

CONTRACT: C202471 **TIP PROJECT: U-4401 / B-4580***

NOTE: SEE SHEET 1A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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LINE	STATION	SHEET NUMBERS		
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ROADWAY
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. U-4401* F.A. PROJ. _____
 COUNTY MECKLENBURG
 PROJECT DESCRIPTION CHARLOTTE - SR 2804 (REEDY CREEK RD.)
AND SR 2805 (OLD HARRISBURG RD.); INTERSECTION
REALIGNMENT

INVENTORY

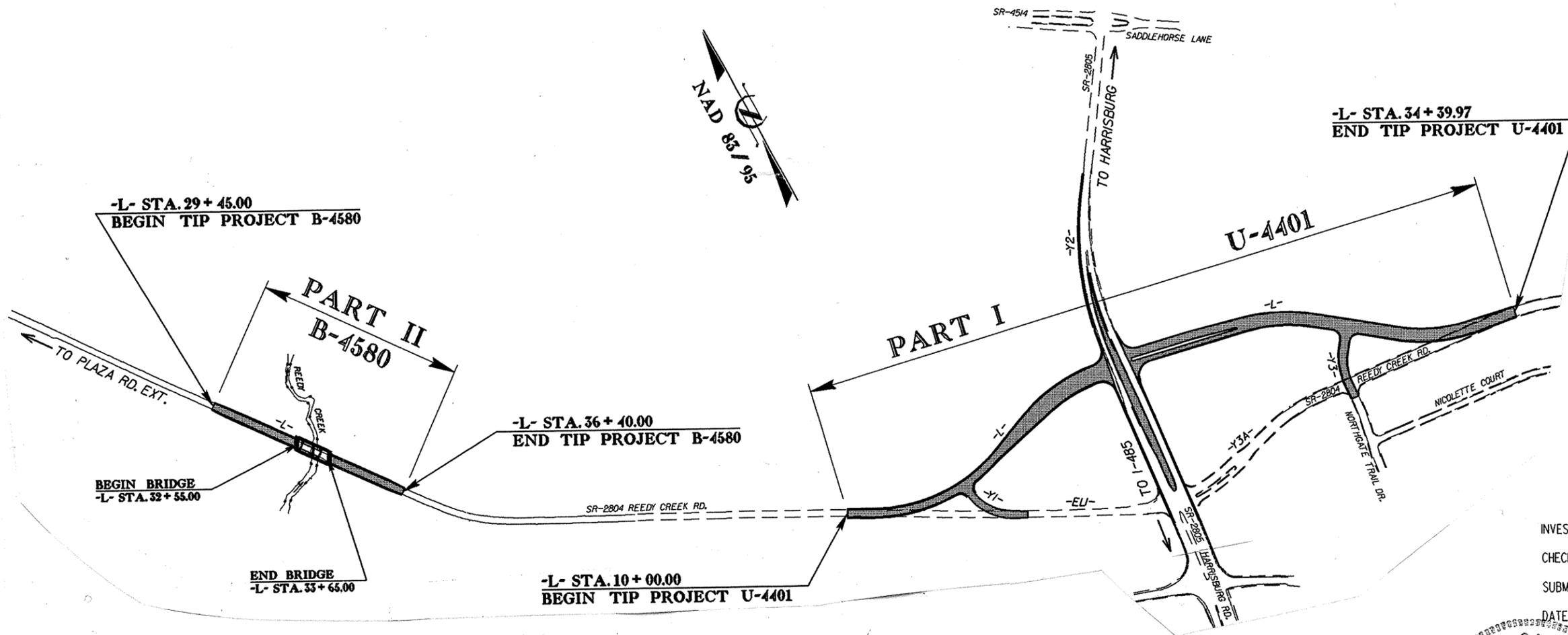
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4401/B-4580*	1	8
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36774.1.2		U-4401 (P.E.)	
33782.1.1	BRZ-2804(2)	B-4580 (P.E.)	
36774.2.1		U-4401 (R/W, UTIL.)	
33782.2.1	BRZ-2804(2)	B-4580 (R/W, UTIL.)	
36774.3.1		U-4401/B-4580 (CONST.)	

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) 250-4088. 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.

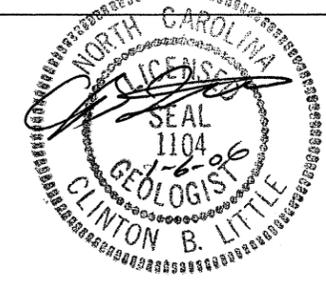
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT 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
- T.A. MECHUM
 - M.L. SMITH
 - C.E. BURRIS
 - C.L. SMITH

INVESTIGATED BY T.A. MECHUM
 CHECKED BY C.B. LITTLE
 SUBMITTED BY C.B. LITTLE
 DATE DECEMBER 2005

* B-4580 roadway subsurface plans have not been prepared.



DRAWN BY: T.A. MECHUM

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.

TIP PROJECT: U-4401

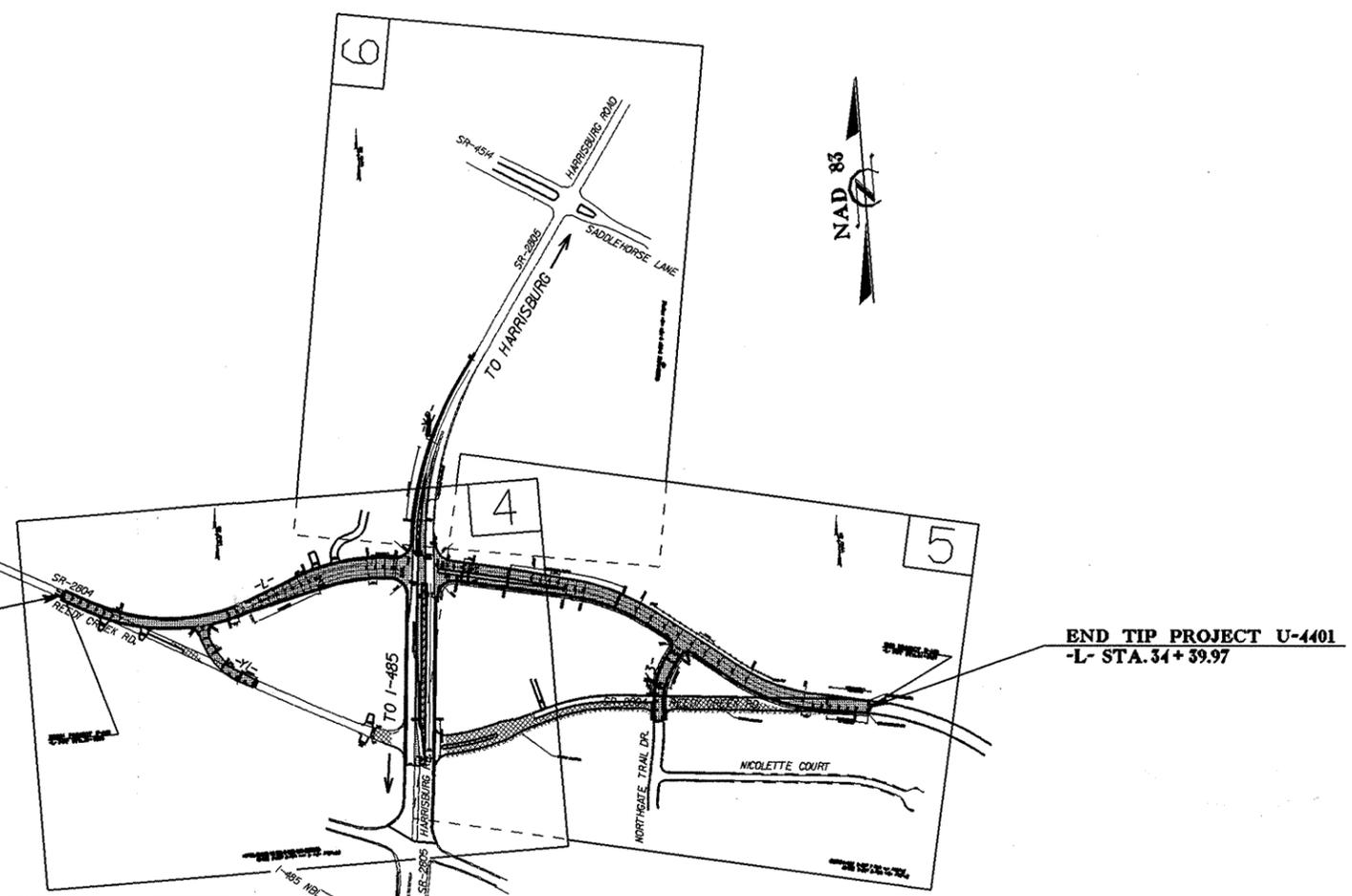
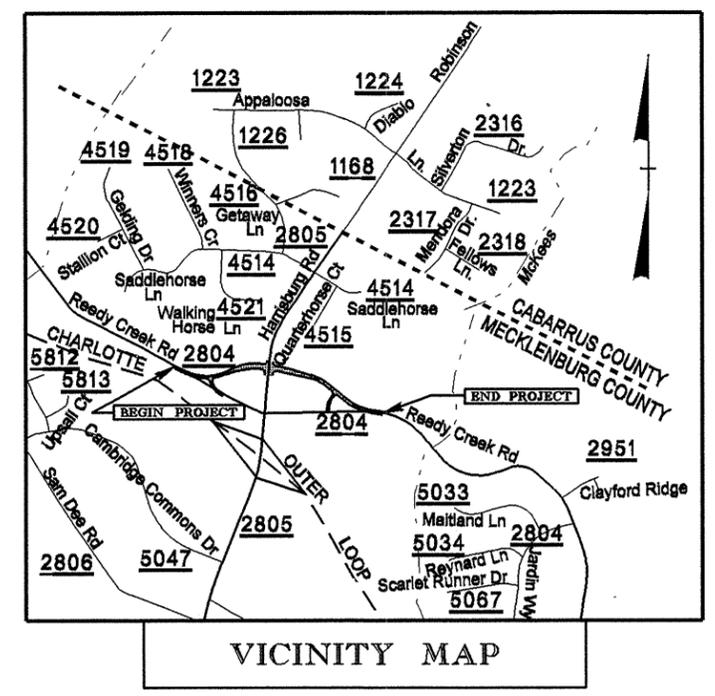
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

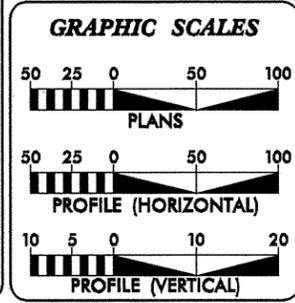
MECKLENBURG COUNTY

**LOCATION: CHARLOTTE - SR 2804 (REEDY CREEK RD.) AND
SR 2805 (OLD HARRISBURG RD.); INTERSECTION
REALIGNMENT**
TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNAL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4401	1A	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36674.1.1		P.E.	



NOTES: 1.) THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
2.) CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD _____



DESIGN DATA

ADT 2005 =	5370
ADT 2030 =	10000
DHV =	12 %
D =	55 %
T =	3 % *
V =	40 MPH
FUNC. CLASS. =	LOCAL
* TTST 1%	DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4401 = 0.462 MI.
TOTAL LENGTH OF TIP PROJECT U-4401 = 0.462 MI.

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

2003 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOT AUTHORIZED

LETTING DATE:
JUNE 20, 2006

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
INCOMPLETE PLANS

SIGNATURE: _____ P.E.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

DATE _____

20-DEC-2005 14:53
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CONTRACT:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

PROJECT REFERENCE NO. U-4401	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																																																																																																																																																																																																																																																						
<p>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. EXAMPLES:</p> <p style="text-align: center;"><i>VERY STIFF, GRAY, SAT. CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i></p>	<p>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.</p> <p style="text-align: center;">ANGULARITY OF GRAINS</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>	<p>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:</p> <p>WEATHERED ROCK (WR)  NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.</p> <p>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.</p> <p>NON-CRYSTALLINE ROCK (NCR)  FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</p> <p>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.</p>	<p>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 SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - 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 (SROD) - 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.</p>																																																																																																																																																																																																																																																						
<p style="text-align: center;">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">GENERAL CLASS.</th> <th colspan="7">GRANULAR MATERIALS (<= 35% PASSING #200)</th> <th colspan="7">SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th colspan="3">ORGANIC MATERIALS</th> </tr> <tr> <th>A-1</th> <th>A-3</th> <th colspan="2">A-2</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</th> <th>A-1, A-2</th> <th>A-4, A-5</th> <th>A-6, A-7</th> <th>A-1, A-2</th> <th>A-4, A-5</th> <th>A-6, A-7</th> <th>A-1, A-2</th> <th>A-4, A-5</th> <th>A-6, A-7</th> </tr> <tr> <td>GROUP CLASS.</td> <td>A-1-a</td> <td>A-1-b</td> <td>A-2-a</td> <td>A-2-b</td> <td>A-2-c</td> <td>A-2-d</td> <td>A-2-e</td> <td>A-2-f</td> <td>A-3</td> <td>A-4</td> <td>A-5</td> <td>A-6</td> <td>A-7</td> <td>A-1, A-2</td> <td>A-4, A-5</td> <td>A-6, A-7</td> </tr> <tr> <td>SYMBOL</td> <td></td> </tr> <tr> <td>% PASSING</td> <td>10</td> </tr> <tr> <td>LIQUID LIMIT PLASTIC INDEX</td> <td>6</td> </tr> <tr> <td>GROUP INDEX</td> <td>0</td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td>STONE FRAGS. GRAVEL AND SAND</td> <td>FINE SAND</td> <td colspan="2">SILTY OR CLAYEY GRAVEL AND SAND</td> <td colspan="2">SILTY SAND</td> <td colspan="2">CLAYEY SAND</td> <td colspan="2">SILTY CLAY</td> <td colspan="2">CLAYEY SILT</td> <td colspan="2">CLAYEY CLAY</td> <td colspan="2">MUCK, PEAT</td> </tr> <tr> <td>GENERAL RATING AS A SUBGRADE</td> <td colspan="7">EXCELLENT TO GOOD</td> <td colspan="7">FAIR TO POOR</td> <td>FAIR TO POOR</td> <td>POOR</td> <td>UNSATURABLE</td> </tr> </table> <p style="text-align: center;">PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30</p>	GENERAL CLASS.	GRANULAR MATERIALS (<= 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)							ORGANIC MATERIALS			A-1	A-3	A-2		A-4	A-5	A-6	A-7	A-1, A-2	A-4, A-5	A-6, A-7	A-1, A-2	A-4, A-5	A-6, A-7	A-1, A-2	A-4, A-5	A-6, A-7	GROUP CLASS.	A-1-a	A-1-b	A-2-a	A-2-b	A-2-c	A-2-d	A-2-e	A-2-f	A-3	A-4	A-5	A-6	A-7	A-1, A-2	A-4, A-5	A-6, A-7	SYMBOL																	% PASSING	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	LIQUID LIMIT PLASTIC INDEX	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	GROUP INDEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL AND SAND	FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND		SILTY SAND		CLAYEY SAND		SILTY CLAY		CLAYEY SILT		CLAYEY CLAY		MUCK, PEAT		GENERAL RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR							FAIR TO POOR	POOR	UNSATURABLE	<p style="text-align: center;">MINERALOGICAL COMPOSITION</p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p style="text-align: center;">COMPRESSIBILITY</p> <p>SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50</p> <p style="text-align: center;">PERCENTAGE OF MATERIAL</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">ORGANIC MATERIAL</th> <th colspan="2">GRANULAR SOILS</th> <th colspan="2">SILT - CLAY SOILS</th> <th colspan="2">OTHER MATERIAL</th> </tr> <tr> <th>TRACE OF ORGANIC MATTER</th> <th>2 - 3%</th> <th>3 - 5%</th> <th>5 - 12%</th> <th>TRACE</th> <th>1 - 10%</th> </tr> <tr> <th>LITTLE ORGANIC MATTER</th> <th>3 - 5%</th> <th>5 - 12%</th> <th>12 - 20%</th> <th>SOME</th> <th>10 - 20%</th> </tr> <tr> <th>MODERATELY ORGANIC</th> <th>5 - 10%</th> <th>12 - 20%</th> <th>>20%</th> <th>HIGHLY</th> <th>20 - 35%</th> </tr> <tr> <th>HIGHLY ORGANIC</th> <th>>10%</th> <th>>20%</th> <th>>30%</th> <th></th> <th>35% AND ABOVE</th> </tr> </table> <p style="text-align: center;">GROUND WATER</p> <p> WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING</p> <p> STATIC WATER LEVEL AFTER 24 HOURS</p> <p> PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA</p> <p> SPRING OR SEEP</p> <p style="text-align: center;">MISCELLANEOUS SYMBOLS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td></td> <td></td> </tr> </table> <p style="text-align: center;">ABBREVIATIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>AR - AUGER REFUSAL</td> <td>HL - HIGHLY</td> <td>V - VERY</td> </tr> <tr> <td>BT - BORING TERMINATED</td> <td>MED. - MEDIUM</td> <td>VST - VANE SHEAR TEST</td> </tr> <tr> <td>CL - CLAY</td> <td>MICA - MICACEOUS</td> <td>γ - UNIT WEIGHT</td> </tr> <tr> <td>CPT - CONE PENETRATION TEST</td> <td>MOD. - MODERATELY</td> <td>γ_d - DRY UNIT WEIGHT</td> </tr> <tr> <td>CSE - COARSE</td> <td>NP - NON PLASTIC</td> <td></td> </tr> <tr> <td>DMT - DILATOMETER TEST</td> <td>PMT - PRESSUREMETER TEST</td> <td></td> </tr> <tr> <td>DPT - DYNAMIC PENETRATION TEST</td> <td>SAP. - SAPROLITIC</td> <td></td> </tr> <tr> <td>e - VOID RATIO</td> <td>SD. - SAND, SANDY</td> <td></td> </tr> <tr> <td>F - FINE</td> <td>SL. - SILT, SILTY</td> <td></td> </tr> <tr> <td>FOSS. - FOSSILIFEROUS</td> <td>SLI. - SLIGHTLY</td> <td></td> </tr> <tr> <td>FRAC. - FRACTURED</td> <td>TCR - TRICONE REFUSAL</td> <td></td> </tr> <tr> <td>FRAGS. - FRAGMENTS</td> <td>W - MOISTURE CONTENT</td> <td></td> </tr> </table>	ORGANIC MATERIAL	GRANULAR SOILS		SILT - CLAY SOILS		OTHER MATERIAL		TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	5 - 12%	TRACE	1 - 10%	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	12 - 20%	SOME	10 - 20%	MODERATELY ORGANIC	5 - 10%	12 - 20%	>20%	HIGHLY	20 - 35%	HIGHLY ORGANIC	>10%	>20%	>30%		35% AND ABOVE																									AR - AUGER REFUSAL	HL - HIGHLY	V - VERY	BT - BORING TERMINATED	MED. - MEDIUM	VST - VANE SHEAR TEST	CL - CLAY	MICA - MICACEOUS	γ - UNIT WEIGHT	CPT - CONE PENETRATION TEST	MOD. - MODERATELY	γ _d - DRY UNIT WEIGHT	CSE - COARSE	NP - NON PLASTIC		DMT - DILATOMETER TEST	PMT - PRESSUREMETER TEST		DPT - DYNAMIC PENETRATION TEST	SAP. - SAPROLITIC		e - VOID RATIO	SD. - SAND, SANDY		F - FINE	SL. - SILT, SILTY		FOSS. - FOSSILIFEROUS	SLI. - SLIGHTLY		FRAC. - FRACTURED	TCR - TRICONE REFUSAL		FRAGS. - FRAGMENTS	W - MOISTURE CONTENT		<p style="text-align: center;">ROCK HARDNESS</p> <p>VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</p> <p>HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</p> <p>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.</p> <p>MEDIUM HARD CAN BE GROVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.</p> <p>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.</p> <p>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.</p>	<p style="text-align: center;">ROCK QUALITY DESIGNATION (ROD) - 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.</p> <p>SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p>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.</p> <p>SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p>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.</p> <p>STRATA CORE RECOVERY (SREC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p>STRATA ROCK QUALITY DESIGNATION (SROD) - 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.</p> <p>TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>
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<input type="checkbox"/> CME-45C	<input checked="" type="checkbox"/> 8" HOLLOW AUGERS	<input type="checkbox"/> B- _____																																																																																																																																																																																																																																																							
<input type="checkbox"/> CME-550	<input type="checkbox"/> HARD FACED FINGER BITS	<input type="checkbox"/> N- _____																																																																																																																																																																																																																																																							
<input type="checkbox"/> PORTABLE HOIST	<input type="checkbox"/> TUNG-CARBIDE INSERTS	<input type="checkbox"/> H- _____																																																																																																																																																																																																																																																							
<input type="checkbox"/> OTHER _____	<input type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER	HAND TOOLS:																																																																																																																																																																																																																																																							
<input type="checkbox"/> OTHER _____	<input type="checkbox"/> TRICONE _____ * STEEL TEETH	<input type="checkbox"/> POST HOLE DIGGER																																																																																																																																																																																																																																																							
	<input type="checkbox"/> TRICONE _____ * TUNG-CARB.	<input type="checkbox"/> HAND AUGER																																																																																																																																																																																																																																																							
	<input type="checkbox"/> CORE BIT	<input type="checkbox"/> SOUNDING ROD																																																																																																																																																																																																																																																							
	<input type="checkbox"/> OTHER _____	<input type="checkbox"/> VANE SHEAR TEST																																																																																																																																																																																																																																																							
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WIDE	3 TO 10 FEET	THICKLY BEDDED 1.5 - 4 FEET																																																																																																																																																																																																																																																							
MODERATELY CLOSE	1 TO 3 FEET	THINLY BEDDED 0.16 - 1.5 FEET																																																																																																																																																																																																																																																							
CLOSE	0.16 TO 1 FEET	VERY THINLY BEDDED 0.03 - 0.16 FEET																																																																																																																																																																																																																																																							
VERY CLOSE	LESS THAN 0.16 FEET	THICKLY LAMINATED 0.008 - 0.03 FEET																																																																																																																																																																																																																																																							
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<p style="text-align: center;">PLASTICITY</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>NONPLASTIC</th> <th>PLASTICITY INDEX (PI)</th> <th>DRY STRENGTH</th> </tr> <tr> <td>LOW PLASTICITY</td> <td>0-5</td> <td>VERY LOW</td> </tr> <tr> <td>MED. PLASTICITY</td> <td>6-15</td> <td>SLIGHT</td> </tr> <tr> <td>HIGH PLASTICITY</td> <td>16-25</td> <td>MEDIUM</td> </tr> <tr> <td></td> <td>26 OR MORE</td> <td>HIGH</td> </tr> </table>	NONPLASTIC	PLASTICITY INDEX (PI)	DRY STRENGTH	LOW PLASTICITY	0-5	VERY LOW	MED. PLASTICITY	6-15	SLIGHT	HIGH PLASTICITY	16-25	MEDIUM		26 OR MORE	HIGH	<p style="text-align: center;">COLOR</p> <p>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.</p>	<p style="text-align: center;">WEATHERING</p> <p>FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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></p> <p>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></p> <p>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></p> <p>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.</p>																																																																																																																																																																																																																																								
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

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

LYNDO TIPPETT
SECRETARY

December 22, 2005

STATE PROJECT: 36674.1.1 (U-4401)
COUNTY: Mecklenburg
DESCRIPTION: Charlotte – SR 2804 (Reedy Creek Road) and SR 2805 (Old Harrisburg Road);
Intersection Realignment
SUBJECT: Geotechnical Report – Inventory

PROJECT DESCRIPTION

The project consists primarily of new location construction of approximately 0.462 miles of two lane roadway (-L- Stations 10+00 to 34+39.97) tying in to existing roads.

A geotechnical investigation was conducted in April 2005 for the proposed intersection realignment of Reedy Creek Road with Old Harrisburg Road. A CME-550x all-terrain drill rig equipped with automatic hammer, hollow-stem augers, and SPT sampling gear collected data from eleven borings. Representative soil samples were taken for visual classification. Laboratory analyses were conducted by the Materials and Test Unit.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

1) Soft Foundation Soils: One area of soft residual soil was encountered on the project. Listed below are the locations and types of material.

Line	Station	Material
-L-	24+50 to 25+50	(Residual) Brown-Olive, v. soft-soft, wet, silty sandy clay
-L-	28+00 to 29+00	(Residual) Tan, soft-med. stiff, wet, silty v. sandy clay

2) Highly Plastic Soils: Highly plastic clays, with plasticity indices equal or greater than 26, were found in the following areas.

Line	Station
-L-	20+00 to 21+00 (Subgrade)
-L-	30+20 to 30+50 (Under Fill)

3) Floodplain Deposits: Floodplain deposits are located in the following area.

Line	Station
-L-	30+20 to 30+50

4) Springs and Seeps: Springs were found in the following locations.

Line	Station	Offset
-L-	25+10	25.0 Lt.
-L-	26+15	35.0 Rt.
-L-	26+20	15.0 Rt.
-L-	27+55.5	Centerline

PHYSIOGRAPHY AND GEOLOGY

The project is located in the Piedmont Region in the Charlotte Geologic Belt. The Charlotte Belt consists mostly of igneous rocks such as granite, diorite and gabbro. These rocks are 300-500 million years old. The terrain is relatively flat through the first half of the project and gradually slopes downward in elevation after crossing Old Harrisburg Road. There is one small drainage area toward the end of the project.

SOIL PROPERTIES

Soils consisted of mainly residual clays and silts. On the portion of the project before the crossing of Old Harrisburg Road, clays (A-6 and A-7) are tan to red-tan, dry-moist, and contain some sand and silt. Densities ranged from medium stiff to hard (6-43 bpf). Silts (A-4 and A-5) underlay 8.5-9.0 feet thick clays in borings 10+60 -L- 45.0 Lt. and 16+00 -L- Centerline. They are tan in color, micaceous, moist, and very sandy to clayey sandy. Blow counts range from 8-40 bpf (medium stiff to hard).

After crossing over Old Harrisburg Road, interlayered residual clay and silts continued to be present with one area of sand. Silts (A-4) are tan to tan-olive to tan-gray-white, dry to wet, and clayey sandy to very sandy. Densities range from medium stiff to hard (15-85 bpf). Clays are brown-olive to tan-gray to tan, wet to moist, and silty sandy to very sandy. Blow counts ranged from 2-13 bpf (very soft to stiff). One area of alluvium was encountered from 30+20 to 30+50 -L-. The alluvial soil was 4.8 feet thick, brown, soft, wet, and consisted of sandy silty clay. Residual clay and silt underlay the alluvium. Termination depths for borings were from 10.6 to 16.3 feet.

GROUND WATER

The water table intersected two borings. The boring located at 27+25 -L- 5.0 Lt. had a 24 hour water reading of 2.1 feet and was located near springs. The boring at 30+30 -L- 5.0 Lt. had a 24 hour water reading of 1.5 feet and was located adjacent to a drainage area. Water levels were below grade in both areas. No water was encountered in any of the other borings at the time of drilling.

Springs were present at 25+10 -L-25.0 Lt., 26+15 -L- 35.0 Rt., 26+20 -L- 15.0 Rt., and 27+55.5 -L- Centerline.

Respectfully Submitted,

Trudy A. Mechum
Transportation Engineering Geologist

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT: U-4401 / B-4580

COUNTY: MECKLENBURG

DATE: 12/29/2009

COMPILED BY: MTP

SHEET 3 OF 8 SHEETS

LINE	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE				
			TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+) 20%		ROCK	SUITABLE	UNSUIT.	TOTAL	
-L-	10+00.00	20+41.24	2,221				2,221	7,785		7,785	9,342	7,121					
-Y1-	10+12.00	12+50.00	146				146	26		26	31				115		115
-Y2-	19+60.00	33+03.80	3,376				3,376	23		23	28				3,348		3,348
SUBTOTAL 1			5,743				5,743	7,834		7,834	9,401	7,121			3,463		3,463
-L-	21+09.50	34+39.97	899				899	27,213		27,213	32,656	31,757					
-Y3-	10+20.00	12+46.43	125				125	1,192		1,192	1,430	1,305					
-DR1-	10+15.97	11+12.15	169				169								169		169
SUBTOTAL 2			1,193				1,193	28,405		28,405	34,086	33,062			169		169
PROJECT U-4401 SUBTOTAL			6,936				6,936	36,239		36,239	43,487	40,183			3,632		3,632
-L-	29+45.00	32+55.00 BEGIN BRIDGE	197				197	351		351	421	224					
SUBTOTAL 1			197				197	351		351	421	224					
-L-	33+65.00 END BRIDGE	36+40.00	328				328	436		436	523	195					
SUBTOTAL 2			328				328	436		436	523	195					
PROJECT B-4580 SUBTOTAL			525				525	787		787	944	419					
COMBINED PROJECTS U-4401 / B-4580 SUBTOTAL			7,461				7,461	37,026		37,026	44,431	40,602			3,632		3,632
LOSS DUE TO CLEARING & GRUBBING			-1,275				-1,275					1,275					
SHOULDER CONSTRUCTION MATERIAL								1,200		1,200	1,440	1,440					
WASTE IN LIEU OF BORROW												-3,632		-3,632			-3,632
COMBINED PROJECTS U-4401 / B-4580 TOTAL			6,186				6,186	38,226		38,226	45,871	39,685					
EST 5% TO REPLACE TOPSOIL ON BORROW PIT												1,984					
GRAND TOTAL			6,186				6,186	38,226		38,226	45,871	41,669					
SAY			6,200									42,000					

EST. DDE = 600 CY

EST. UNDERCUT = 650 CY

EST. SHALLOW UNDERCUT = 275 CY

PAVEMENT STRUCTURE VOLUME (U-4401; -L-, -Y2-) = 630 CY

* 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.

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT: U-4401

COUNTY: MECKLENBURG

DATE: 11/16/2009

COMPILED BY: MTP

SHEET 3A OF 8 SHEETS

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE						
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+) 20%		ROCK	SUITABLE	UNSUIT.	TOTAL			
-L-																		
10+00.00	20+41.24	2,221				2,221	7,785		7,785	9,342	7,121							
-Y1-																		
10+12.00	12+50.00	146				146	26		26	31				115				115
-Y2-																		
19+60.00	33+03.80	3,376				3,376	23		23	28				3,348				3,348
SUBTOTAL 1		5,743				5,743	7,834		7,834	9,401	7,121			3,463				3,463
-L-																		
21+09.50	34+39.97	899				899	27,213		27,213	32,656	31,757							
-Y3-																		
10+20.00	12+46.43	125				125	1,192		1,192	1,430	1,305							
-DR1-																		
10+15.97	11+12.15	169				169								169				169
SUBTOTAL 2		1,193				1,193	28,405		28,405	34,086	33,062			169				169
PROJECT SUBTOTAL		6,936				6,936	36,239		36,239	43,487	40,183			3,632				3,632
LOSS DUE TO CLEARING & GRUBBING		-1,200				-1,200					1,200							
SHOULDER CONSTRUCTION MATERIAL							1,200		1,200	1,440	1,440							
WASTE IN LIEU OF BORROW											-3,632			-3,632				-3,632
PROJECT TOTAL		5,736				5,736	37,439		37,439	44,927	39,191							
EST 5% TO REPLACE TOPSOIL ON BORROW PIT											1,960							
GRAND TOTAL		5,736				5,736	37,439		37,439	44,927	41,151							
SAY		5,800									42,000							

EST. DDE = 600 CY

EST. UNDERCUT = 400 CY SHALLOW UNDERCUT = 100 CY

PAVEMENT STRUCTURE VOLUME (-L-, -Y2-) = 630 CY

* 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.

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT TIP # B-4580 (33782.3.1)

COUNTY Mecklenburg

DATE 10/12/2009

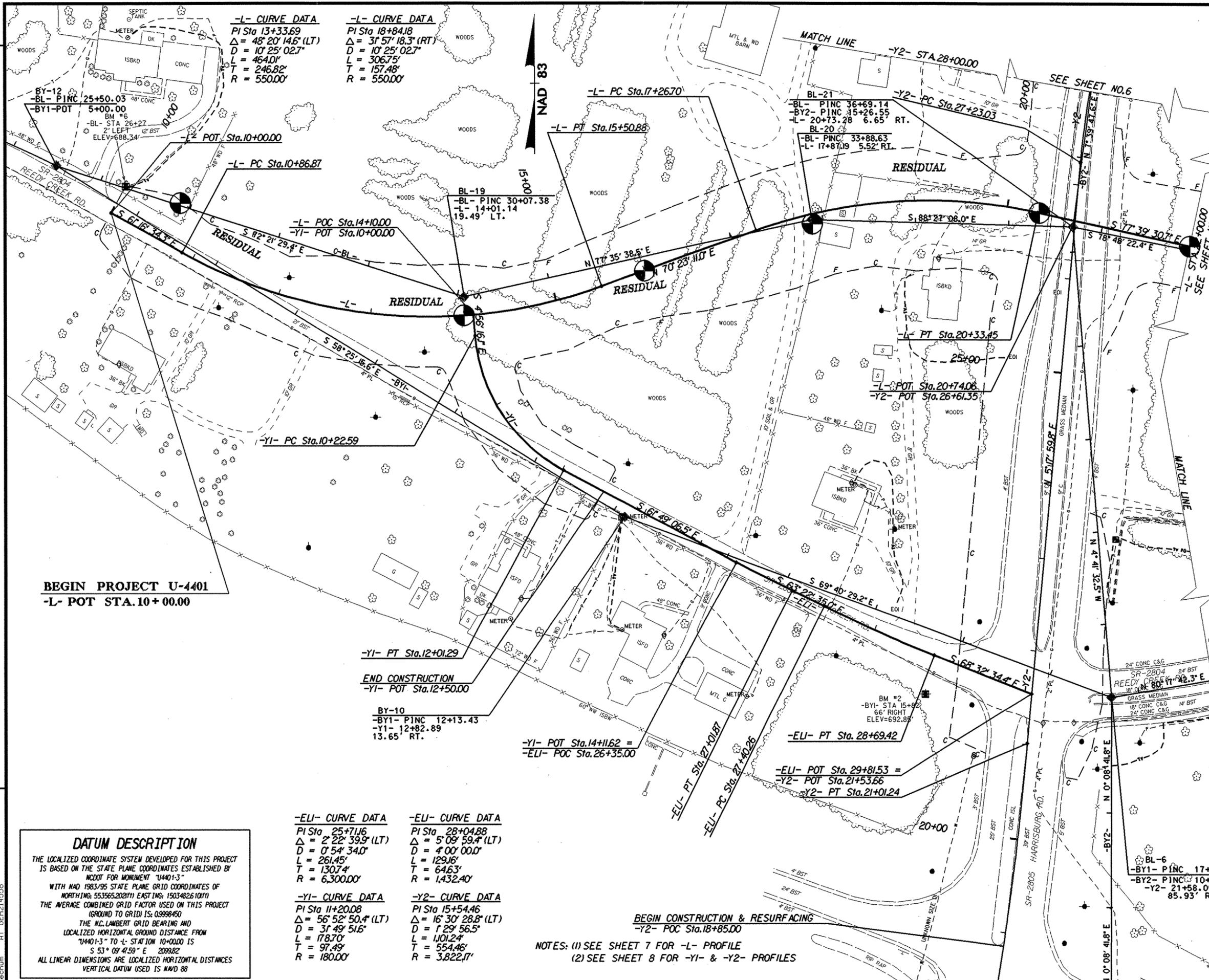
SHEET **3B** OF 8 SHEETS

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. %	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
L	29+45.00	32+55.00 BEGIN BRIDGE	197				197	351			351	421	224			
SUBTOTAL			197				197	351			351	421	224			
L	33+65.00 END BRIDGE	36+40.00	328				328	436			436	523	195			
SUBTOTAL			328				328	436			436	523	195			
PROJECT SUBTOTAL			525				525	787			787	944	419			
LOSS DUE TO CLEARING & GRUBBING			-75				-75						75			
PROJECT TOTAL			450				450	787			787	944	494			
EST 5% TO REPLACE TOP SOIL ON BORROW PIT													25			
GRAND TOTAL			450				450	787			787	944	519			
SAY			455										520			

Est. Undercut	250	CY
Est. Shallow Undercut	175	CY
Est. Class IV Subgrade Stabilization	350	TONS
Fabric for Soil Stabilization	500	SY

* 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.

PROJECT REFERENCE NO. U-4401	SHEET NO. 4
R/W SHEET NO. 4	4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	



BEGIN PROJECT U-4401
-L- POT STA. 10+00.00

END CONSTRUCTION
-Y1- POT STA. 12+50.00

BEGIN CONSTRUCTION & RESURFACING
-Y2- POC STA. 18+85.00

DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY MCDOT FOR MONUMENT "U4401-3"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 553565.202(11) EASTING: 1503482.610(11)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998450
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4401-3" TO -L- STATION 10+00.00 IS
S 53° 09' 41.59" E 2099.82'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

-EU- CURVE DATA
PI Sta 25+71.16
Δ = 2° 22' 39.9" (LT)
D = 0' 54' 34.0"
L = 261.45'
T = 130.74'
R = 6,300.00'

-Y1- CURVE DATA
PI Sta 11+20.08
Δ = 56° 52' 50.4" (LT)
D = 31' 49" 51.6"
L = 178.70'
T = 97.49'
R = 180.00'

-EU- CURVE DATA
PI Sta 28+04.88
Δ = 5° 09' 59.4" (LT)
D = 4' 00" 00.0"
L = 129.16'
T = 64.63'
R = 1,432.40'

-Y2- CURVE DATA
PI Sta 15+54.46
Δ = 16° 30' 28.8" (LT)
D = 1' 29" 56.5"
L = 1,101.24'
T = 554.46'
R = 3,822.17'

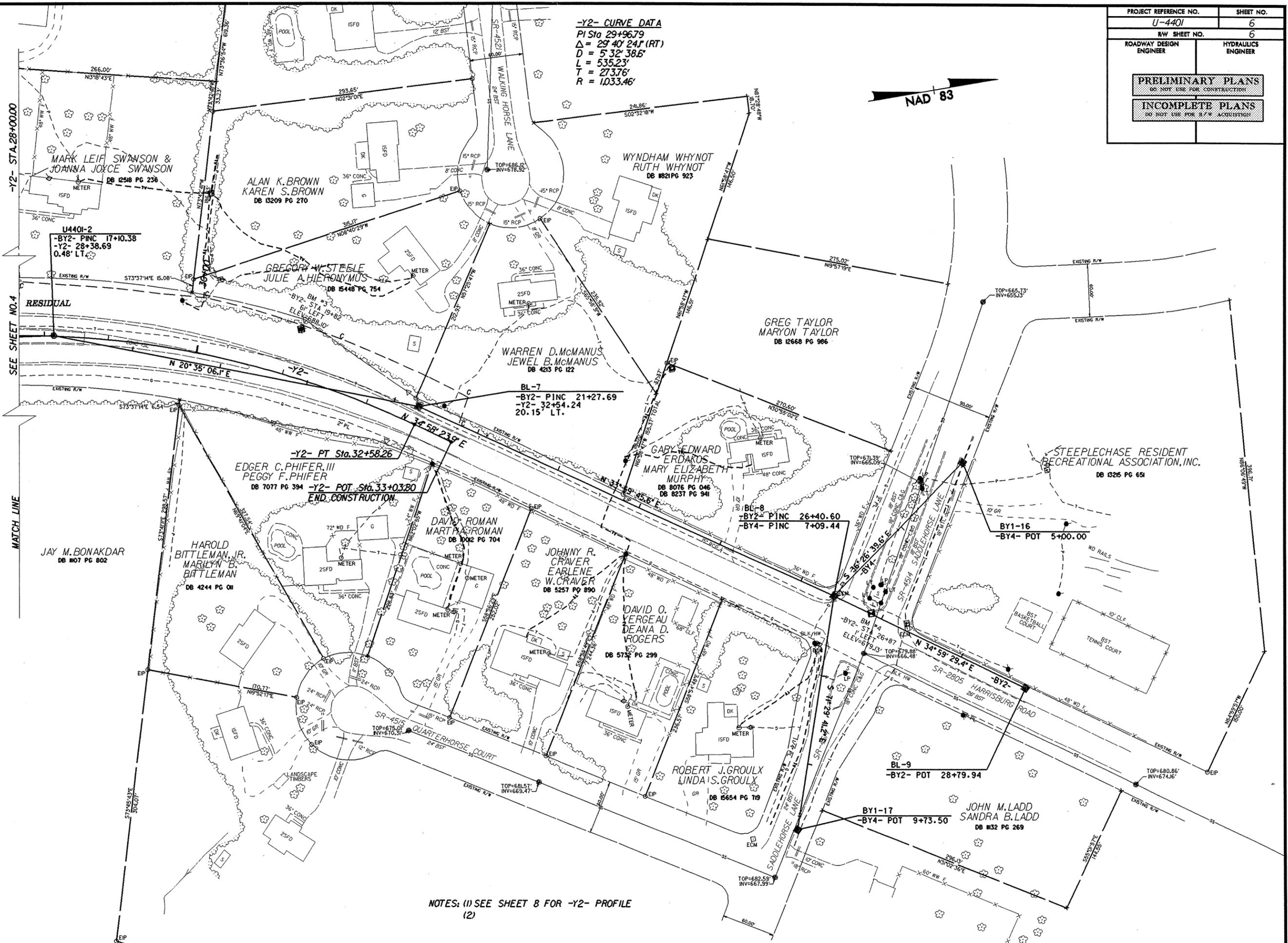
NOTES: (1) SEE SHEET 7 FOR -L- PROFILE
(2) SEE SHEET 8 FOR -Y1- & -Y2- PROFILES

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-4401	6
R/W SHEET NO.	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS	
DO NOT USE FOR E.I.P. ACQUISITION	

-Y2- CURVE DATA
 PI Sta 29+96.79
 $\Delta = 29^{\circ} 40' 24.1''$ (RT)
 $D = 532' 38.6''$
 $L = 535.23'$
 $T = 273.76'$
 $R = 1,033.46'$



-Y2- STA. 28+00.00

SEE SHEET NO. 4

MATCH LINE

U4401-2
 -BY2- PINC 17+10.38
 -Y2- 28+38.69
 0.48' LT.

BL-7
 -BY2- PINC 21+27.69
 -Y2- 32+54.24
 20.15' LT.

BL-8
 -BY2- PINC 26+40.60
 -BY4- PINC 7+09.44

BL-9
 -BY2- POT 28+79.94

BY1-17
 -BY4- POT 9+73.50

BY1-16
 -BY4- POT 5+00.00

-Y2- PT Sta. 32+58.26
 EDGER C. PHIFER, III
 PEGGY F. PHIFER
 DB 7077 PG 394

-Y2- POT Sta. 33+03.80
 END CONSTRUCTION

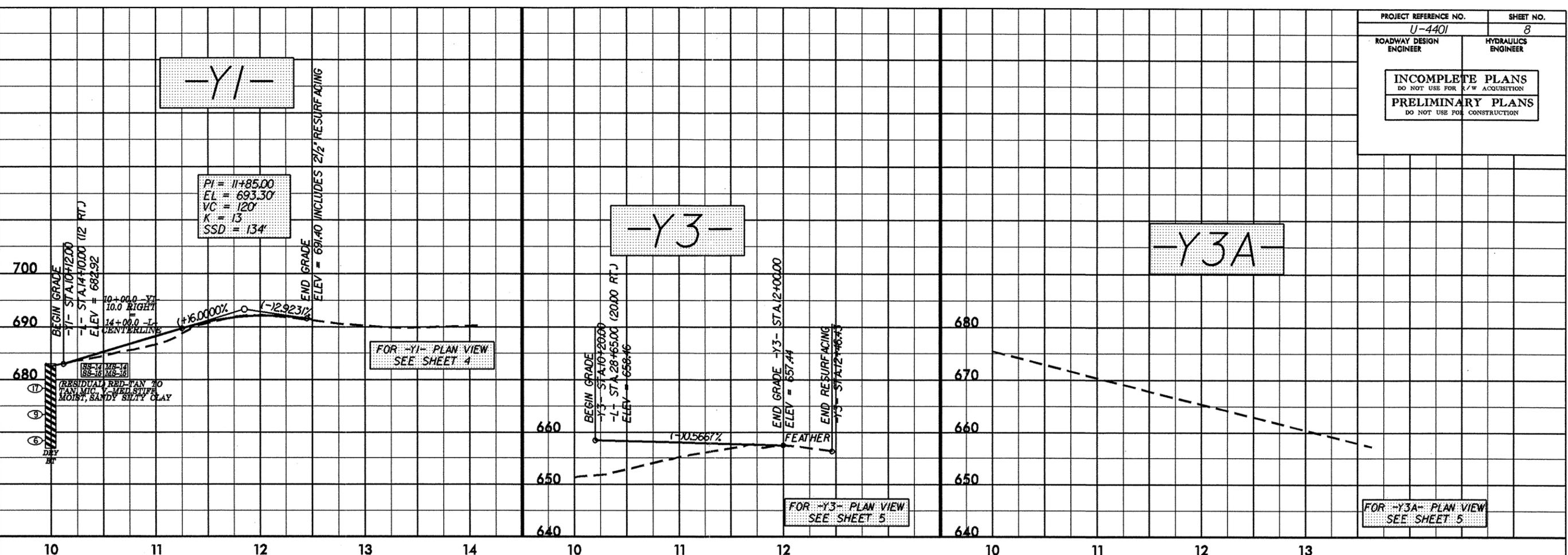
NOTES: (1) SEE SHEET 8 FOR -Y2- PROFILE
 (2)

REVISIONS

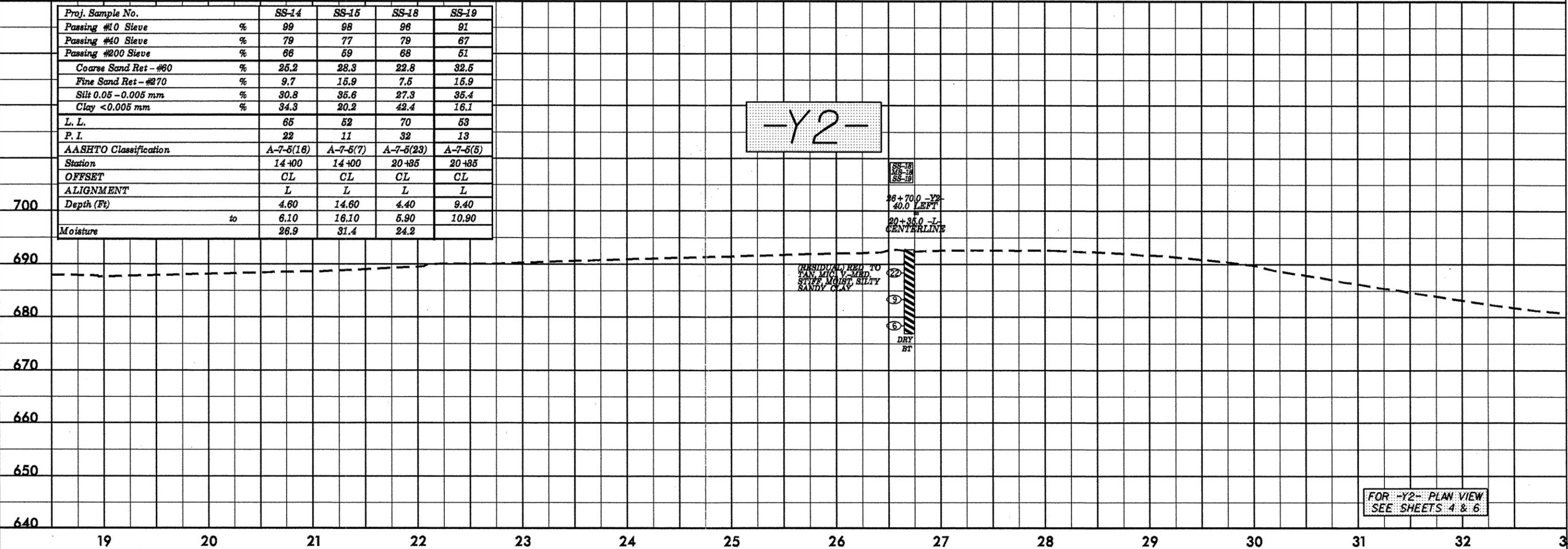
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5/28/99

PROJECT REFERENCE NO. U-4401	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



Proj. Sample No.	SS-14	SS-15	SS-18	SS-19
Passing #10 Sieve	% 99	98	96	91
Passing #40 Sieve	% 79	77	79	67
Passing #200 Sieve	% 66	69	68	51
Coarse Sand Ret - #60	% 25.2	28.3	22.8	32.5
Fine Sand Ret - #270	% 9.7	15.9	7.5	15.9
Silt 0.05 - 0.005 mm	% 30.8	35.6	27.3	35.4
Clay <0.005 mm	% 34.3	20.2	42.4	16.1
L. L.	65	52	70	53
P. I.	22	11	32	13
AASHTO Classification	A-7-5(16)	A-7-5(7)	A-7-5(23)	A-7-5(6)
Station	14+00	14+00	20+85	20+85
OFFSET	CL	CL	CL	CL
ALIGNMENT	L	L	L	L
Depth (Ft)	4.60	14.60	4.40	9.40
Moisture	to 26.9	16.10	5.90	10.90
		31.4	24.2	



FOR -Y2- PLAN VIEW
SEE SHEETS 4 & 6

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