
17
17
15
18
DRY (09/13)
BT
SHALLOW UNDERCUT EXCAVATION
UNDERCUT EXCAVATION
UNSUITABLE UNCLASSIFIED EXCAVATION
BEGIN SHALLOW UNDERCUT AT 154+00
*EMBANKMENT MATERIAL FROM SEG.1
-L-
$$$$SYSTIME$$$$
$$$$$$$DGN$$$$
$$$$USERNAME$$$$


PROJ. REFERENCE NO.
40373.1.1(U-4910)
SHEET NO.
10
DERITA ROAD
-L- (SEG.2)
155+50.00
4:1
4:1
*PAVEMENT/RDWY EMB.
RES: RED,V.STIFF,MOIST,F.SANDY CLAY,W/TRACE MICA
RES: RED-BROWN AND TAN,STIFF,MOIST,F.SANDY SILT,W/TRACE TO LITTLE MICA
EX EOP
EX EOP
DERITA ROAD
-L- (SEG.2)
155+00.00
SS-11
4:1
3:1
*PAVEMENT/RDWY EMB.
17
19
22
28
DRY (09/13)
BT
RES: RED BROWN AND GRAY,V.STIFF,DRY TO MOIST,F.SANDY SILT AND F.SANDY SILTY CLAY,W/TRACE MICA
RES: RED-BROWN AND TAN,STIFF,MOIST,F.SANDY SILT,W/TRACE TO LITTLE MICA
EX EOP
SHALLOW UNDERCUT EXCAVATION
UNDERCUT EXCAVATION
UNSUITABLE UNCLASSIFIED EXCAVATION
*EMBANKMENT MATERIAL FROM SEG.1
-L-

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	11

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

635 630 625 620 615 610 605 600 595

DERITA ROAD
–L– (SEG.2)
156+50.00

4:1

*PAVEMENT/RDWY EMB.

EX EOP

EX EOP

4.028:1

Ⓐ

RES: RED-BROWN AND TAN, STIFF TO V.STIFF, MOIST, F.SANDY SILT AND CLAY, W/ TRACE TO LITTLE MICA

RES: BLACK TAN AND GRAY, MED.DENSE TO V.DENSE, MOIST, SILTY F.SAND

Ⓐ **RDWY EMB:** BROWN AND TAN, MED.DENSE, DRY, SILTY SAND, W/GRAVEL

DERITA ROAD
–L– (SEG.2)
156+00.00

4:1

4.028:1

Ⓐ

*PAVEMENT/RDWY EMB.

EX EOP

EX EOP

RES: RED, V.STIFF, MOIST, F.SANDY CLAY, W/TRACE MICA

RES: BLACK TAN AND GRAY, MED.DENSE, TO V.DENSE, DRY, SILTY SAND, SAPROLITIC

12
24
58
49

DRY (09/13)
BT

Ⓐ **RDWY EMB:** BROWN AND TAN, MED.DENSE, DRY, SILTY SAND, W/GRAVEL

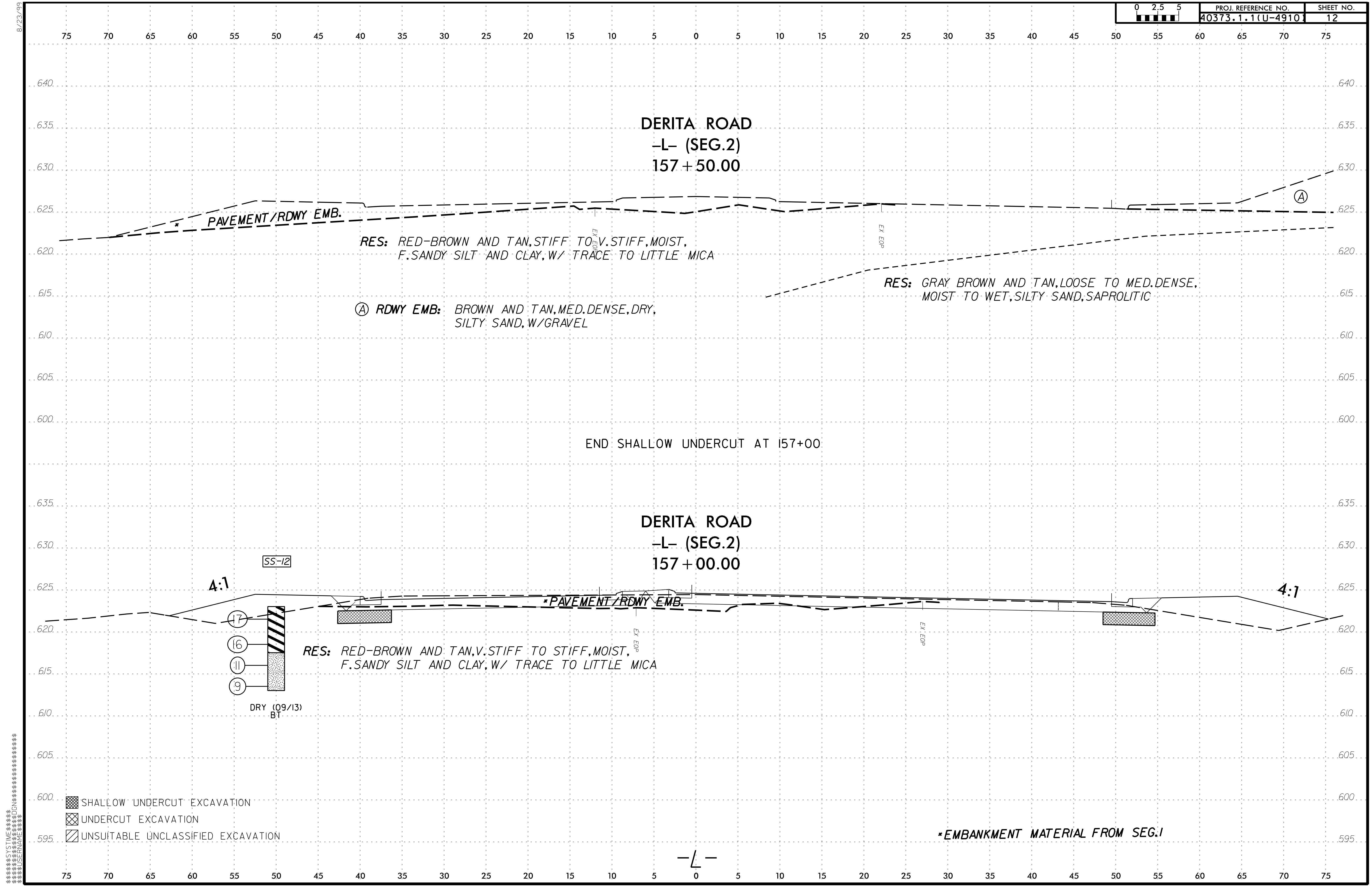
SHALLOW UNDERCUT EXCAVATION
UNDERCUT EXCAVATION
UNSUITABLE UNCLASSIFIED EXCAVATION

*EMBANKMENT MATERIAL FROM SEG.1

–L–

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

PROJ. REFERENCE NO.	SHEET NO.
40373.1.1(U-4910)	12



8/23/99
0 2.5 5
DERITA ROAD
-L- (SEG.2)
157+50.00
PAVEMENT/RDWY EMB.
RES: RED-BROWN AND TAN, STIFF TO V.STIFF, MOIST, F.SANDY SILT AND CLAY, W/ TRACE TO LITTLE MICA
Ⓐ RDWY EMB: BROWN AND TAN, MED.DENSE, DRY, SILTY SAND, W/GRAVEL
RES: GRAY BROWN AND TAN, LOOSE TO MED.DENSE, MOIST TO WET, SILTY SAND, SAPROLITIC
EX EOP
END SHALLOW UNDERCUT AT 157+00
DERITA ROAD
-L- (SEG.2)
157+00.00
SS-12
4:1
4:1
*PAVEMENT/RDWY EMB.
17
16
11
9
DRY (09/13)
BT
RES: RED-BROWN AND TAN, V.STIFF TO STIFF, MOIST, F.SANDY SILT AND CLAY, W/ TRACE TO LITTLE MICA
SHALLOW UNDERCUT EXCAVATION
UNDERCUT EXCAVATION
UNSUITABLE UNCLASSIFIED EXCAVATION
*EMBANKMENT MATERIAL FROM SEG.1
-L-

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	13

8/23/99

BEGIN SHALLOW UNDERCUT EXCAVATION AT 157+00

BEGIN UNSUITABLE UNCLASSIFIED EXCAVATION AT 157+25

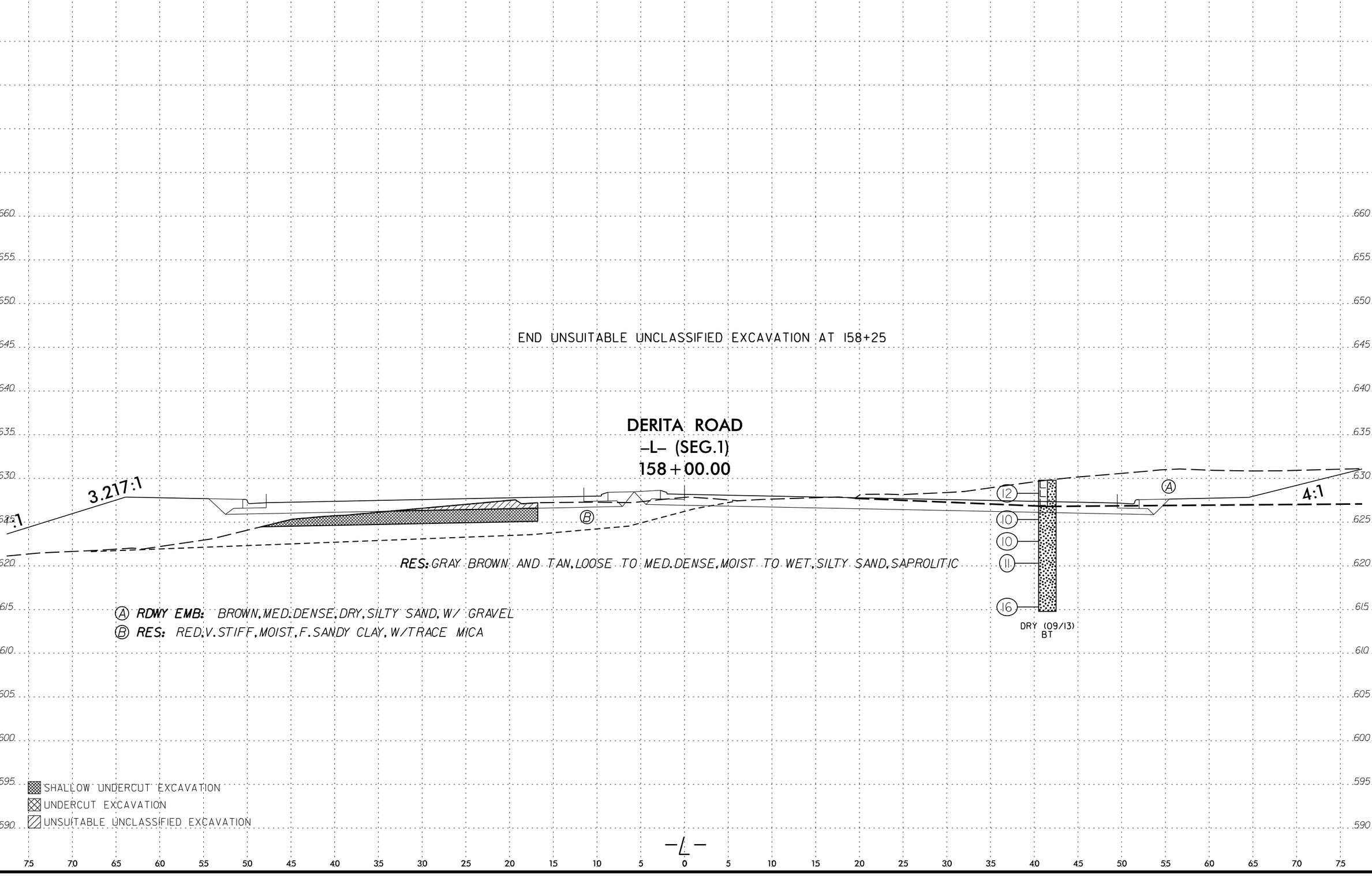
▩ SHALLOW UNDERCUT EXCAVATION
⊠ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	14

END UNSUITABLE UNCLASSIFIED EXCAVATION AT 158+25

DERITA ROAD
–L– (SEG.1)
158+00.00



RES: *GRAY BROWN AND TAN, LOOSE TO MED. DENSE, MOIST TO WET, SILTY SAND, SAPROLITIC*

Ⓐ ***RDWY EMB:*** *BROWN, MED. DENSE, DRY, SILTY SAND, W/ GRAVEL*
Ⓑ ***RES:*** *RED, V. STIFF, MOIST, F. SANDY CLAY, W/TRACE MICA*

SHALLOW UNDERCUT EXCAVATION
UNDERCUT EXCAVATION
UNSUITABLE UNCLASSIFIED EXCAVATION

–L–

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

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	15

END SHALLOW UNDERCUT EXCAVATION AT 159+00

DERITA ROAD
-L- (SEG.1)
159+00.00

DERITA ROAD
-L- (SEG.1)
158+50.00

▩ SHALLOW UNDERCUT EXCAVATION
⊠ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	16

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

660 655 650 645 640 635 630 625 620

DERITA ROAD
–L– (SEG.1)
164+00.00

4.029:1

4:1

ART.FILL: *BROWN, LOOSE, DRY, SILTY SAND*

Ⓐ

RES: *TAN AND BROWN, STIFF, WET TO MOIST, F. SANDY SILT*

634.65

RES: *TAN AND BROWN, MED. DENSE, DRY, SILTY SAND, SAPROLITIC*

Ⓐ ***ART.FILL:*** *BROWN AND BLACK, STIFF, MOIST, F. SANDY CLAY*

BEGIN SHALLOW UNDERCUT EXCAVATION AT 164+00

BEGIN UNSUITABLE UNCLASSIFIED EXCAVATION AT 164+00

DERITA ROAD
–L– (SEG.1)
163+50.00

4.029:1

4:1

Ⓐ

RES: *BROWN TAN AND BLACK, STIFF, MOIST, F. SANDY CLAY*

635.51

RES: *BROWN TAN AND BLACK, MED. DENSE, MOIST, SILTY SAND*

Ⓐ ***PAVEMENT/RDWY EMB:*** *BITUMINOUS CONCRETE AND GRAY AND BROWN, MED. DENSE, MOIST, SILTY SAND, W/ GRAVEL*

SHALLOW UNDERCUT EXCAVATION
UNDERCUT EXCAVATION
UNSUITABLE UNCLASSIFIED EXCAVATION

–L–

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

PROJ. REFERENCE NO.	SHEET NO.
40373.1.1(U-4910)	17

8/23/99

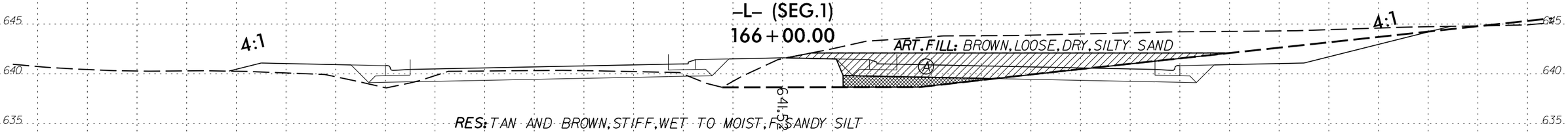
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	18

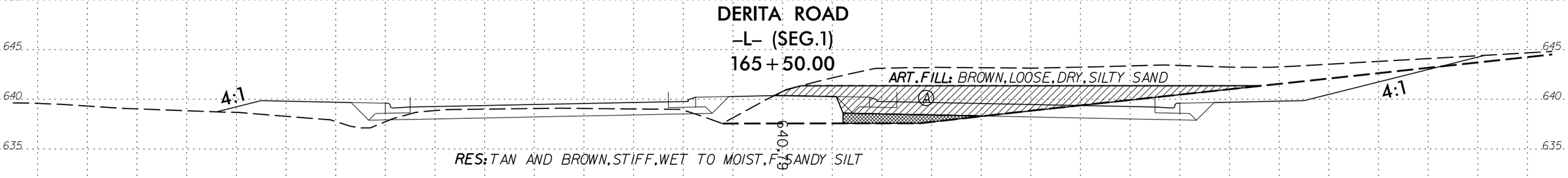
END SHALLOW UNDERCUT EXCAVATION AT 166+00

END UNSUITABLE UNCLASSIFIED EXCAVATION AT 166+00

DERITA ROAD
–L– (SEG.1)
166+00.00



DERITA ROAD
–L– (SEG.1)
165+50.00



SHALLOW UNDERCUT EXCAVATION
UNDERCUT EXCAVATION
UNSUITABLE UNCLASSIFIED EXCAVATION

–L–

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

PROJ. REFERENCE NO.	SHEET NO.
40373.1.1(U-4910)	19

DERITA ROAD
-L- (SEG.1)
166+50.00

INTERSECTION
-DR2-

RES: BROWN AND TAN,STIFF,MOIST,F.SANDY CLAY, W/ ROCK FRAGS.

RES: BROWN BLACK AND TAN,DENSE TO MED.DENSE,DRY TO MOIST, SILTY SAND, W/ TRACE MICA

RES: TAN,STIFF,MOIST,F.SANDY CLAY

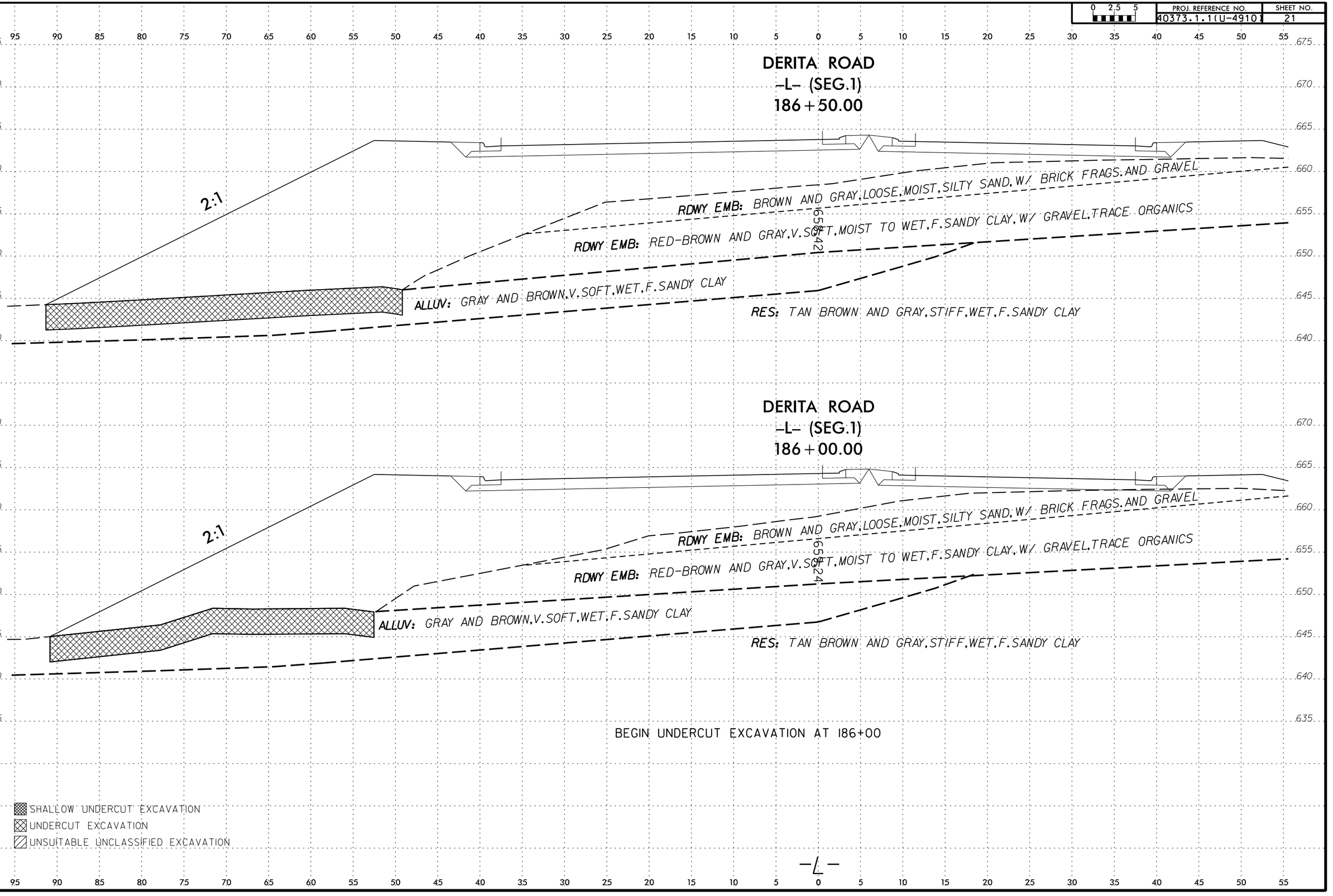
▩ SHALLOW UNDERCUT EXCAVATION
☒ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

DERITA ROAD
-L- (SEG.1)
185+50.00

RDWY EMB: RED-BROWN AND GRAY, V.SOFT, MOIST TO WET, F.SANDY CLAY, W/ GRAVEL, TRACE ORGANICS

RES: TAN BROWN AND GRAY, MED.DENSE TO DENSE, DRY TO MOIST, SILTY SAND, SAPROLITIC, W/ TRACE MICA, ROCK FRAGS.

▩ SHALLOW UNDERCUT EXCAVATION
⊠ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION



8/23/99

DERITA ROAD
-L- (SEG.1)
186 + 50.00

DERITA ROAD
-L- (SEG.1)
186 + 00.00

BEGIN UNDERCUT EXCAVATION AT 186+00

- ▩ SHALLOW UNDERCUT EXCAVATION
- ⊠ UNDERCUT EXCAVATION
- ▨ UNSUITABLE UNCLASSIFIED EXCAVATION

8/23/99

DERITA ROAD
-L- (SEG.1)
187+50.00

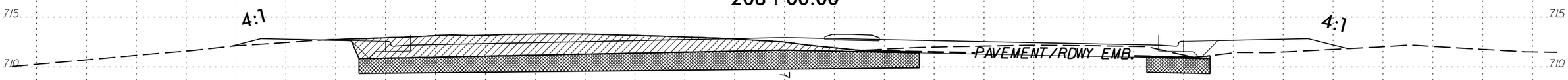
Ⓐ **RDWY EMB:** *BROWN AND GRAY,LOOSE,MOIST,SILTY SAND,W/ BRICK FRAGS.AND GRAVEL*

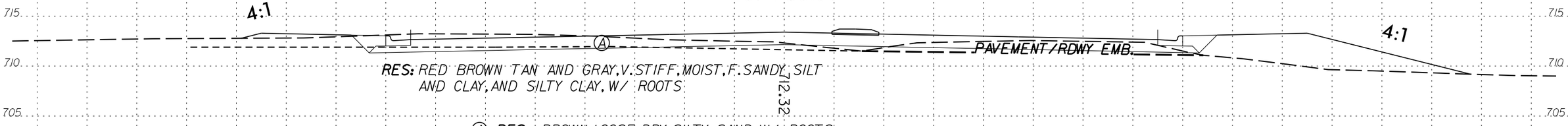
END UNDERCUT EXCAVATION AT 187+00

DERITA ROAD
-L- (SEG.1)
187+00.00

Ⓐ **RDWY EMB:** *BROWN AND GRAY,LOOSE,MOIST,SILTY SAND,W/ BRICK FRAGS.AND GRAVEL*

☒ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION ▩ SHALLOW UNDERCUT EXCAVATION





DERITA ROAD
–L– (SEG.1)
208+00.00

RES: *TAN BROWN AND GRAY,V.STIFF,MOIST,F.SANDY SILT AND SILTY CLAY*

RES: *BROWN AND TAN,MED.DENSE,DRY,SILTY F.SAND,SAPROLITIC*

BEGIN SHALLOW UNDERCUT EXCAVATION AT 208+00

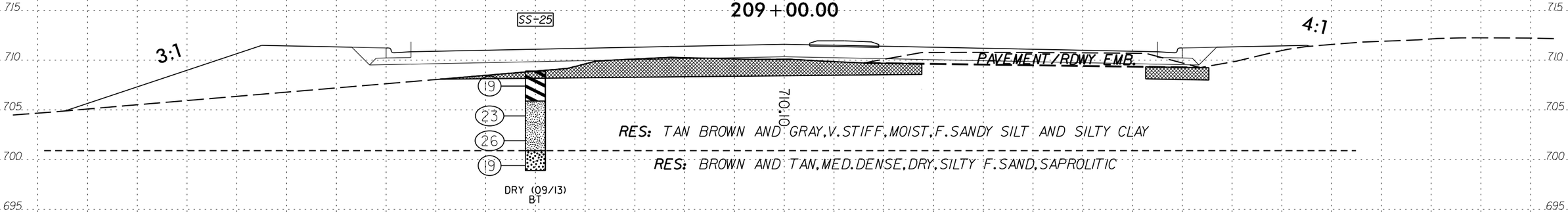
BEGIN UNSUITABLE UNCLASSIFIED EXCAVATION AT 208+00

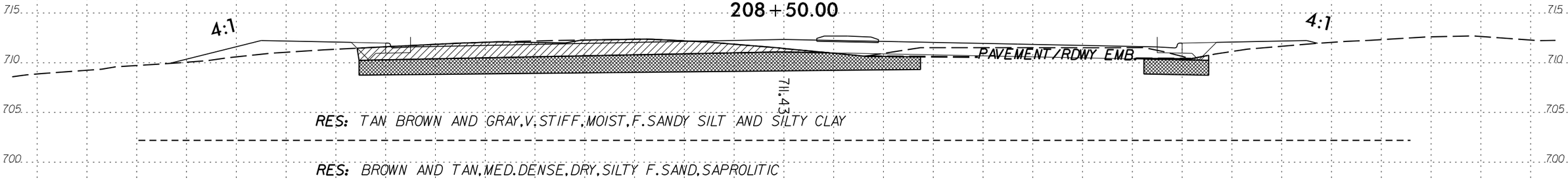
DERITA ROAD
–L– (SEG.1)
207+50.00

RES: *RED BROWN TAN AND GRAY,V.STIFF,MOIST,F.SANDY SILT AND CLAY,AND SILTY CLAY,W/ ROOTS*

Ⓐ *RES:* *BROWN,LOOSE,DRY,SILTY SAND,W/ ROOTS*

▩ SHALLOW UNDERCUT EXCAVATION
⊠ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION





PROJ. REFERENCE NO.	SHEET NO.
40373.1.1(U-4910)	24

DERITA ROAD
-L- (SEG.1)
209+00.00

RES: *TAN BROWN AND GRAY, V. STIFF, MOIST, F. SANDY SILT AND SILTY CLAY*

RES: *BROWN AND TAN, MED. DENSE, DRY, SILTY F. SAND, SAPROLITIC*

END UNSUITABLE UNCLASSIFIED EXCAVATION AT 208+75

DERITA ROAD
-L- (SEG.1)
208+50.00

RES: *TAN BROWN AND GRAY, V. STIFF, MOIST, F. SANDY SILT AND SILTY CLAY*

RES: *BROWN AND TAN, MED. DENSE, DRY, SILTY F. SAND, SAPROLITIC*

▩ SHALLOW UNDERCUT EXCAVATION
⊠ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

-L-

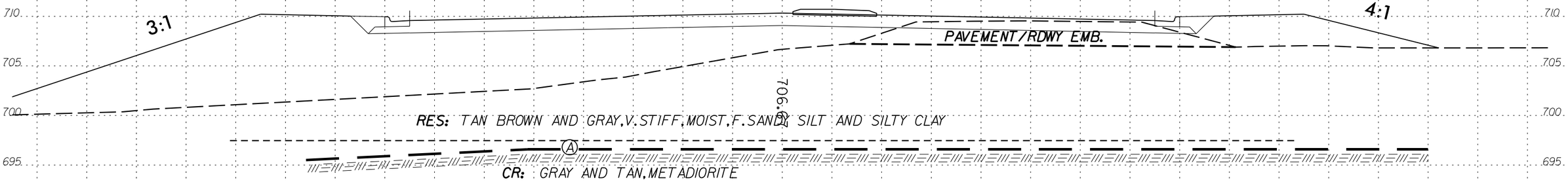
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	25

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

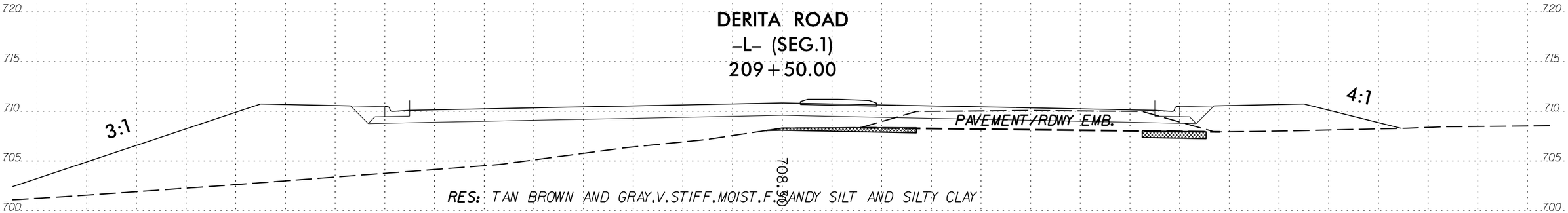
725 720 715 710 705 700 695 690 685

DERITA ROAD
–L– (SEG.1)
210+00.00



END SHALLOW UNDERCUT EXCAVATION AT 209+75

DERITA ROAD
–L– (SEG.1)
209+50.00



720 715 710 705 700 695 690 685 680

SHALLOW UNDERCUT EXCAVATION
UNDERCUT EXCAVATION
UNSUITABLE UNCLASSIFIED EXCAVATION

–L–

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

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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	26

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

730 725 720 715 710 705 700

DERITA ROAD
–L– (SEG.1)
214+00.00

4:1

PAVEMENT/RDWY EMB.

4:1

712

RES: RED TAN BROWN BLACK AND GRAY, MED. STIFF TO STIFF, MOIST, SILTY CLAY AND F. SANDY SILT, /W TRACE ROOTS

RES: BROWN GRAY AND TAN, MED. DENSE TO V. DENSE, DRY TO MOIST, SILTY F. SAND W/ TRACE MICA, ROCK FRAGS.

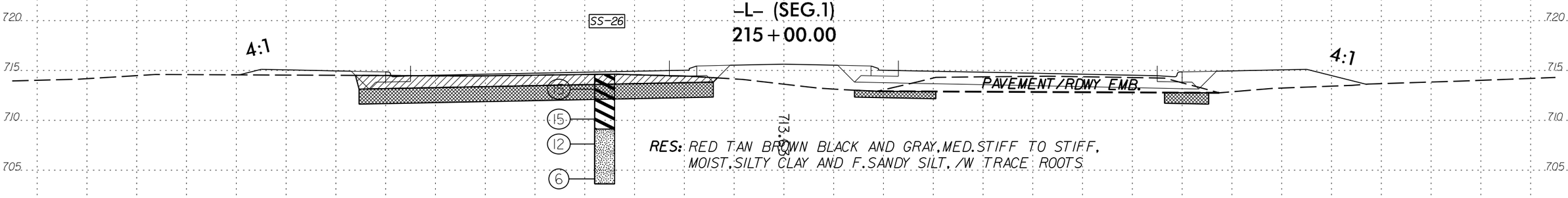
BEGIN SHALLOW UNDERCUT EXCAVATION AT 214+00

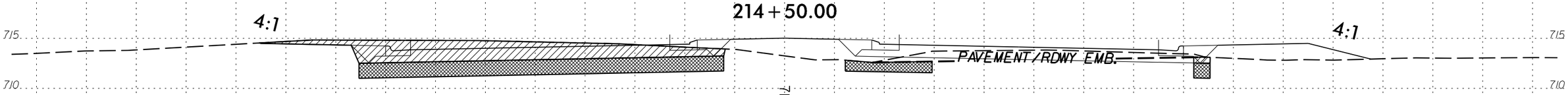
BEGIN UNSUITABLE UNCLASSIFIED EXCAVATION AT 214+00

SHALLOW UNDERCUT EXCAVATION
UNDERCUT EXCAVATION
UNSUITABLE UNCLASSIFIED EXCAVATION

–L–

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





8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	27

DERITA ROAD
-L- (SEG.1)
215+00.00

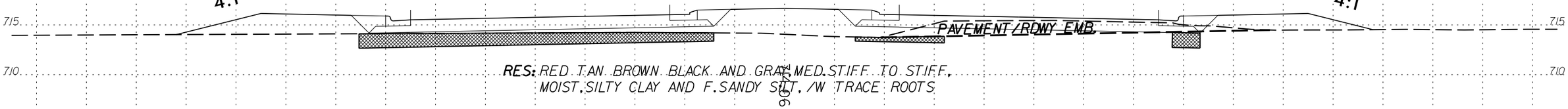
RES: RED TAN BROWN BLACK AND GRAY, MED.STIFF TO STIFF, MOIST, SILTY CLAY AND F.SANDY SILT, /W TRACE ROOTS

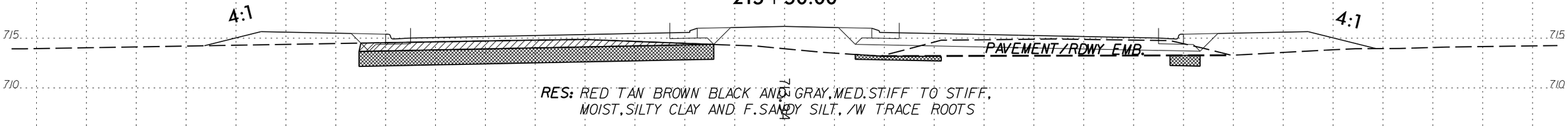
DERITA ROAD
-L- (SEG.1)
214+50.00

RES: RED TAN BROWN BLACK AND GRAY, MED.STIFF TO STIFF, MOIST, SILTY CLAY AND F.SANDY SILT, /W TRACE ROOTS

▩ SHALLOW UNDERCUT EXCAVATION
☒ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

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





END SHALLOW UNDERCUT EXCAVATION AT 216+00

DERITA ROAD
-L- (SEG.1)
216+00.00

RES: RED TAN BROWN BLACK AND GRAY,MED.STIFF TO STIFF,
MOIST,SILTY CLAY AND F.SANDY SILT,/W TRACE ROOTS

END UNSUITABLE UNCLASSIFIED EXCAVATION AT 215+75

DERITA ROAD
-L- (SEG.1)
215+50.00

RES: RED TAN BROWN BLACK AND GRAY,MED.STIFF TO STIFF,
MOIST,SILTY CLAY AND F.SANDY SILT,/W TRACE ROOTS

▩ SHALLOW UNDERCUT EXCAVATION
⊠ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	40373.1.1(U-4910)	29

DERITA ROAD
–L– (SEG.1)
216+50.00

RES: BROWN GRAY WHITE AND TAN,STIFF TO MED.STIFF, MOIST TO WET,F.TO MED.SANDY CLAY AND SILT,SAPROLITIC

▩ SHALLOW UNDERCUT EXCAVATION
☒ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

8/23/99

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
40373.1.1(U-4910)	30

DERITA ROAD –L– (SEG.1) 228+00.00

INTERSECTION –Y10–

Ⓐ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND BROWN MED.DENSE, DRY, SILTY SAND, W/ GRAVEL

Ⓑ **RES:** RED-BROWN AND TAN, V.STIFF TO STIFF, DRY TO MOIST, F.SANDY SILT AND SILTY CLAY

727.16

BEGIN SHALLOW UNDERCUT EXCAVATION AT 228+00

DERITA ROAD –L– (SEG.1) 227+50.00

4.135:1

726.70

RES: TAN BLACK BROWN AND GRAY, MED.DENSE, DRY, SILTY SAND, W/ TRACE MICA

Ⓐ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED BROWN AND TAN, STIFF, MOIST, F.SANDY CLAY, W/ GRAVEL

Ⓑ **RES:** RED-BROWN AND TAN, V.STIFF TO STIFF, DRY TO MOIST, F.SANDY SILT AND SILTY CLAY

DERITA ROAD –L– (SEG.1) 227+00.00

SS-30

4.143:1

11
13
16
17

DRY: (09/13) BT

726.21

RES: TAN BLACK BROWN AND GRAY, MED.DENSE, DRY, SILTY SAND, W/ TRACE MICA

Ⓐ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED BROWN AND TAN, STIFF, MOIST, F.SANDY CLAY, W/ GRAVEL

Ⓑ **RES:** TAN AND GRAY, STIFF, MOIST, F.SANDY SILT, W/ TRACE ROOTS

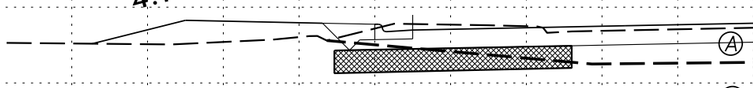
SHALLOW UNDERCUT EXCAVATION

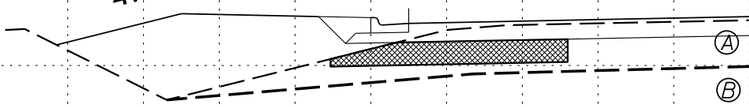
UNDERCUT EXCAVATION

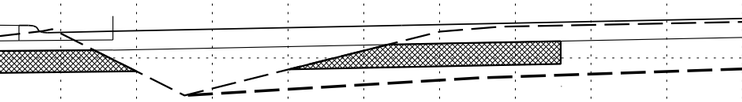
UNSUITABLE UNCLASSIFIED EXCAVATION

—L—

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







8/23/99

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40373.1.1(U-4910)	31

DERITA ROAD
-L- (SEG.1)
229+50.00

Ⓐ ***PAVEMENT/RDWY EMB:*** *BITUMINOUS CONCRETE AND BROWN MED.DENSE, DRY,SILTY SAND, W/ GRAVEL*

Ⓑ ***RES:*** *RED-BROWN AND TAN,V.STIFF TO STIFF,DRY TO MOIST, F.SANDY SILT AND SILTY CLAY*

DERITA ROAD
-L- (SEG.1)
229+00.00

Ⓐ ***PAVEMENT/RDWY EMB:*** *BITUMINOUS CONCRETE AND BROWN MED.DENSE, DRY,SILTY SAND, W/ GRAVEL*

Ⓑ ***RES:*** *RED-BROWN AND TAN,V.STIFF TO STIFF,DRY TO MOIST, F.SANDY SILT AND SILTY CLAY*

DERITA ROAD
-L- (SEG.1)
228+50.00

Ⓐ ***PAVEMENT/RDWY EMB:*** *BITUMINOUS CONCRETE AND BROWN MED.DENSE, DRY,SILTY SAND, W/ GRAVEL*

Ⓑ ***RES:*** *RED-BROWN AND TAN,V.STIFF TO STIFF,DRY TO MOIST, F.SANDY SILT AND SILTY CLAY*

▩ SHALLOW UNDERCUT EXCAVATION
▦ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

-L-

$$$$SYSTIME$$$$
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DERITA ROAD
-L- (SEG.1)
231+00.00

Ⓐ ***PAVEMENT/RDWY EMB:*** *BITUMINOUS CONCRETE AND RED AND BROWN, MED. STIFF, MOIST, F. SANDY CLAY, W/ GRAVEL*

Ⓑ ***RES:*** *RED-BROWN AND TAN, V. STIFF TO STIFF, DRY TO MOIST, F. SANDY SILT AND SILTY CLAY*

DERITA ROAD
-L- (SEG.1)
230+50.00

Ⓐ ***PAVEMENT/RDWY EMB:*** *BITUMINOUS CONCRETE AND RED AND BROWN, MED. STIFF, MOIST, F. SANDY CLAY, W/ GRAVEL*

Ⓑ ***RES:*** *RED-BROWN AND TAN, V. STIFF TO STIFF, DRY TO MOIST, F. SANDY SILT AND SILTY CLAY*

DERITA ROAD
-L- (SEG.1)
230+00.00

Ⓐ ***PAVEMENT/RDWY EMB:*** *BITUMINOUS CONCRETE AND BROWN MED. DENSE, DRY, SILTY SAND, W/ GRAVEL*

Ⓑ ***PAVEMENT/RDWY EMB:*** *BITUMINOUS CONCRETE AND RED AND BROWN, MED. STIFF, MOIST, F. SANDY CLAY, W/ GRAVEL*

Ⓒ ***RES:*** *RED-BROWN AND TAN, V. STIFF TO STIFF, DRY TO MOIST, F. SANDY SILT AND SILTY CLAY*

▩ SHALLOW UNDERCUT EXCAVATION

▨ UNDERCUT EXCAVATION

▧ UNSUITABLE UNCLASSIFIED EXCAVATION

8/23/99

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PROJ. REFERENCE NO.	SHEET NO.
40373.1.1(U-4910)	33

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

745 740 735 730 725 720

DERITA ROAD
–L– (SEG.1)
232+50.00

4:1

732.10

PAVEMENT/RDWY EMB: BITUMINOUS CONCRETE AND RED BLACK AND TAN,LOOSE,DRY,SILTY SAND,W/ GRAVEL

RES: RED AND TAN,STIFF,MOIST,F.SANDY CLAY

RES: RED TAN AND BROWN,LOOSE,MOIST,SILTY F.SAND,W/ TRACE MICA

DERITA ROAD
–L– (SEG.1)
232+00.00

4:1

732.40

Ⓐ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED AND BROWN,MED.STIFF, MOIST,F.SANDY CLAY,W/ GRAVEL

Ⓑ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED BLACK AND TAN,LOOSE,DRY,SILTY SAND,W/ GRAVEL

Ⓒ **RES:** RED-BROWN AND TAN,V.STIFF TO STIFF,DRY TO MOIST, F.SANDY SILT AND SILTY CLAY

DERITA ROAD
–L– (SEG.1)
231+50.00

4:1

731.70

Ⓐ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED AND BROWN,MED.STIFF, MOIST,F.SANDY CLAY,W/ GRAVEL

Ⓑ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED BLACK AND TAN,LOOSE,DRY,SILTY SAND,W/ GRAVEL

Ⓒ **RES:** RED-BROWN AND TAN,V.STIFF TO STIFF,DRY TO MOIST, F.SANDY SILT AND SILTY CLAY

UNDERCUT EXCAVATION

UNSUITABLE UNCLASSIFIED EXCAVATION SHALLOW UNDERCUT EXCAVATION

–L–

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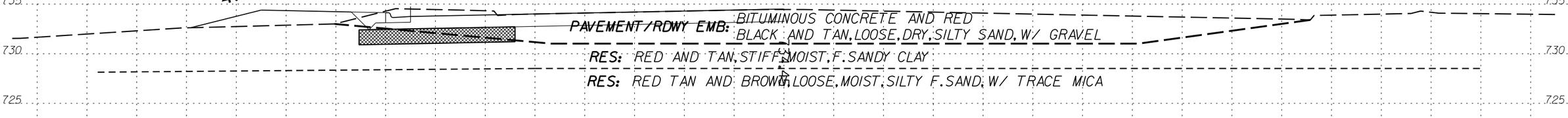
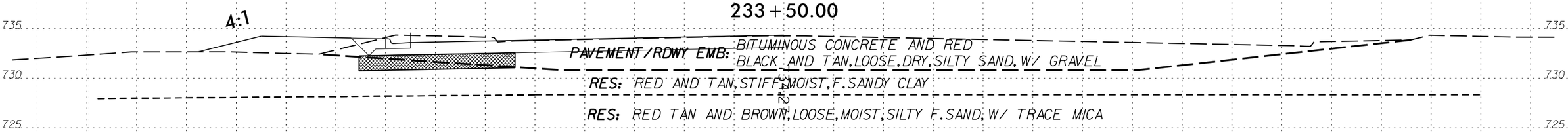
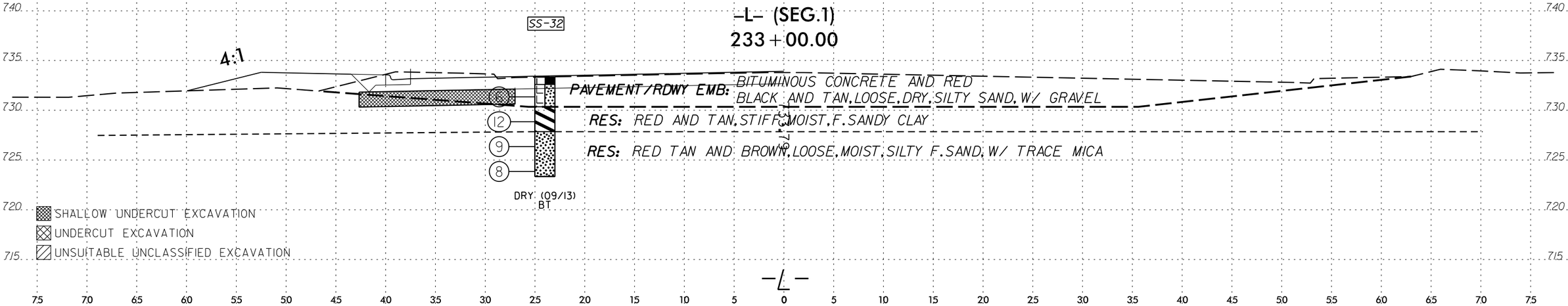






DERITA ROAD
-L- (SEG.1)
234+00.00

DERITA ROAD
-L- (SEG.1)
233+50.00

DERITA ROAD
-L- (SEG.1)
233+00.00

▩ SHALLOW UNDERCUT EXCAVATION
▩ UNDERCUT EXCAVATION
▨ UNSUITABLE UNCLASSIFIED EXCAVATION

DERITA ROAD
-L- (SEG.1)
235+50.00

RES: RED AND TAN, STIFF, MOIST, F. SANDY CLAY

RES: RED TAN AND BROWN, STIFF, MOIST, F. SANDY SILT, W/ TRACE TO LITTLE MICA

Ⓐ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED AND TAN, MED. STIFF TO STIFF, MOIST, SILTY CLAY

Ⓑ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED BLACK AND TAN, LOOSE, MOIST, SILTY SAND, W/ GRAVEL

DERITA ROAD
-L- (SEG.1)
235+00.00

PAVEMENT/RDWY EMB: BITUMINOUS CONCRETE AND RED AND TAN, MED. STIFF TO STIFF, MOIST, SILTY CLAY

RES: RED AND TAN, STIFF, MOIST, F. SANDY CLAY

RES: RED TAN AND BROWN, STIFF, MOIST, F. SANDY SILT, W/ TRACE TO LITTLE MICA

DERITA ROAD
-L- (SEG.1)
234+50.00

RES: RED AND TAN, STIFF, MOIST, F. SANDY CLAY

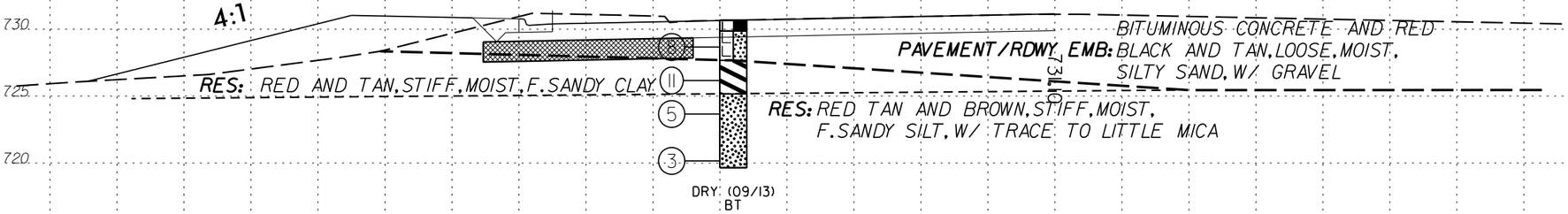
RES: RED TAN AND BROWN, STIFF, MOIST, F. SANDY SILT, W/ TRACE TO LITTLE MICA

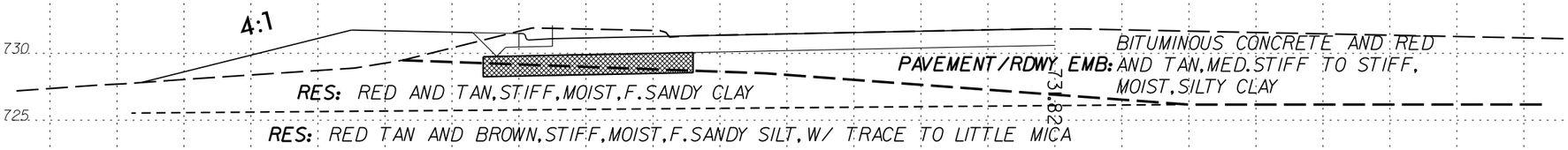
Ⓐ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED AND TAN, MED. STIFF TO STIFF, MOIST, SILTY CLAY

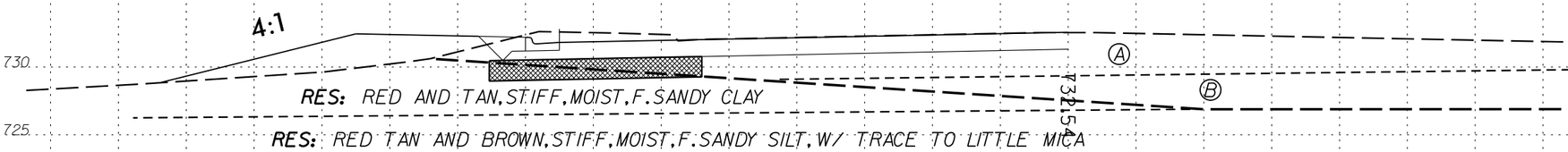
Ⓑ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED BLACK AND TAN, LOOSE, DRY, SILTY SAND, W/ GRAVEL

☒ UNDERCUT EXCAVATION

▨ UNSUITABLE UNCLASSIFIED EXCAVATION ▩ SHALLOW UNDERCUT EXCAVATION







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DERITA ROAD
-L- (SEG.1)
237+00.00

DERITA ROAD
-L- (SEG.1)
236+50.00

DERITA ROAD
-L- (SEG.1)
236+00.00

Ⓐ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED AND TAN,MED.STIFF TO STIFF, MOIST,SILTY CLAY

Ⓑ **PAVEMENT/RDWY EMB:** BITUMINOUS CONCRETE AND RED BLACK AND TAN,LOOSE,MOIST, SILTY SAND,W/ GRAVEL

▨ UNDERCUT EXCAVATION

▨ UNSUITABLE UNCLASSIFIED EXCAVATION ▨ SHALLOW UNDERCUT EXCAVATION

-L-

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

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

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	40373.1.1(U-4910)	37

8/23/99

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PROJ. REFERENCE NO.	SHEET NO.
40373.1.1(U-4910)	38