

CONTRACT: ID: U-4910

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

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L- (SEG. 1)	157+44.41 - 239+28.50	-	-	4-12
-L- (SEG. 2)	115+05.55 - 157+44.41	-	-	13-38

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

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.	
		RW & UTIL.	

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.

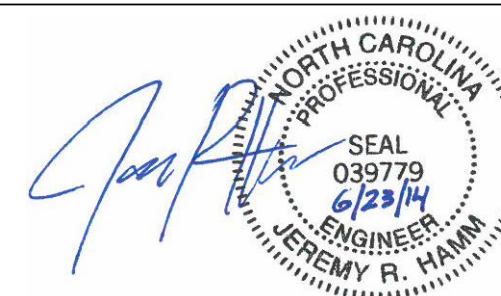
SUBMITTED BY FALCON

DATE JUNE 2014

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.



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

PROJECT REFERENCE NO. 40373JJ (U-4910)	SHEET NO. 2
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SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
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: <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>	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 .	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) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)	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 DISLOGGED 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 (IN 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.
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION	WEATHERING	
GENERAL CLASS. GRANULAR MATERIALS (≤ 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	FRESH - ROCK FRESH, CRYSTALLINE 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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i> SEVERE (SEV.) - ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i> 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. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i> 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.	
COMPRESSION SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE	COMPRESSION LIQUID LIMIT LESS THAN 31 LIQUID LIMIT EQUAL TO 31-50 LIQUID LIMIT GREATER THAN 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 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 DIP & DIP DIRECTION OF ROCK STRUCTURES TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD	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 GROOVED 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 FINGER NAIL.	
CONSISTENCY OR DENSENESS PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/F ²)	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. - MICA 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		
TEXTURE OR GRAIN SIZE U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.76 2.00 0.42 0.25 0.075 0.053			
SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION			
PLASTICITY NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY			
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.			
EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: MOBILE B- BK-51 CME-45C CME-550X PORTABLE HOIST ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG.-CARBIDE INSERTS CASING w/ ADVANCER TRICONE * STEEL TEETH TRICONE * TUNG.-CARB. CORE BIT HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B-N Q2-H HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST	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.

09/08/99

TIP PROJECT: U-4910 (SEG. 1)

108658

P.O. NO.:

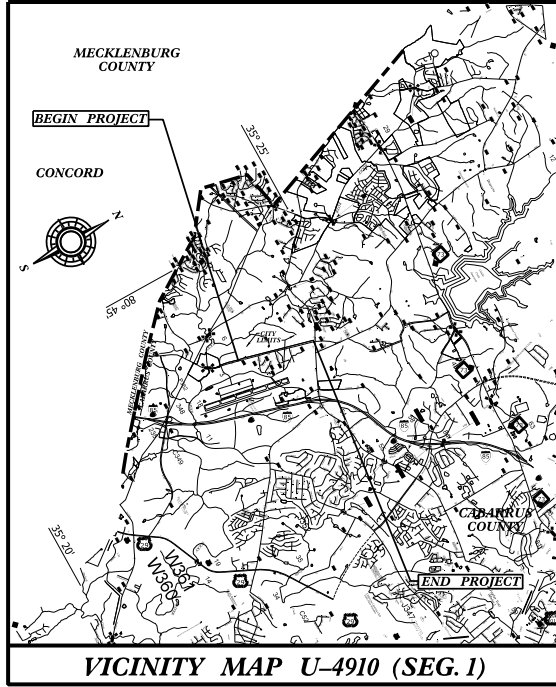
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

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

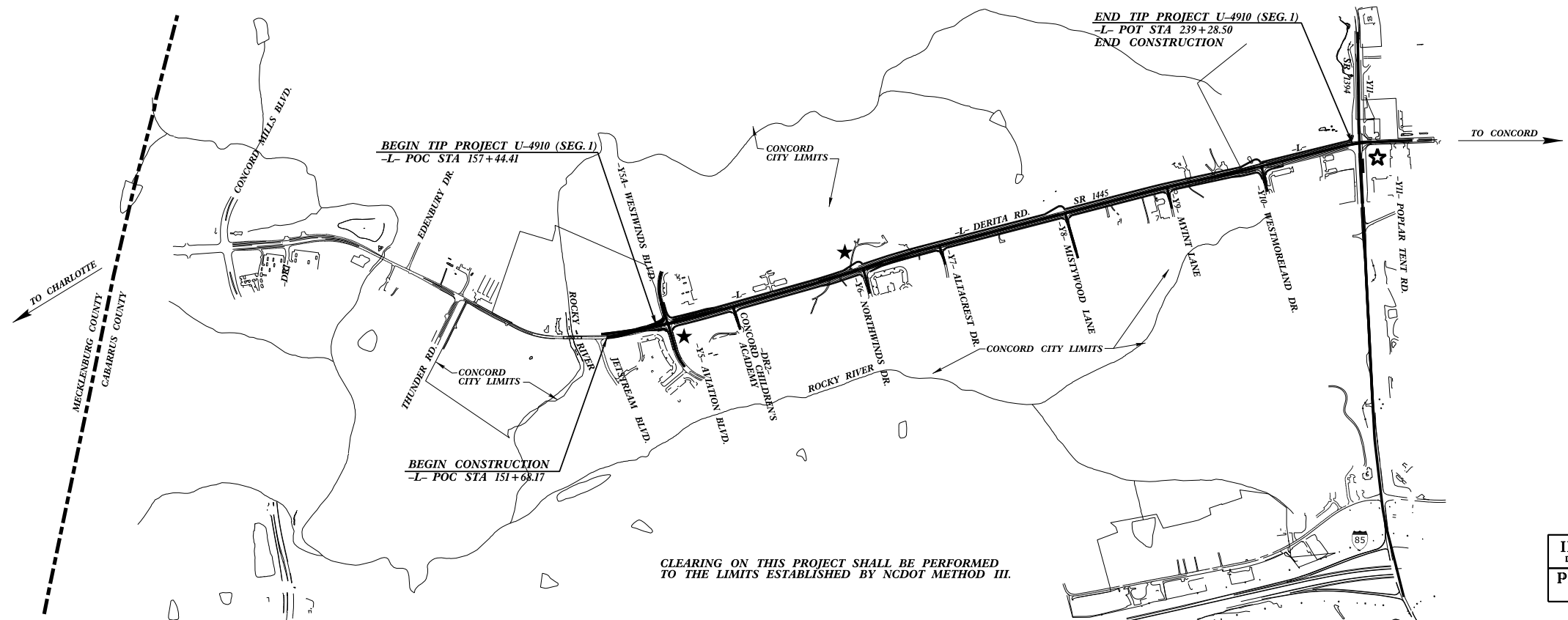
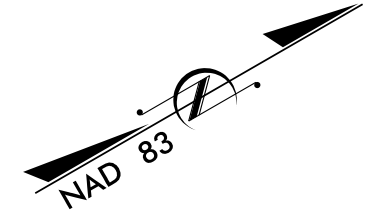
TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS & SIGNING

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



VICINITY MAP U-4910 (SEG. 1)

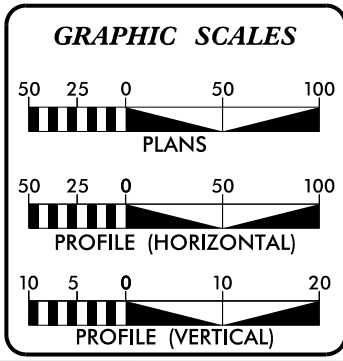
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	40373.1.1 (U-4910)	3	39
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40373.1.1	STP-1445(4)	R/W	



- ★ - EXISTING SIGNALIZED INTERSECTION
- ★ - PROPOSED SIGNALIZED 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



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
2006 STANDARD SPECIFICATIONS

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

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

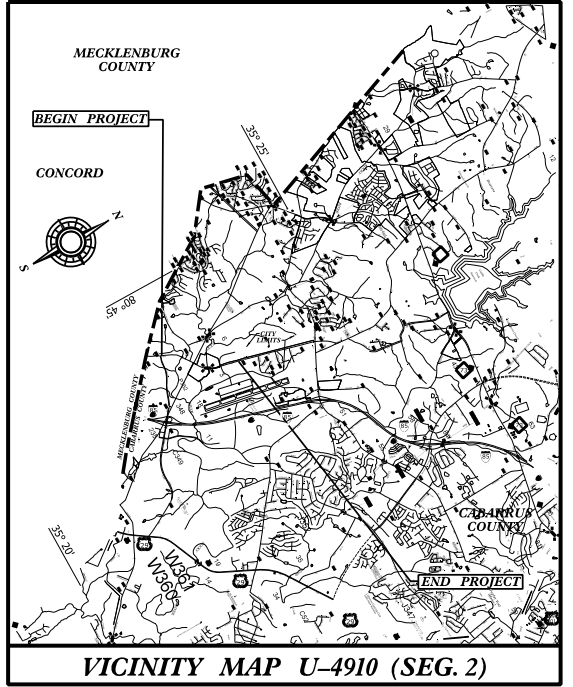
STATE HIGHWAY DESIGN ENGINEER

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DATE: \$\$DATE\$\$
TIME: \$\$TIME\$\$
DGN: \$\$DGN\$\$

09/08/99

TIP PROJECT: U-4910 (SEG. 2)
108658
P.O. NO.:

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



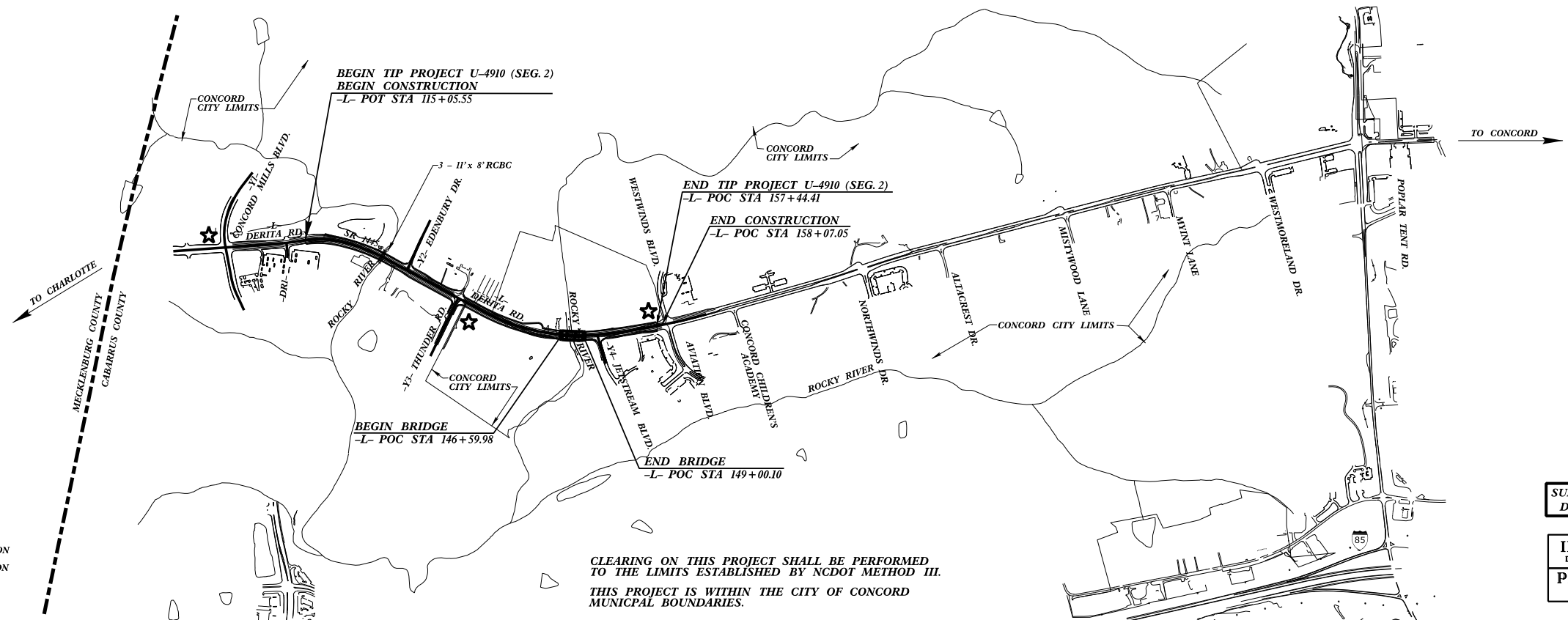
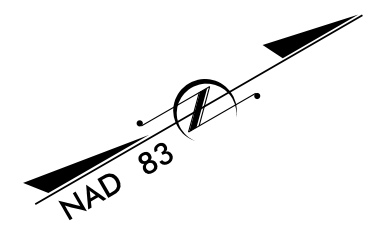
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

CABARRUS COUNTY

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

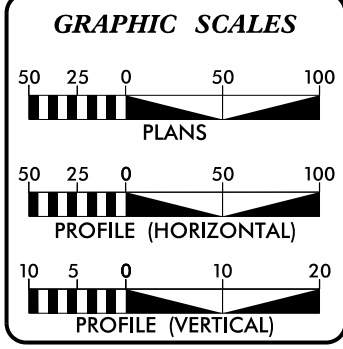
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES,
 SIGNALS, & SIGNING**

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)	RW	



SUBMITTAL: STRUCTURE RECOMMENDATIONS
 DATE:

INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION



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

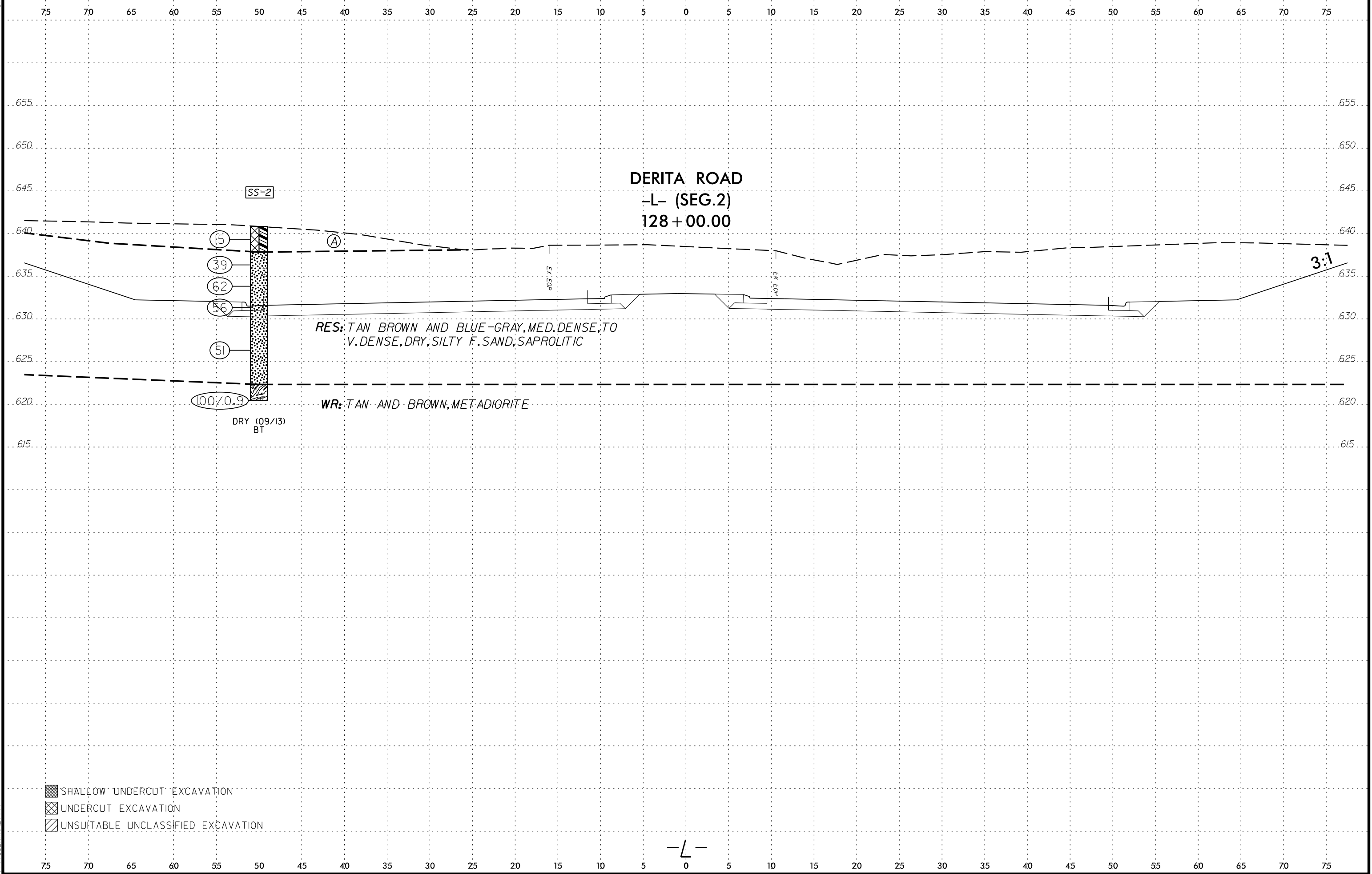
SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

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

8/23/99



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

*RES: TAN BROWN AND BLUE-GRAY, MED. DENSE, TO
 V. DENSE, DRY, SILTY F. SAND, SAPROLITIC*

WR: TAN AND BROWN, METADIORITE

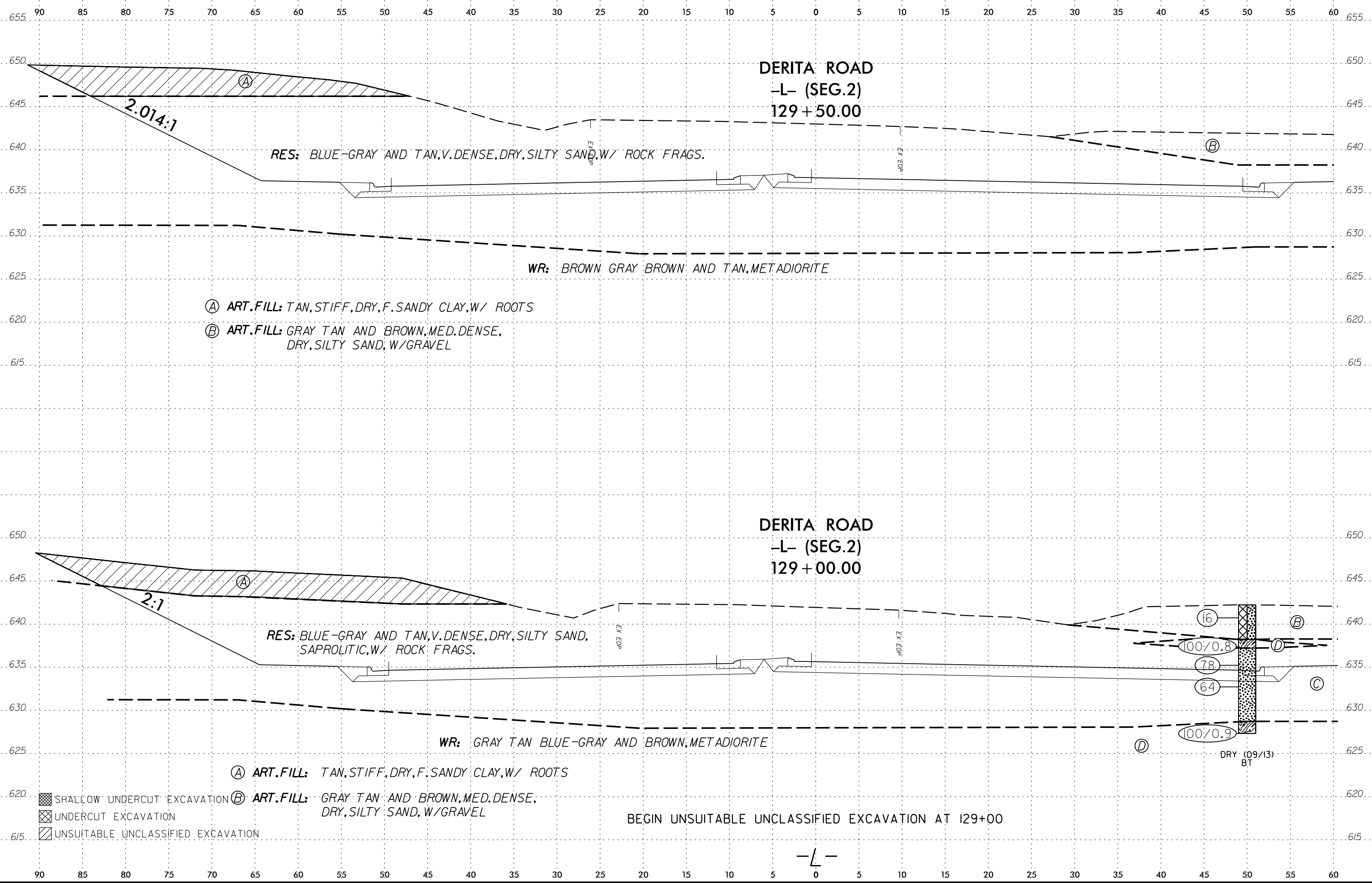
DRY (09/13)
 BT

100% 0.9

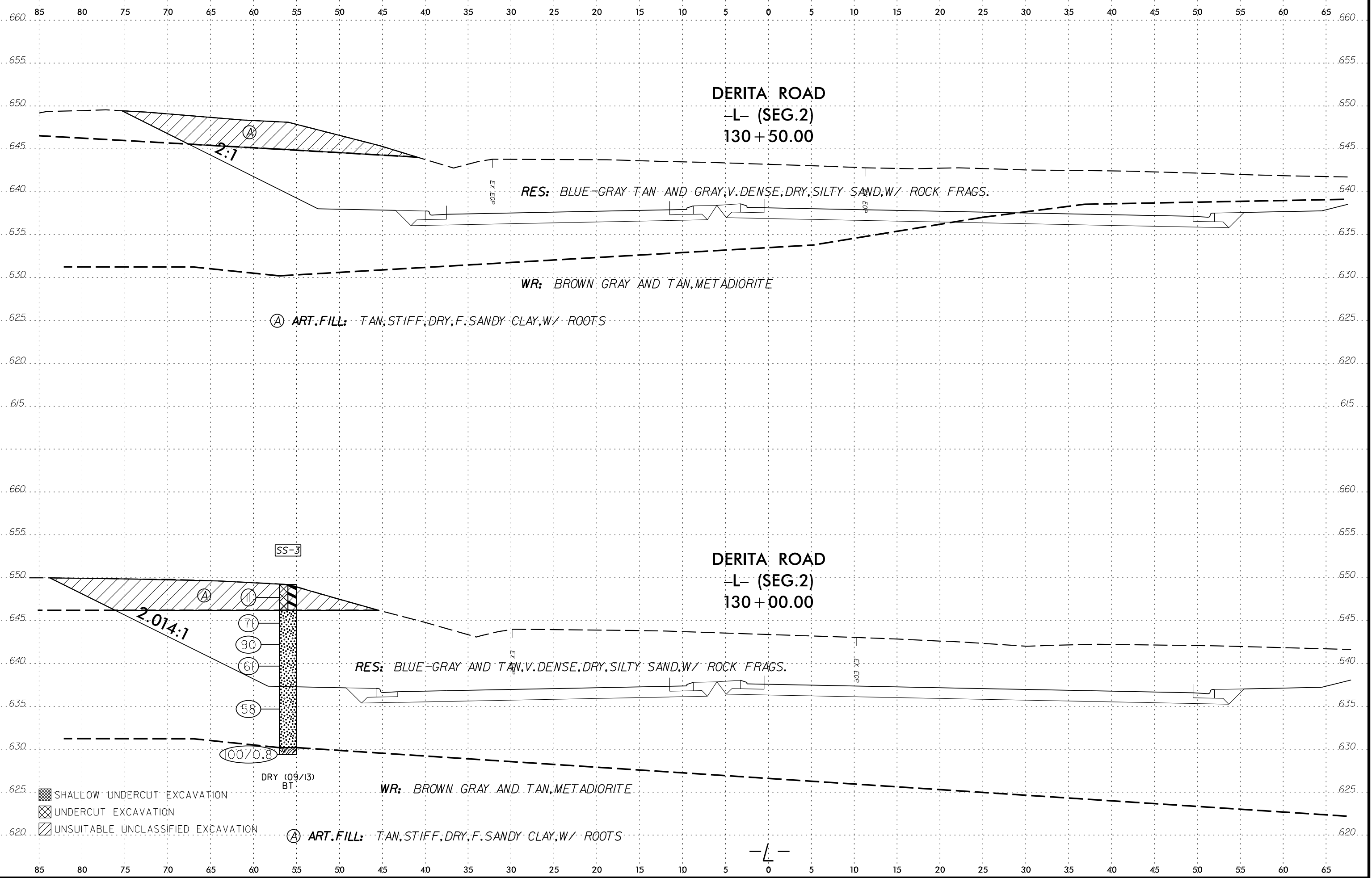
- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

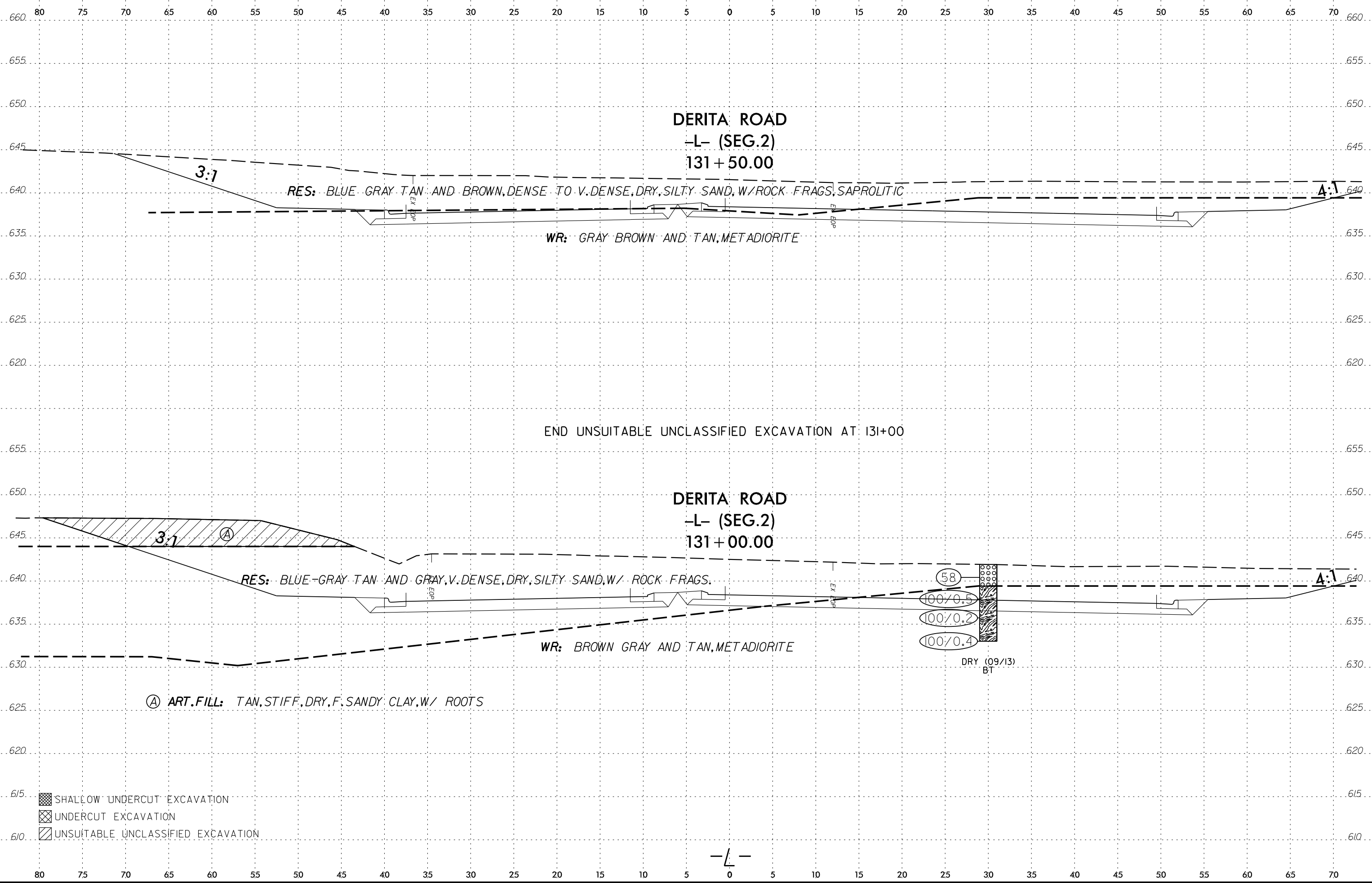
-L-

8/23/99

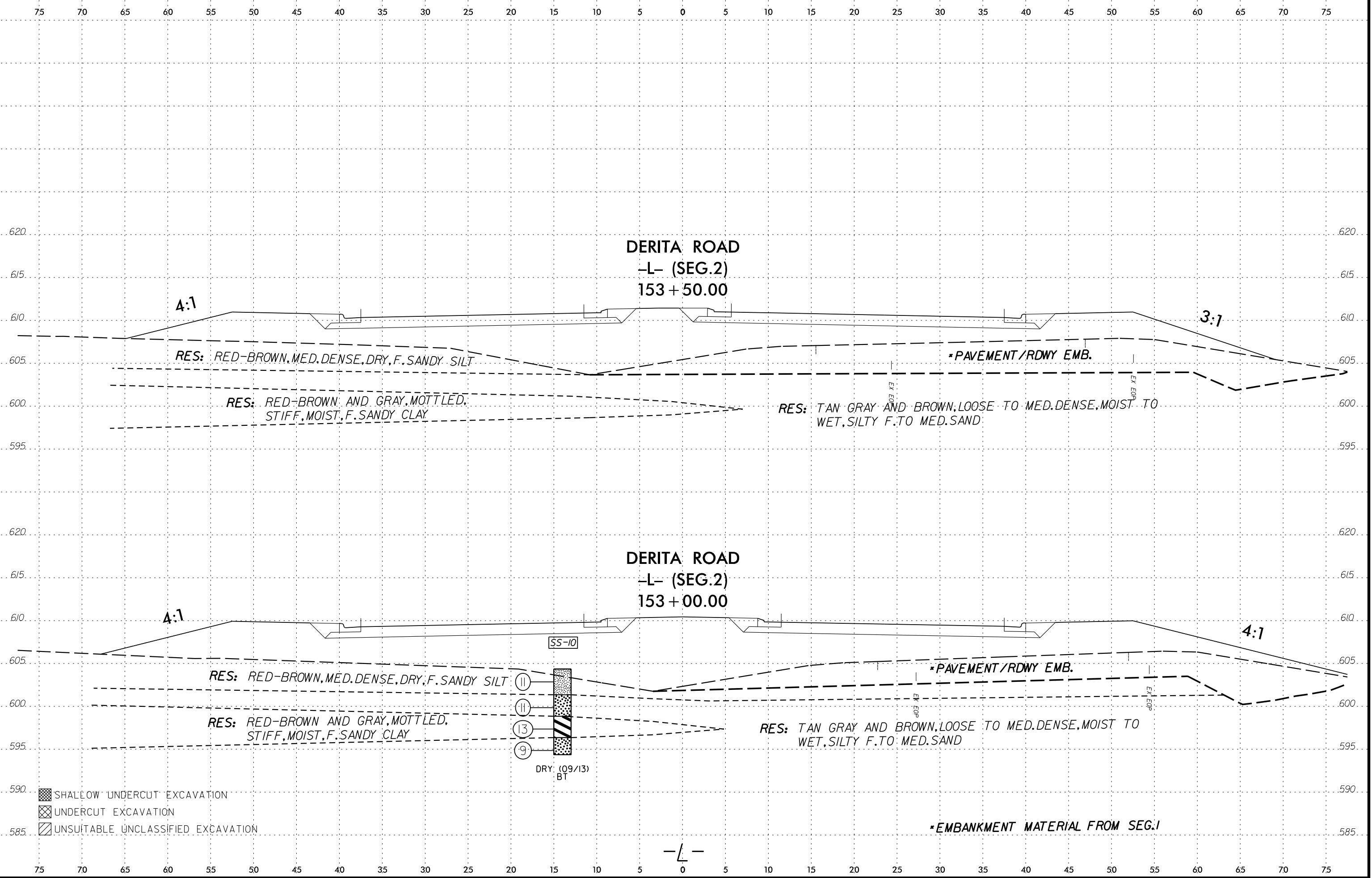


8/23/99

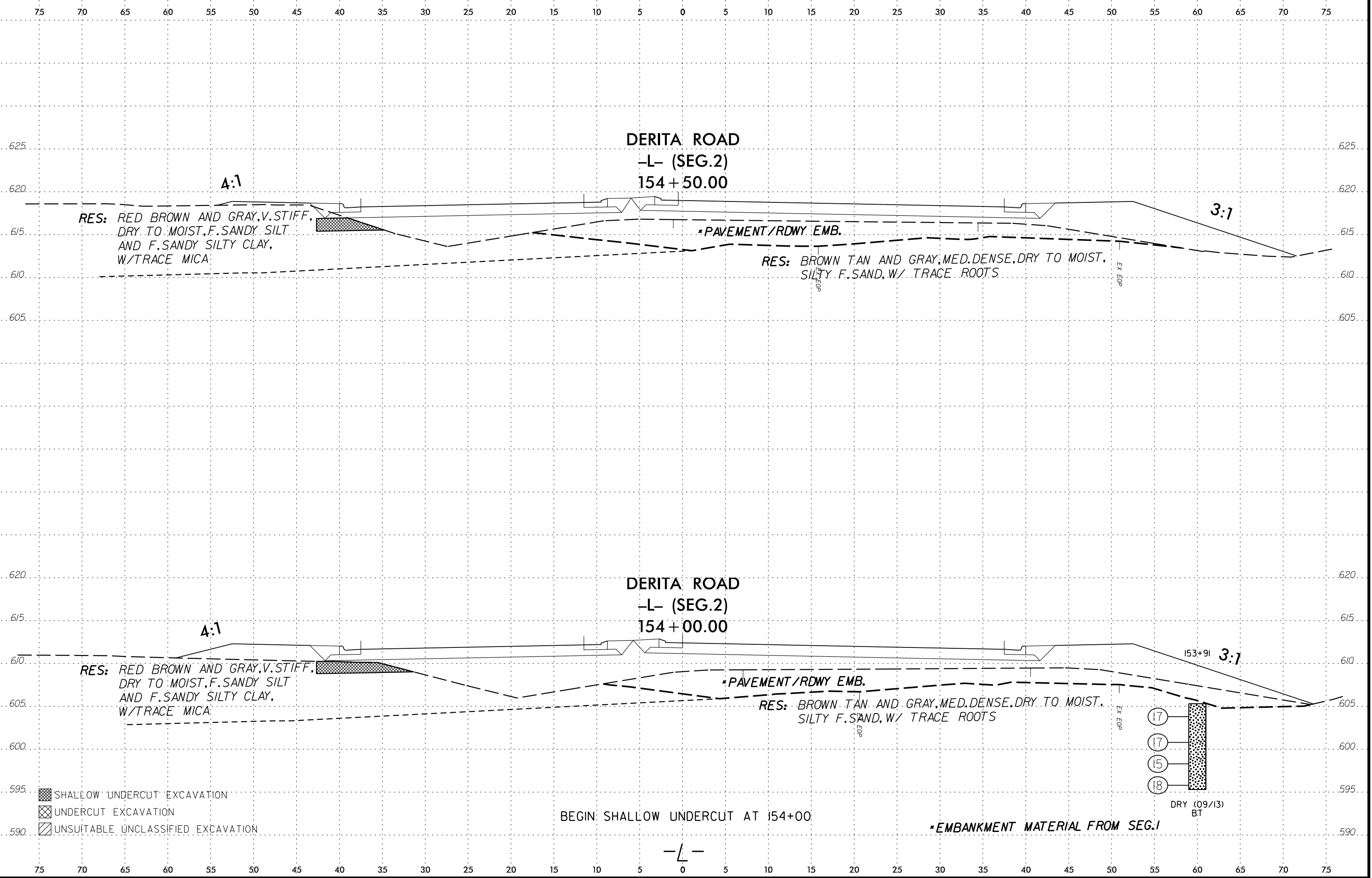




8/23/99



8/23/99



DERITA ROAD
 -L- (SEG.2)
 154+50.00

DERITA ROAD
 -L- (SEG.2)
 154+00.00

RES: RED BROWN AND GRAY, V. STIFF,
 DRY TO MOIST, F. SANDY SILT
 AND F. SANDY SILTY CLAY,
 W/TRACE MICA

RES: BROWN TAN AND GRAY, MED. DENSE, DRY TO MOIST,
 SILTY F. SAND, W/ TRACE ROOTS

RES: RED BROWN AND GRAY, V. STIFF,
 DRY TO MOIST, F. SANDY SILT
 AND F. SANDY SILTY CLAY,
 W/TRACE MICA

RES: BROWN TAN AND GRAY, MED. DENSE, DRY TO MOIST,
 SILTY F. SAND, W/ TRACE ROOTS

- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

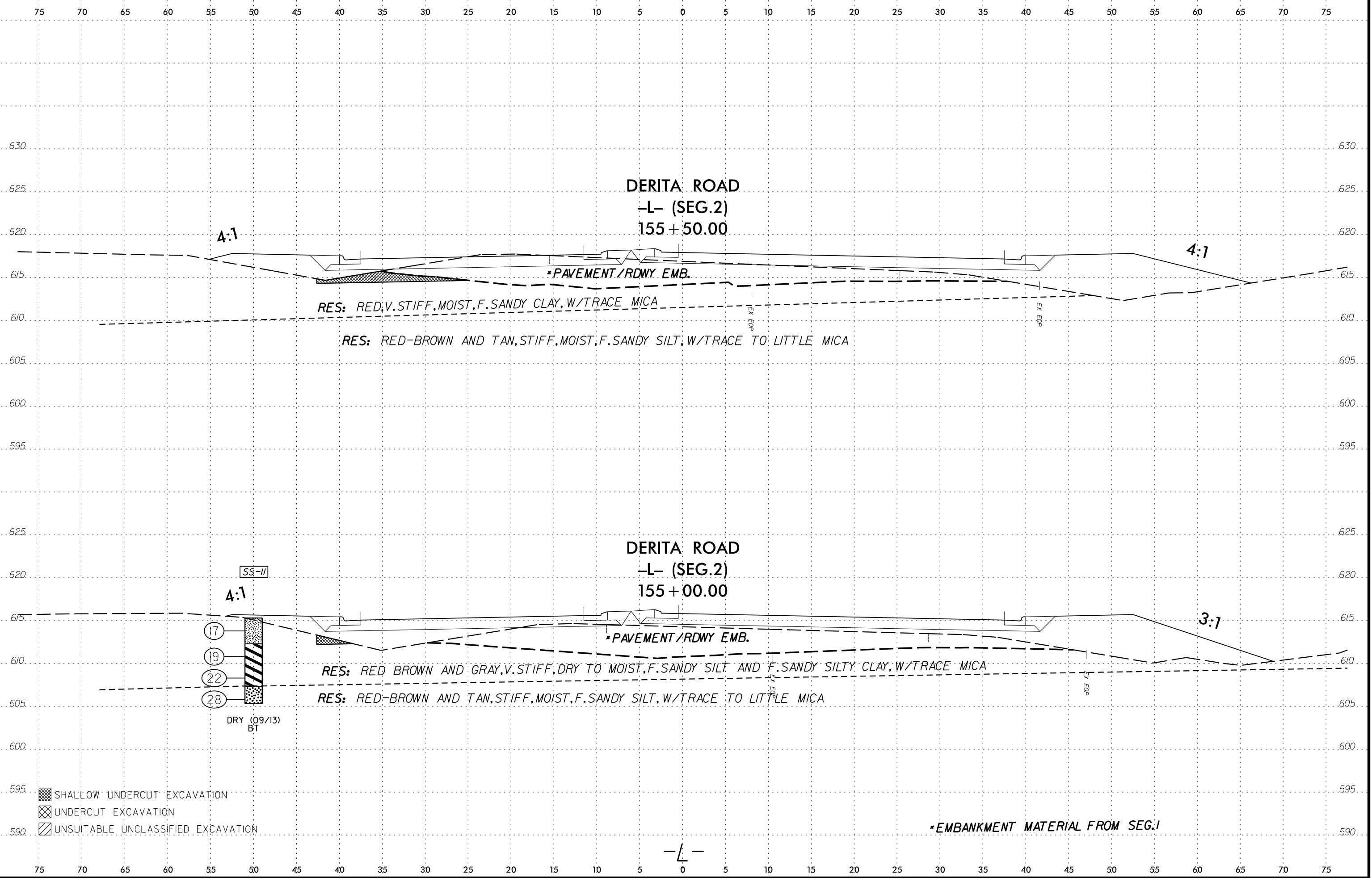
BEGIN: SHALLOW UNDERCUT AT 154+00

*EMBANKMENT MATERIAL FROM SEG.1

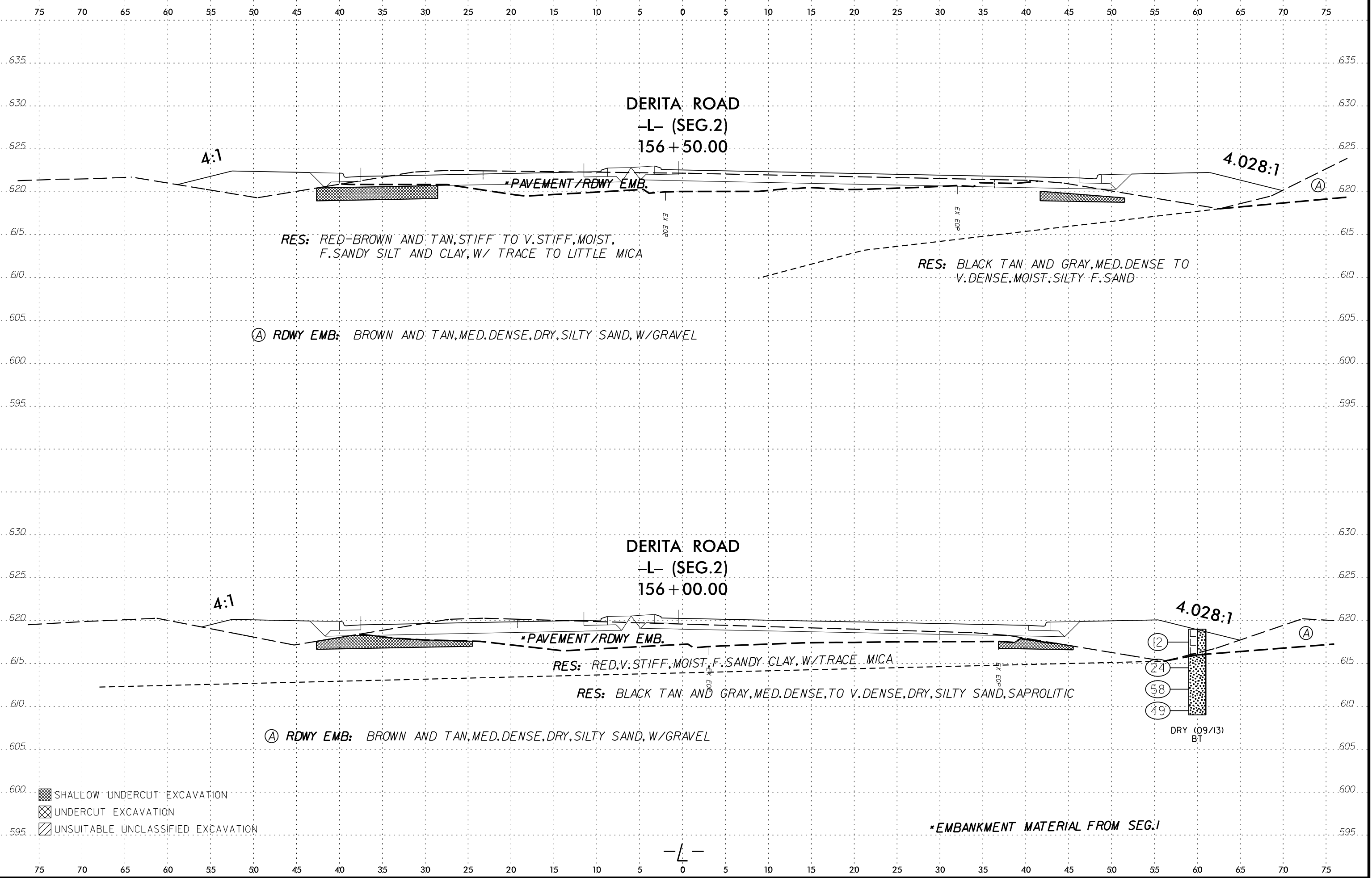
- 17
- 17
- 15
- 18

DRY (09/13)
 BT

8/23/99



8/23/99



DERITA ROAD
 -L- (SEG.2)
 156 + 50.00

DERITA ROAD
 -L- (SEG.2)
 156 + 00.00

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

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

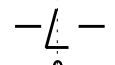
RES: BLACK TAN AND GRAY, MED. DENSE, TO V. DENSE, DRY, SILTY SAND, SAPROLITIC

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

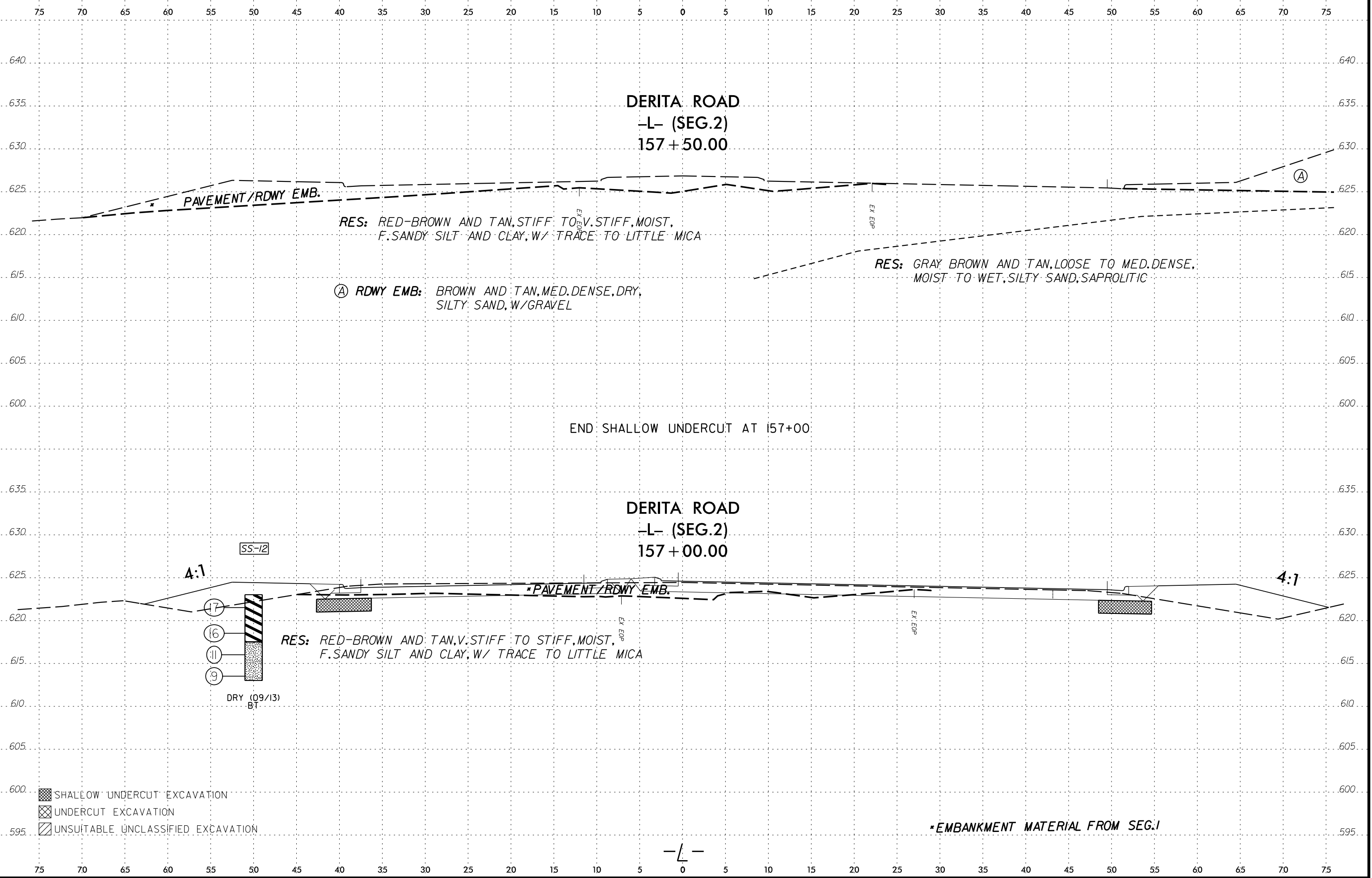
DRY (09/13)
BT

- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

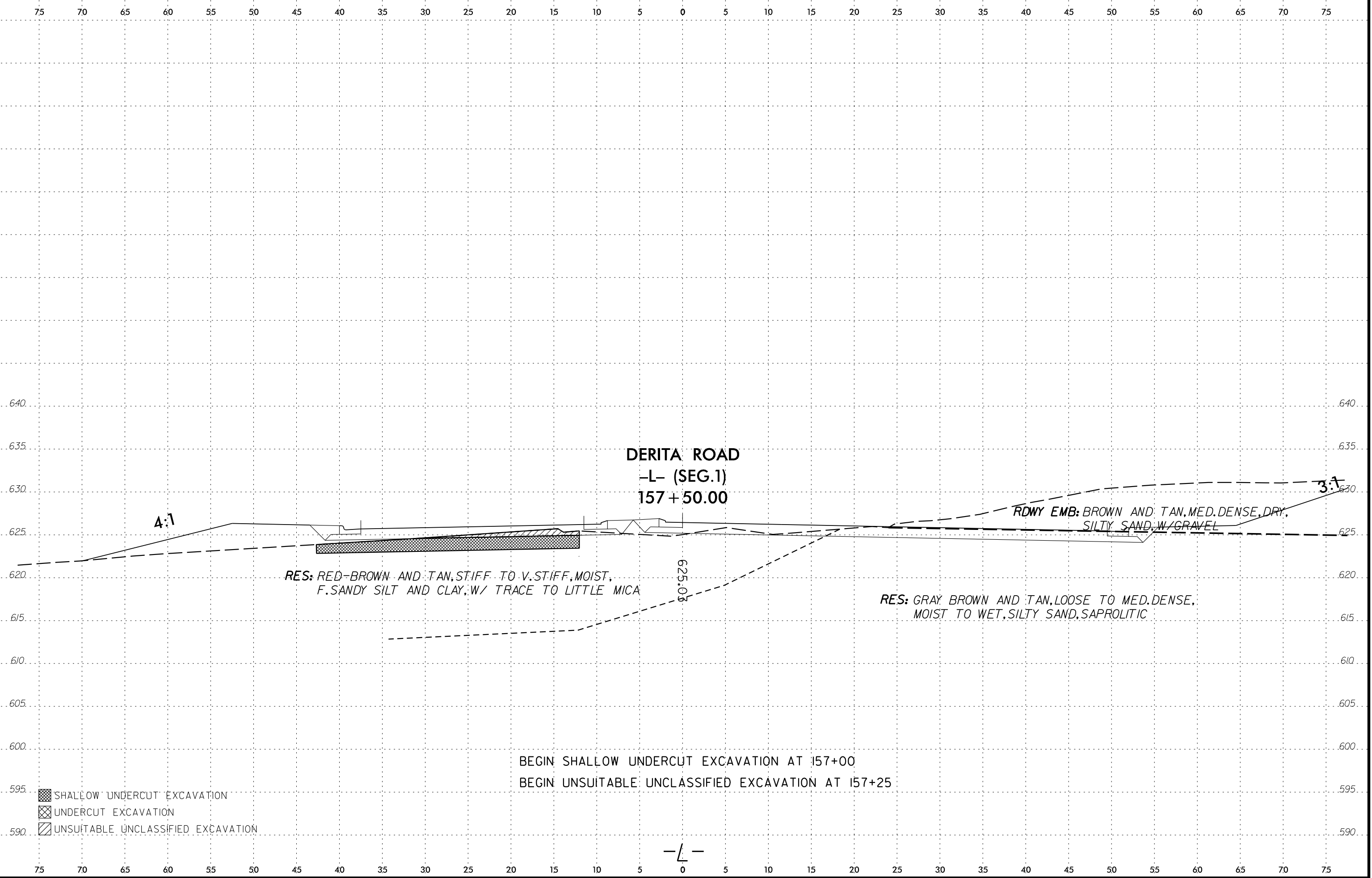
* EMBANKMENT MATERIAL FROM SEG.1



8/23/99



8/23/99



DERITA ROAD
 -L- (SEG.1)
 157+50.00

4:1

3:1

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

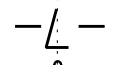
RDWY EMB: BROWN AND TAN, MED. DENSE, DRY,
 SILTY SAND, W/ GRAVEL

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

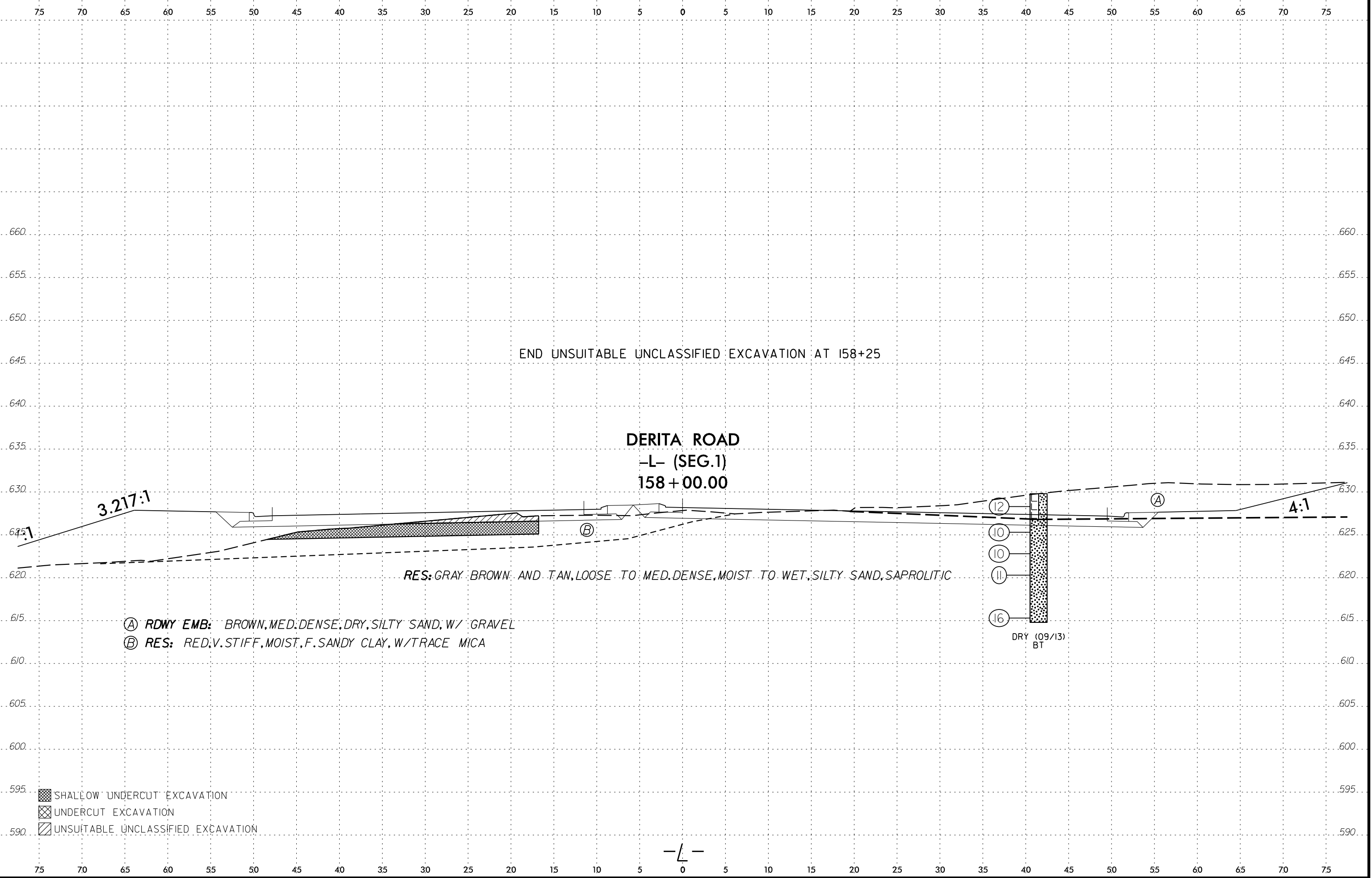
625.03

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



END UNSUITABLE UNCLASSIFIED EXCAVATION AT 158+25

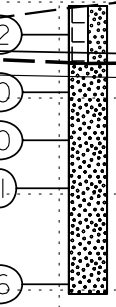
DERITA ROAD
-L- (SEG.1)
158+00.00

3.217:1

4:1

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

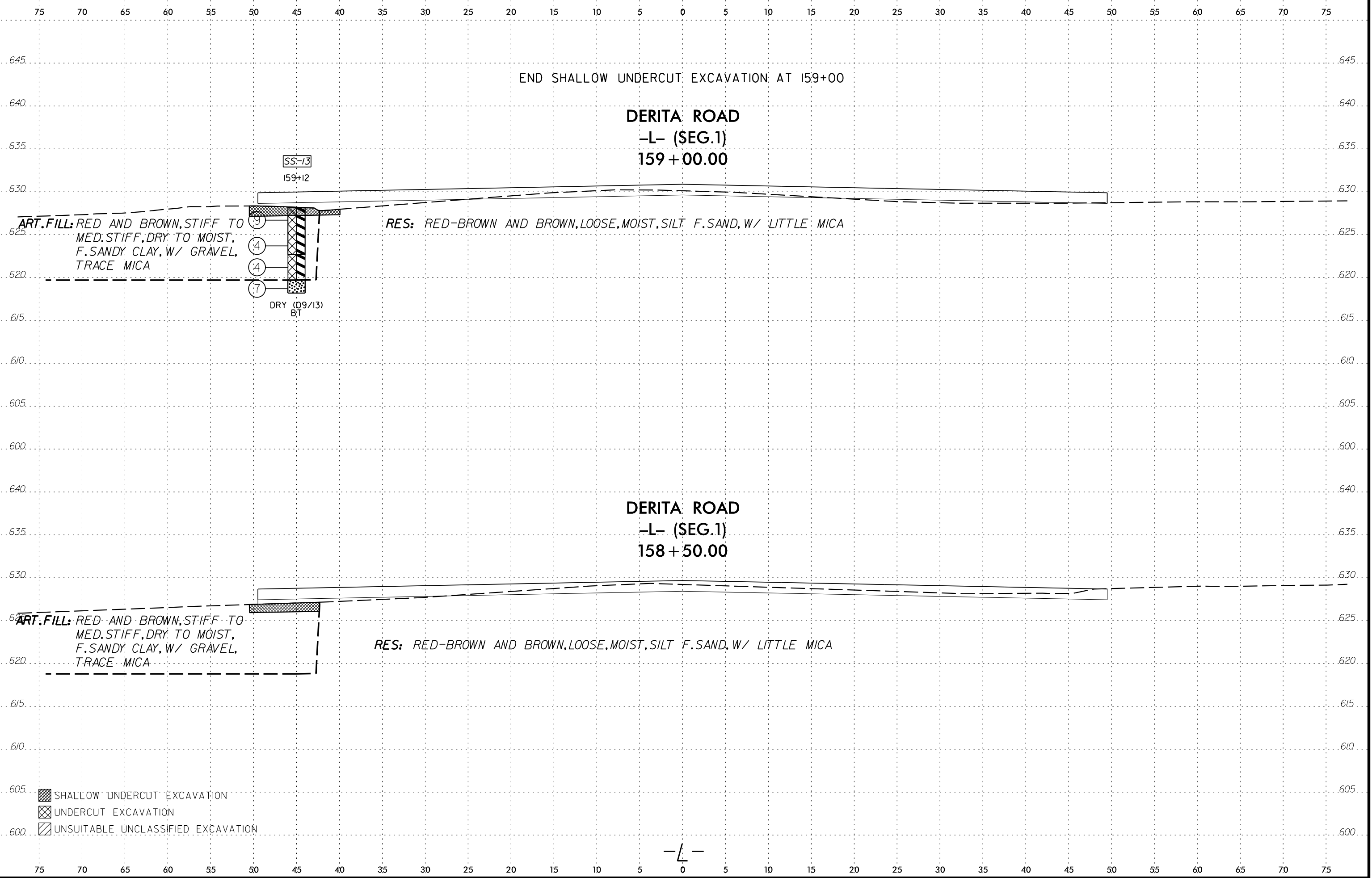
- (A) RDWY EMB: BROWN, MED. DENSE, DRY, SILTY SAND, W/ GRAVEL
- (B) RES: RED, V. STIFF, MOIST, F. SANDY CLAY, W/ TRACE MICA



DRY (09/13)
BT

- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

-L-

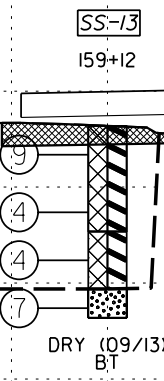


END SHALLOW UNDERCUT EXCAVATION AT 159+00

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

ART. FILL: RED AND BROWN, STIFF TO MED. STIFF, DRY TO MOIST, F. SANDY CLAY, W/ GRAVEL, TRACE MICA

RES: RED-BROWN AND BROWN, LOOSE, MOIST, SILT F. SAND, W/ LITTLE MICA

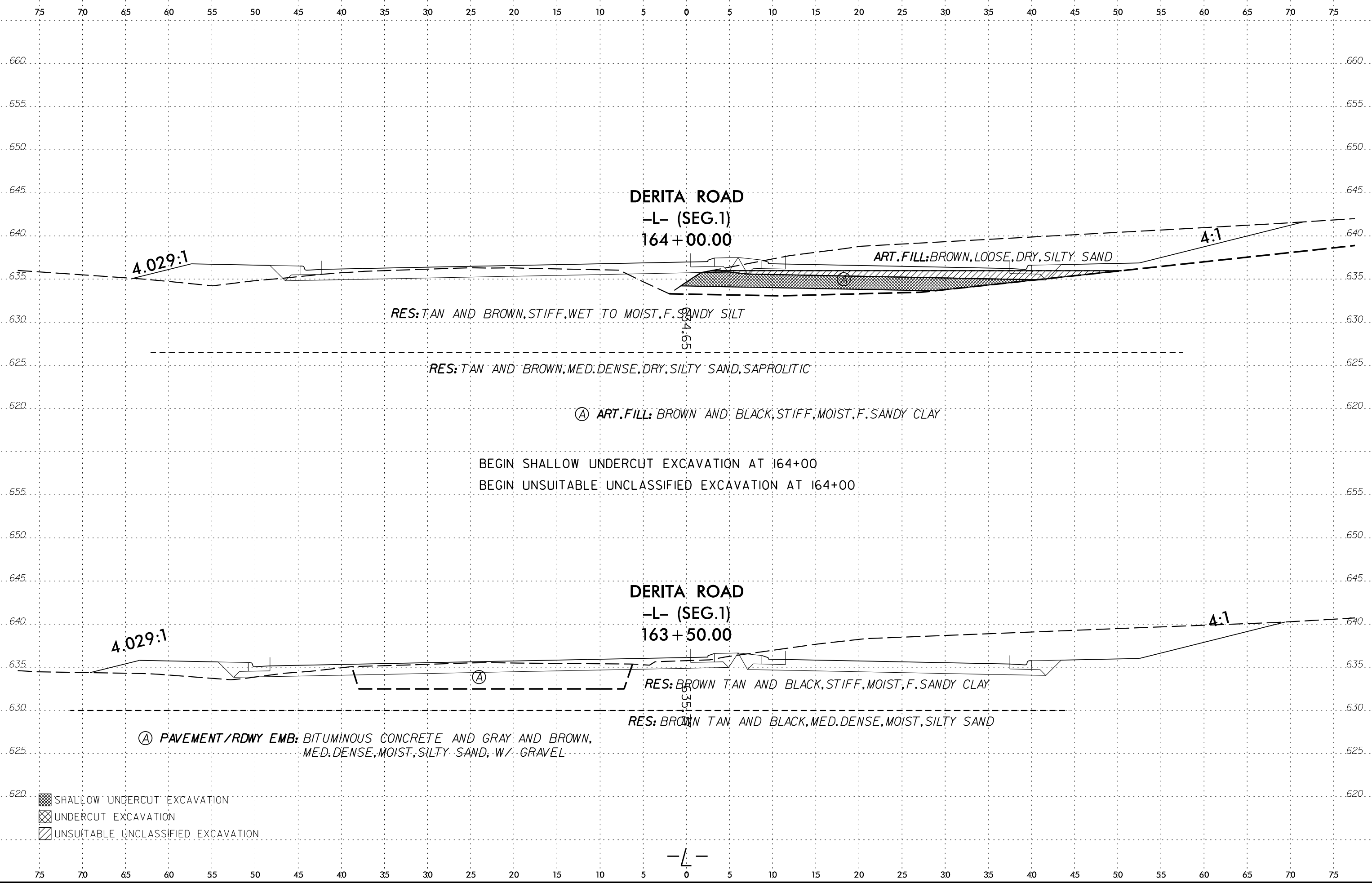


**DERITA ROAD
-L- (SEG.1)
158 + 50.00**

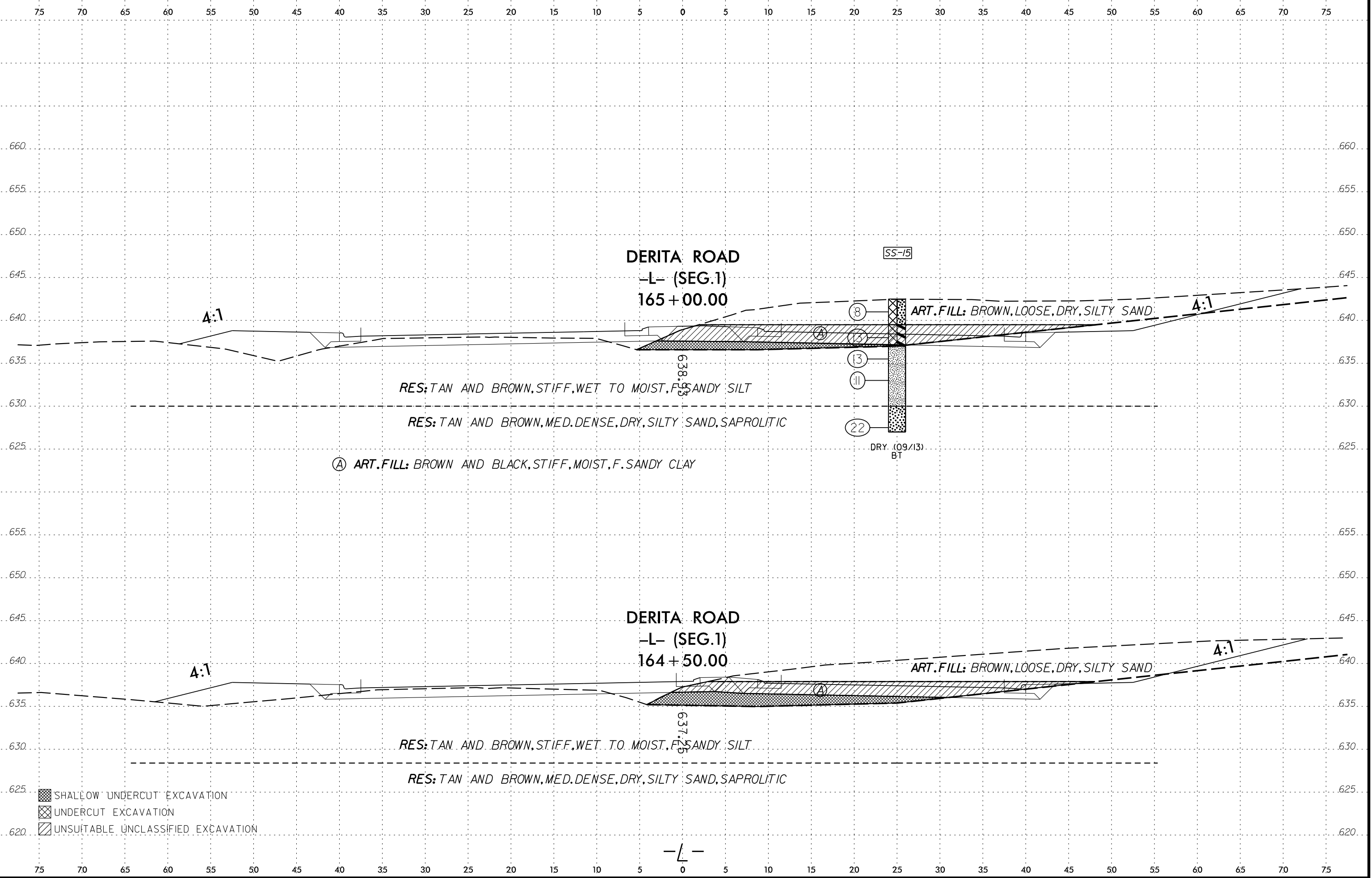
ART. FILL: RED AND BROWN, STIFF TO MED. STIFF, DRY TO MOIST, F. SANDY CLAY, W/ GRAVEL, TRACE MICA

RES: RED-BROWN AND BROWN, LOOSE, MOIST, SILT F. SAND, W/ LITTLE MICA

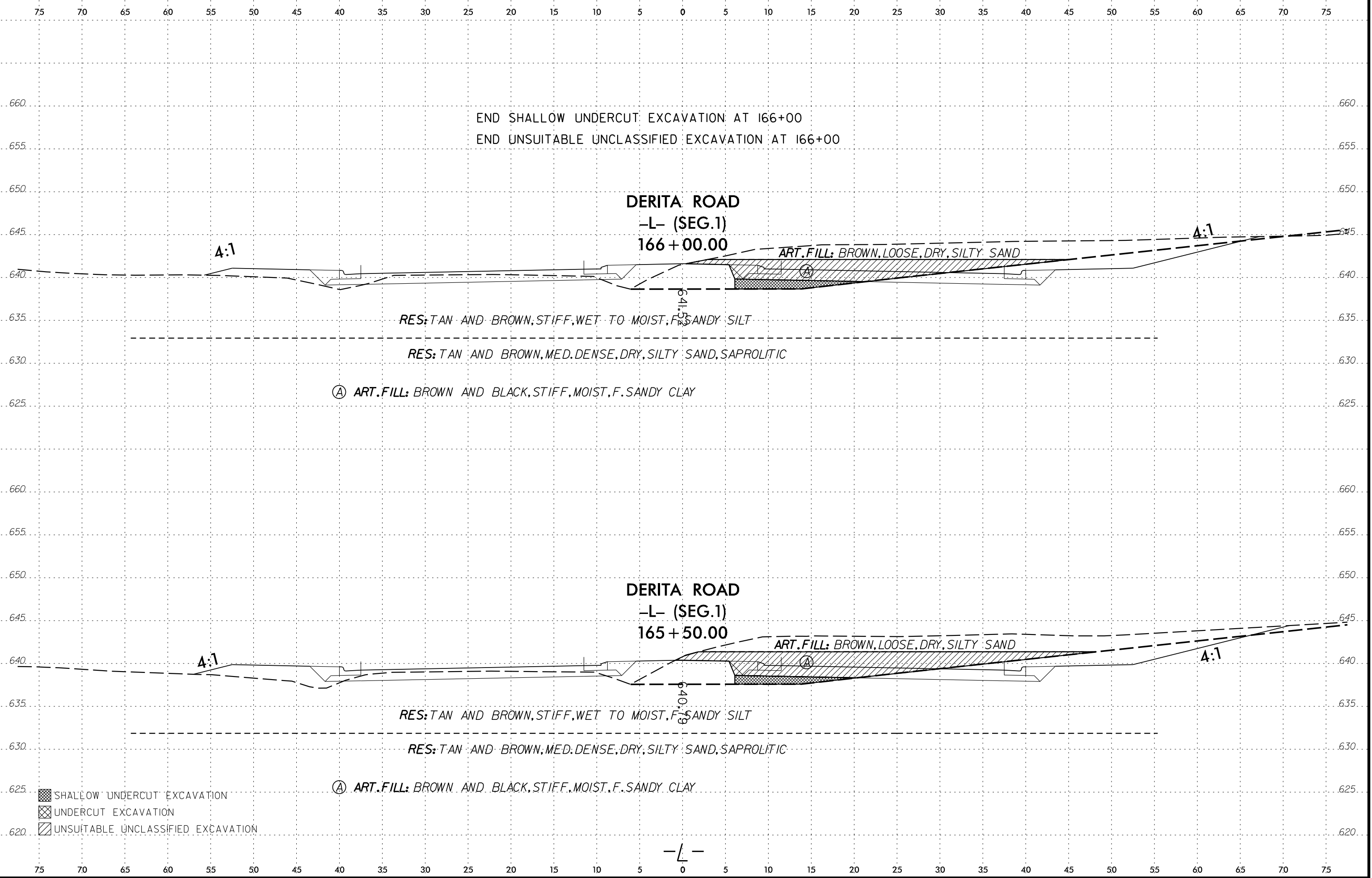
- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION



8/23/99

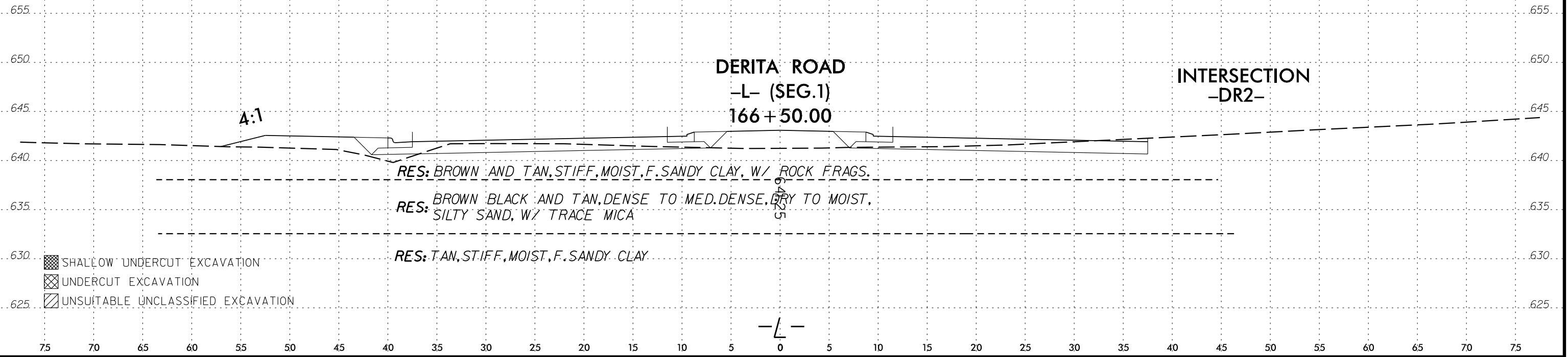


8/23/99

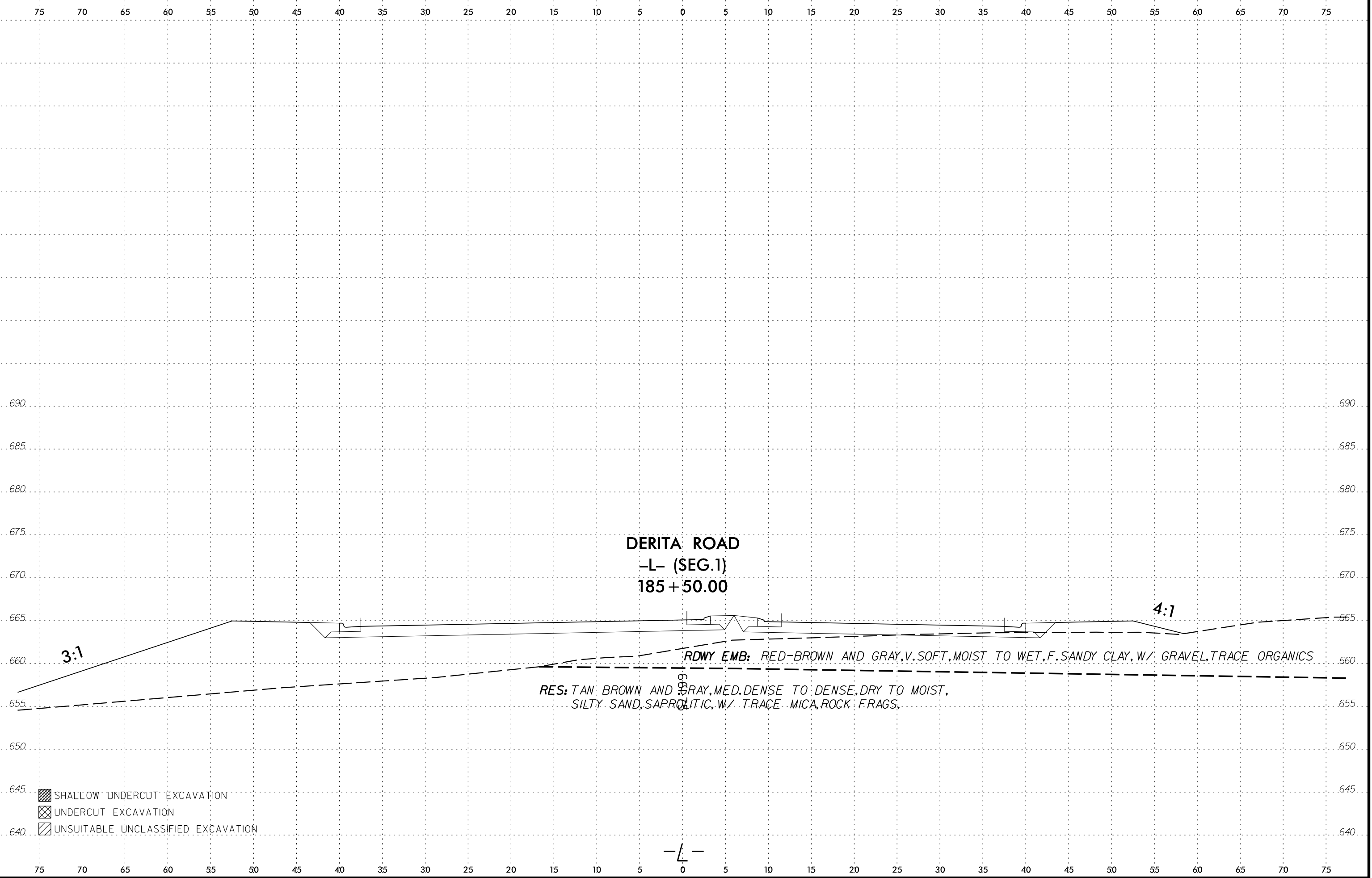


8/23/99

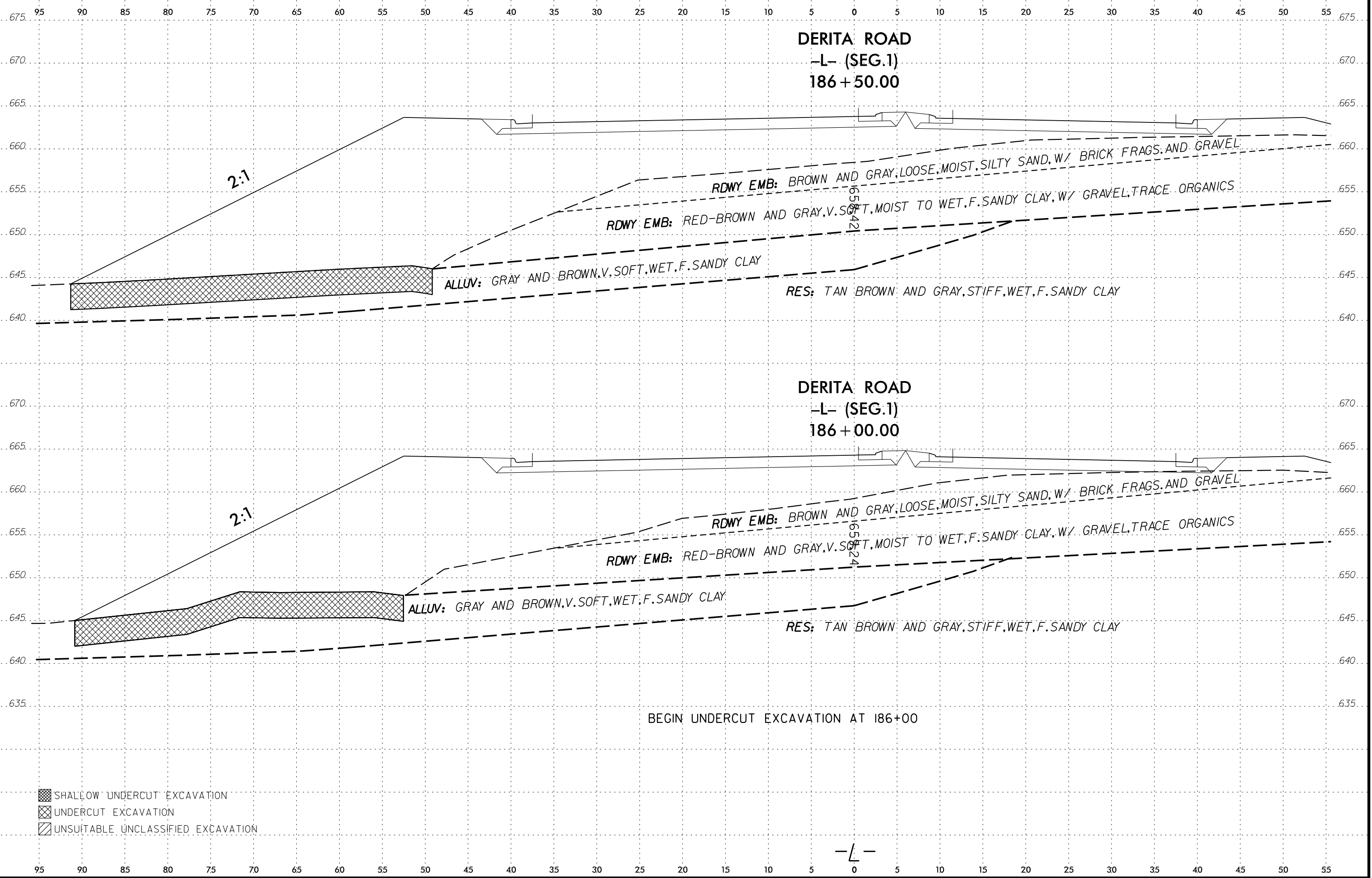
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



8/23/99
TIME
DATE
BY
SCALE
SHEET NO.



8/23/99



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

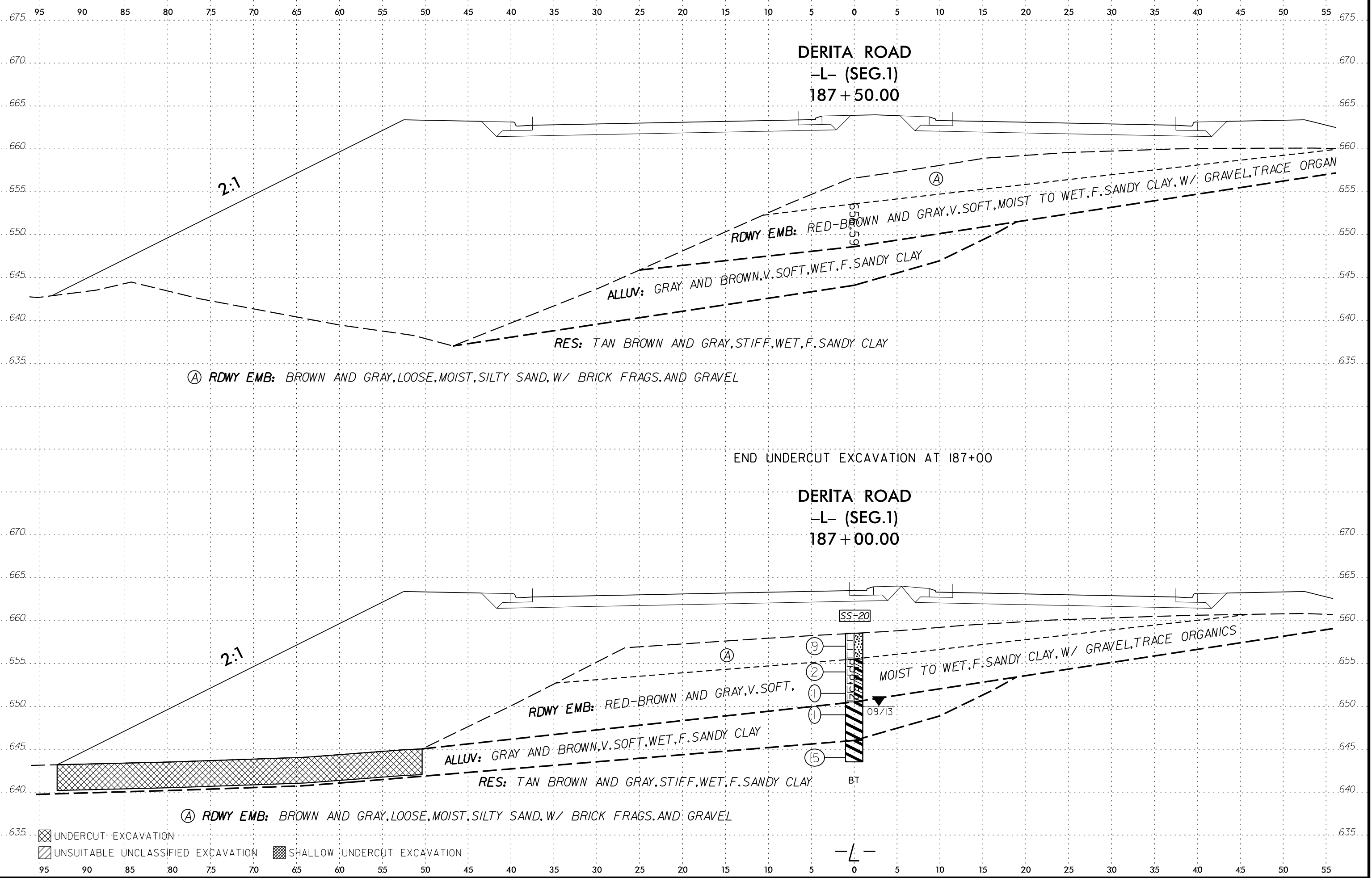
DERITA ROAD
 -L- (SEG.1)
 186 + 00.00

BEGIN UNDERCUT EXCAVATION AT 186+00

- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

-L-

8/23/99



DERITA ROAD

-L- (SEG.1)

187 + 50.00

2:1

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

ALLUV: GRAY AND BROWN, V. SOFT, WET, F. SANDY CLAY

RES: TAN BROWN AND GRAY, STIFF, WET, F. SANDY CLAY

(A) 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

2:1

RDWY EMB: RED-BROWN AND GRAY, V. SOFT,

ALLUV: GRAY AND BROWN, V. SOFT, WET, F. SANDY CLAY

RES: TAN BROWN AND GRAY, STIFF, WET, F. SANDY CLAY

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

SS-20

9
2
1
1
15

MOIST TO WET, F. SANDY CLAY, W/ GRAVEL, TRACE ORGANICS

09/13

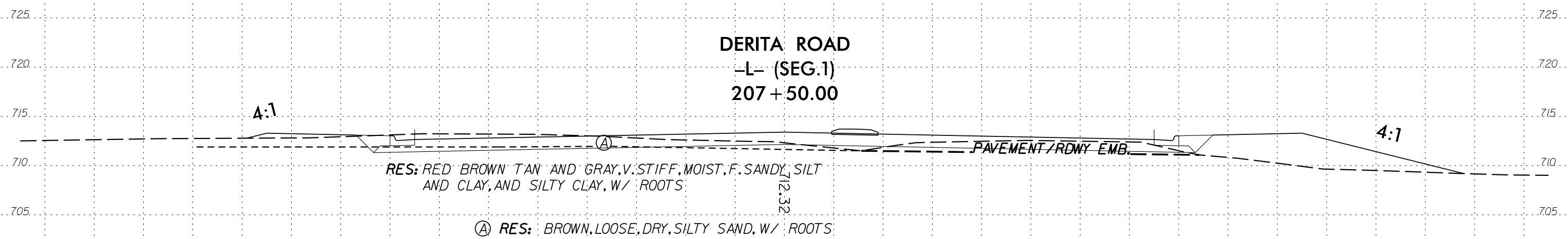
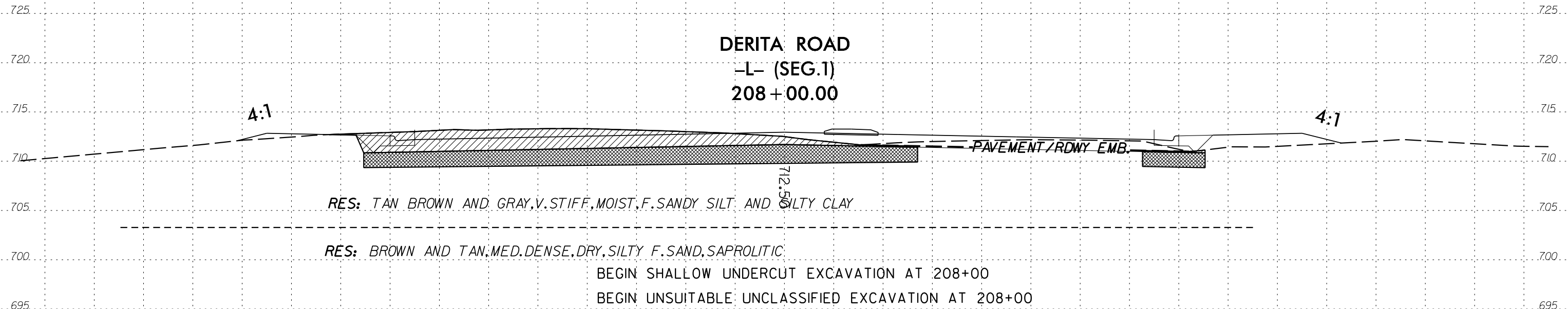
BT

- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION
- SHALLOW UNDERCUT EXCAVATION

-L-

8/23/99

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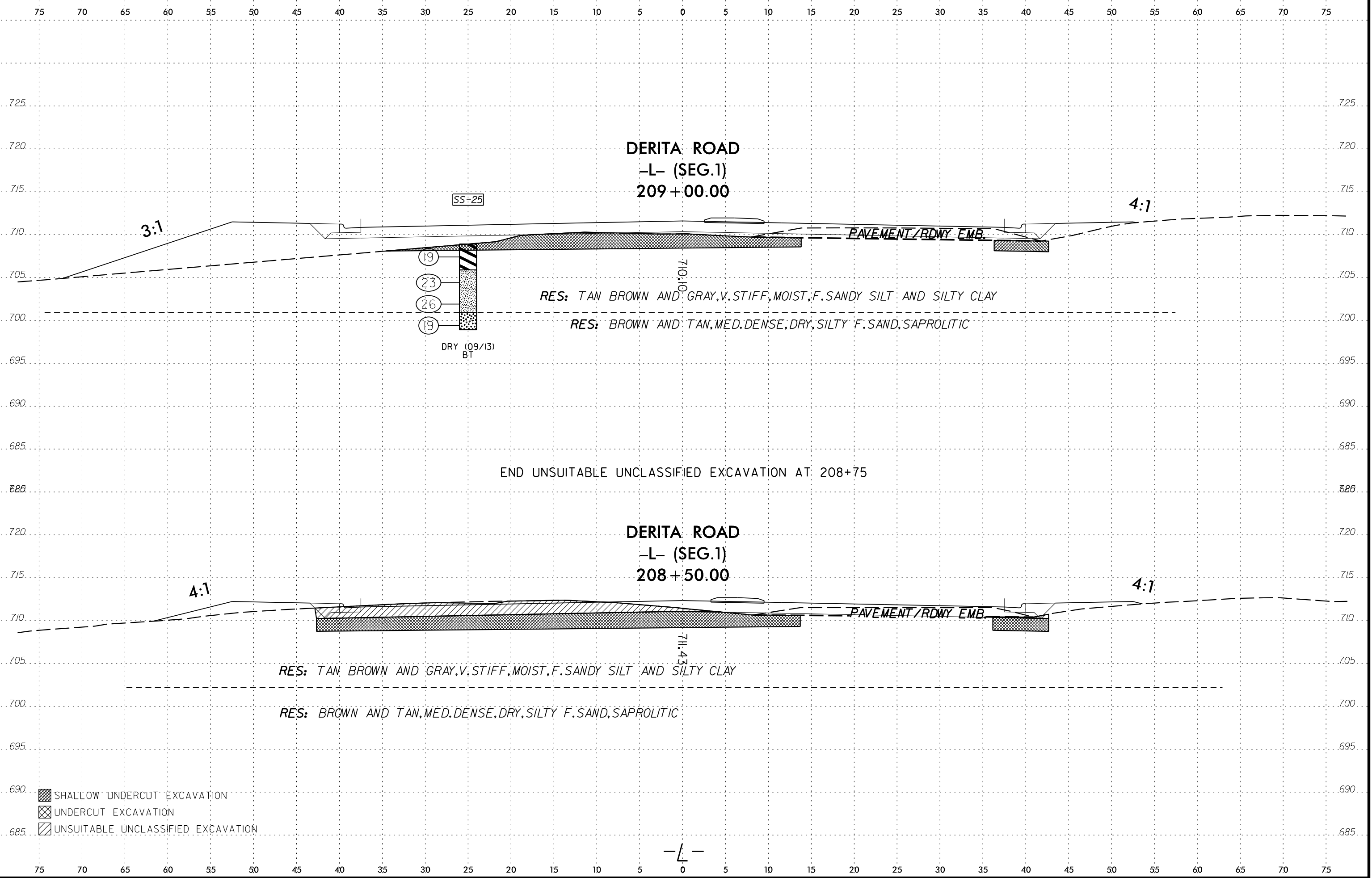


- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

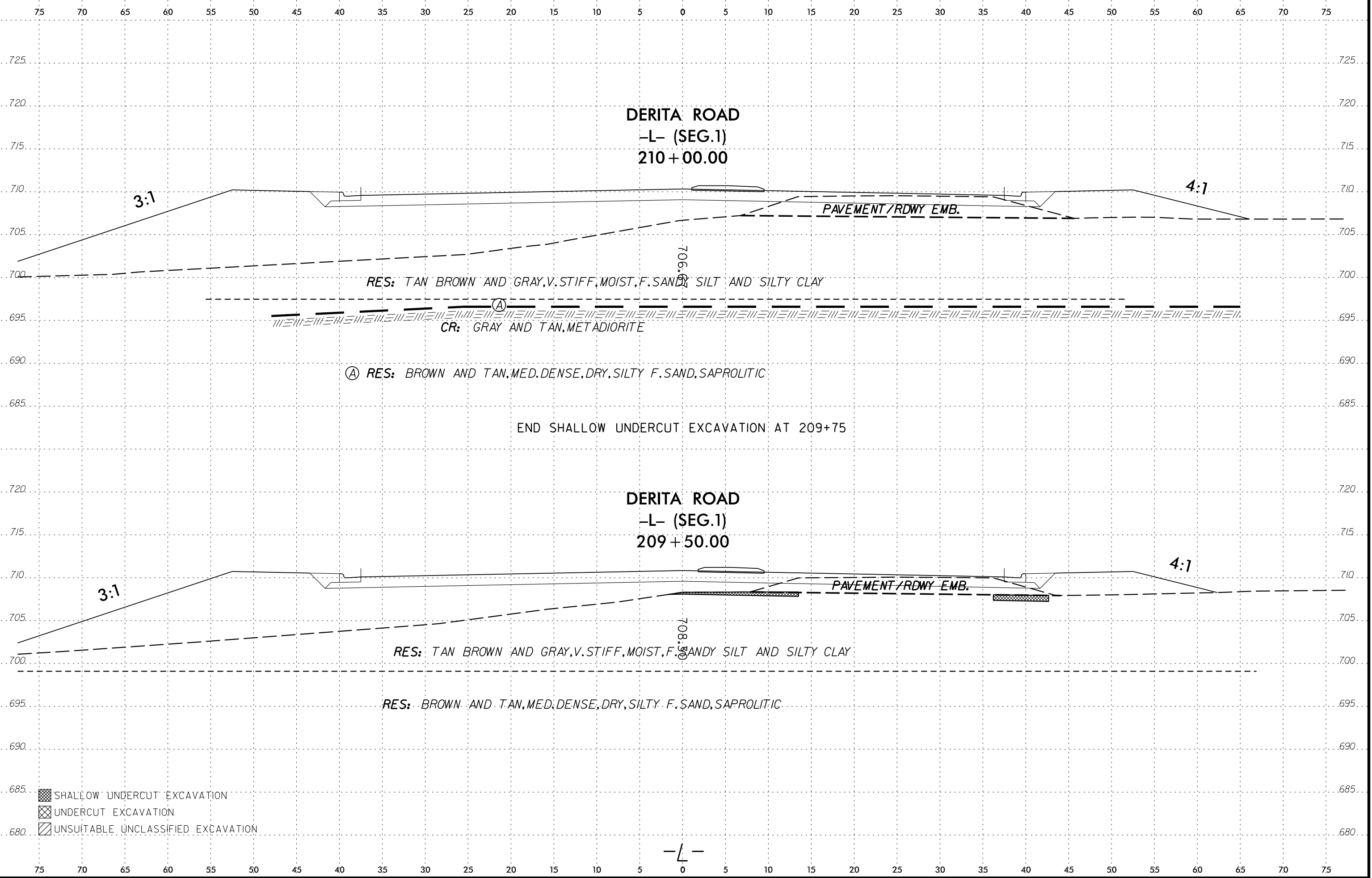
—L—

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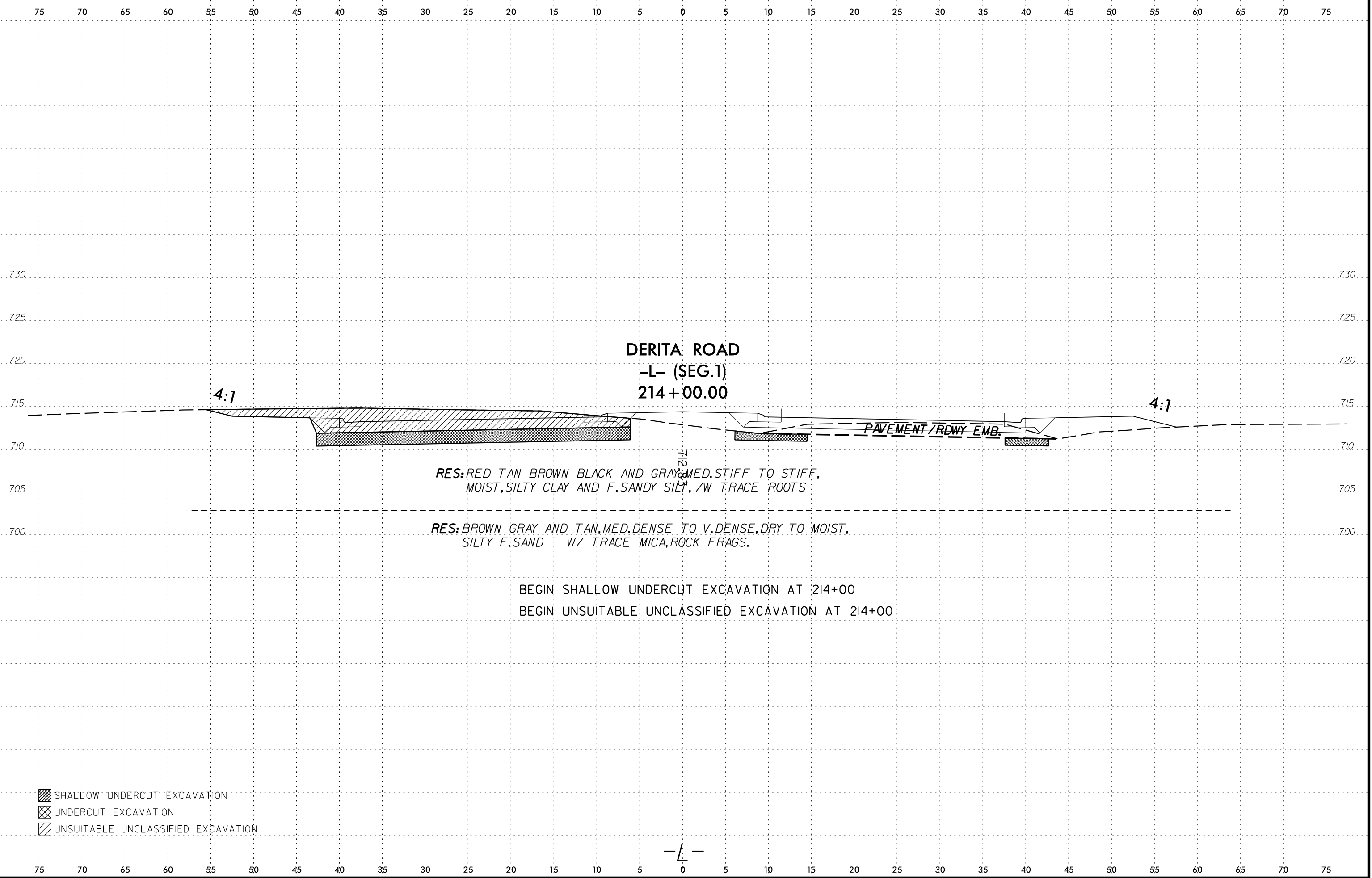
8/23/99



8/23/99



8/23/99



DERITA ROAD
-L- (SEG.1)
214+00.00

4:1

4:1

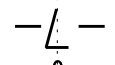
PAVEMENT /RDWY EMB.

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

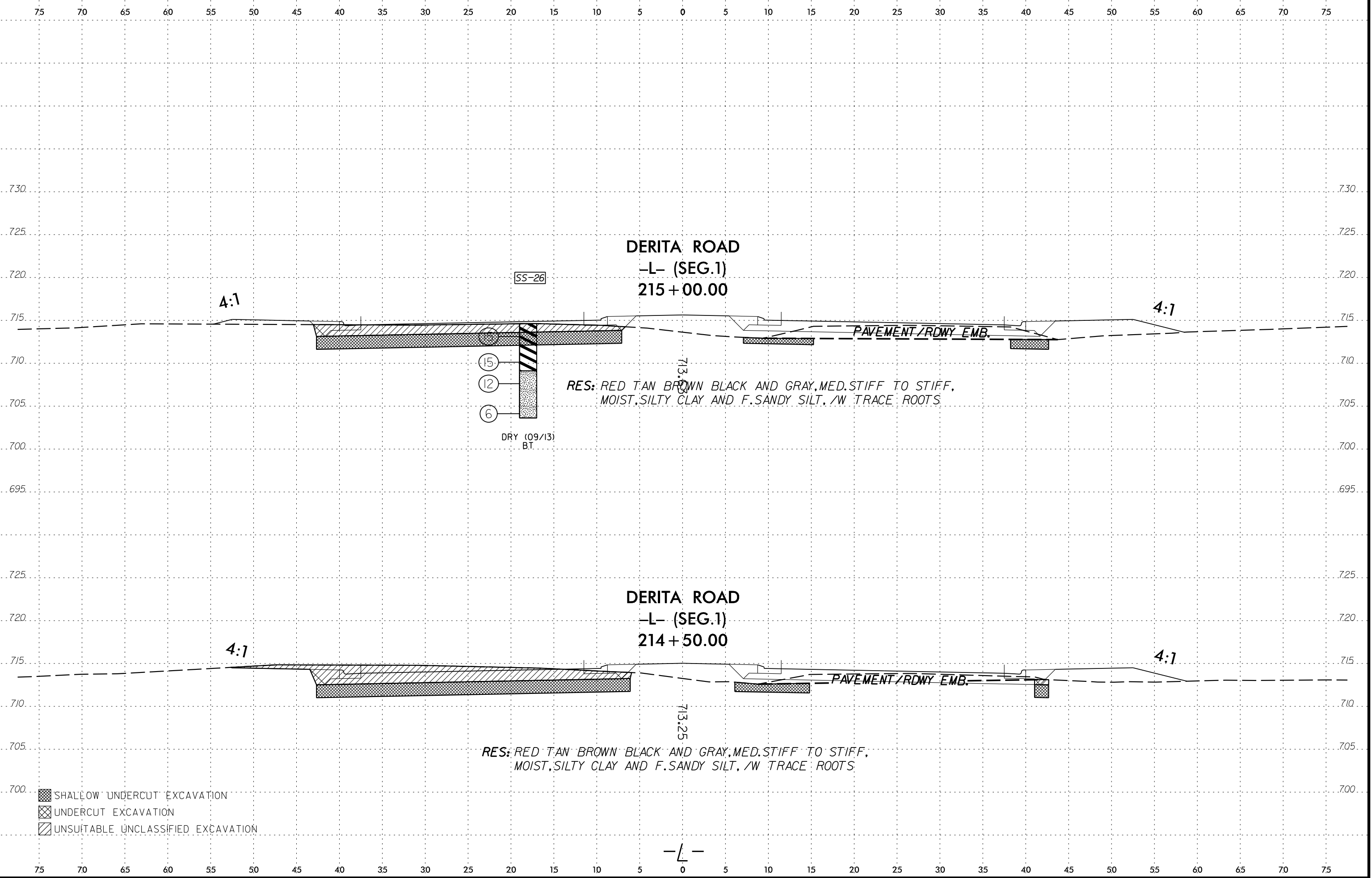
RES: BROWN GRAY AND TAN, MED. DENSE TO V. DENSE, DRY TO MOIST,
 SILTY F. SAND W/ TRACE MICA, ROCK FRAGS.

BEGIN SHALLOW UNDERCUT EXCAVATION AT 214+00
 BEGIN UNSUITABLE UNCLASSIFIED EXCAVATION AT 214+00

- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

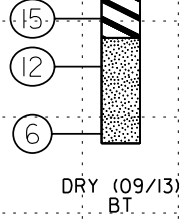


8/23/99



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

-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

7.30 7.25 7.20 7.15 7.10 7.05 7.00

END SHALLOW UNDERCUT EXCAVATION AT 216+00

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

4:1

4:1

PAVEMENT/RDWAY EMB.

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

7.25 7.20 7.15 7.10 7.05 7.00

END UNSUITABLE UNCLASSIFIED EXCAVATION AT 215+75

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

4:1

4:1

PAVEMENT/RDWAY EMB.

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

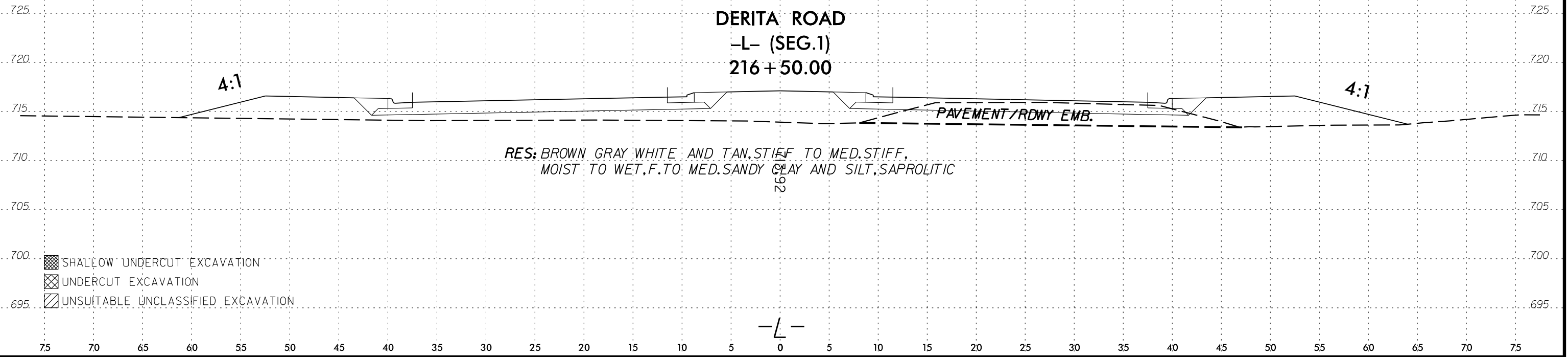
- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

-L-

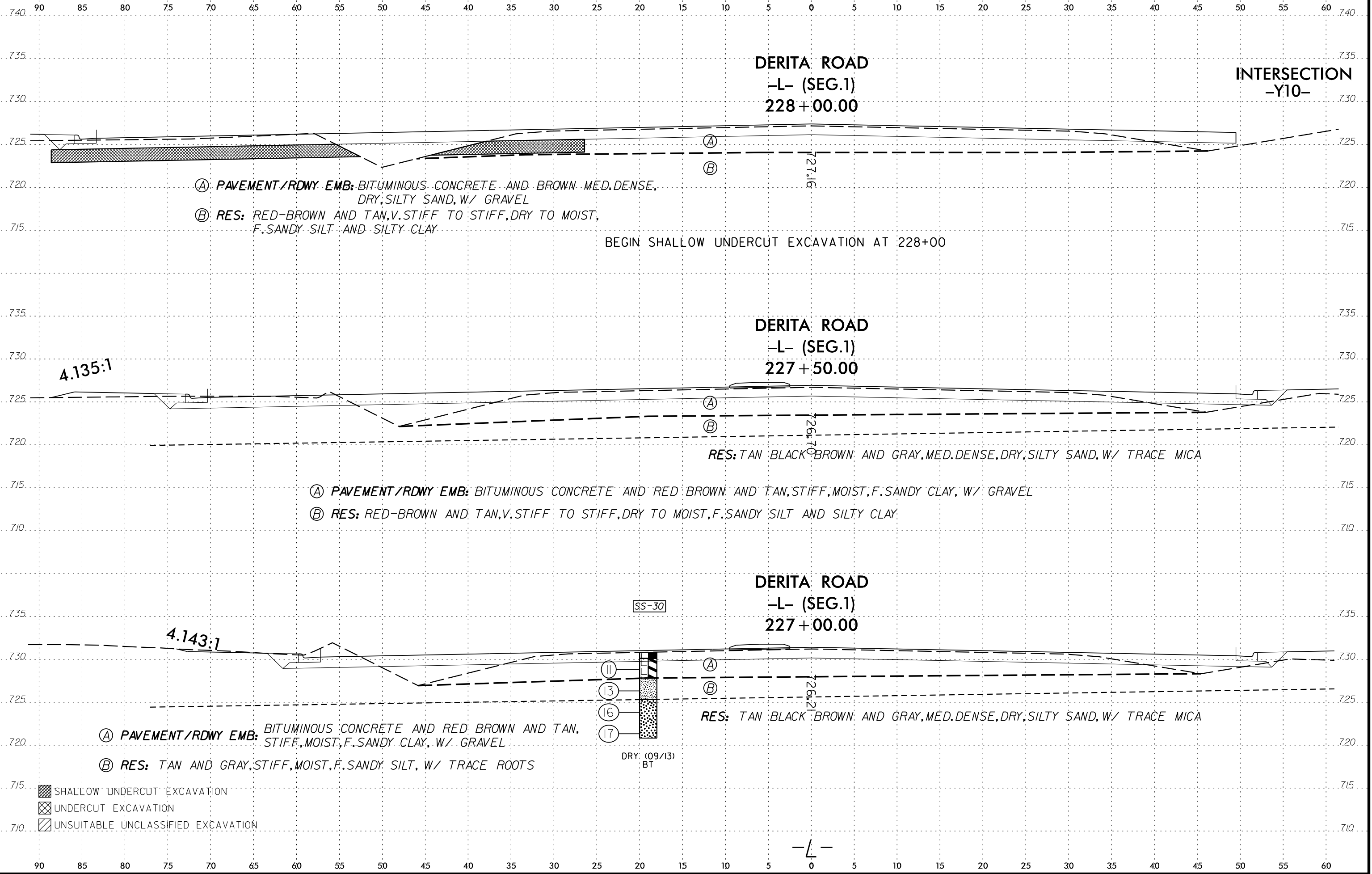
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8/23/99

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

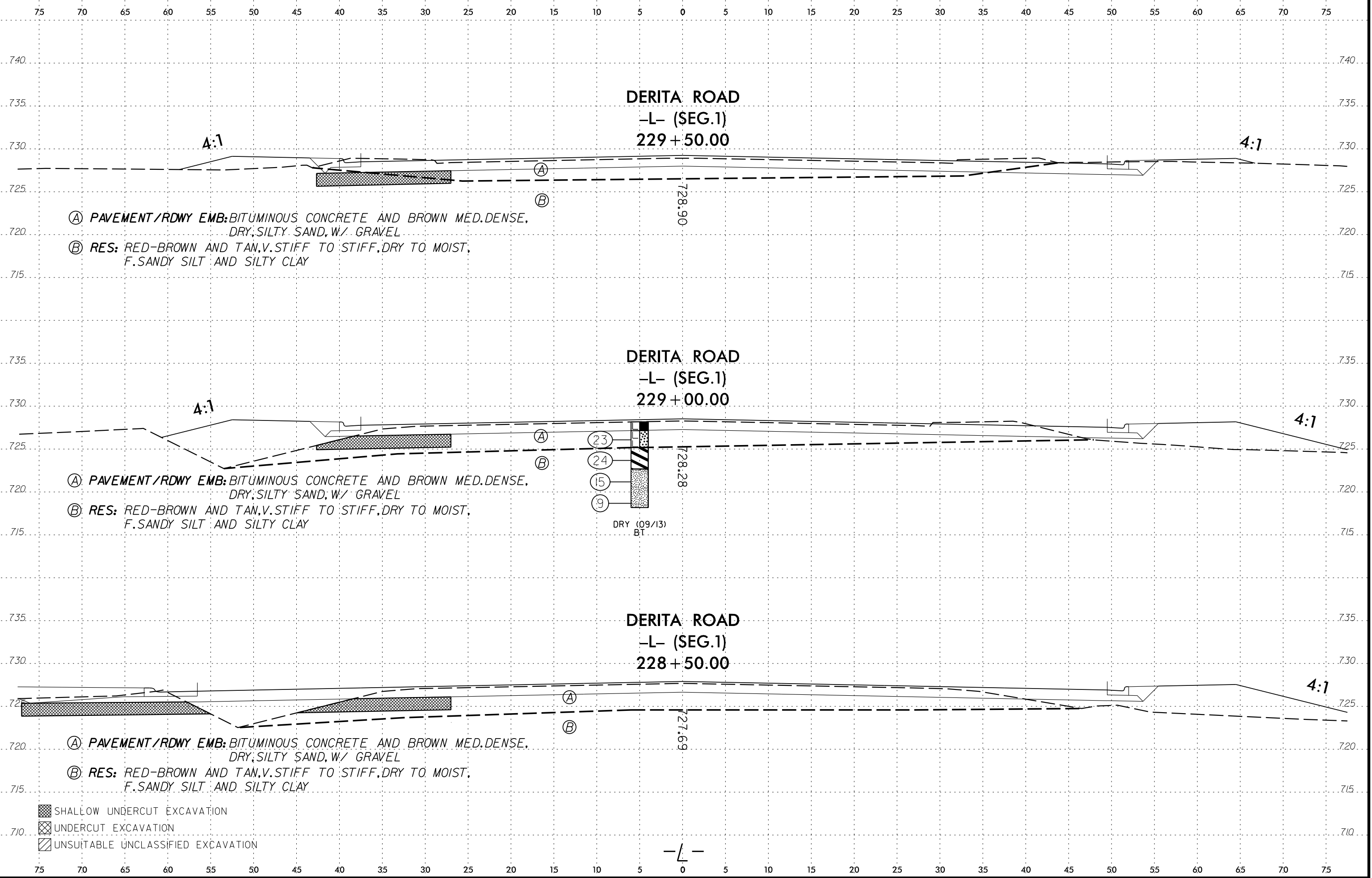


8/23/99



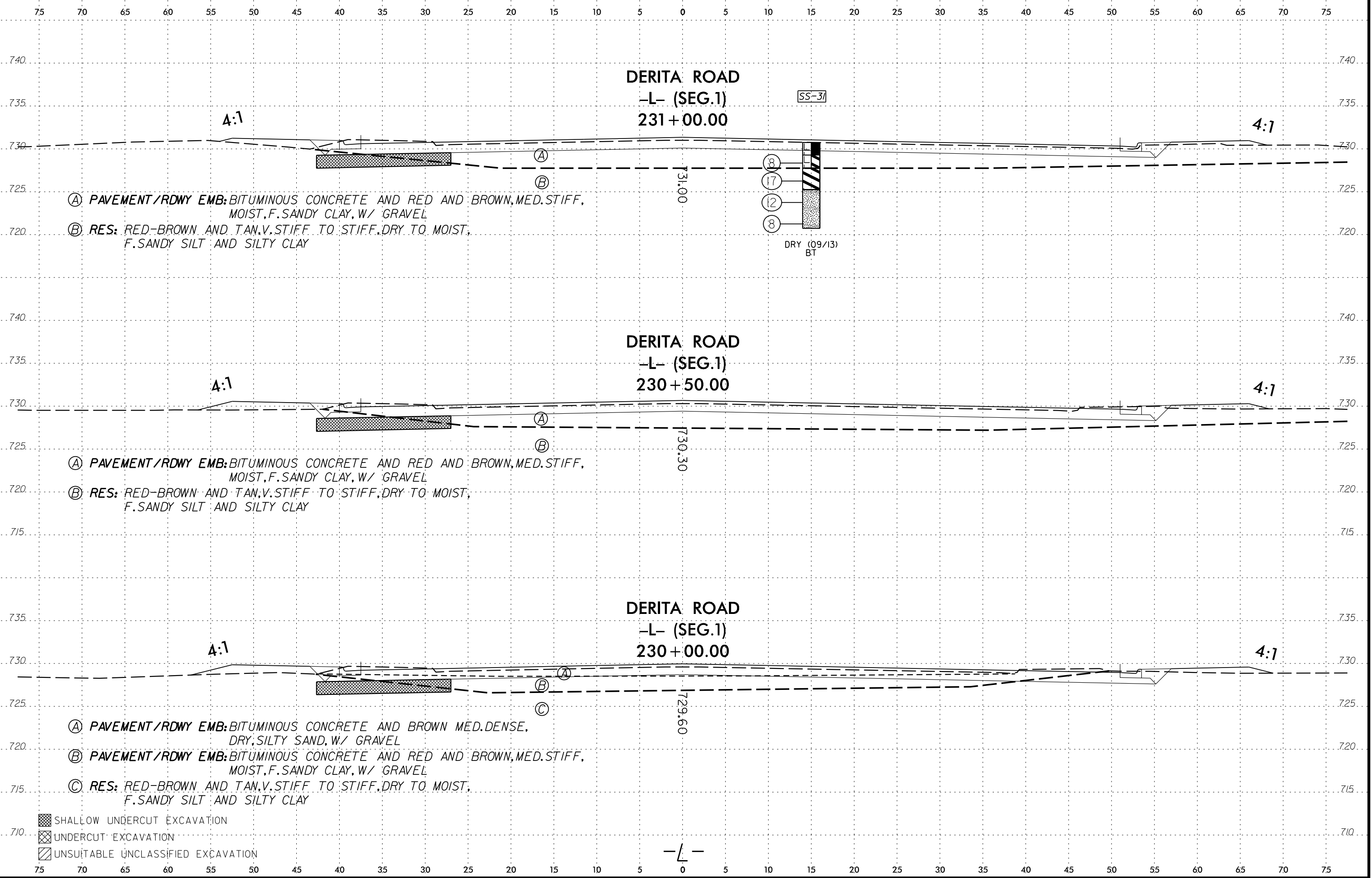
DATE PLOTTED: 8/23/99

8/23/99



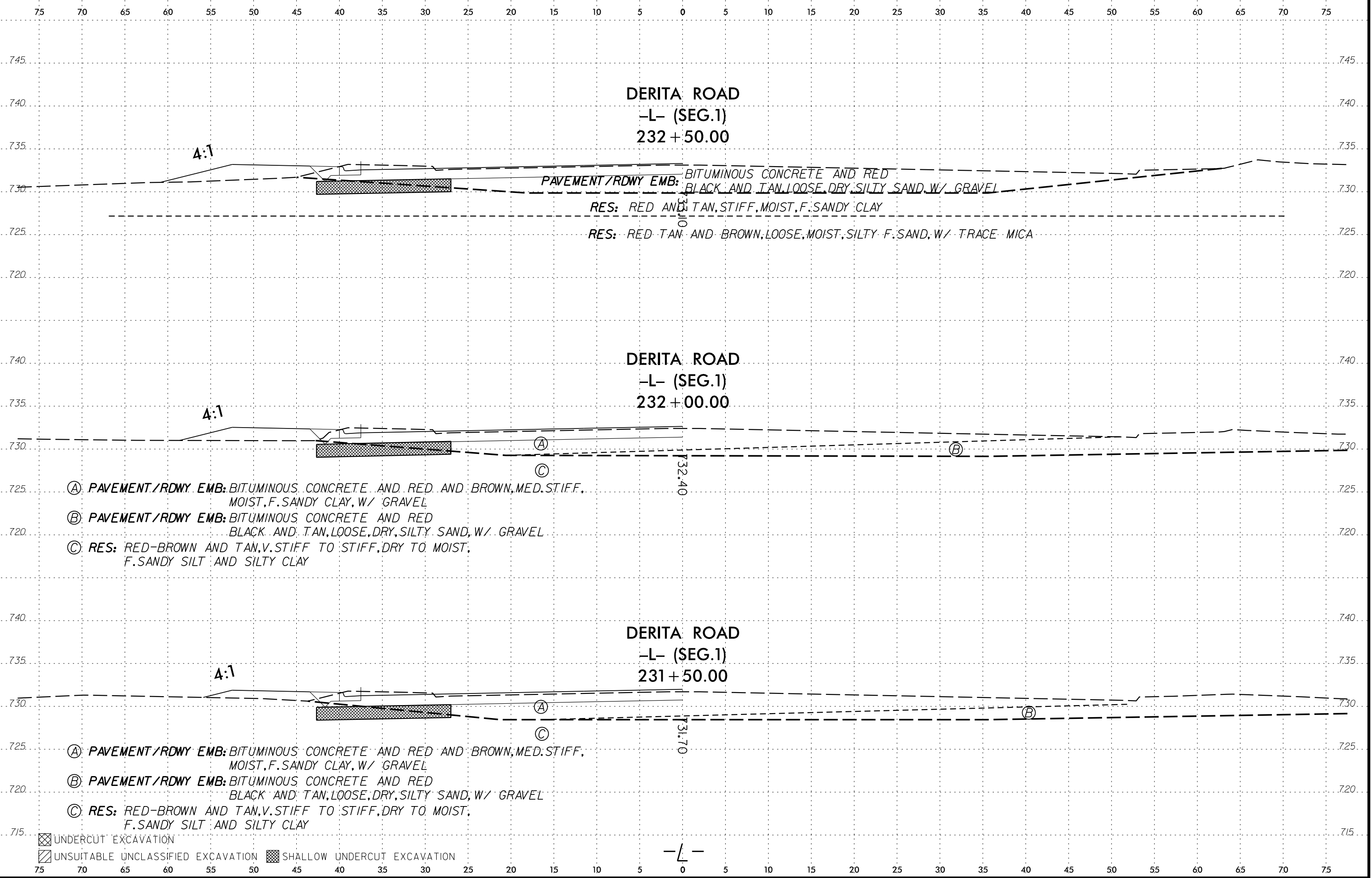
UNCLASSIFIED EXCAVATION

8/23/99

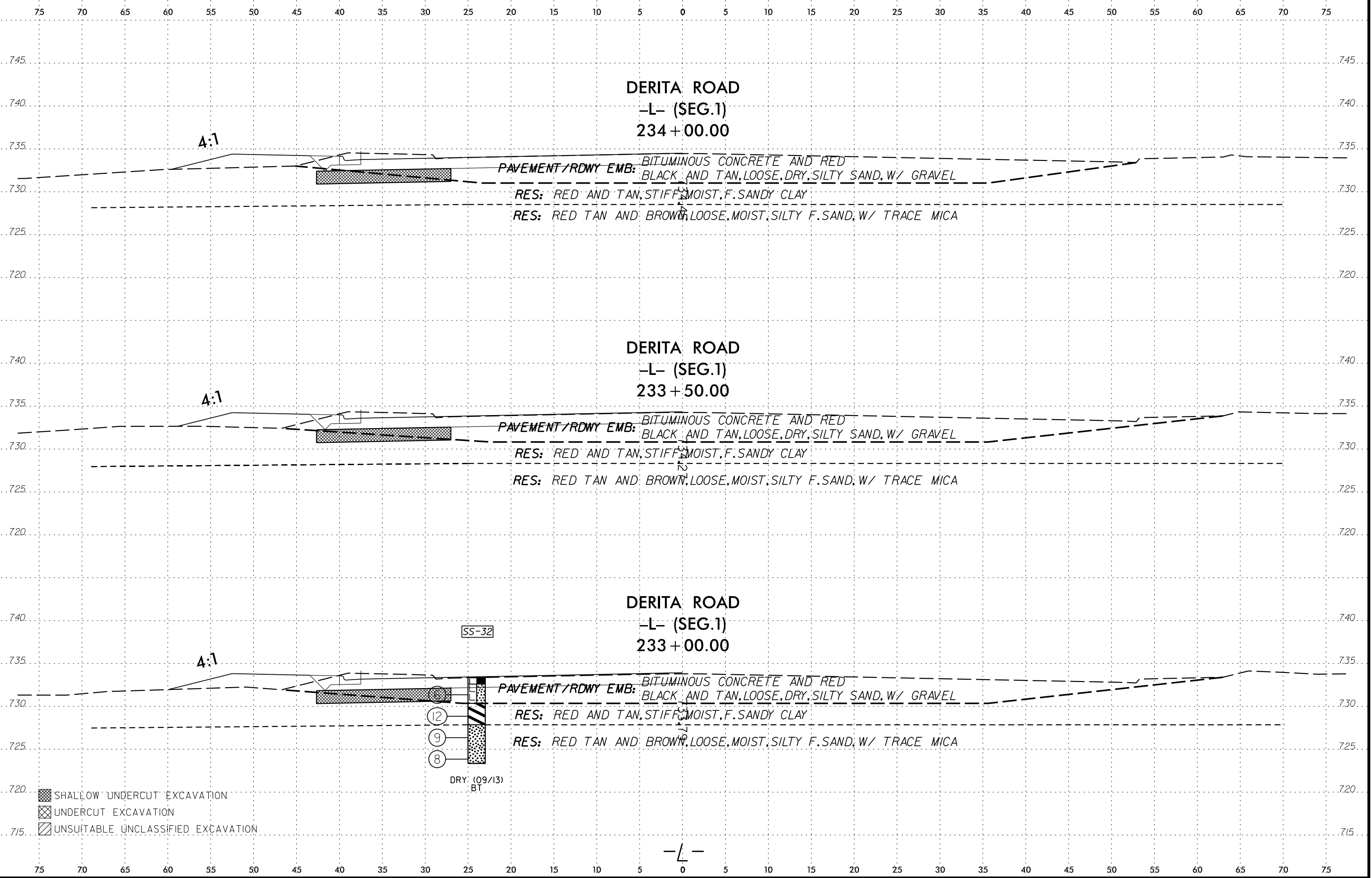


- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

DATE PLOTTED: 8/23/99



8/23/99

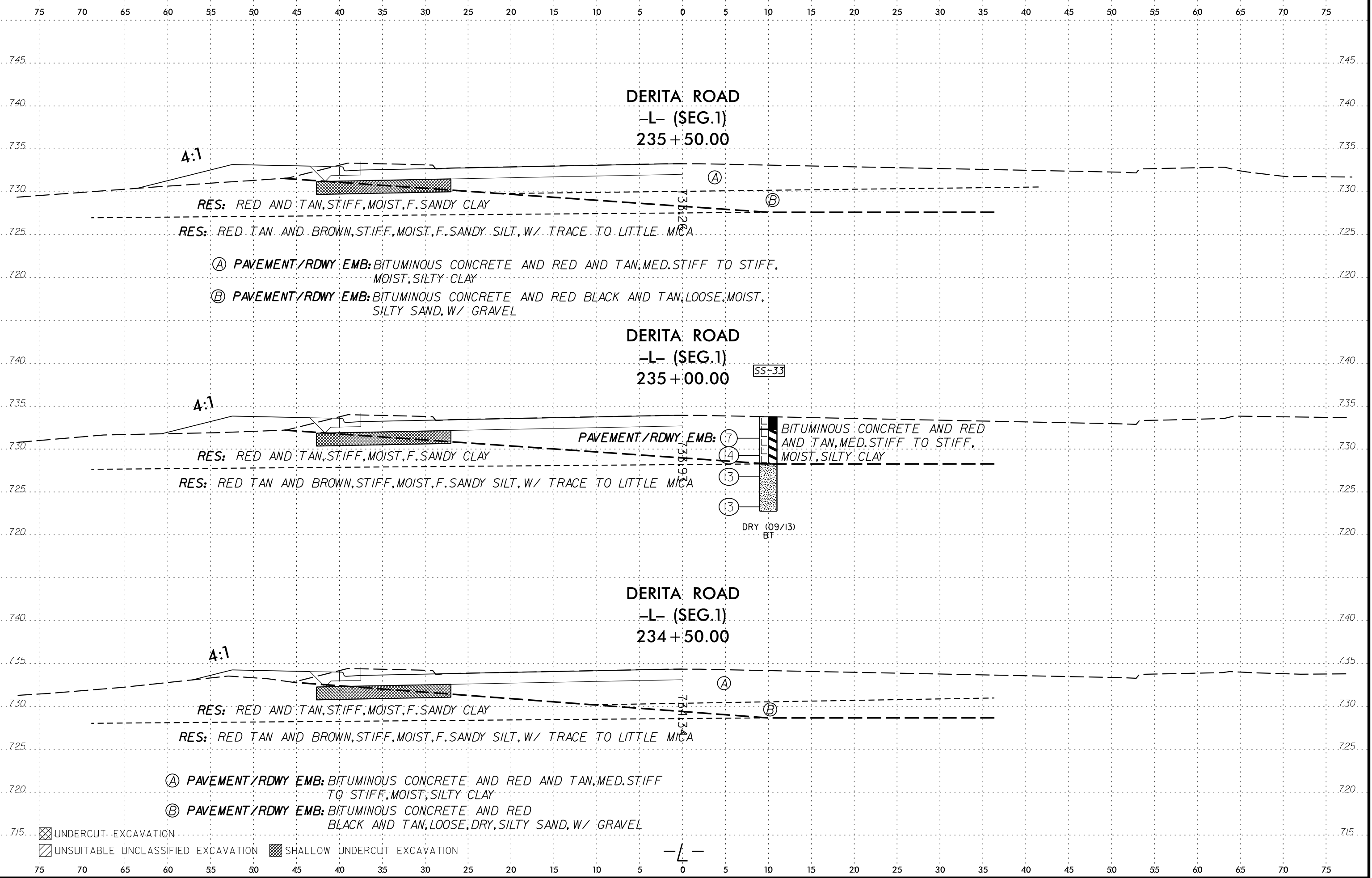


- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

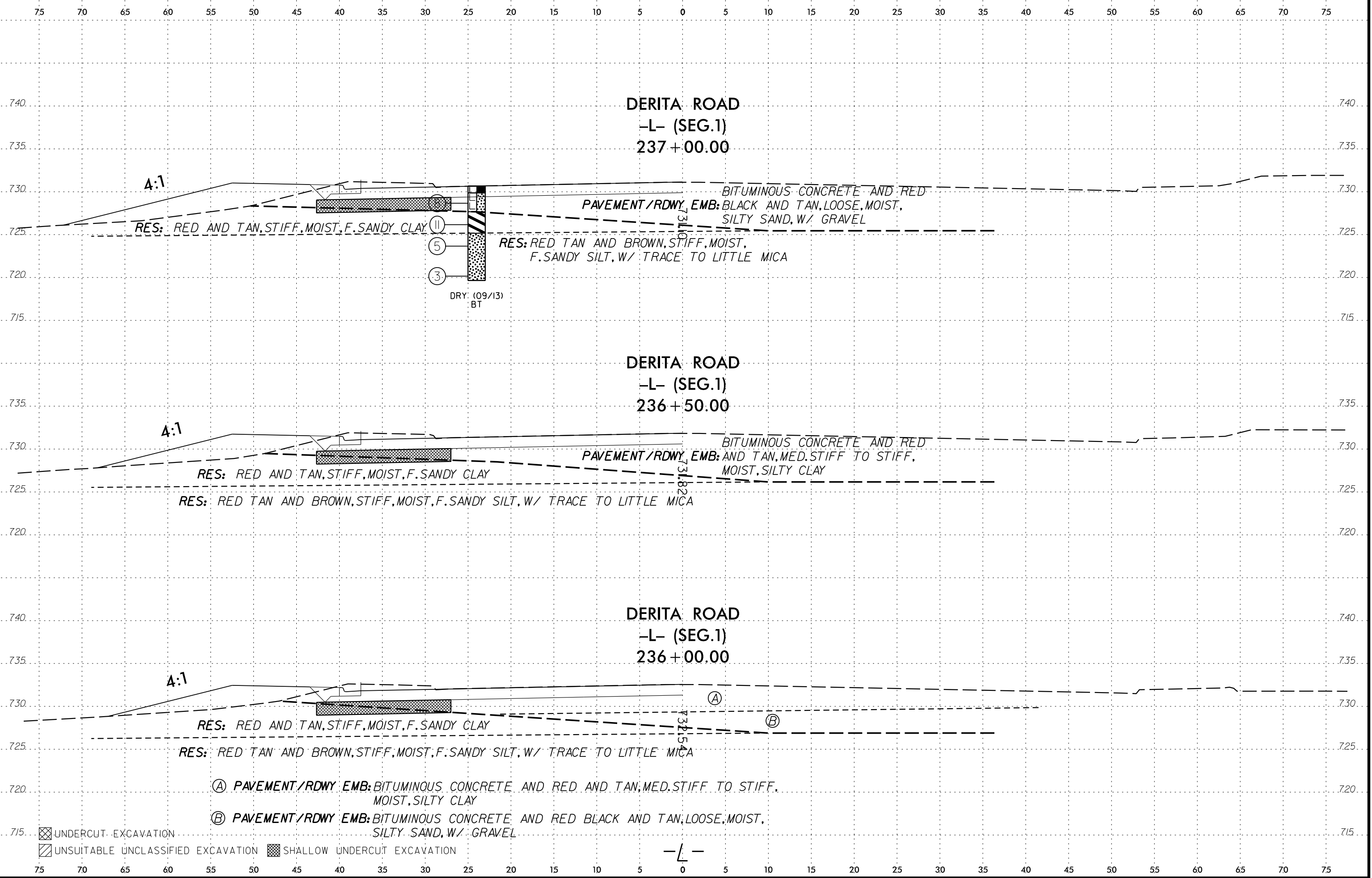
DATE PLOTTED: 08/23/99 10:00 AM

-L-

8/23/99

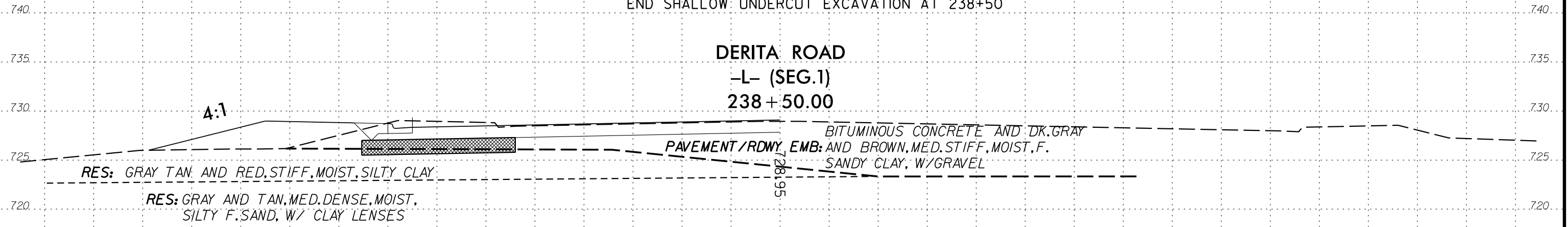


8/23/99

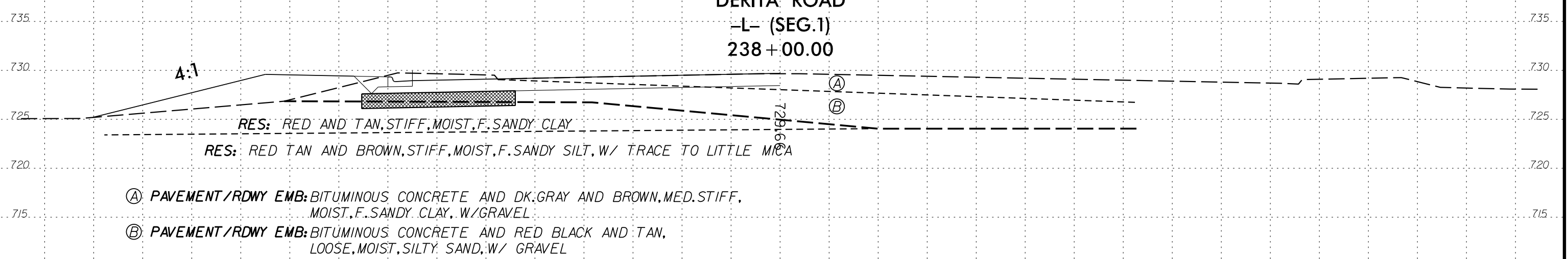


END SHALLOW UNDERCUT EXCAVATION AT 238+50

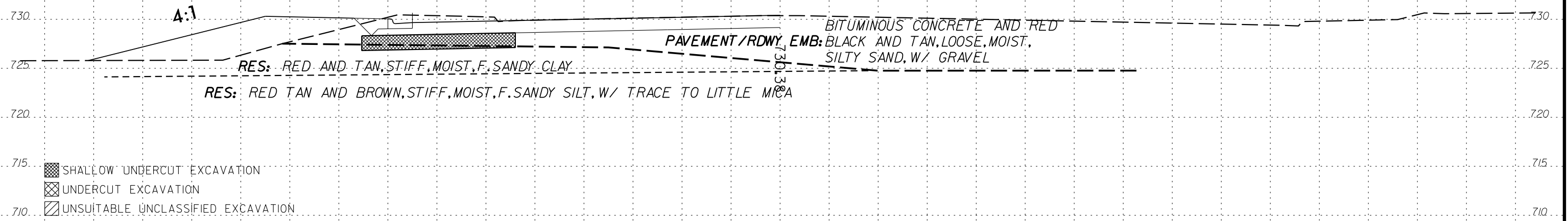
DERITA ROAD
 -L- (SEG.1)
 238 + 50.00



DERITA ROAD
 -L- (SEG.1)
 238 + 00.00



DERITA ROAD
 -L- (SEG.1)
 237 + 50.00



- SHALLOW UNDERCUT EXCAVATION
- UNDERCUT EXCAVATION
- UNSUITABLE UNCLASSIFIED EXCAVATION

8/23/99

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

