CONTRACT: C201599

ID: B-4298

CONTENTS

LINE	STATION	PLAN	XSECTS
-L-	11+75 – 30+50	4-5	6-32

NOTE: SEE SHEET 2A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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

ROADWAY SUBSURFACE INVESTIGATION

STATE PROJ. 33635.1.1 I.D. B-4298 F.A. PROJ. BRZ-1107(8)

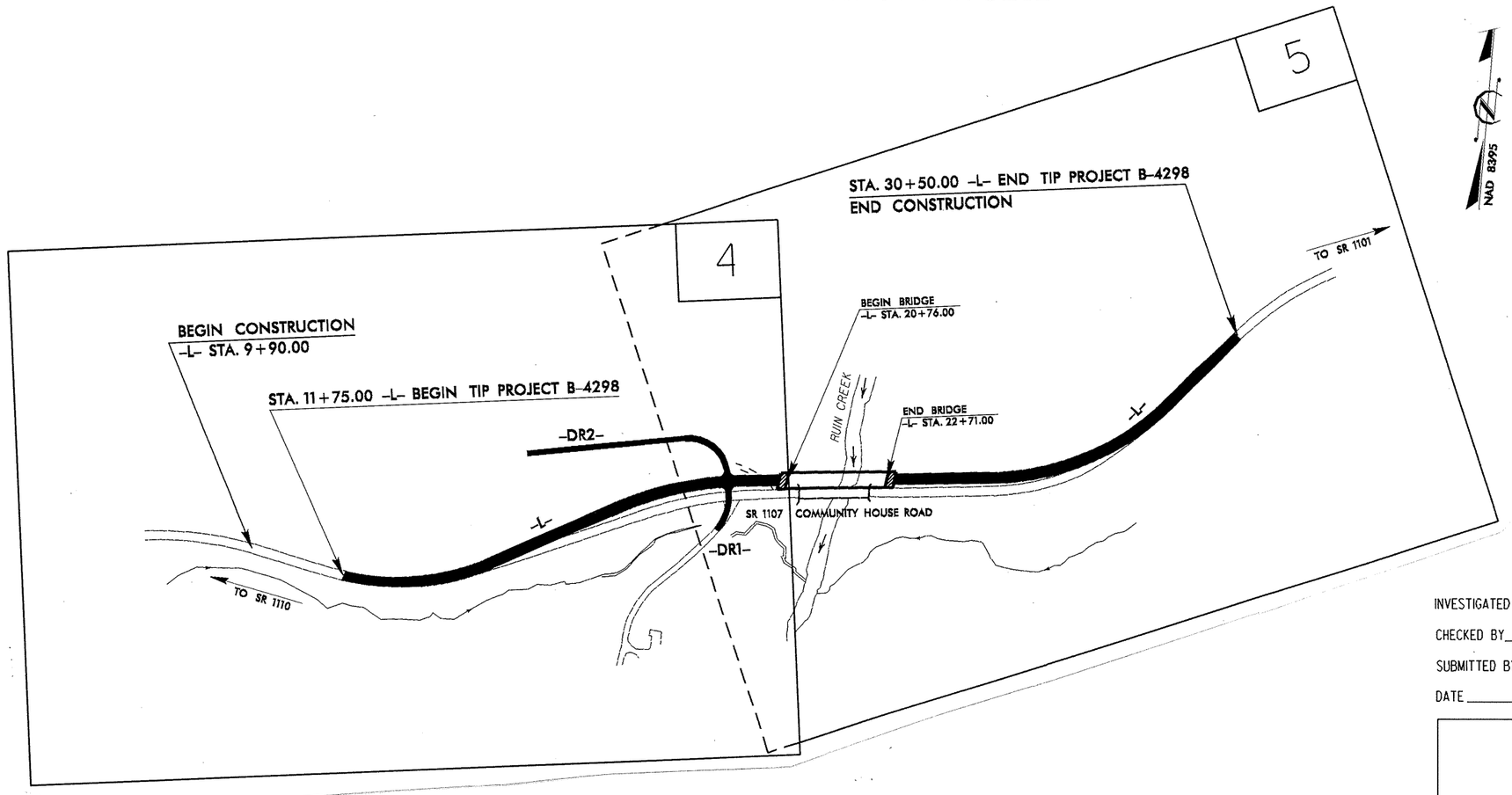
COUNTY VANCE

PROJECT DESCRIPTION BRIDGE NO. 3 ON SR 1107 (COMMUNITY HOUSE RD.) OVER RUIN CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4298	1	32

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33635.1.1	BRZ-1107(8)	PE
33635.2.1	BRZ-1107(8)	R/W & UTIL
33635.3.1	BRZ-1107(13)	CONSTR.

INVENTORY



CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS 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 UNIT @ (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA IS 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

N.D. Mohs
C.D. Czajka
D.W. Dixon
C.E. Pope
J.B. Barfield

INVESTIGATED BY C.A. Youngblood

CHECKED BY N.T. Roberson

SUBMITTED BY N.T. Roberson

DATE October, 2005

NORTH CAROLINA LICENSED SEAL 1959 GEOLOGIST CHERYL A. YOUNGBLOOD 10/25/05

DRAWN BY: C.A. Youngblood

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.

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
B-4298	33635.1.1	2	32

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL 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 WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND 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 PLASTIC INDEX	6 MX		N.P.	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

P.I. OF A-7-5 ≤ L.L. - 30 : P.I. OF A-7-6 > L.L. - 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 0.5 0.5 TO 1 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	2.0	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F. SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12"	3"				

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
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, YEL-BRN, 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 ARE 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 30
MODERATELY COMPRESSIBLE	LIQUID LIMIT 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 SEEPAGE

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS
- INFERRED SOIL BOUNDARIES
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP/DIP DIRECTION OF ROCK STRUCTURES
- ● - SOUNDING ROD
- SPT CPT DPT DMT VST PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- SPT N-VALUE
- REF — SPT REFUSAL

SAMPLE DESIGNATIONS

- S- BULK SAMPLE
- SS- SPLIT SPOON SAMPLE
- ST- SHELBY TUBE SAMPLE
- RS- ROCK SAMPLE
- RT- RECOMPACTED TRIAXIAL SAMPLE
- CBR - CBR SAMPLE

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
FRAGS. - FRAGMENTS
MED. - MEDIUM
PMT - PRESSUREMETER TEST
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT
W - MOISTURE CONTENT
V. - VERY
VST - VANE SHEAR TEST

EQUIPMENT USED ON SUBJECT PROJECT

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

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN 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 FOLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT YIELDS SPT N VALUES > 100 BLOWS PER FOOT.
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 ROCKS 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 GEOLOGISTS 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 GEOLOGISTS 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 GEOLOGISTS 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 WHICH 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 IS IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS WHICH 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 (F.P.) - 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 SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (R.Q.D.) - 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 WHICH 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, WHICH 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 B.P.F.) 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 LESS THAN 0.1 FOOT PENETRATION WITH 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 (S.R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

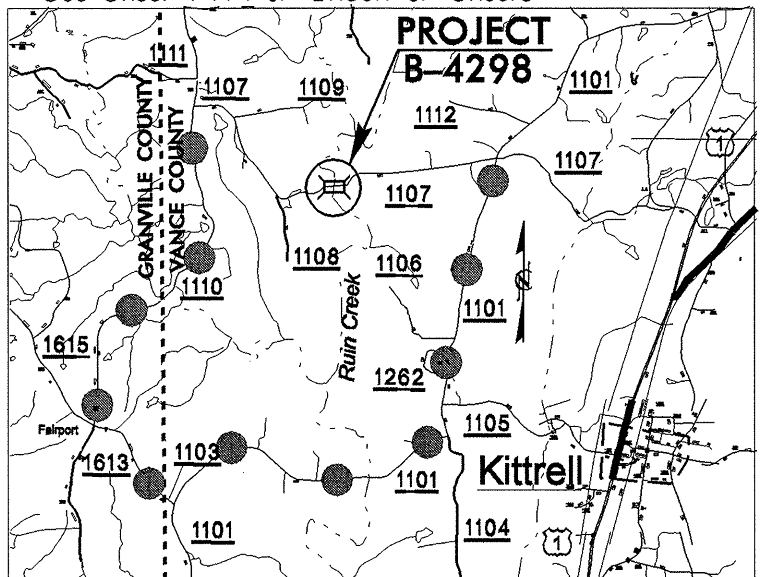
BENCH MARK: N/A

ELEVATION: N/A

NOTES:

REVISED 09/15/00

See Sheet 1-A For Index of Sheets



VICINITY MAP

DENOTES OFF-SITE DETOUR ROUTE

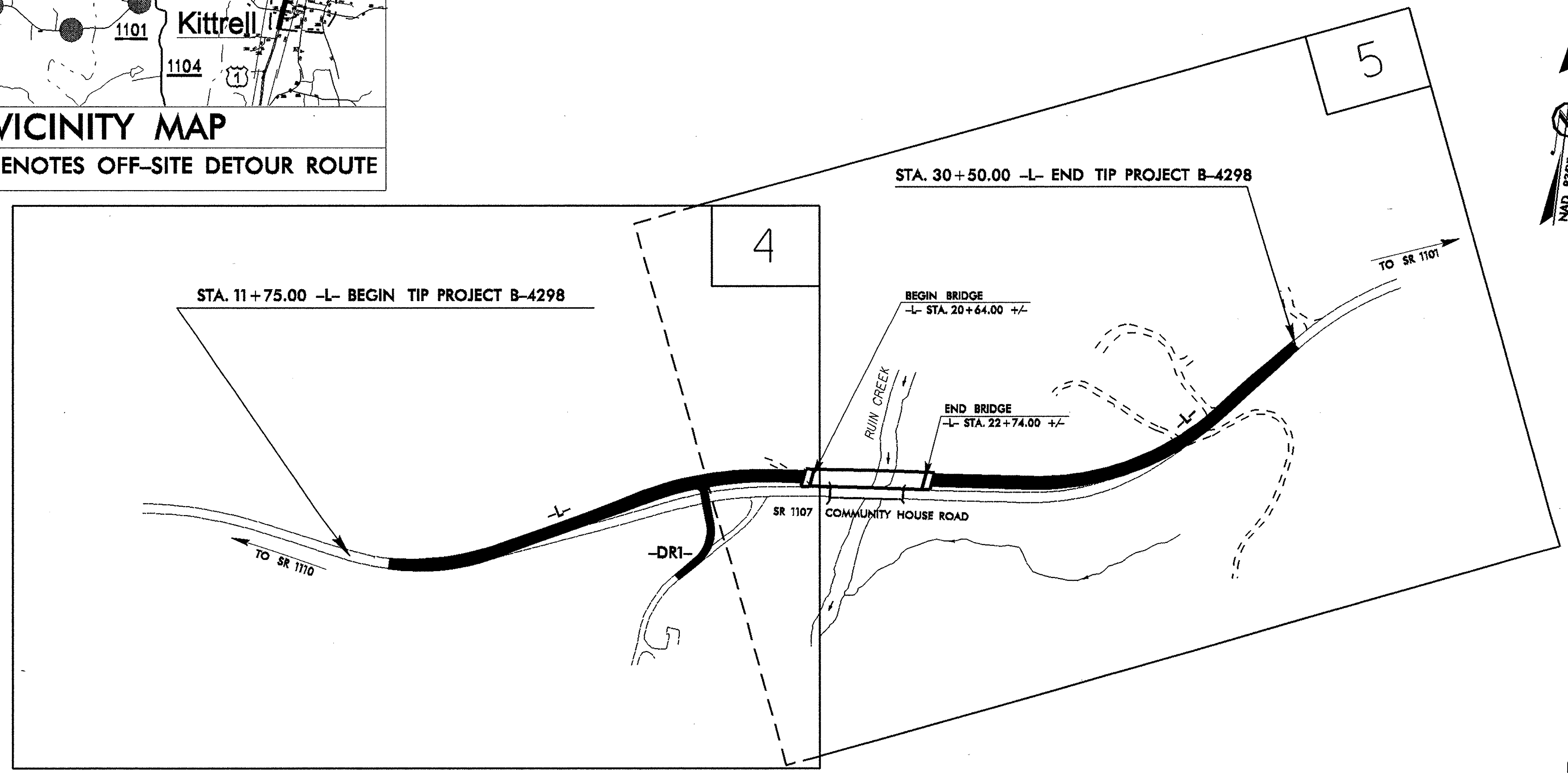
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

VANCE COUNTY

LOCATION: BRIDGE NO. 3 OVER RUIN CREEK AND APPROACHES ON SR 1107 (COMMUNITY HOUSE ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4298	2A	32
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33635.1.1	BRZ-1107(8)	PE	



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

CLEARING ON THIS PROJECT SHOULD BE PREFORMED TO THE LIMITS ESTABLISHED BY METHOD ___

** DESIGN EXCEPTION FOR DESIGN SPEED REQUIRED

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 0 50 100 PLANS

50 0 50 100 PROFILE (HORIZONTAL)

10 0 10 20 PROFILE (VERTICAL)

DESIGN DATA

ADT 2007 = 750
ADT 2025 = 1200
DHV = 13 %
D = 55 %
T = 3 % *
** V = 40 MPH
* TTST 1% DUAL 2%
FUNC CLASS = LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4298	=	0.315 MILES
LENGTH STRUCTURE TIP PROJECT B-4298	=	0.040 MILES
TOTAL LENGTH OF TIP PROJECT B-4298	=	0.355 MILES

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 2006

LETTING DATE: MARCH 20, 2007

ROGER D. THOMAS, PE
PROJECT ENGINEER

SAMUEL L. ST. CLAIR
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

TIP PROJECT: B-4298

CONTRACT:

24-OCT-2005 11:22
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cyoungblood AT GEJ214561

09/08/99

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Michael F. Easley
GOVERNOR

P.O. BOX 25201, RALEIGH, N.C. 27611-5201

Lyndo Tippett
SECRETARY

October 25, 2005

STATE PROJECT: 33635.1.1 (B-4298)
FEDERAL PROJECT: BRZ-1107(8)
COUNTY: Vance

DESCRIPTION: Bridge No. 3 on SR 1107 (Community House Rd.) over Ruin Creek.

SUBJECT: Geotechnical Report - Inventory

Project Description

This project consists of the relocation of SR 1107 (Community House Rd.) and the proposed bridge directly North of the existing bridge. The total length of the roadway project is 0.355 miles.

A geotechnical investigation was conducted during March and April 2005. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis by the Materials and Tests Unit. The -L- alignment from station 12+00 to 30+50 was investigated using a CME-550 drill rig and hand auger.

Areas of Special Geotechnical Interest

1) Highly Plastic Clays: Highly plastic clays were encountered on the project at the following location:

Line	Station
-L-	12+00 to 12+50
-L-	13+50 to 16+50

2) Crystalline Rock: Crystalline Rock was encountered at the following locations:

Line	Station
-L-	13+00 to 14+75
-L-	16+25 to 18+50
-L-	24+00 to 24+75

Physiography and Geology

The project is located in gently rolling terrain of the Piedmont Physiographic Province. The area consists of wooded land, rock outcrops, and sparse dwellings. Geologically, the site is located within the Carolina Slate Belt and is underlain by metamorphosed granite.

Soil Properties

Soils present at the project site include roadway embankment and residual soils.

Roadway embankment soil is present in the embankment of the existing roadway. These soils consist primarily of red brown, moist, medium stiff to stiff, silty clay (AASHTO classification A-7) and red-brown, moist, medium stiff, sandy silt (A-4).

Residual soils are derived from the in-place weathering of the underlying metamorphosed granite. They consist of red brown, dry to moist, stiff to very stiff, highly plastic, silty clay (A-7), tan to tan brown, dry to moist, saprolitic, stiff to hard, sandy silt/silty clay (A-4/A-7) and tan to orange brown, dry, saprolitic, dense to very dense, silty sand.

Rock Properties

Weathered rock was encountered during the roadway investigation. It originates from the underlying metamorphosed granite.

Crystalline rock was encountered during the roadway investigation and consists of metamorphosed granite.

Groundwater

Groundwater was encountered in two locations on the project in the cut sections left of station 16+10 and right of station 25+16. Groundwater may fluctuate with seasonal precipitation.

Respectfully submitted,

Cheryl A. Youngblood, LG
Project Geologist

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4298	3-A

EARTHWORK BALANCE SHEET

-- VOLUMES IN CUBIC YARDS --

PROJECT B-4298 COUNTY Vance COMPUTED BY: BAK 3/07 CHECKED BY: SLS 5/07 SHEET 1 OF 1

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+) 20%		ROCK	SUITABLE	UNSUIT.	TOTAL
-L-															
11+75.00	20+76 (BB)	19305	840			18465	3972	840	3132	4598	0		14707		14707
-DR 1-															
10+11	11+00	0	0			0	746	0	746	895	895		0		0
-DR 2-															
8+82.83	13+15.25	958	0			958	194	0	194	233	0		725		725
SUBTOTAL		20263	840			19423	4912	840	4072	5726	895		15432		15432
-L-															
22+71 (EB)	30+50.00	3636	8			3628	3968	8	3960	4760	1124		0		0
SUBTOTAL		3636	8			3628	3968	8	3960	4760	1124		0		0
TOTAL		23899	848			23051	8880	848	8032	10486	2019		15432		15432
LOSS DUE TO CLEARING & GRUBBING		-800				-800							-800		-800
WASTE TO REPL. BORROW											-2019		-2019		-2019
GRAND TOTAL		23099	848			22251					0		12613		12613
	SAY	**23,250**													

EST. DDE = 65 CY

EST. UNDERCUT = 250 CY (PER GEOTECH)

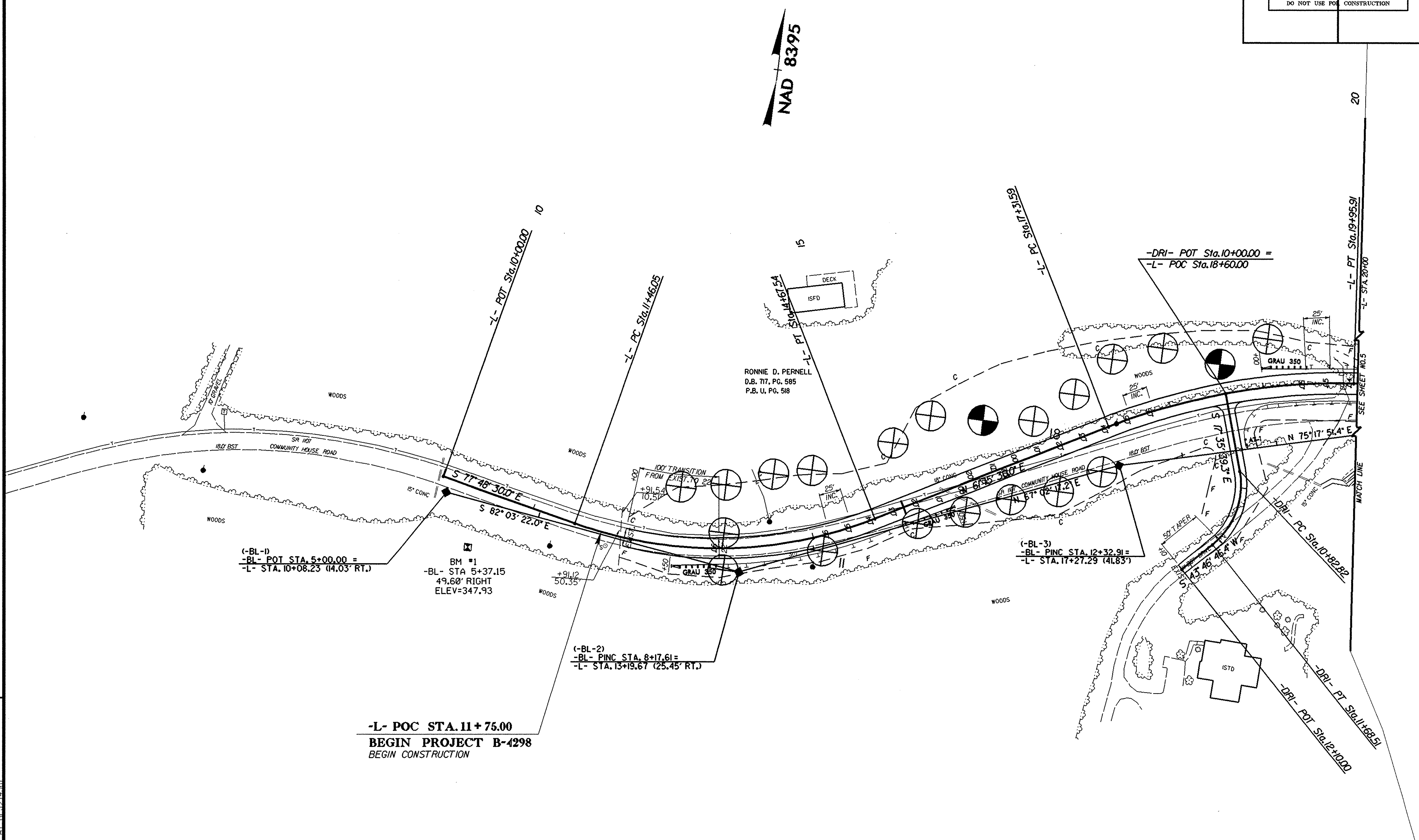
EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

17-MAY-2007 16:28
\Roadway\Proj\b4298_ew_balance_sheet.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-4298	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83/95
-L- POT Sta.10+00.00
-L- PC Sta.11+46.05
-L- PT Sta.14+67.54
-L- PC Sta.17+31.59
-L- PT Sta.19+95.91
-DRI- POT Sta.10+00.00 =
-L- POC Sta.18+60.00
RONNIE D. PERNELL
D.B. 717, PG. 585
P.B. U, PG. 518
DECK
ISFD
WOODS
SR 1101
COMMUNITY HOUSE ROAD
18.0' BST
15" CONC
S 77° 48' 30.0" E
S 82° 03' 22.0" E
N 67° 02' 17.2" E
N 75° 17' 51.4" E
S 17° 35' 39.3" E
S 43° 46' 46.4" W
100' TRANSITION FROM EXIST. TO 22'
25' INC.
GRAU 350
50' TAPER
(-BL-1)
-BL- POT STA. 5+00.00 =
-L- STA. 10+08.23 (14.03' RT.)
BM #1
-BL- STA 5+37.15
49.60' RIGHT
ELEV=347.93
+91.54
10.51
+91.12
50.35
(-BL-2)
-BL- PINC STA. 8+17.61 =
-L- STA. 13+19.67 (25.45' RT.)
(-BL-3)
-BL- PINC STA. 12+32.91 =
-L- STA. 17+27.29 (41.83')
-DRI- PC Sta.10+82.82
-DRI- PT Sta.11+68.51
-DRI- POT Sta.12+10.00
ISTD
SEE SHEET NO. 5
MATCH LINE
-L- STA 20+00

-L- POC STA. 11 + 75.00
BEGIN PROJECT B-4298
BEGIN CONSTRUCTION

NOTE: SEE SHEET 6 FOR -L- AND -DRI- PROFILES

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
B-4298	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

NAD 83/95

BENNY L. HARRIS JR.
KATHY W. HARRIS
D.B. 528, PG. 430 (TRACT I)

-L-
PI Sta 26+74.61
Δ = 43° 35' 05.0" (LT)
D = 11° 14' 04.5"
L = 387.96'
T = 203.91'
R = 510.00'

S 17° 02' 06" E 87.14'
S 20° 37' 43" E 107.20'
S 4° 39' 08" W 237.46'
S 4° 41' 17" W 307.05'

20
25
30

-L- STA 20+00

81° 53' 33" E 40.49'

N 66° 57' 21" E 749.93'

-L- POT Sta. 30+51.39

(-BL-4)
-BL- PINC STA. 15+75.28 =
-L- STA. 20+89.19 (39.42' RT.)

BEGIN APPROACH SLAB

BEGIN BRIDGE

-L- PC Sta. 24+70.71

-L- PT Sta. 28+58.66

BENNY L. HARRIS JR.
KATHY W. HARRIS
D.B. 528, PG. 430 (TRACT 2)
D.B. 478, PG.31

SEE SHEET NO.4

TYPE-III

WOODS

RUN CREEK

WATERCOURSE

N 7° 05' 53" W

EXISTING R/W

WOOD & STEEL BRIDGE W/ 6" DECK
SEAT ELEVATION 219.89
WOODEN OR CONC. SEAT ELEVATION 219.89

N 75° 17' 51.4" E

MATCH LINE

MYLES J. McGINNES
DEBORAH McGINNES
D.B. 890, PG. 822

-BL- STA. 19+32.28
ELEV. = 219.89

N 11° 02' 58" E 28.18'

N 84° 12' 15.0" E

GRAU 360

SR 1107 COMMUNITY HOUSE ROAD

182' BST

N 84° 10' 45.0" E

N 72° 44' 47.9" E

INV=300.48 18" CONC

INV=301.05

SEPTIC FIELD

HTR

U/G TANK

WOODS TRANSITION FROM 22' TO EXIST.

3' GRAVEL DRIVE

INV=309.41

INV=309.25

INV=309.09

15" CONC

N 40° 37' 30.0" E

N 43° 51' 16.8" E

N 46° 34' 42.1" E

N 65° 36' 44.6" E

+60.87
34.17'

+60.87
36.80'

EXISTING R/W

INV=333.15

180' BST

6" CONC

INV=329.25

(-BL-8)
-BL- PINC STA. 27+05.33

(-BL-9)
-BL- PINC STA. 29+12.51

BENNY L. HARRIS JR.
KATHY W. HARRIS
D.B. 528, PG. 430 (TRACT I)

END APPROACH SLAB

END BRIDGE

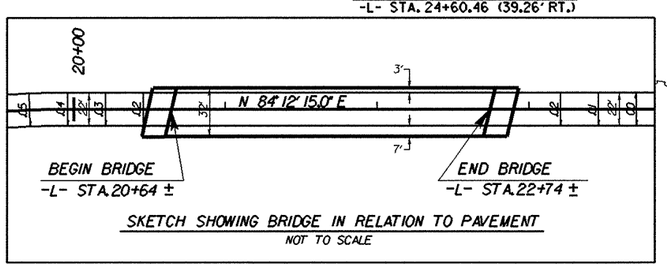
BENNY L. HARRIS JR.
KATHY W. HARRIS
D.B. 528, PG. 430 (TRACT 2)
D.B. 478, PG.31

(-BL-7)
-BL- PINC STA. 23+95.19 =
-L- STA. 28+89.02 (13.58' RT.)

-L- POT STA. 30 + 50.00
END PROJECT B-4298
END CONSTRUCTION

(-BL-5)
-BL- PINC STA. 19+46.55 =
-L- STA. 24+60.46 (39.26' RT.)

(-BL-6)
-BL- PINC STA. 21+47.99 =
-L- STA. 26+50.35 (32.55' RT.)



SKETCH SHOWING BRIDGE IN RELATION TO PAVEMENT
NOT TO SCALE

NOTES: (1) SEE SHEET 7 FOR -L- PROFILE
(2) SEE SHEETS S-1 TO S- FOR STRUCTURE DETAILS

25-OCT-2005 11:04
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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4298	6

12+53

RESIDUAL, RED-BROWN, STIFF
MOIST, HIGHLY PLASTIC, SILTY CLAY

2:1

TAN, DRY, SAPROLITIC, STIFF TO HARD, SANDY SILT

4:1

2:1

Ⓒ

338.97

WEATHERED ROCK (META GRANITE)

DRY
4/05

12+50.00

Ⓒ ROADWAY EMBANKMENT, RED BROWN, MOIST, STIFF, SILTY CLAY

RESIDUAL, RED BROWN, MOIST,
STIFF, HIGHLY PLASTIC, SILTY CLAY

TAN, DRY, STIFF, SANDY SILT

2.5:1

Ⓒ

WEATHERED ROCK (META-GRANITE)

12+00.00

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

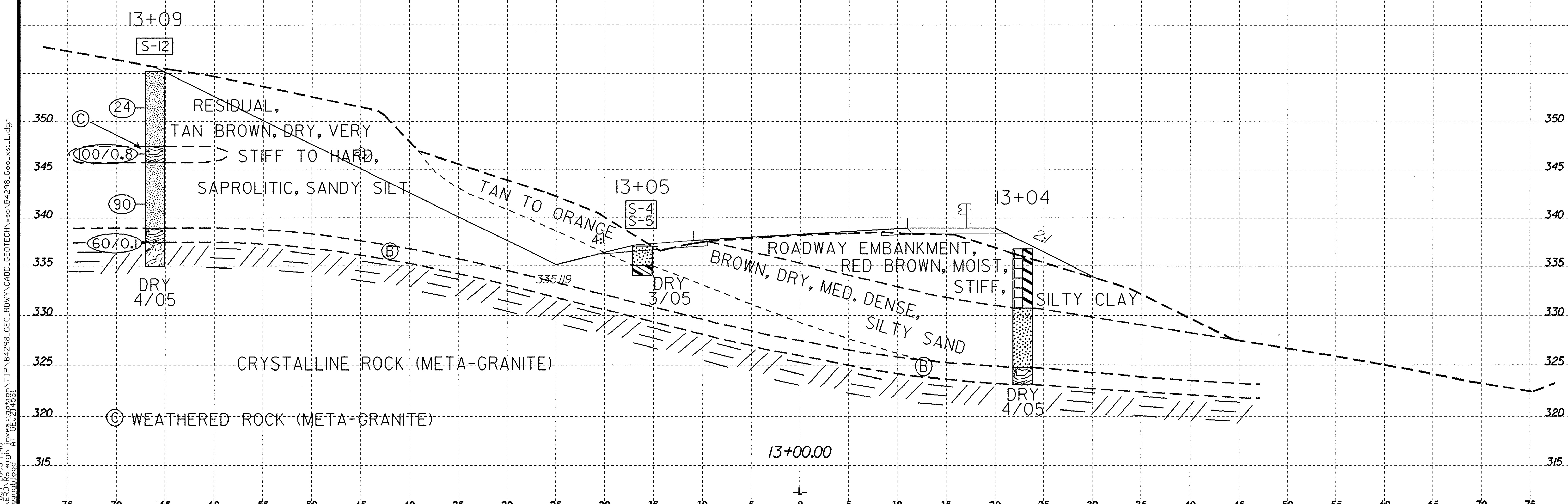
370 365 360 355 350 345 340 335 330 325 320 315 360 355 350 345 340 335 330

8/23/99

24-OCT-2005 12:10
User:[kbaileygh]
c:\cadd\data\kbaileygh AT SETTINGS1

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-4	16 LT	13+05	1.0-2.0	A-2-4(0)	28	5	46.3	19.7	21.9	12.1	91	57	35	-	-
S-5	16 LT	13+05	2.0-3.0	A-6(2)	36	12	43.1	15.7	23.1	18.1	97	62	43	-	-
SS-12	66 LT	13+09	2.8-4.3	A-4(3)	33	6	15.6	21.6	52.7	10.0	99	89	68	-	-



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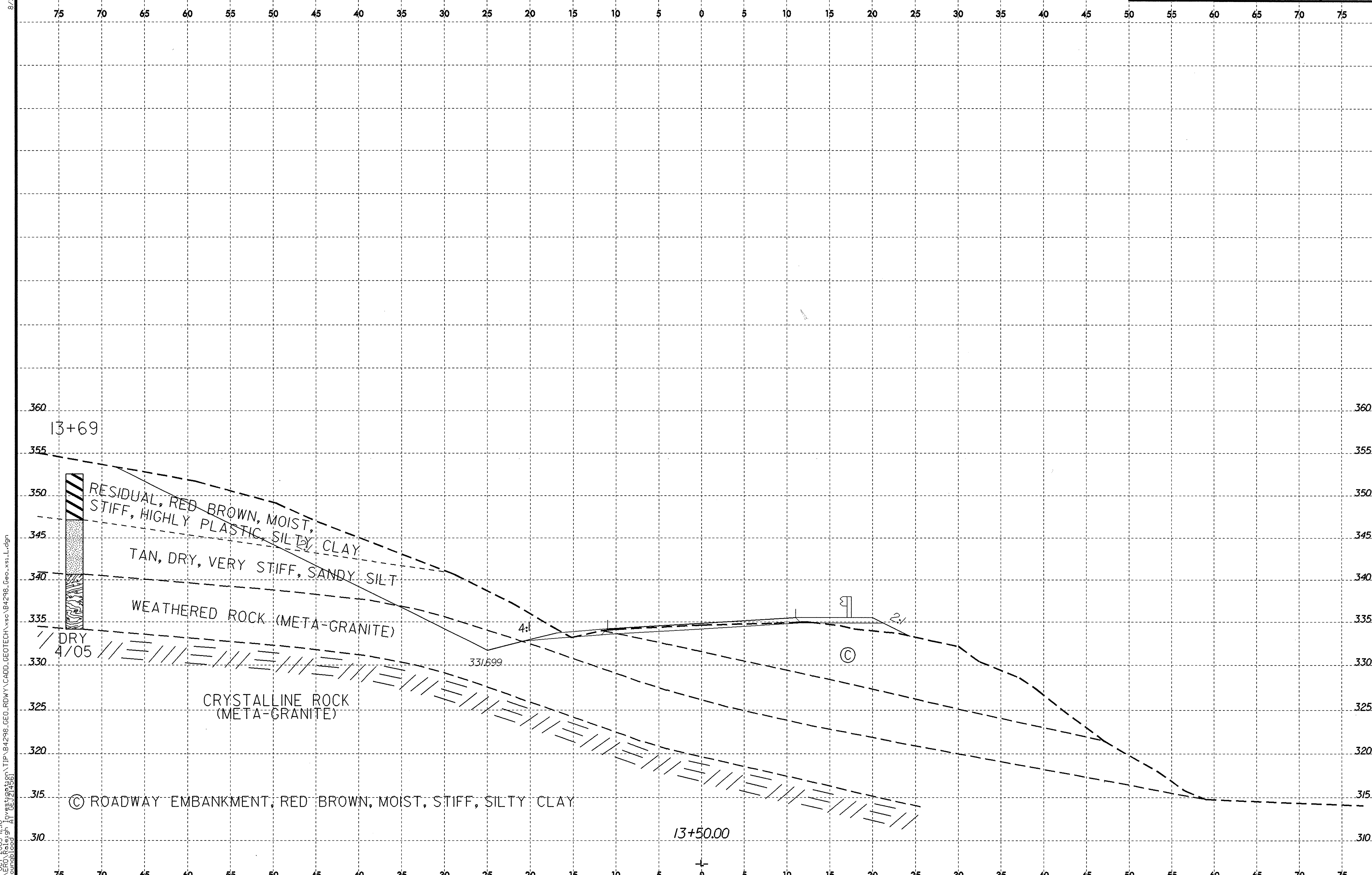
cyoungblood AT GEJ21456I

PROJ. REFERENCE NO.	SHEET NO.
B-4298	8



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cyoungblood AT GEJ214561

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4298	9

14+17

A

2:1

TAN, DRY, STIFF, SANDY SILT

DRY
4/05

4:1

328.278

CRYSTALLINE ROCK (META-GRANITE)

14+06

2:1

B

C

DRY
4/05

Ⓐ RESIDUAL, RED BROWN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

Ⓑ WEATHERED ROCK (META-GRANITE)

Ⓒ ROADWAY EMBANKMENT, RED BROWN, MOIST, STIFF, SILTY CLAY

14+00.00

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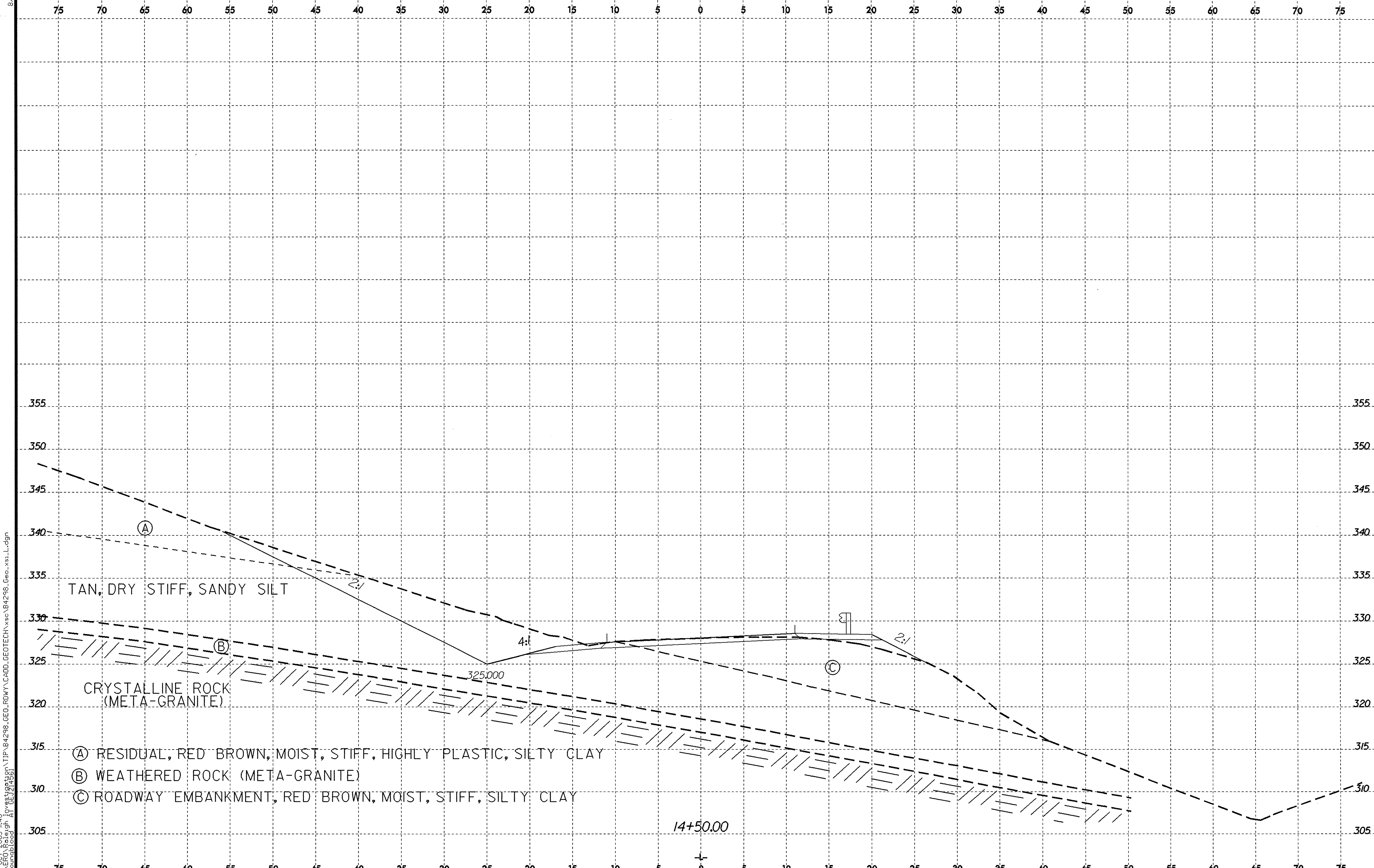
groundhog AT GE214961

PROJ. REFERENCE NO.	SHEET NO.
B-4298	10



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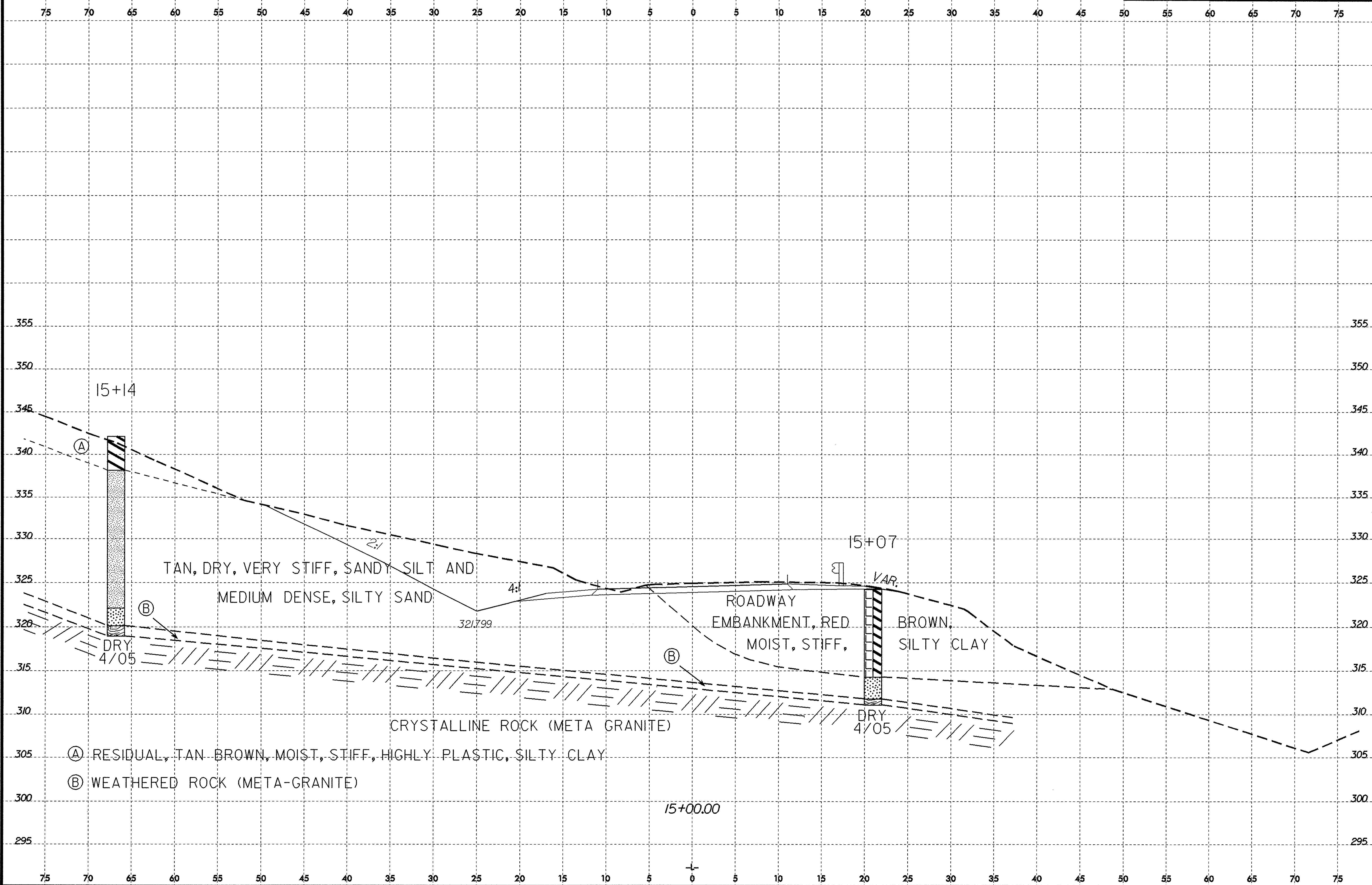
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4298	11


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
355
350
345
340
335
330
325
320
315
310
305
300
295
15+14
15+07
Ⓐ
Ⓑ
2:1
4:1
VAR.
321.799
TAN, DRY, VERY STIFF, SANDY SILT AND
MEDIUM DENSE, SILTY SAND
ROADWAY
EMBANKMENT, RED
MOIST, STIFF,
BROWN,
SILTY CLAY
DRY
4/05
DRY
4/05
CRYSTALLINE ROCK (META GRANITE)
Ⓐ RESIDUAL, TAN BROWN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY
Ⓑ WEATHERED ROCK (META-GRANITE)
15+00.00

8/23/99

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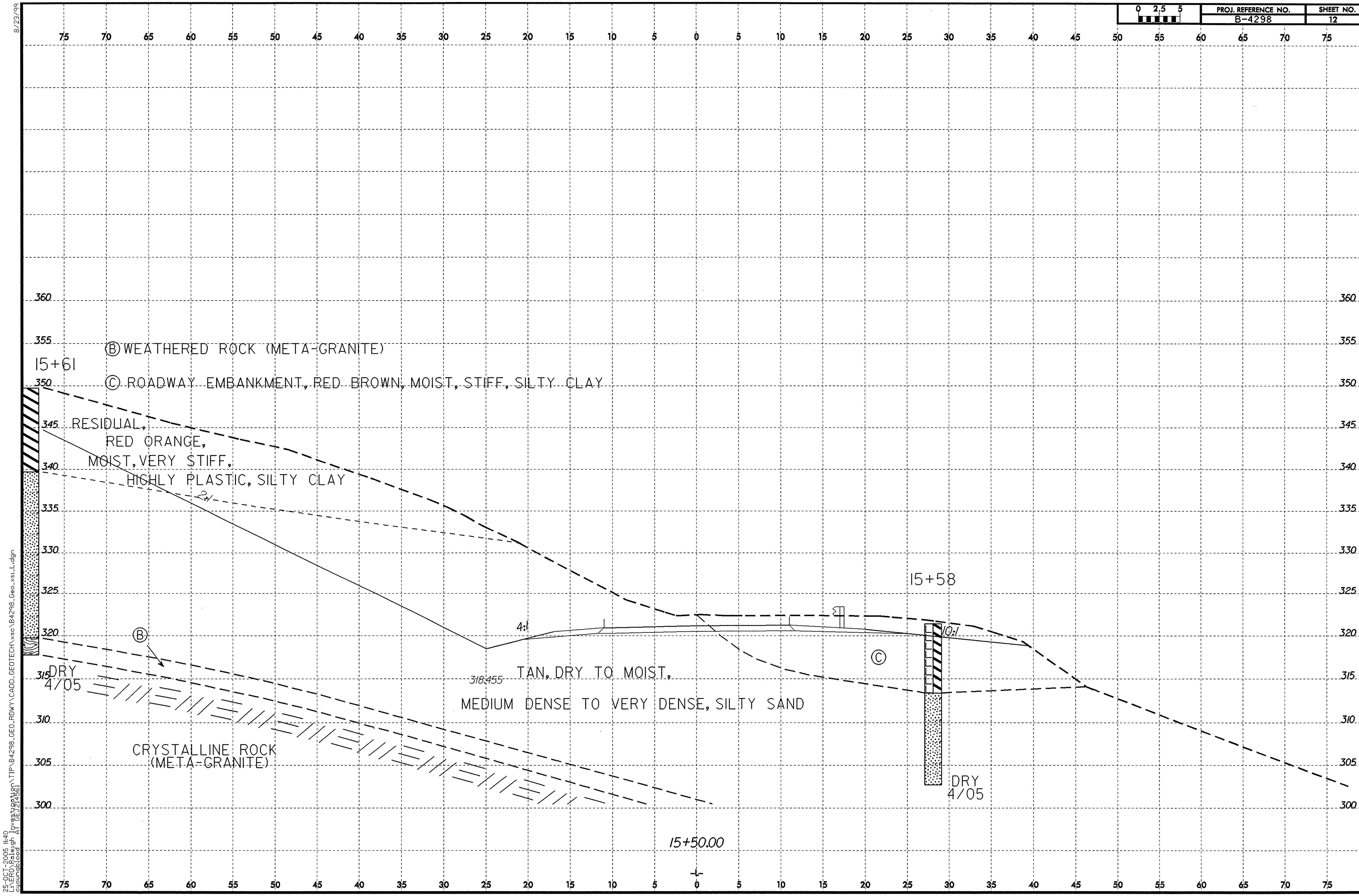
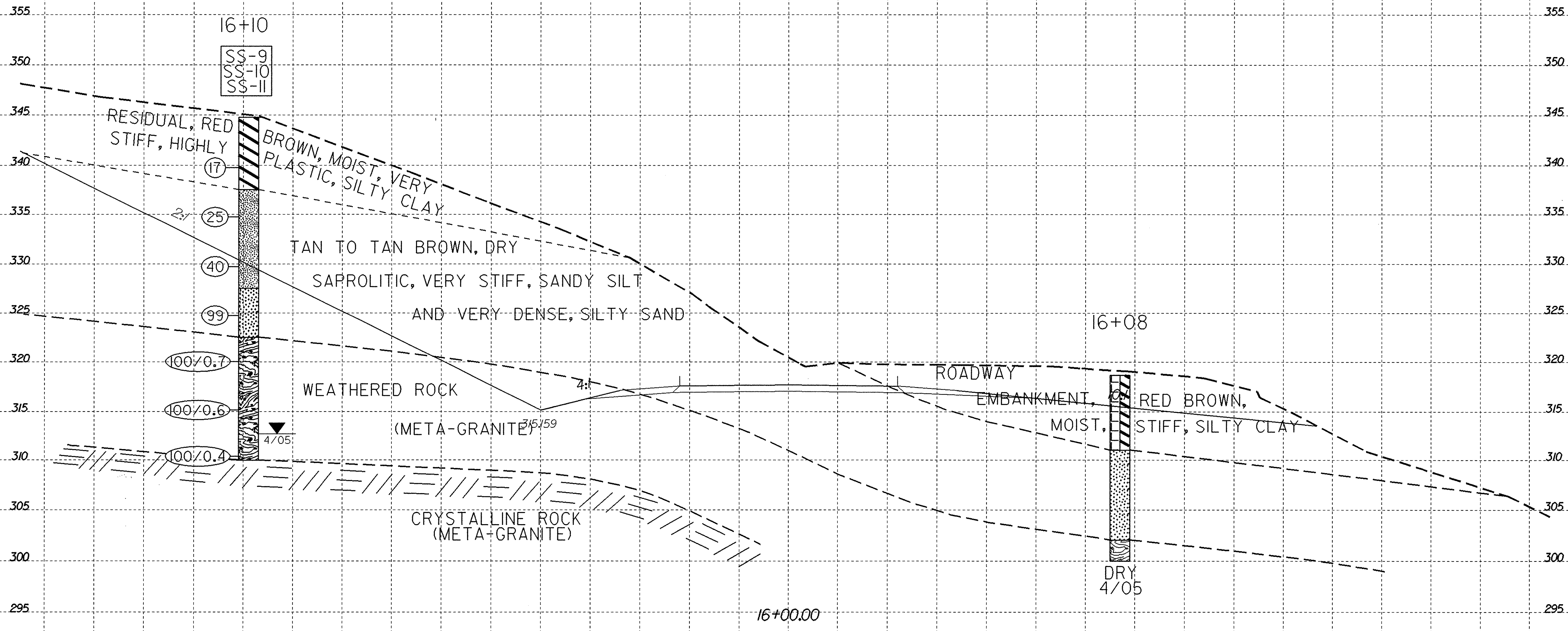
cyoungblood AT GEJ214561


PROJ. REFERENCE NO.
B-4298
SHEET NO.
12
8/23/99
15+61
Ⓑ WEATHERED ROCK (META-GRANITE)
Ⓒ ROADWAY EMBANKMENT, RED BROWN, MOIST, STIFF, SILTY CLAY
RESIDUAL, RED ORANGE, MOIST, VERY STIFF, HIGHLY PLASTIC, SILTY CLAY
2:1
4:1
10:1
15+58
TAN, DRY TO MOIST, MEDIUM DENSE TO VERY DENSE, SILTY SAND
318.455
DRY 4/05
CRYSTALLINE ROCK (META-GRANITE)
DRY 4/05
15+50.00
25-OCT-2005 11:40
cyoungblood

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-9	54 LT	16+10	4.0-5.5	A-7-6(7)	57	28	16.2	21.2	30.3	32.3	62	54	42	-	-
SS-10	54 LT	16+10	9.0-10.5	A-4(1)	36	4	26.7	28.9	34.3	10.1	97	78	51	-	-
SS-11	54 LT	16+10	19.0-20.5	A-2-4(0)	30	NP	41.6	22.8	29.5	6.1	85	56	35	-	-



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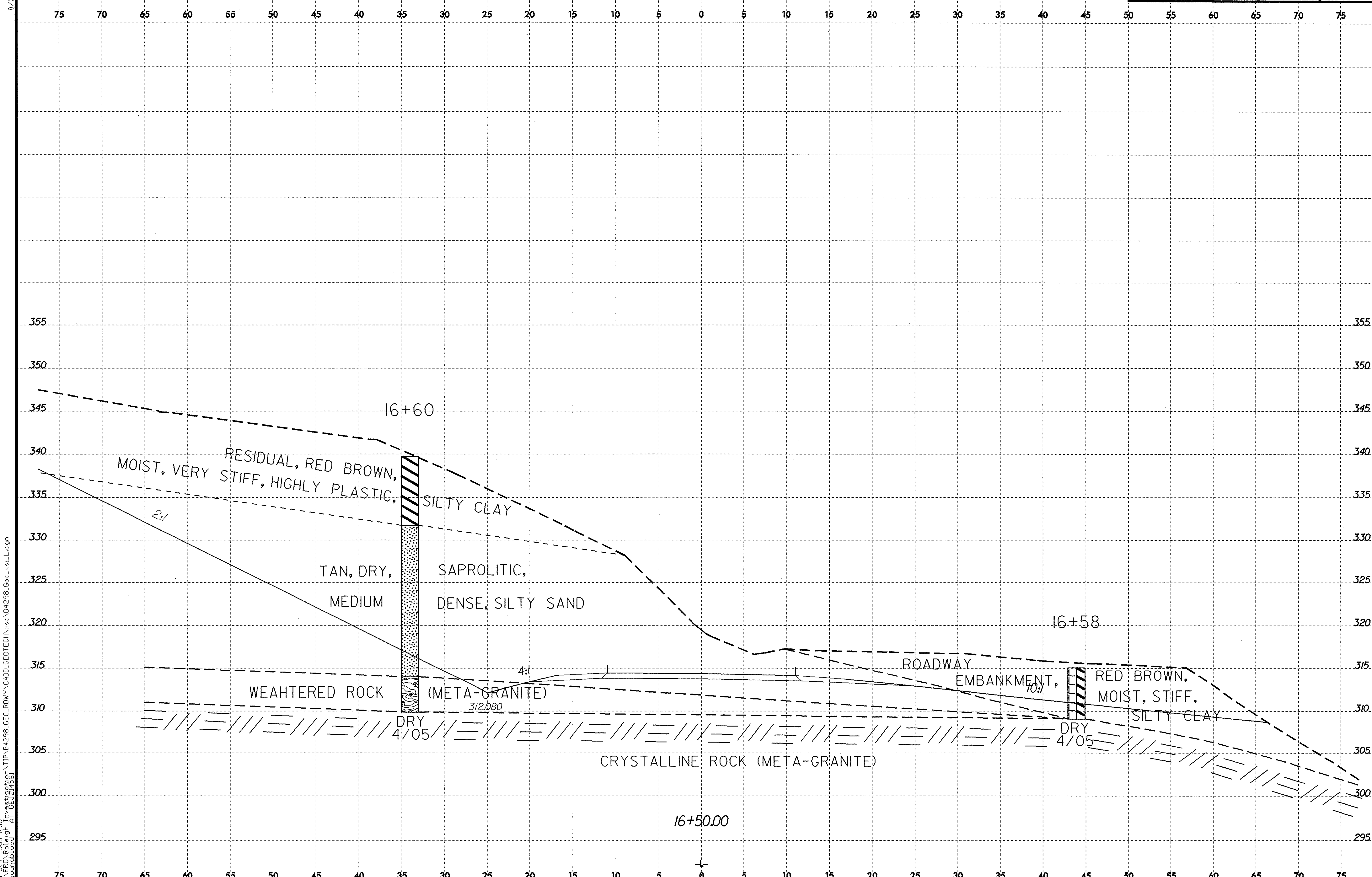
cyoungblood AT GEJ214561

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
B-4298	14



0 2.5 5
16+60
RESIDUAL, RED BROWN,
MOIST, VERY STIFF, HIGHLY PLASTIC, SILTY CLAY
2:1
TAN, DRY, MEDIUM
SAPROLITIC, DENSE, SILTY SAND
16+58
ROADWAY EMBANKMENT, RED BROWN, MOIST, STIFF, SILTY CLAY
4:1
10:1
WEAHTERED ROCK (META-GRANITE)
312.080
DRY 4/05
DRY 4/05
CRYSTALLINE ROCK (META-GRANITE)
16+50.00
355
350
345
340
335
330
325
320
315
310
305
300
295
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

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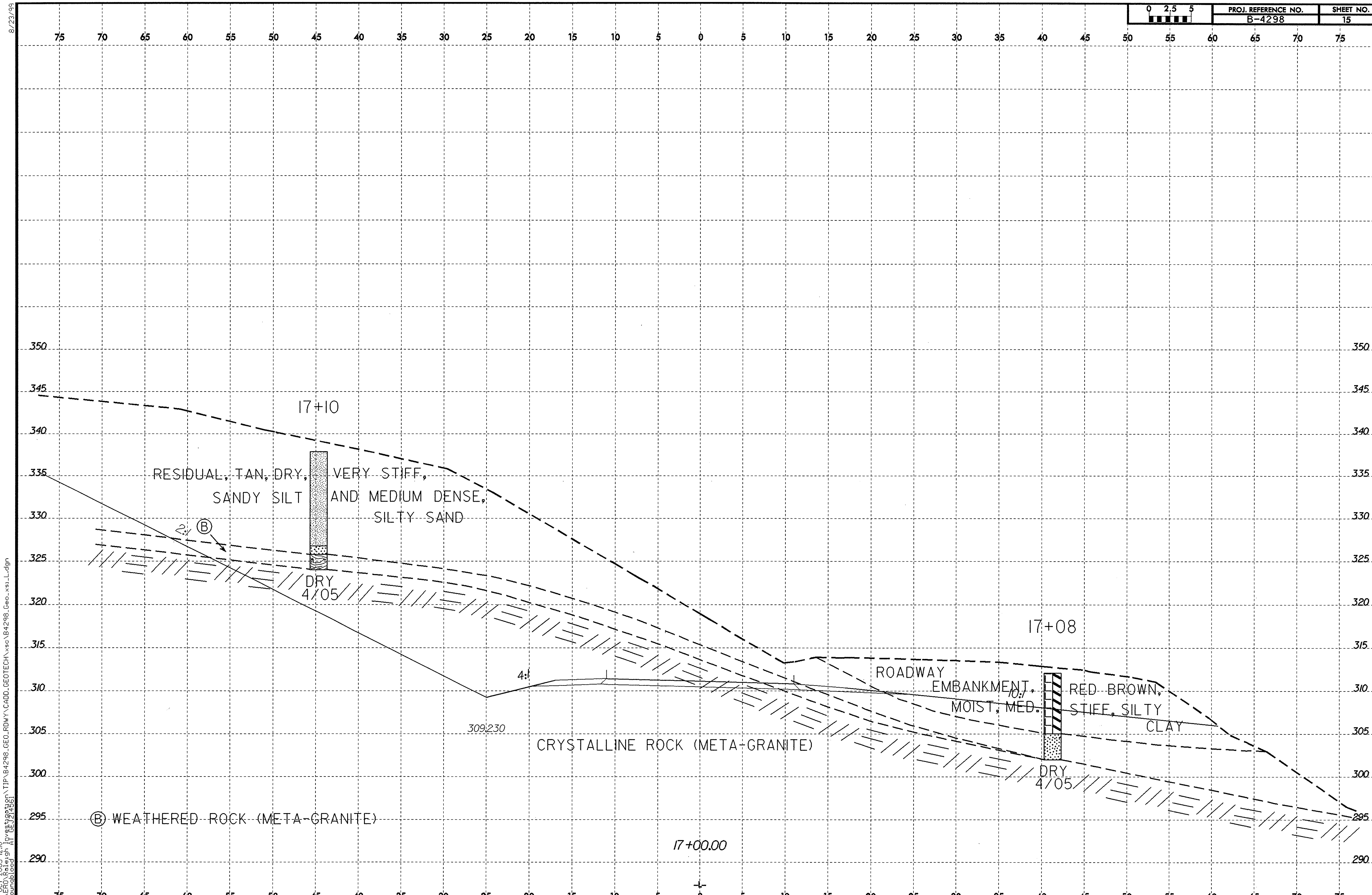
cyoungblood AT GEJ21456



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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4298	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

345
340
335
330
325
320
315
310
305
300
295
290
285
280

17+58

RESIDUAL, TAN BROWN, DRY,
VERY STIFF, SANDY SILT

2:1

DRY
4.05

4:1

306.764

CRYSTALLINE ROCK (META-GRANITE)

ROADWAY
EMBANKMENT,
RED BROWN,
MOIST, MED.
STIFF,
SILTY
CLAY

0.4

17+50.00

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

24-OCT-2005 12:10
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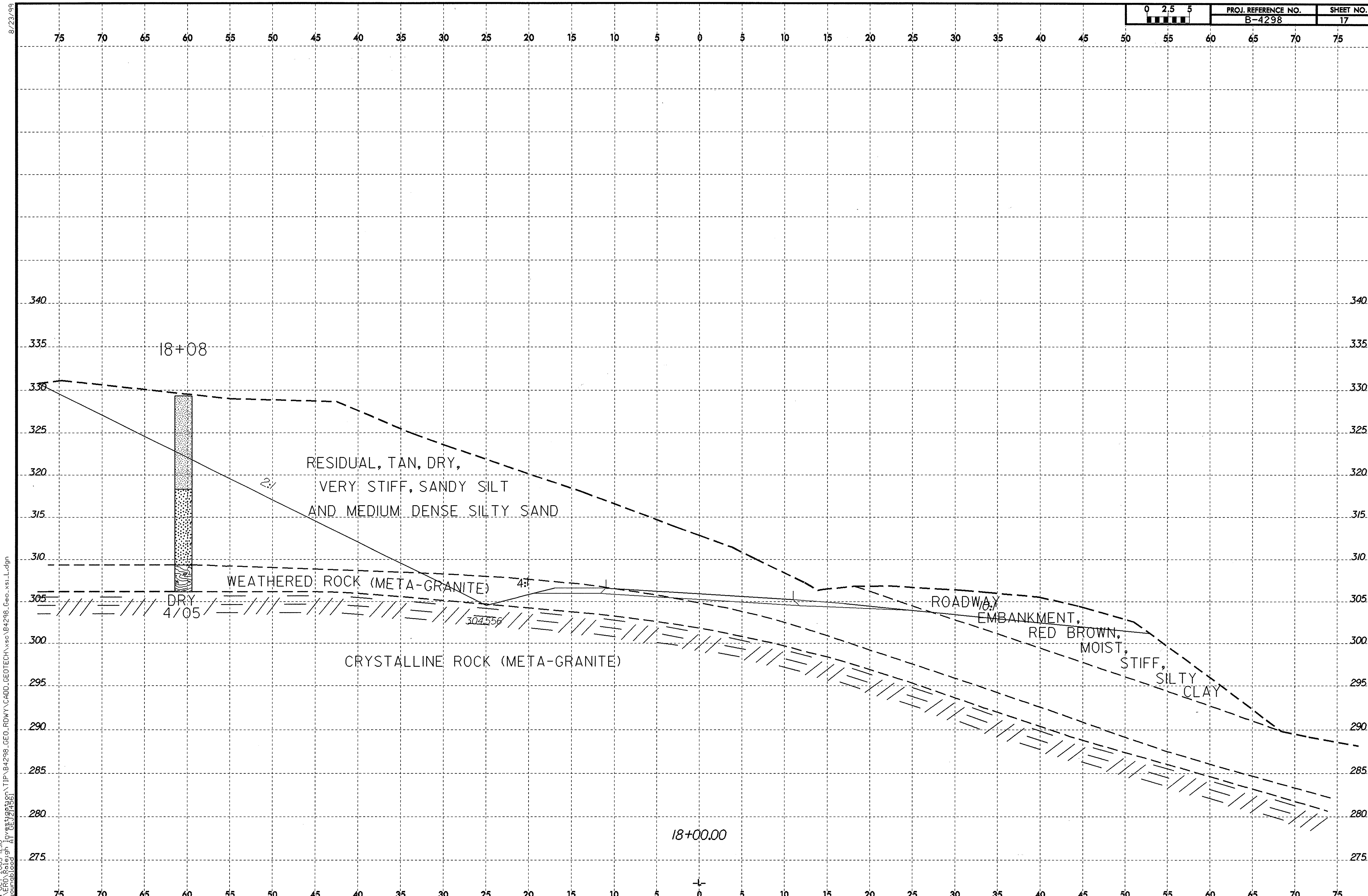


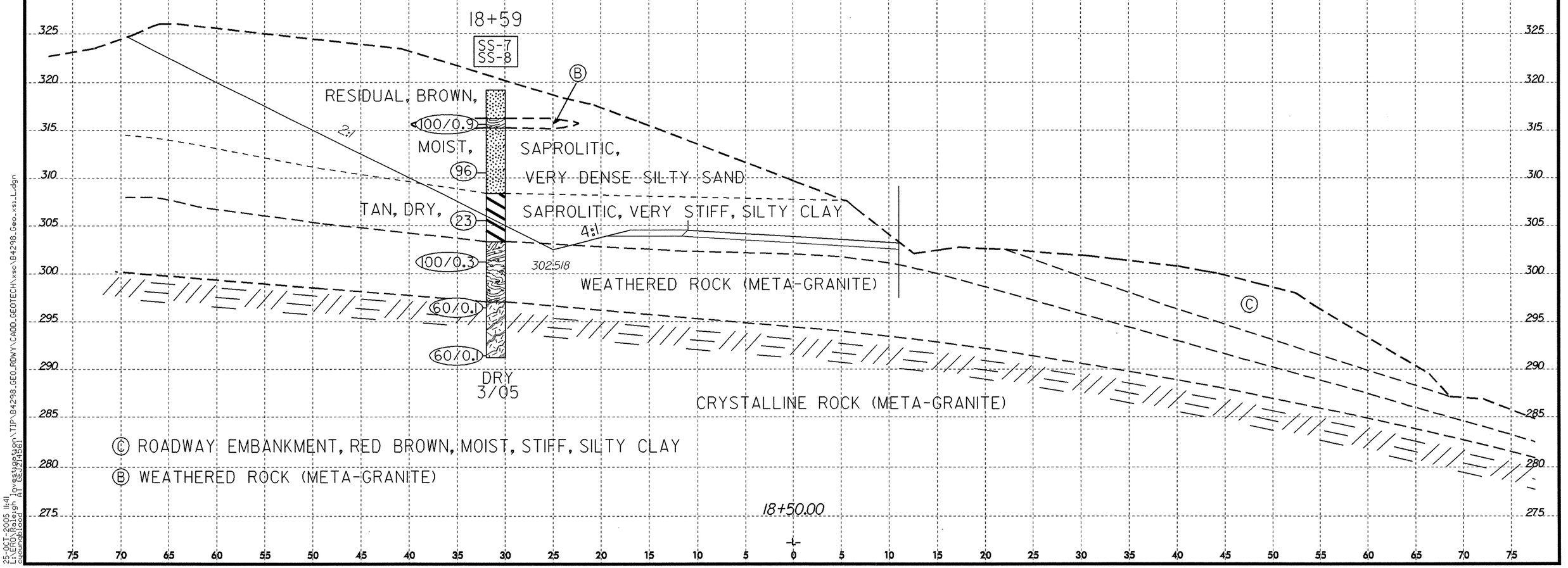
PROJ. REFERENCE NO.
B-4298
SHEET NO.
17
18+08
RESIDUAL, TAN, DRY,
VERY STIFF, SANDY SILT
AND MEDIUM DENSE SILTY SAND
2:1
WEATHERED ROCK (META-GRANITE)
4:1
DRY
4/05
304.556
CRYSTALLINE ROCK (META-GRANITE)
ROADWAY
EMBANKMENT,
RED BROWN,
MOIST,
STIFF,
SILTY
CLAY
18+00.00

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4298	18

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-7	31 RT	18+59	0.5-2.0	A-2-4(0)	29	NP	44.4	20.2	27.3	8.1	80	50	32	-	-
SS-8	31 RT	18+59	12.7-14.2	A-7-6(6)	45	16	29.1	20.4	30.3	20.2	93	73	52	-	-



25-OCT-2005 11:41
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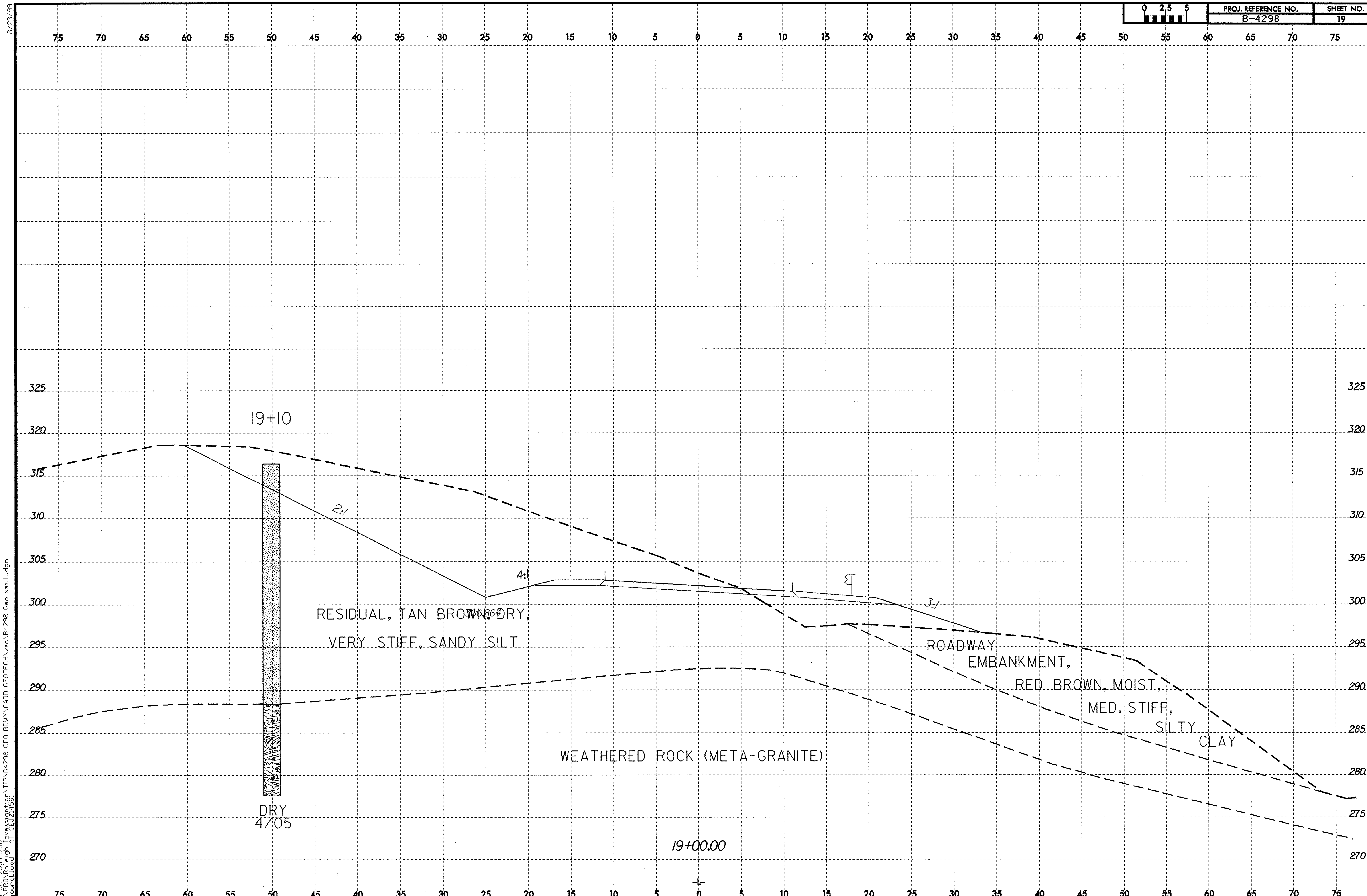
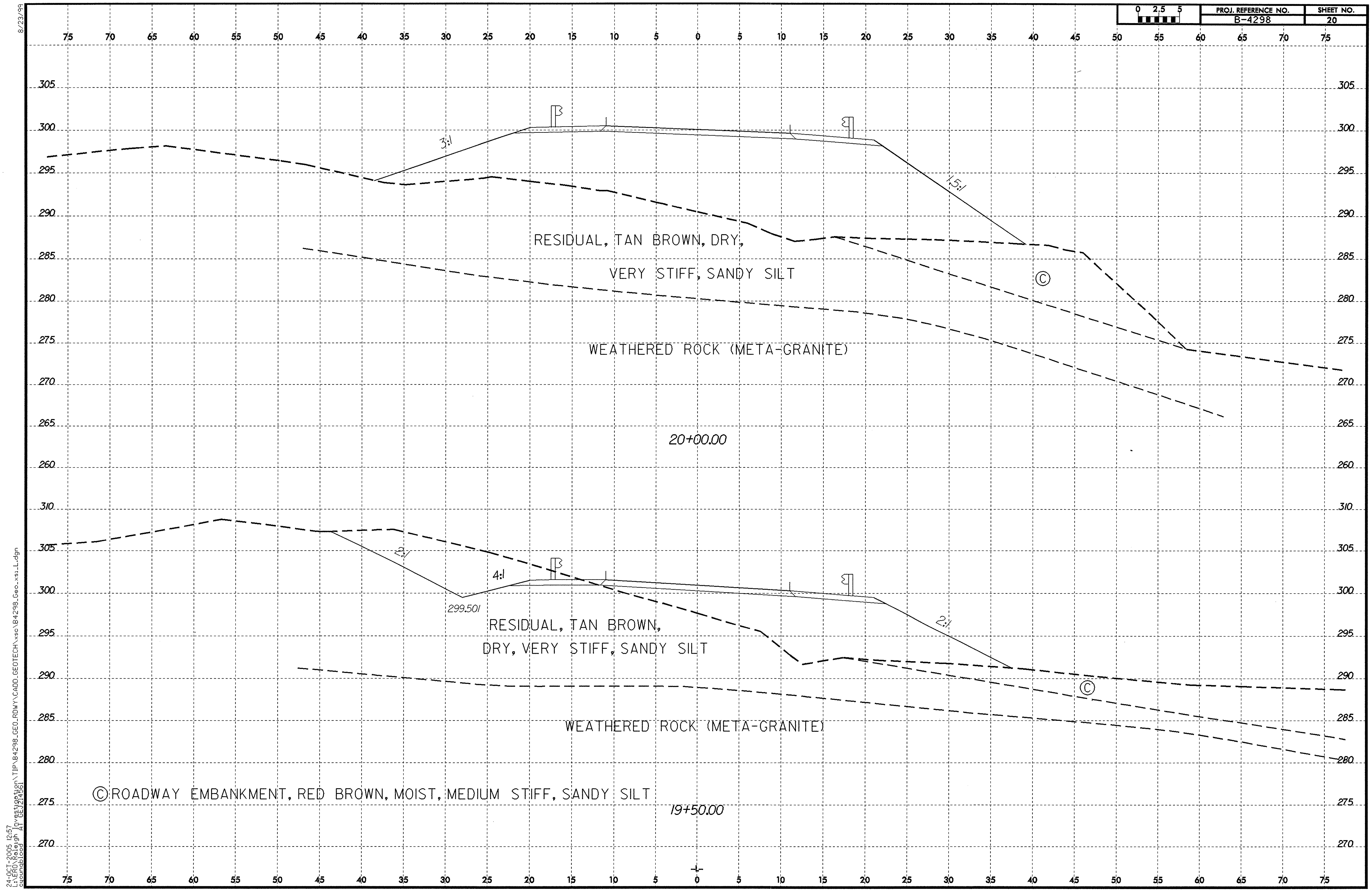
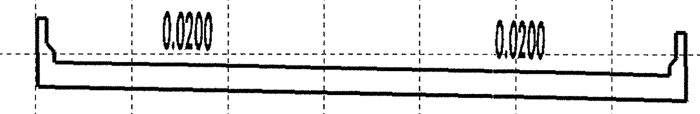
groundbreaking AT GE214561



PROJ. REFERENCE NO.
B-4298
SHEET NO.
19
19+10
2:1
4:1
3:1
RESIDUAL, TAN BROWN, DRY,
VERY STIFF, SANDY SILT
ROADWAY
EMBANKMENT,
RED BROWN, MOIST,
MED. STIFF,
SILTY
CLAY
WEATHERED ROCK (META-GRANITE)
DRY
4/05
19+00.00
24-OCT-2005 12:10

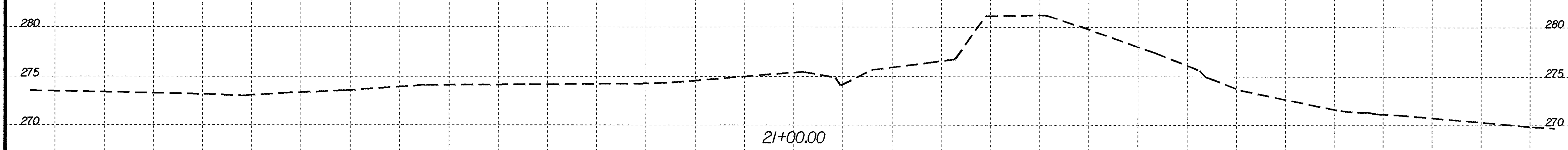


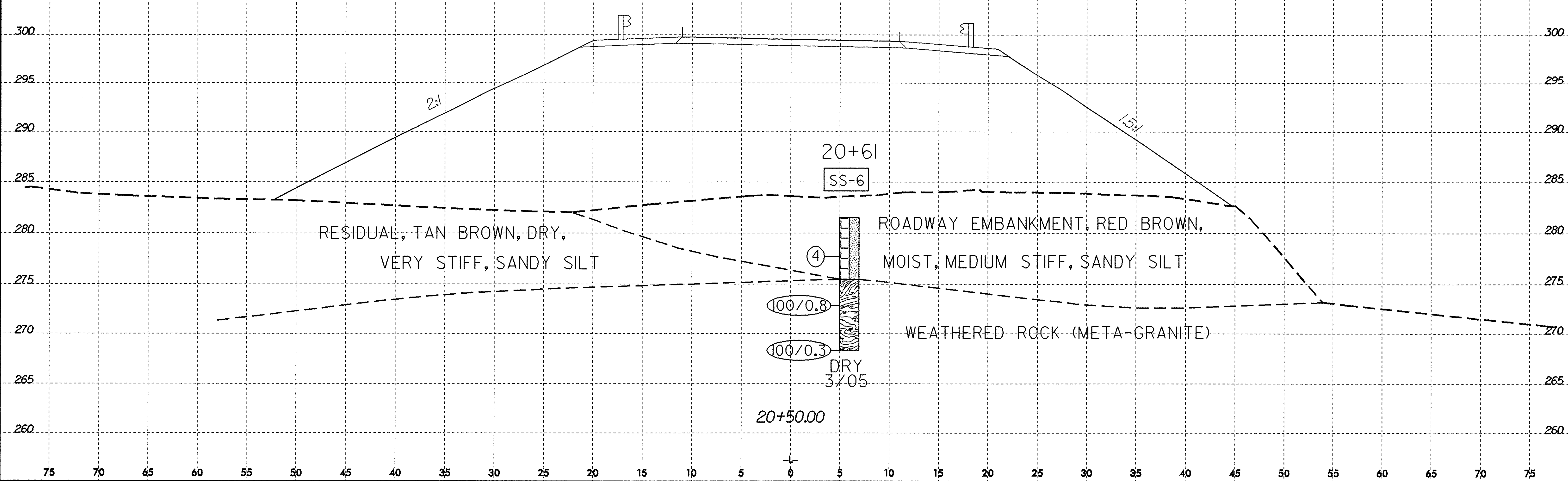
PROJ. REFERENCE NO.
B-4298
SHEET NO.
20
0 2.5 5
8/23/99
3:1
1.5:1
RESIDUAL, TAN BROWN, DRY,
VERY STIFF, SANDY SILT
©
WEATHERED ROCK (META-GRANITE)
20+00.00
2:1
4:1
299.501
2:1
RESIDUAL, TAN BROWN,
DRY, VERY STIFF, SANDY SILT
©
WEATHERED ROCK (META-GRANITE)
© ROADWAY EMBANKMENT, RED BROWN, MOIST, MEDIUM STIFF, SANDY SILT
19+50.00



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-6	6 RT	20+61	2.9-4.4	A-4(1)	29	6	26.7	21.6	31.5	20.2	97	78	55	-	-





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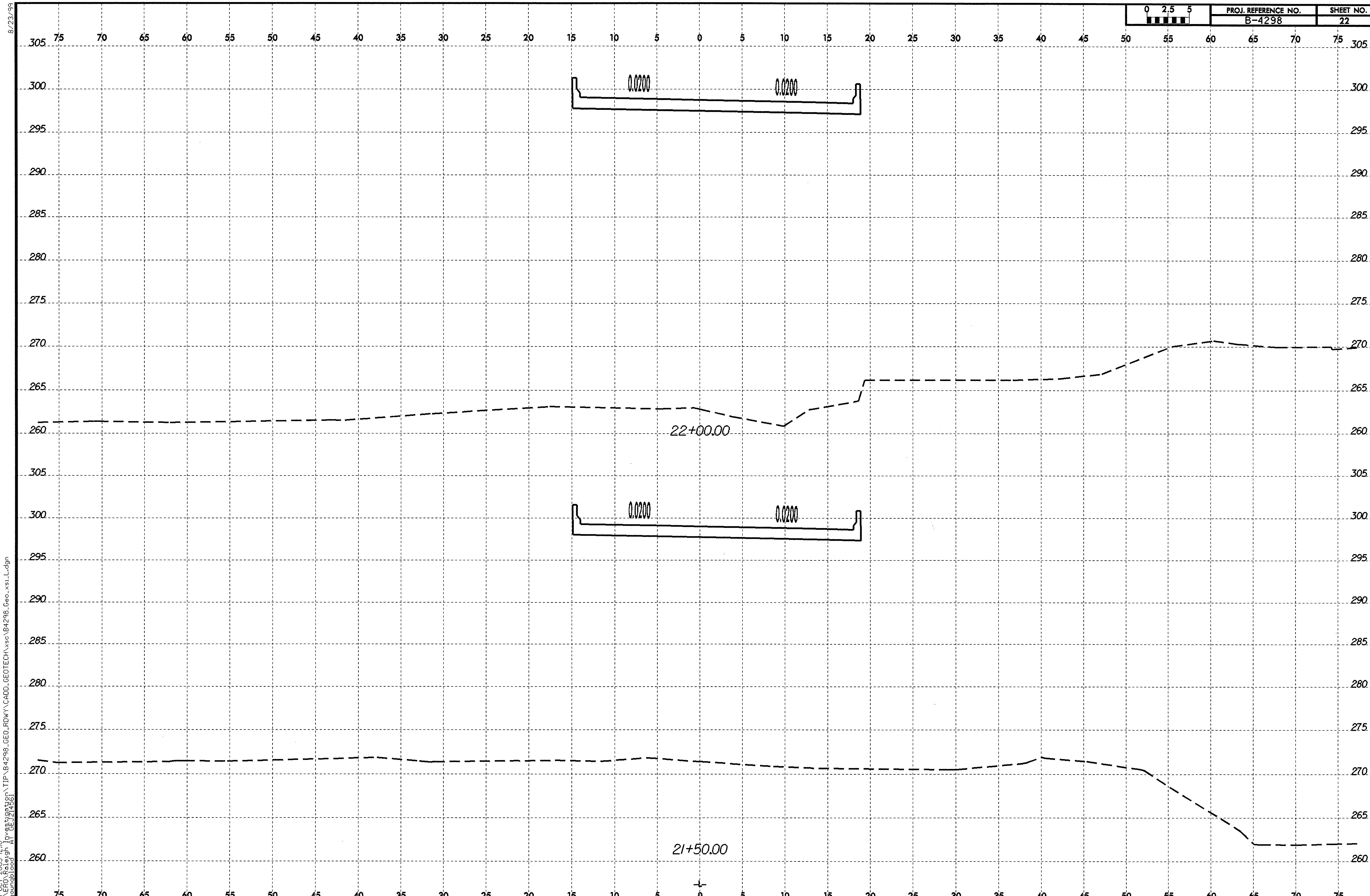

PROJ. REFERENCE NO.
B-4298
SHEET NO.
22
0 2.5 5
0.0200
0.0200
22+00.00
0.0200
0.0200
21+50.00
8/23/99

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4298	23

23+10

2:1

2:1

DRY
4/05

ROADWAY EMBANKMENT, RED BROWN,
MOIST, MED. STIFF, SANDY SILT

CRYSTALLINE ROCK (META-GRANITE)

Ⓐ RESIDUAL, BROWN TO GRAY, DRY TO MOIST, DENSE, SILTY SAND

Ⓑ WEATHERED ROCK (META-GRANITE)

23+00.00

0.0200

0.0200

22+50.00

24-OCT-2005 12:11
L:\ERO\Raleigh Projects\geotech\TIP\B4298_GEO_RDWY\CADD_GEOTECH\xsc\B4298_Geo_xs1_L.dgn
gloundblood AT GEV 21496

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4298	24

24+10

Ⓐ

4:1

Ⓓ

295.672

DRY
4/05

CRYSTALLINE ROCK (META-GRANITE)

ROADWAY EMBANKMENT,
RED BROWN, MOIST, MED.
STIFF, SANDY
SILT

2:1

Ⓐ RESIDUAL, RED BROWN, DRY TO MOIST, STIFF, SANDY CLAY

Ⓓ TAN, DRY, DENSE, SILTY SAND

24+00.00

23+60

3:1

Ⓐ

Ⓑ

100/1.1

DRY
4/05

CRYSTALLINE ROCK (META-GRANITE)

ROADWAY EMBANKMENT,
RED BROWN, MOIST,
MED. STIFF, SANDY
SILT

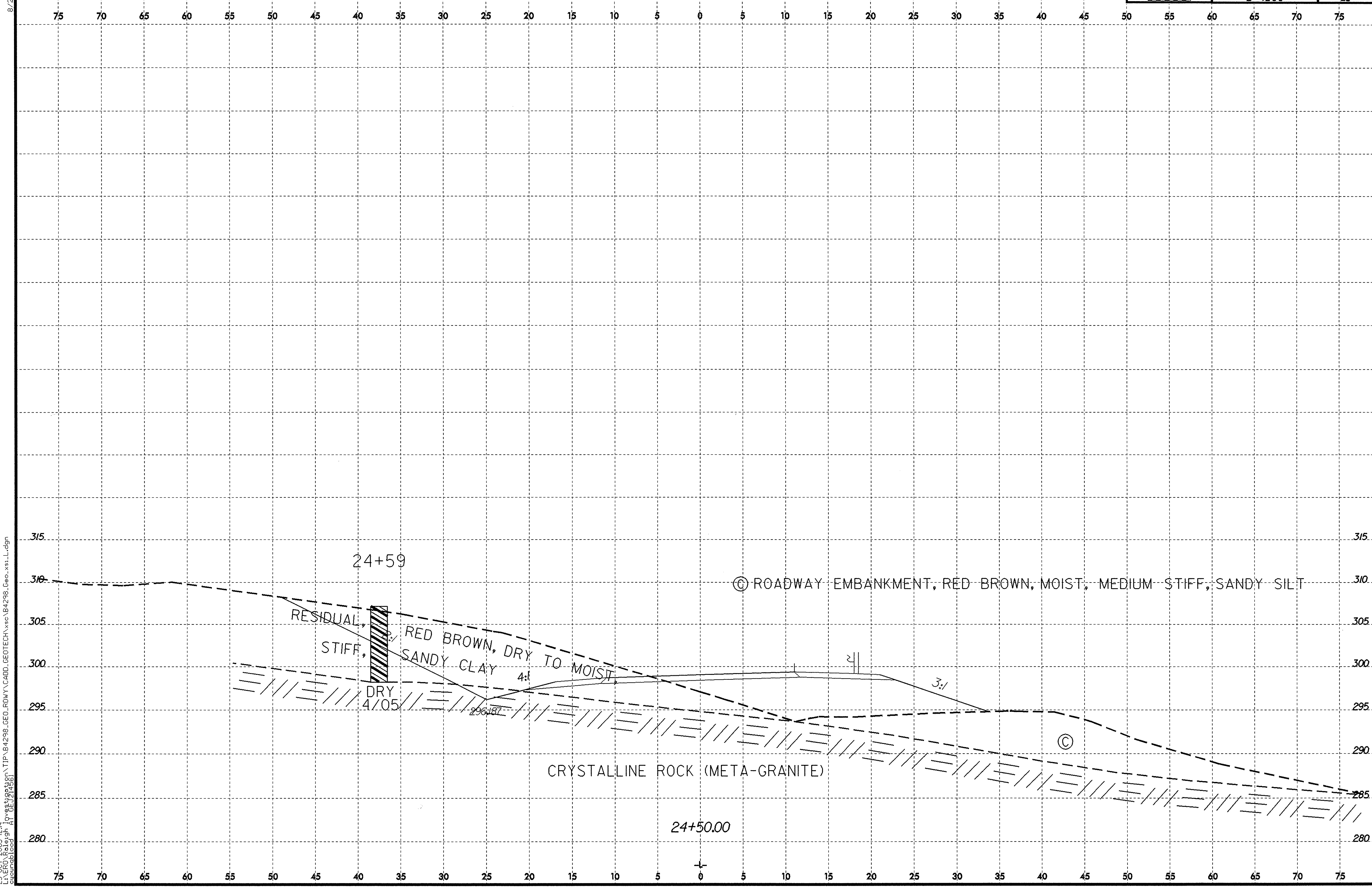
2:1

Ⓑ WEATHERED ROCK (META-GRANITE)

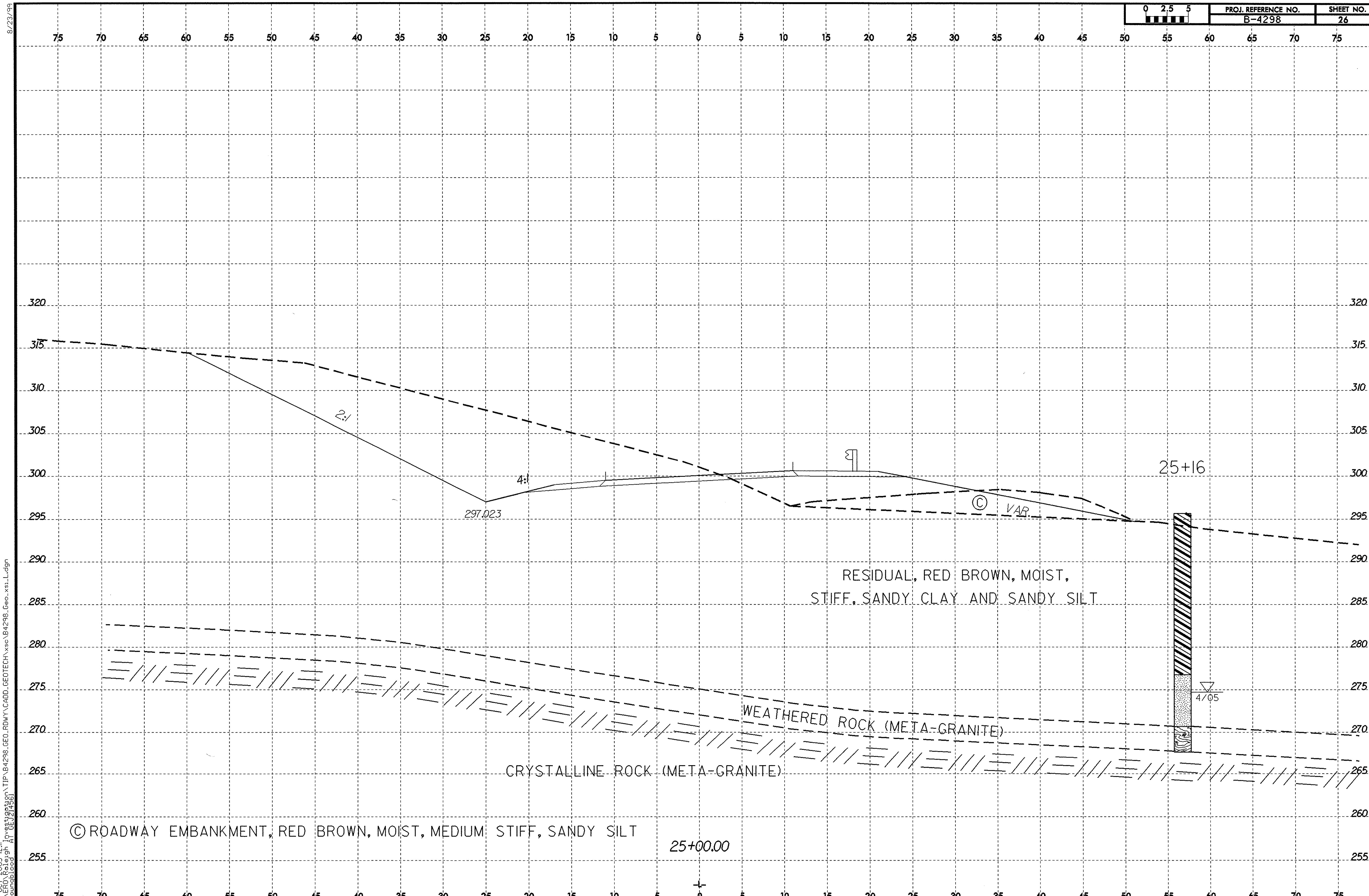
23+50.00

25-OCT-2005 11:50
L:\ERD\Raleigh Projects\Program\TIP\B4298_GEO_ROWY\CADD_GEOTECH\xsc\B4298_Geo_xsi_L.dgn
GroundBoss AT GE214961

PROJ. REFERENCE NO.	SHEET NO.
B-4298	25



PROJ. REFERENCE NO.	SHEET NO.
B-4298	26



8/23/99

24-OCT-2005 12:11
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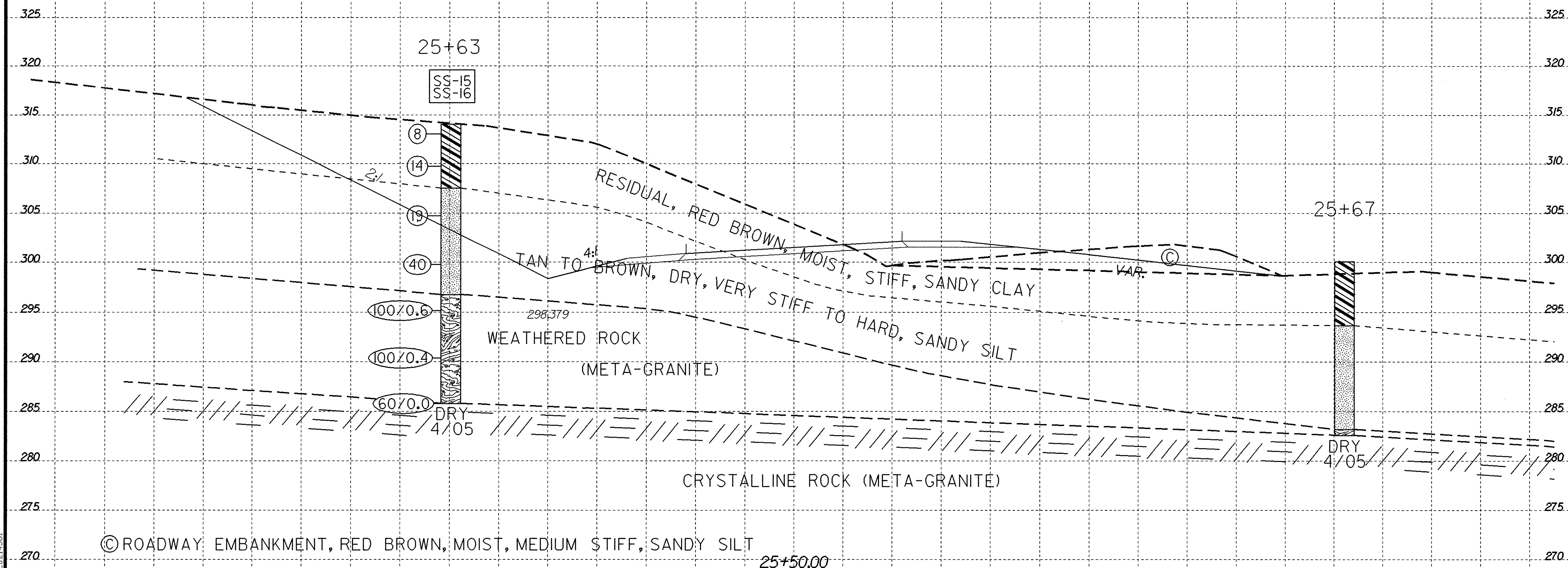
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS- 15	35 LT	25+63	0.0- 1.5	A-6(6)	34	15	22.5	16.5	28.8	32.2	90	75	59	-	-
SS- 16	35 LT	25+63	8.3-9.8	A-4(3)	35	7	26.3	27.3	34.3	12.1	100	82	60	-	-



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cuoungblood AT GEJ21456I

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4298	28

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

320 315 310 305 300 295 290 285 280 275 270 265

26+16

RESIDUAL, RED BROWN, MOIST, SANDY CLAY STIFF,

2:1

4:1

300.215

TAN BROWN, DRY TO MOIST, VERY STIFF, SANDY SILT

WEATHERED ROCK (META-GRANITE)

DRY
4/05

Ⓒ

VAR.

Ⓒ ROADWAY EMBANKMENT, RED BROWN, MOIST, MEDIUM STIFF, SANDY SILT

26+00.00

℄

25-OCT-2005 12:17
L:\GEO\Raleigh Projects\TIP\B4298_GEO_RDWY\CADD_GEOTECH\xsc\B4298_Geo_xsi_L.dgn
cwoodward
All DGN Files

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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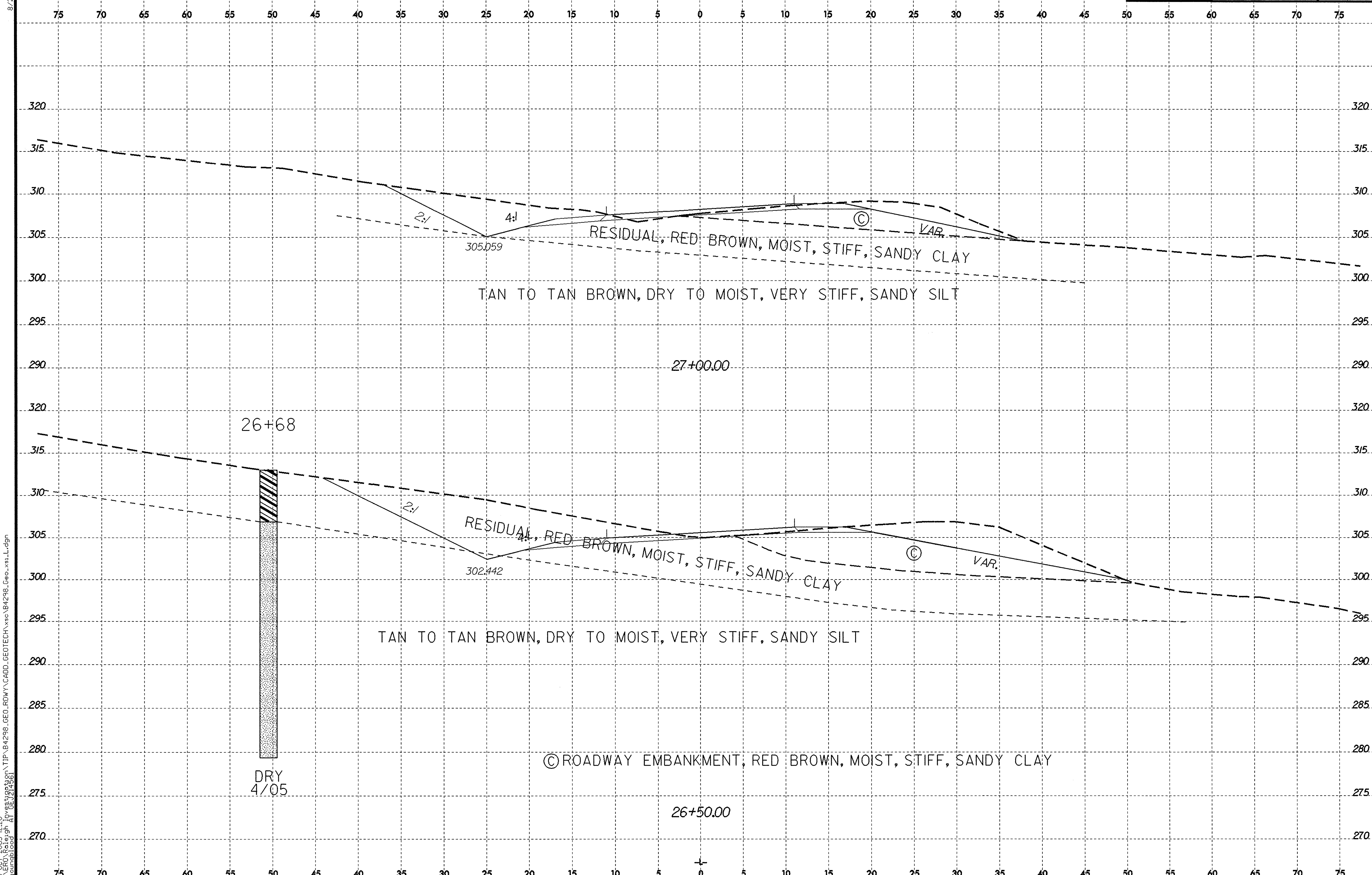

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75
320
315
310
305
300
295
290
2:1
4:1
©
VAR.
305.059
RESIDUAL, RED BROWN, MOIST, STIFF, SANDY CLAY
TAN TO TAN BROWN, DRY TO MOIST, VERY STIFF, SANDY SILT
27+00.00
26+68
2:1
4:1
©
VAR.
302.442
RESIDUAL, RED BROWN, MOIST, STIFF, SANDY CLAY
TAN TO TAN BROWN, DRY TO MOIST, VERY STIFF, SANDY SILT
285
280
275
270
DRY
4/05
© ROADWAY EMBANKMENT, RED BROWN, MOIST, STIFF, SANDY CLAY
26+50.00

8/23/99

25-OCT-2005 12:20
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aoyoungblood AT GE\214561

PROJ. REFERENCE NO.	SHEET NO.
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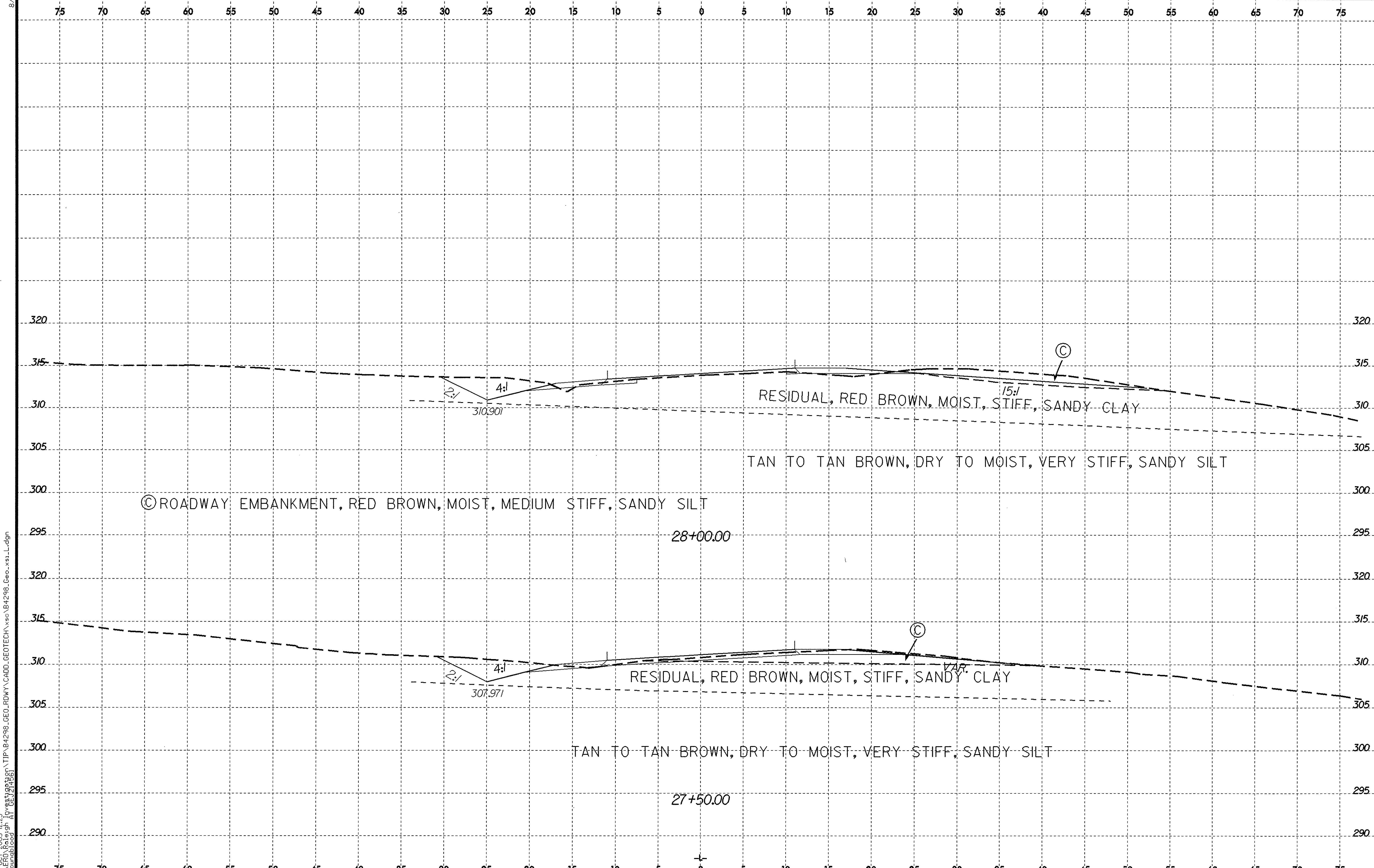

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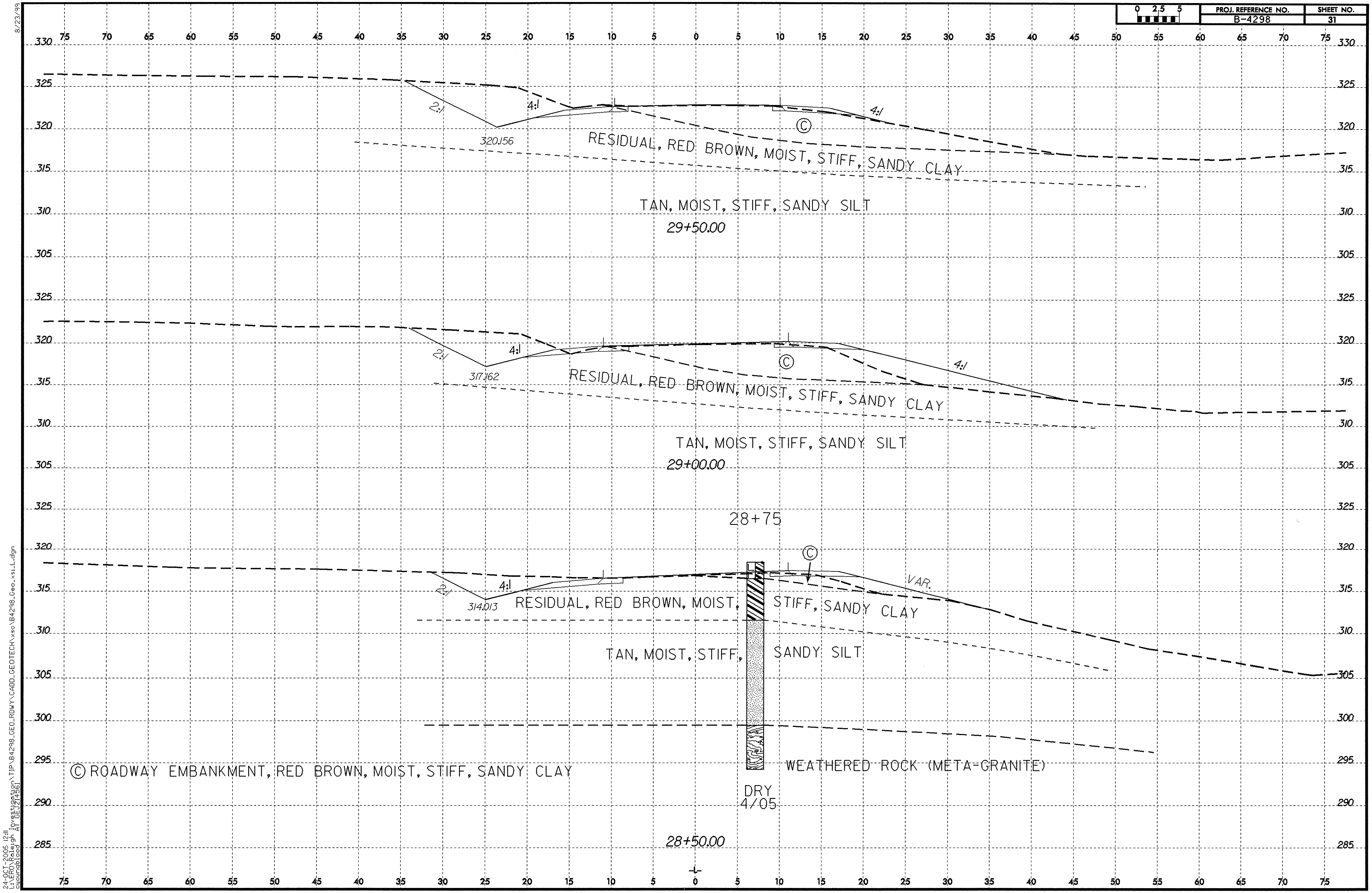
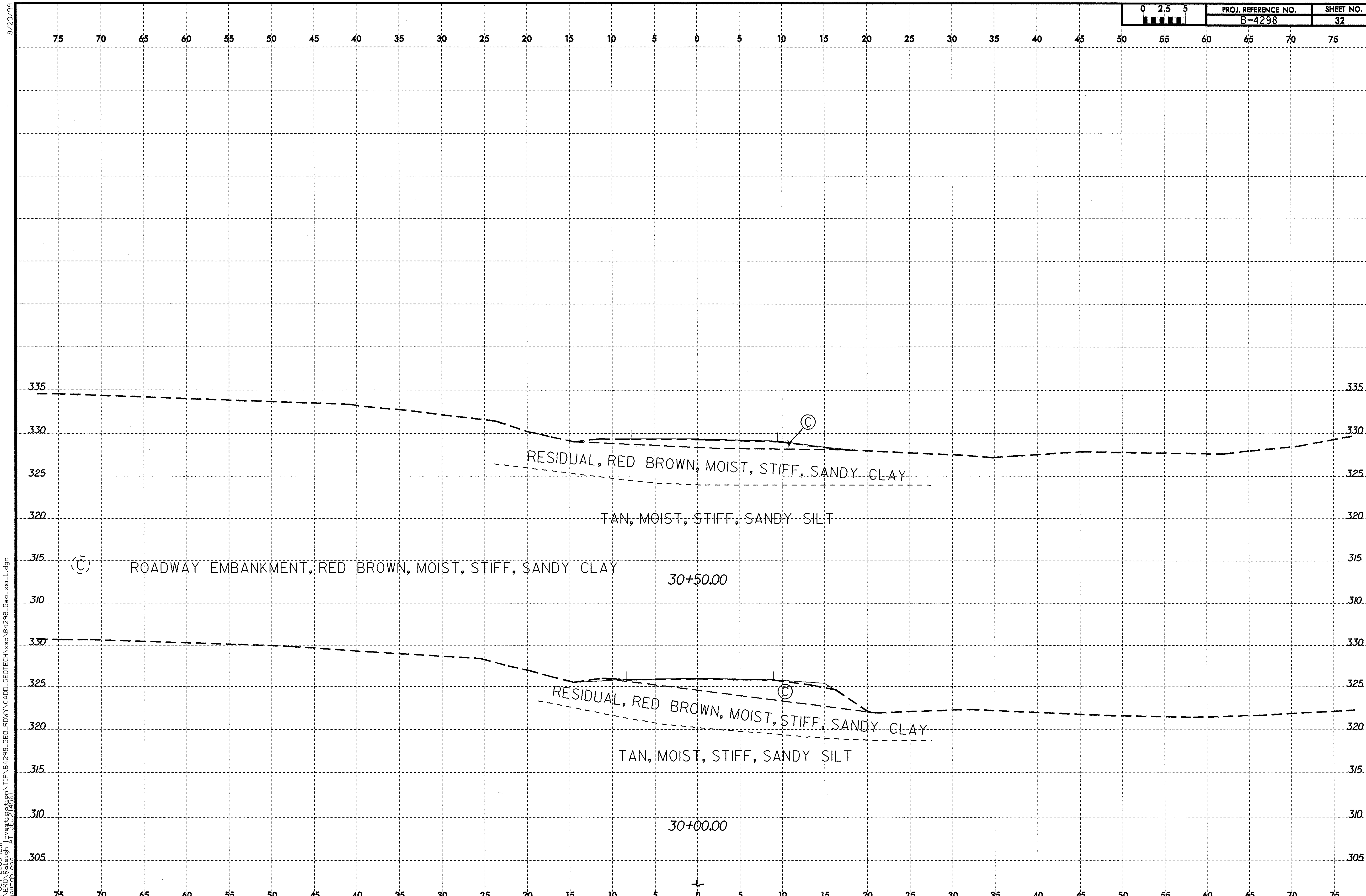
B-4298	31



8/23/99
0 2.5 5
2:1
4:1
4:1
320.156
©
RESIDUAL, RED BROWN, MOIST, STIFF, SANDY CLAY
TAN, MOIST, STIFF, SANDY SILT
29+50.00
2:1
4:1
4:1
317.162
©
RESIDUAL, RED BROWN, MOIST, STIFF, SANDY CLAY
TAN, MOIST, STIFF, SANDY SILT
29+00.00
28+75
©
2:1
4:1
VAR.
314.013
RESIDUAL, RED BROWN, MOIST, STIFF, SANDY CLAY
TAN, MOIST, STIFF, SANDY SILT
WEATHERED ROCK (META-GRANITE)
DRY
4/05
© ROADWAY EMBANKMENT, RED BROWN, MOIST, STIFF, SANDY CLAY
28+50.00
24-OCT-2005 12:11
L:\ERD\Raleigh Investigation\TIP\B4298_GEO_RDWY\CADD_GEOTECH\xsc\B4298_Geo_xsL.dgn
cyoungblood AT GEI21456


PROJ. REFERENCE NO.
B-4298
SHEET NO.
32
RESIDUAL, RED BROWN, MOIST, STIFF, SANDY CLAY
TAN, MOIST, STIFF, SANDY SILT
ROADWAY EMBANKMENT, RED BROWN, MOIST, STIFF, SANDY CLAY
30+50.00
RESIDUAL, RED BROWN, MOIST, STIFF, SANDY CLAY
TAN, MOIST, STIFF, SANDY SILT
30+00.00