CONTRACT: C201328 ID: U-3612

CONTENTS

LINE	STATION	PLAN	XSECTS
-L-	13+94 - 45+00	4-7	8-18

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. 34960~~3~~.1 I.D. U-3612 F.A. PROJ. STP-1424(3)

COUNTY GUILFORD

PROJECT DESCRIPTION GREENSBORO - SR 1424 (HILLTOP ROAD) FROM EAST OF SR 1546 (GUILFORD COLLEGE ROAD) AT CHELSEA ACRES COURT TO ADAMS FARM PARKWAY

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3612	1	18

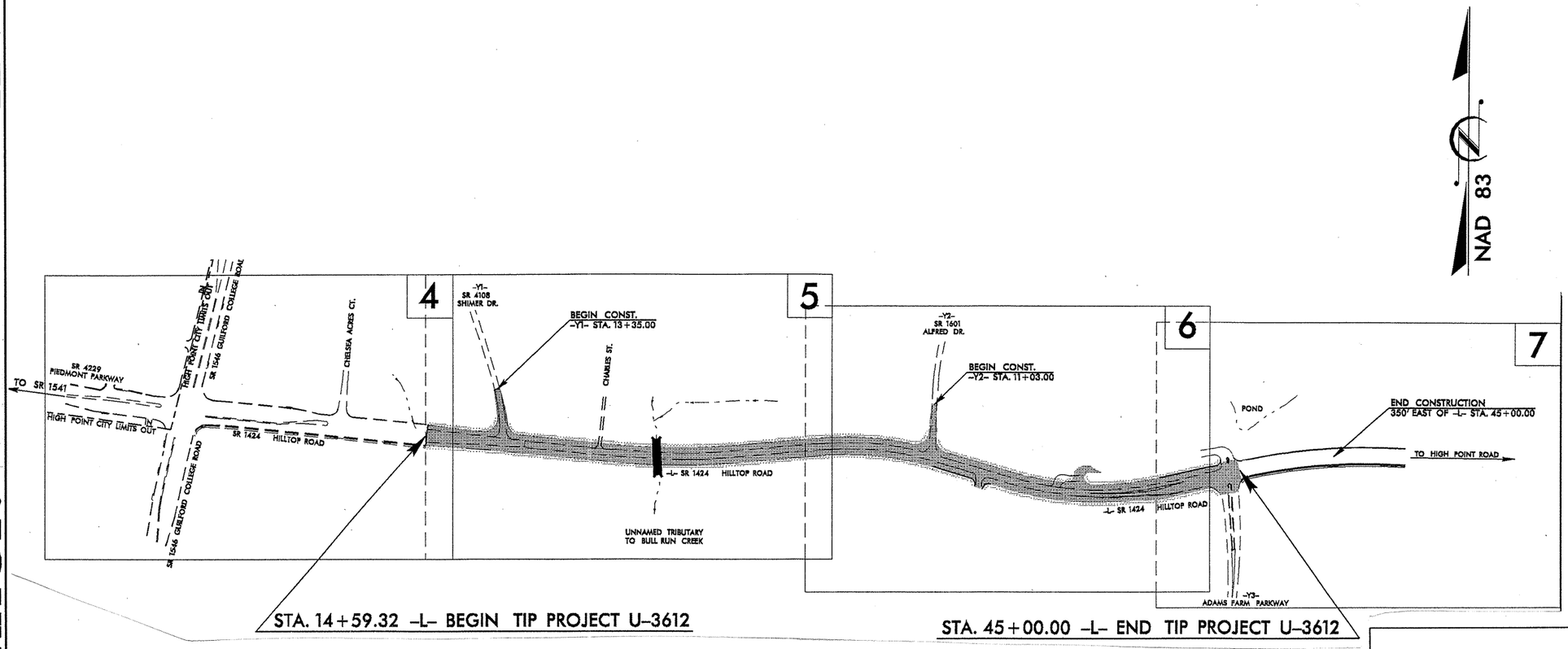
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION
34960.1.1	STP-1424(3)	PE
34960.2.1	STP-1424(3)	R/W & UTILITIES
34960.3.1	STP-1424(5)	CONST.

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.



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CHECKED BY D.N. ARGENBRIGHT
SUBMITTED BY D.N. ARGENBRIGHT
DATE FEBRUARY 2004

NORTH CAROLINA LICENSED SEAL 1873 GEOLOGIST STEVE P. BROWN
Steve P. Brown 2/5/04

DRAWN BY: E.C. CAMPBELL, A.N. KARPA

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
34960.1.1	U-3612	2	18

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 ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.5 0.5 TO 1 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		
	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, 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
- [X] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] OTHER _____
- [ ] OTHER _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [X] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [X] 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 FOLLOWS:

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

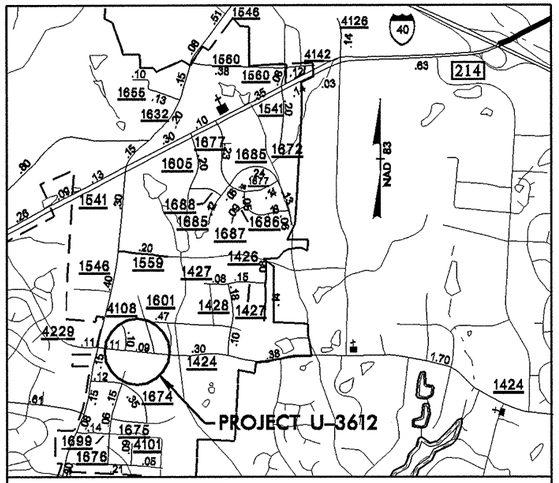
09/08/99

TIP PROJECT: U-3612

CONTRACT: 34960.1.1

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

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

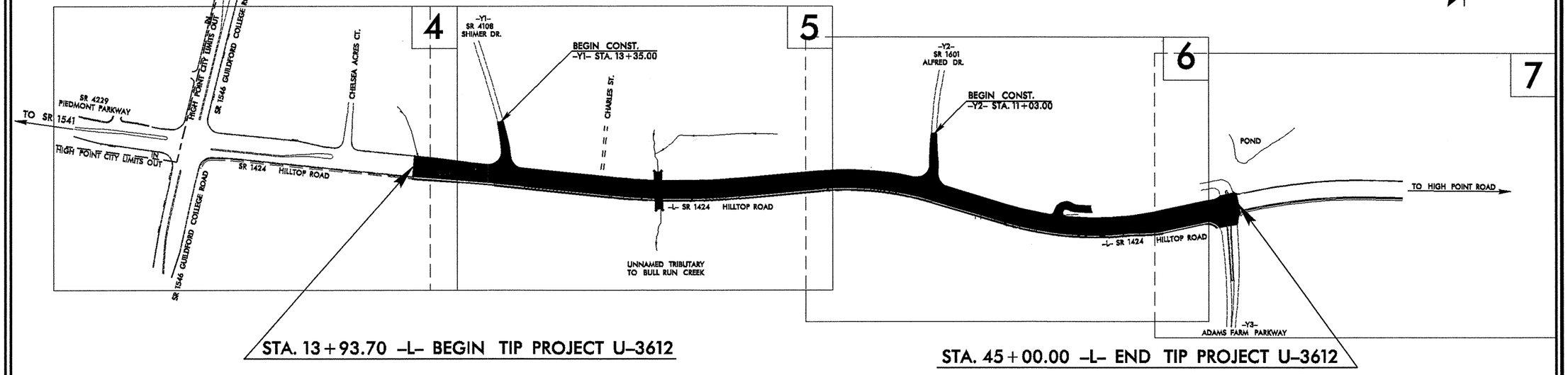
GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3612	2A	18
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION	
34960.1.1	STP-1424(3)	PE	

LOCATION: *GREENSBORO – SR 1424 (HILLTOP ROAD) FROM EAST OF SR 1546 (GUILFORD COLLEGE ROAD) AT CHELSEA ACRES COURT TO ADAMS FARM PARKWAY*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, CURB & GUTTER, GUARDRAIL, AND CULVERT*

NAD 83



STA. 13+93.70 –L– BEGIN TIP PROJECT U-3612

STA. 45+00.00 –L– END TIP PROJECT U-3612

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD _____.
THIS PROJECT IS NOT WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO OR HIGH POINT.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2005 = 16040
ADT 2025 = 19800
DHV = 10 %
D ≐ 55 %
T = 5 % *
V = 40 MPH

* TTST-1% DUAL-4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3612 = 0.588 MI
TOTAL LENGTH OF TIP PROJECT U-3612 = 0.588 MI.

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 21, 2004

LETTING DATE: OCTOBER 18, 2005

JAMES A. SPEER, PE
PROJECT ENGINEER

DANNY GARDNER
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*

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

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

LYNDO TIPPETT
SECRETARY

February 19, 2004

STATE PROJECT:	34960.1.1 (U-3612)
FEDERAL PROJECT:	STP-1424(3)
COUNTY:	Guilford
DESCRIPTION:	Greensboro - SR 1424 (Hilltop Road) from east of SR 1546 (Guilford College Road) at Chelsea Acres Court to Adams Farm Parkway
SUBJECT:	Geotechnical Report - Inventory

PROJECT DESCRIPTION

The project consists of widening of approximately 0.6 miles of Hilltop Road (-L- Stations 13+94 to 45+00). The existing two-lane roadway will be widened to create a five-lane roadway with outside turn lanes and curb and gutter. Included is some minor, vertical realignment. A culvert is proposed to replace an existing pipe at -L- Station 23+12.

A geotechnical investigation was conducted in September and October 2003, using a CME-45C ATV-mounted drill machine with an automatic hammer. Standard Penetration Tests were performed at selected locations and additional borings were advanced using continuous flight augers. Representative soil samples were collected for visual classification in the field and for laboratory analysis by the Materials and Tests Unit.

The following alignments, totaling 0.7 miles, were investigated.

Line	Station		
-L-	13+94	to	45+00
-Y1-	13+35	to	15+35
-Y2-	11+03	to	13+00

AREAS OF SPECIAL GEOTECHNICAL INTEREST

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

Line	Station		
-L-	14+75	to	15+75
-L-	18+00	to	20+00
-L-	24+00	to	26+00
-L-	27+50	to	31+75
-L-	32+25	to	34+25
-L-	35+25	to	45+00

2) Groundwater: The following sections were found to exhibit a high water table, seasonal high groundwater, or the potential for groundwater related construction problems.

Line	Station		
-L-	13+94	to	24+25
-L-	25+75	to	27+75
-L-	41+60	to	43+40

3) Wells: One water well was identified within proposed construction easement, but outside of proposed right of way, at the following location. This well is located at the toe of proposed roadway fill.

Line	Station	Offset
-L-	21+33	55 Lt

4) Rock: Borings encountered crystalline rock in the vicinities of -L- Stations 23+00, 25+00, and 29+00.

PHYSIOGRAPHY AND GEOLOGY

The project is located in the central portion of the Piedmont Physiographic province. The topography is gently rolling and well drained. An unnamed tributary of Bull Run Creek crosses the project at -L- Station 23+12. Rural residences and woods occur along the project corridor.

The project is located in the Carolina Slate Belt. Underlying bedrock consists of metamorphosed granite.

SOIL PROPERTIES

Most soils along the project are residual, being derived by in-place weathering of the underlying, metamorphosed granite. Alluvial and roadway embankment soils are also present, but far less common than residual soils.

Residual soils are mostly silty clay (A-7-5, A-7-6) and sandy clay (A-6). These soils are very soft to very stiff, moist to wet, and slightly to highly plastic. Less common residual soils include loose to medium dense, dry to wet, silty sand (A-2-4) and medium stiff to stiff, moist to wet, sandy silt (A-4).

Alluvial soils occur in the floodplain of the unnamed tributary of Bull Run Creek, between -L- Stations 22+00 and 24+00. The alluvial column consists of approximately five feet of soft, moist to wet, sandy silt (A-4) over approximately five feet of medium to very dense, moist to wet, coarse sand (A-1-a, A-1-b). In the vicinity of the proposed culvert at -L- Station 23+12, the alluvial soils rest directly on crystalline rock (granite).

ROCK PROPERTIES

Approximately seven feet of weathered, granitic rock were encountered at elevation 836.6 feet at -L- Station 25+00, 40 Rt. The boring terminated on crystalline rock (granite), at elevation 829.6 feet. This location is an area of proposed roadway embankment. Weathered rock was not encountered elsewhere on the project. Crystalline rock (granite) is additionally present at elevations ranging from 823.4 to 828.0 feet in the vicinity of the culvert proposed at -L- Station 23+12, and at an elevation of 854.0 feet in the vicinity of -L- Station 29+00.

GROUNDWATER

The areas noted above in "Areas of Special Geotechnical Interest, Groundwater" were found to exhibit a high water table, seasonal high groundwater, or the potential for groundwater related construction problems. Groundwater occurred well below grade over the remainder of the project area.

BULK SAMPLES

The following bulk samples were taken for tests to determine the engineering properties of the soil.

Sample No.	Location	Depth (m)	Test
RT-1	-L- 29+00, 32 Rt	0.0 - 3.0	Recompacted Triaxial CU
CBR-1	-L- 29+00, 32 Rt	3.0 - 6.0	California Bearing Ratio

CULVERT AT -L- STATION 23+12

Natural ground elevations typically range from 830 feet in the streambed to 834 feet in the floodplain. An existing, 5 feet high embankment rests on the alluvial deposits of the floodplain. Borings in the immediate vicinity of the proposed culvert indicate that the alluvial column consists of approximately five feet of soft, moist to wet, sandy silt (A-4) over approximately five feet of medium to very dense, moist to wet, coarse sand (A-1-a and A-1-b). The alluvial soils rest directly on crystalline rock (granite). This rock was encountered at elevations of 824 and 827 feet, and is within one foot of the flowline of portions of the proposed culvert. Groundwater was measured in the borings at elevations between 830.5 and 832.0 feet.

Respectfully submitted,

Steve P. Brown, LG
Project Engineering Geologist

5/28/99

COMPUTED BY: EAD DATE: 04-05-05
CHECKED BY: _____ DATE: _____

PROJECT REFERENCE NO.	SHEET NO.
U-3612	3B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

	EXCAVATION					EMBANKMENT					WASTE		
LOCATION	TOTAL EXCAVATION	ROCK	UNDERCUT	UNSUITABLE UNCLASSIFIED	SUITABLE UNCLASSIFIED	TOTAL EMBANKMENT	ROCK EMBANKMENT	EARTH EMBANKMENT	EMBANKMENT PLUS 20%	BORROW	SUITABLE	UNSUITABLE	TOTAL
PHASE NO. I (CONSTRUCT DETOUR)													
SUMMARY NO. 1													
–L– STA. 18+20.00 TO –L– STA. 28+71.52	846				846	1624		1624	1949	1103			
TOTAL SUMMARY NO. 1	846				846	1624		1624	1949	1103			
PHASE NO. II (CONSTRUCT –L– LT.)													
SUMMARY NO. 2													
–L– STA. 14+59.32 TO –L– STA. 45+00.00	2585		1457	889	1696	6212		6212	7454	5758		2346	2346
–Y1– STA. 13+35.00 TO –Y1– STA. 15+02.48	327				327	9		9	11		316		316
–Y2– STA. 11+03.00 TO –Y2– STA. 12+67.50	119				119	81		81	97		21		21
TOTAL SUMMARY NO. 2	3031		1457	889	2142	6302		6302	7562	5758	337	2346	2683
PHASE NO. III (CONSTRUCT –L– RT.)													
SUMMARY NO. 3													
–L– STA. 14+59.32 TO STA. –L– 45+00.00	1047		944	39	1008	8962		8962	10754	9746		983	983
TOTAL SUMMARY NO. 3	1047		944	39	1008	8962		8962	10754	9746		983	983
SUMMARY TOTALS	4924		2401	928	3996	16888		16888	20266	16607	337	3329	3666
WASTE IN LIEU OF BORROW										–337	–337		–337
SHOULDER MATERIAL						60		60	72	72			
LOSS DUE TO CLEARING & GRUBBING	–100				–100					100			
GRADE POINT UNDERCUT			200			200		200	240	240		200	200
SHALLOW UNDERCUT			85			85		85	102	102		85	85
CONTINGENCY UNDERCUT			600			600		600	720	720		600	600
LESS SELECT GRANULAR MATERIAL						–500		–500	–600	–600			
PROJECT SUB-TOTALS	4824		3286	928	3896	17333		17333	20800	16904		4214	4214
5% EST. TO REPLACE TOPSOIL ON BORROW PIT										845			
PROJECT TOTALS	4824		3286	928	3896	17333		17333	20800	17749		4214	4214
SAY	4850		3350							17800			
DRAINAGE DITCH EXCAVATION = 183 CY													
FABRIC FOR SOIL STABILIZATION = 2100 CY													
CLASS IV SUBGRADE STABILIZATION = 210 TONS													

Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the contract lump sum price for "Grading".

31-MAY-2006 11:56
r:\PROJ\3612\roll\sum.dgn
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8/17/99

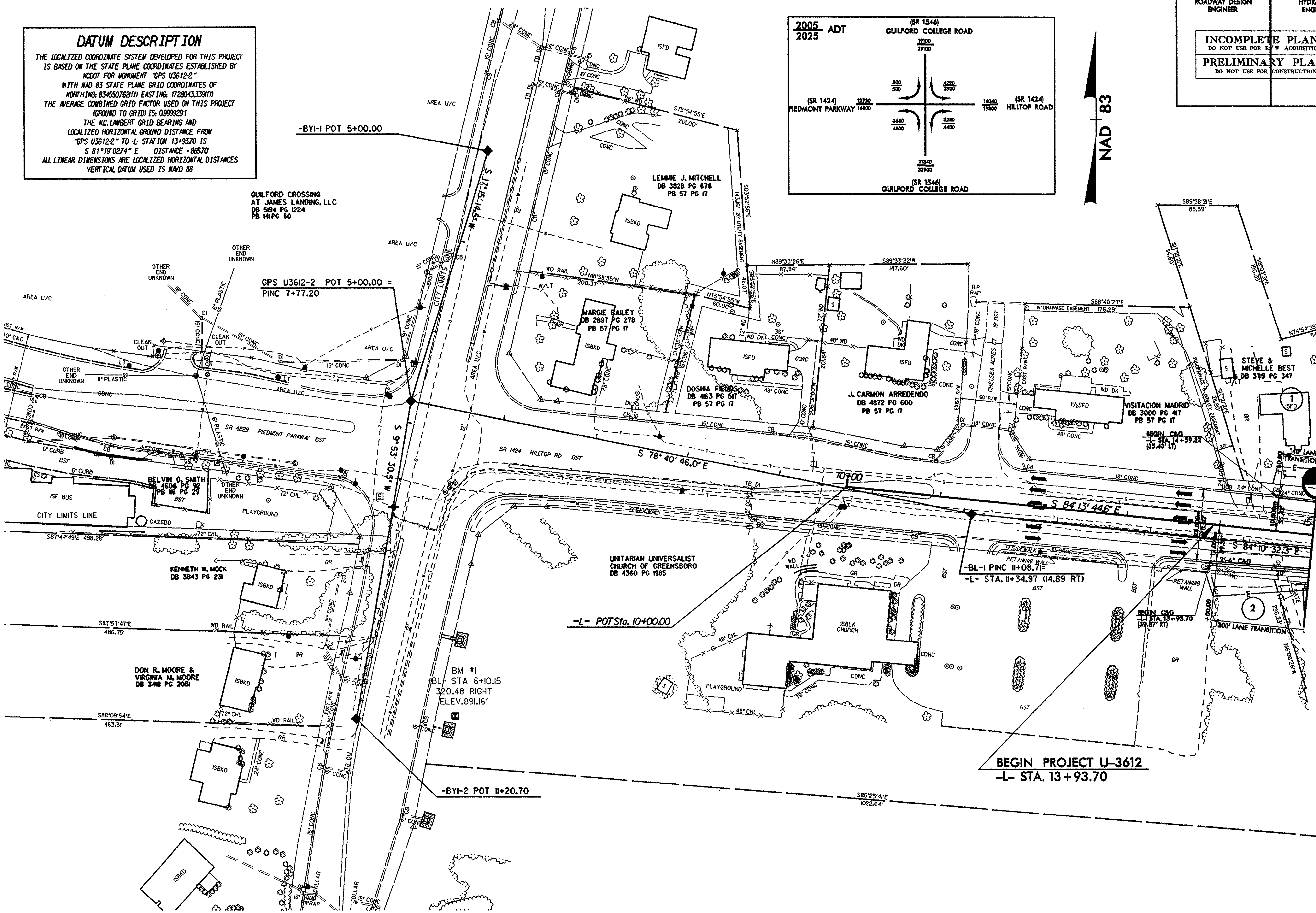
PROJECT REFERENCE NO.	SHEET NO.
U-3612	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

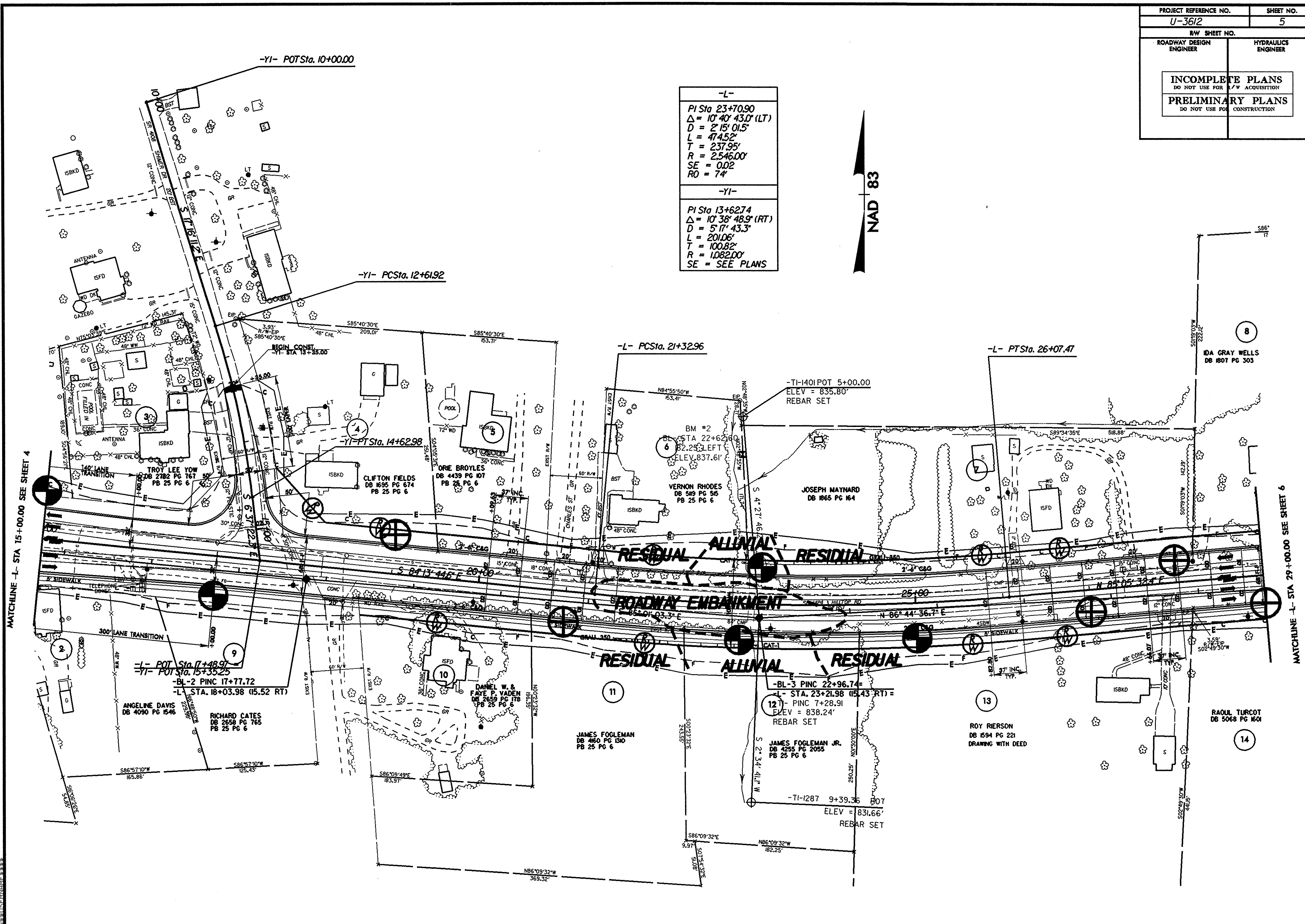
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS U3612-2"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 834550.762(ft) EASTING: 1728043.339(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999291
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS U3612-2" TO -L- STATION 13+93.70 IS
S 81°19'02.74" E DISTANCE = 865.70'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88



BEGIN PROJECT U-3612
-L- STA. 13+93.70



8/17/99
PROJECT REFERENCE NO.
U-3612
SHEET NO.
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
-L-
PI Sta 23+70.90
Δ = 10° 40' 43.0" (LT)
D = 2° 15' 01.5"
L = 474.52'
T = 237.95'
R = 2,546.00'
SE = 0.02
RO = 74'
-Y1-
PI Sta 13+62.74
Δ = 10° 38' 48.9" (RT)
D = 5° 17' 43.3"
L = 201.06'
T = 100.82'
R = 1,082.00'
SE = SEE PLANS
NAD 83
-Y1- POT Sta. 10+00.00
-Y1- PC Sta. 12+61.92
-Y1- PT Sta. 14+62.98
BEGIN CONST. -Y1- STA 13+35.00
-L- PC Sta. 21+32.96
-L- PT Sta. 26+07.47
-TI-1401 POT 5+00.00
ELEV = 835.80'
REBAR SET
BM #2
BL STA 22+62.60
82.25' LEFT
ELEV 837.61'
MATCHLINE -L- STA 15+00.00 SEE SHEET 4
MATCHLINE -L- STA 29+00.00 SEE SHEET 6
S 84° 13' 44.6" E
N 85° 05' 32.4" E
N 86° 44' 36.7" E
RESIDUAL
ALLUVIAL
RESIDUAL
ROADWAY EMBANKMENT
RESIDUAL
ALLUVIAL
RESIDUAL
140' LANE TRANSITION
300' LANE TRANSITION
-L- POT Sta. 17+48.97
-Y1- POT Sta. 15+35.25
-BL-2 PINC 17+77.72
-L- STA. 18+03.98 (15.52 RT)
-BL-3 PINC 22+96.74
-L- STA. 23+21.98 (15.43 RT)
-TI- PINC 7+28.91
ELEV = 838.24'
REBAR SET
-TI-1287 9+39.36 POT
ELEV = 831.66'
REBAR SET
TROY LEE YOW
DB 2782 PG 767
PB 25 PG 6
CLIFTON FIELDS
DB 1695 PG 674
PB 25 PG 6
ORIE BROYLES
DB 4439 PG 107
PB 25 PG 6
VERNON RHODES
DB 519 PG 515
PB 25 PG 6
JOSEPH MAYNARD
DB 1865 PG 164
IDA GRAY WELLS
DB 1807 PG 303
ANGELINE DAVIS
DB 4090 PG 1546
RICHARD CATES
DB 2658 PG 765
PB 25 PG 6
DANIEL W. & FAYE P. VADEN
DB 2659 PG 178
PB 25 PG 6
JAMES FOGLEMAN
DB 4160 PG 1310
PB 25 PG 6
JAMES FOGLEMAN JR.
DB 4255 PG 2055
PB 25 PG 6
ROY RIERSON
DB 1594 PG 221
DRAWING WITH DEED
RAOUL TURCOT
DB 5068 PG 1601
SHIMER DR
CHARLES ST
HILLTOP RD
N86°09'32"W
369.32'
N86°09'32"W
182.25'
S86°57'10"W
165.86'
S86°57'10"W
125.43'
S86°09'49"E
183.97'
S85°40'30"E
209.01'
S85°40'30"E
153.71'
N84°55'50"W
153.41'
S89°34'35"E
518.88'

8/17/99

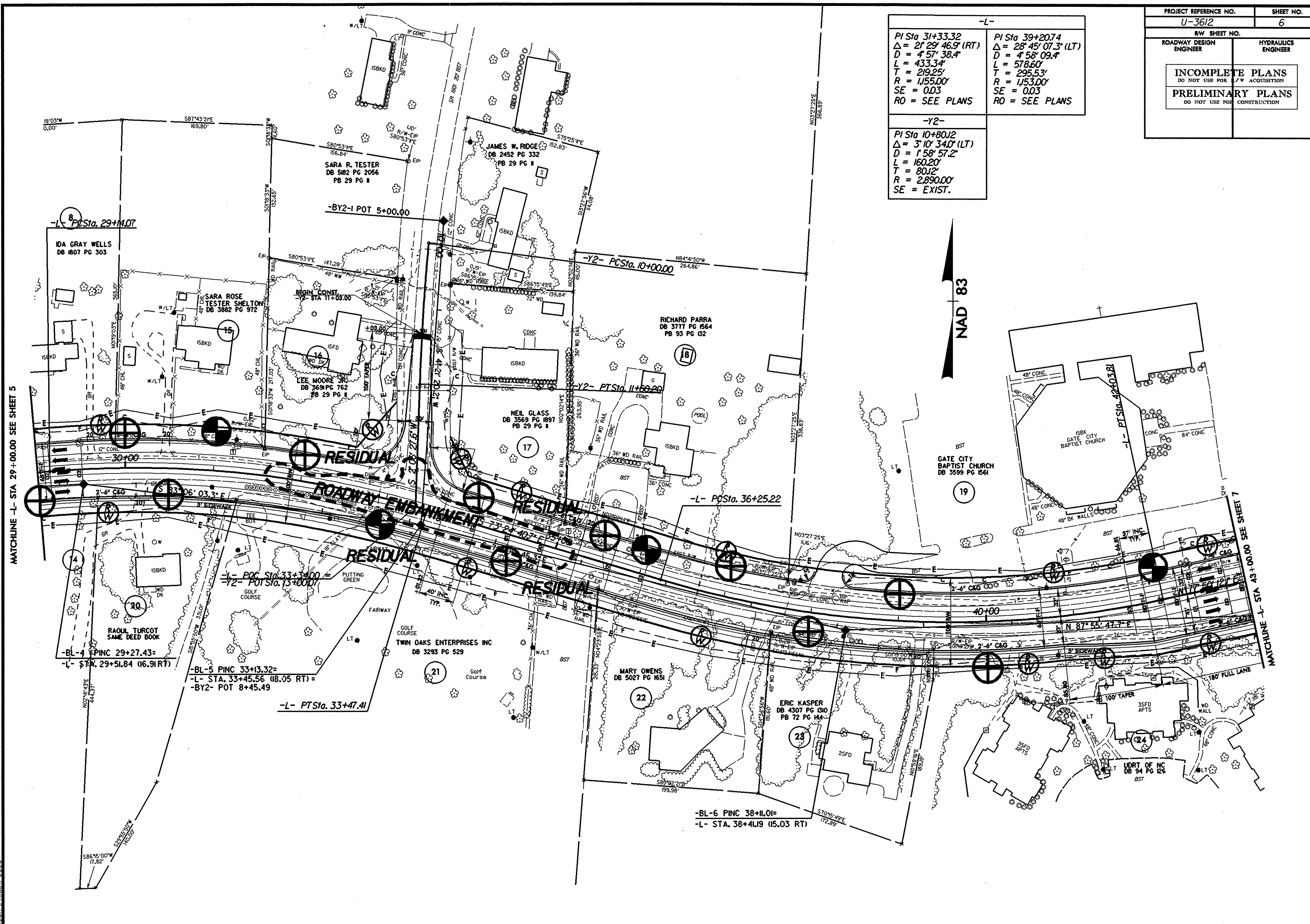
PROJECT REFERENCE NO.	SHEET NO.
U-3612	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-	
PI Sta 31+33.32 Δ = 21° 29' 46.9" (RT) D = 4° 57' 38.4" L = 433.34' T = 219.25' R = 1,155.00' SE = 0.03 RO = SEE PLANS	PI Sta 39+20.74 Δ = 28° 45' 07.3" (LT) D = 4° 58' 09.4" L = 578.60' T = 295.53' R = 1,153.00' SE = 0.03 RO = SEE PLANS

-Y2-
PI Sta 10+80.12 Δ = 3° 10' 34.0" (LT) D = 1° 58' 57.2" L = 160.20' T = 80.12' R = 2,890.00' SE = EXIST.



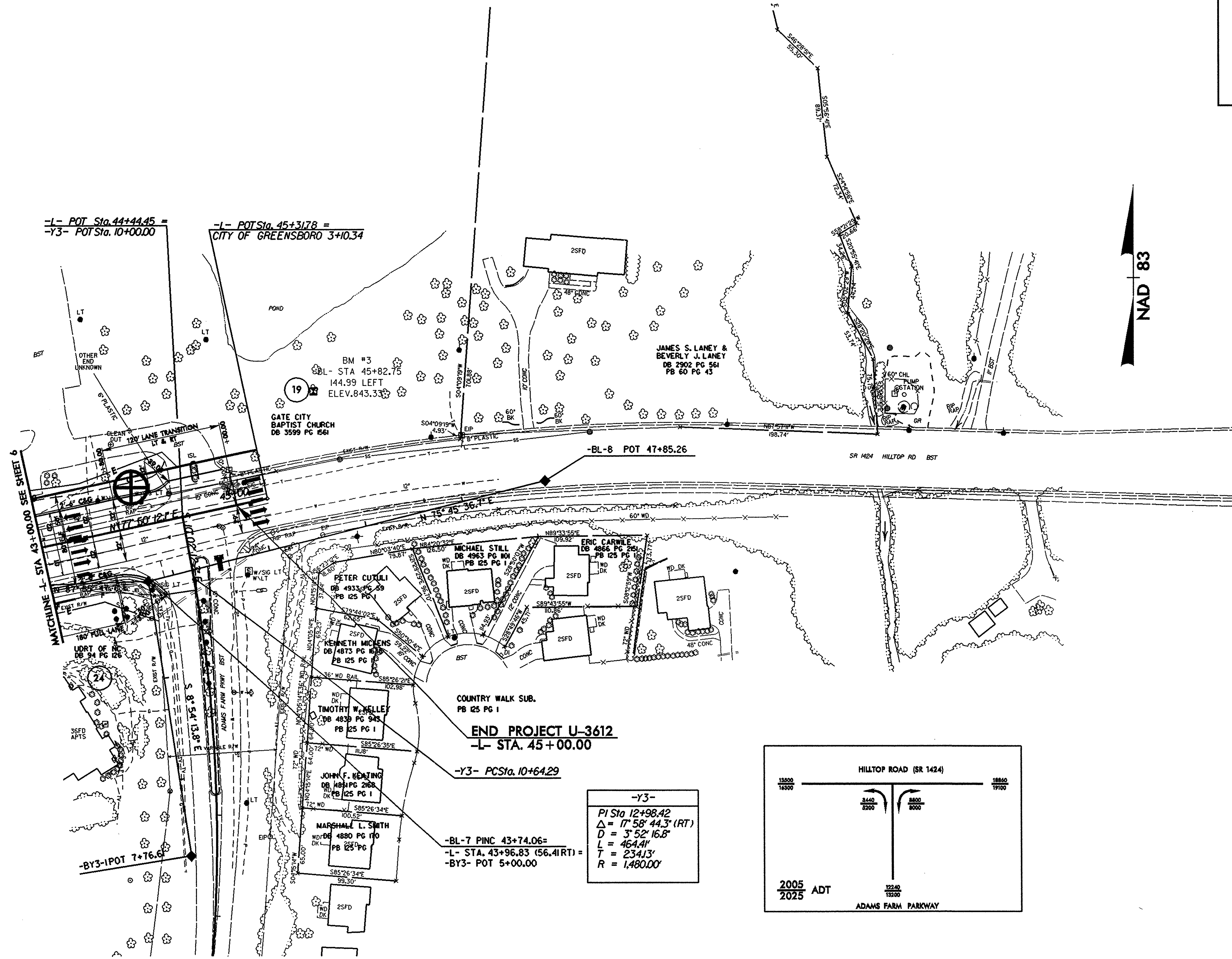
NAD 83
MATCHLINE -L- STA 29+00.00 SEE SHEET 5
MATCHLINE -L- STA 43+00.00 SEE SHEET 7
-L- PCSta. 29+14.07
IDA GRAY WELLS
DB 1807 PG 303
SARA R. TESTER
DB 5182 PG 2056
PB 29 PG 11
JAMES W. RIDGE
DB 2452 PG 332
PB 29 PG 11
-BY2-1 POT 5+00.00
SARA ROSE TESTER SHELTON
DB 3882 PG 972
BEGIN CONST.
-Y2- STA 11+03.00
LEE MOORE JR.
DB 3691 PG 762
PB 29 PG 11
-Y2- PCSta. 10+00.00
RICHARD PARRA
DB 3777 PG 1564
PB 93 PG 132
-Y2- PTSta. 11+60.20
NEIL GLASS
DB 3569 PG 1897
PB 29 PG 11
GATE CITY BAPTIST CHURCH
DB 3599 PG 1561
-L- PTSta. 42+03.81
RESIDUAL
ROADWAY EMBANKMENT
RESIDUAL
RESIDUAL
RESIDUAL
-L- PCSta. 36+25.22
30+00
40+00
N 87° 55' 47.7" E
-X- POC Sta. 33+34.00 =
-Y2- POT Sta. 13+00.07
PUTTING GREEN
GOLF COURSE
FAIRWAY
RAOUL TURCOT
SAME DEED BOOK
TWIN OAKS ENTERPRISES INC
DB 3293 PG 529
MARY OWENS
DB 5027 PG 1651
ERIC KASPER
DB 4307 PG 1310
PB 72 PG 144
UDRT OF NC
DB 94 PG 126
-BL-4 PINC 29+27.43=
-L- STA. 29+51.84 (16.91 RT)
-BL-5 PINC 33+13.32=
-L- STA. 33+45.56 (18.05 RT) =
-BY2- POT 8+45.49
-L- PTSta. 33+47.41
-BL-6 PINC 38+11.01=
-L- STA. 38+41.19 (15.03 RT)
180' FULL LANE
100' TAPER

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-3612	7
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



PROJ. REFERENCE NO.	SHEET NO.
U-3612	8

8/23/99

SOIL TEST RESULTS

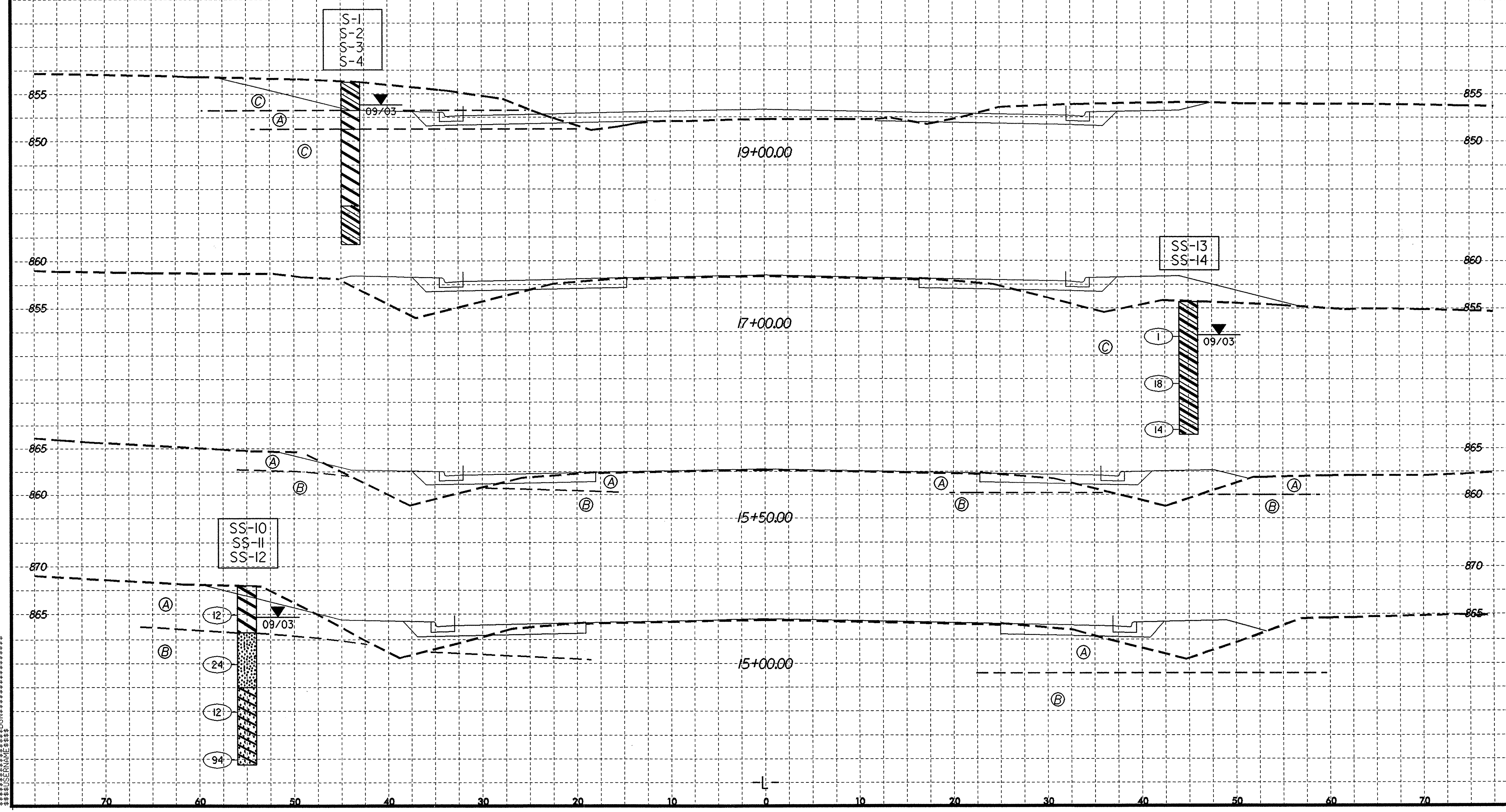
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-10	55' LT	15+00	2.1-3.6	A-7-6(15)	59	37	35.5	13.4	10.5	40.6	97	70	52	21.3	-
SS-11	55' LT	15+00	7.1-8.6	A-2-4(0)	23	6	47.5	20.1	16.2	16.2	91	57	33	-	-
SS-12	55' LT	15+00	12.1-13.6	A-2-6(0)	34	12	53.8	20.3	11.8	14.2	86	50	25	-	-
SS-13	45' RT	17+00	2.7-4.2	A-6(3)	30	15	36.7	18.3	22.7	22.3	93	68	46	20.6	-
SS-14	45' RT	17+00	7.7-9.2	A-6(7)	36	13	18.3	22.5	36.9	22.3	99	86	66	-	-
S-1	44' LT	19+00	0.0-2.0	A-6(2)	25	12	38.3	18.7	16.6	26.4	93	70	43	-	-
S-2	44' LT	19+00	2.0-4.0	A-7-6(8)	48	28	40.8	12.4	10.3	36.5	94	63	46	-	-
S-3	44' LT	19+00	5.0-7.0	A-7-6(9)	46	23	27.8	19.3	14.4	38.5	94	74	54	-	-
S-4	44' LT	19+00	13.0-17.0	A-6(3)	38	14	31.6	27.0	17.0	24.3	94	74	43	-	-

LEGEND

A: RESIDUAL, YELLOW-BROWN, MEDIUM STIFF TO STIFF, HIGHLY PLASTIC, MOIST, SILTY CLAY

B: RESIDUAL, GREY-GREEN, ORANGE-BROWN, AND GREY-WHITE, MEDIUM DENSE TO VERY DENSE, WET, SILTY SAND AND CLAYEY SAND

C: RESIDUAL, BROWN, GREY, AND BROWN-GREY, VERY SOFT TO VERY STIFF, SLIGHTLY TO MODERATELY PLASTIC, MOIST TO WET, SANDY CLAY AND SILTY CLAY



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

8/23/99

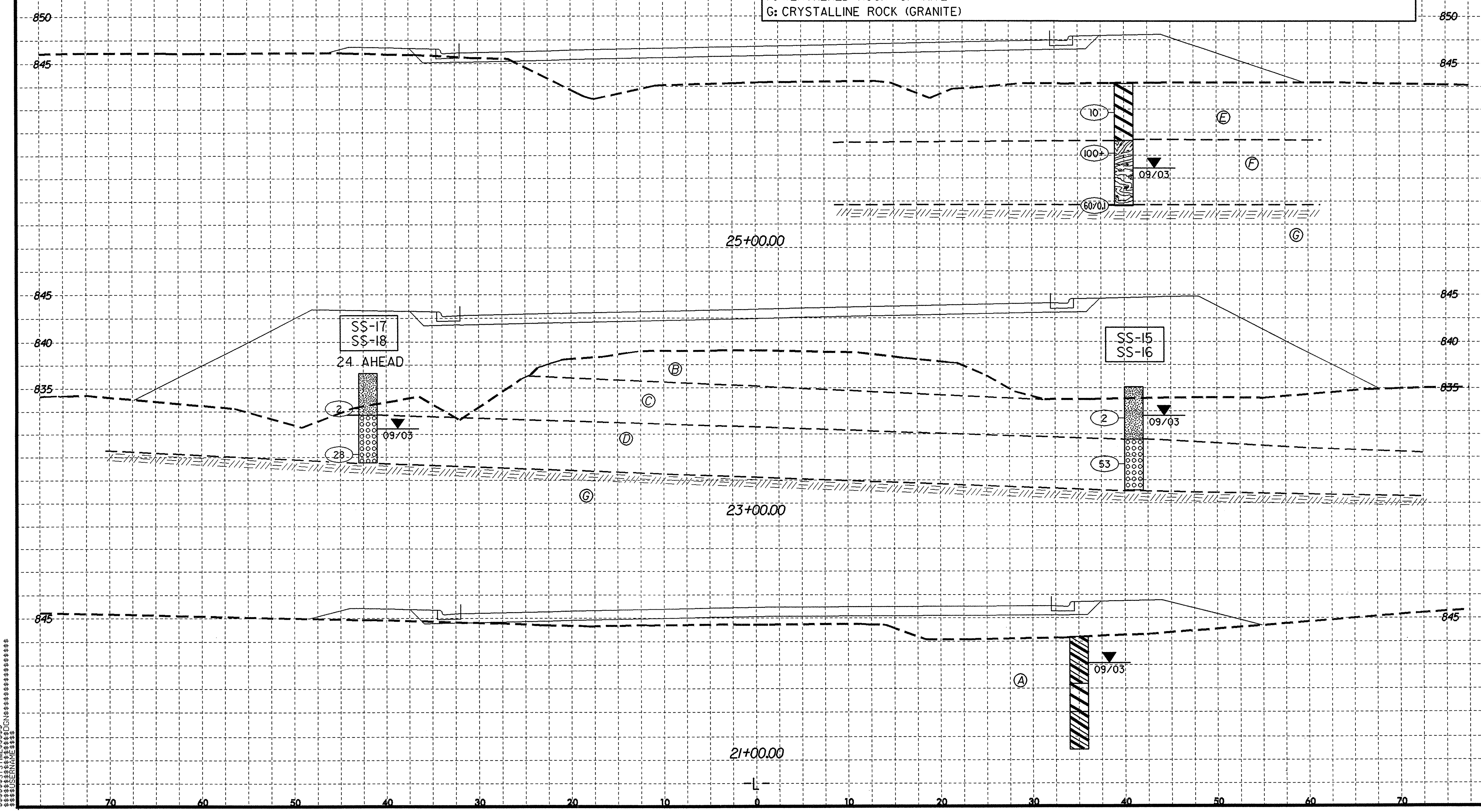
PROJ. REFERENCE NO.	SHEET NO.
U-3612	9

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	41' RT	23+00	2.4-3.9	A-4(1)	24	8	33.5	23.1	21.1	22.3	98	74	48	15.8	-
SS- 16	41' RT	23+00	7.4-8.9	A-1-b(0)	28	NP	60.9	18.7	14.4	6.1	73	37	18	-	-
SS- 17	42' LT	23+24	2.8-4.3	A-4(2)	28	9	28.2	20.7	24.7	26.4	97	82	54	19.5	-
SS- 18	42' LT	23+24	7.8-9.3	A-1-a(0)	32	NP	63.7	18.9	9.3	8.1	41	20	8	-	-

LEGEND

A: RESIDUAL, BROWN, MEDIUM STIFF TO STIFF, SLIGHTLY TO MODERATELY PLASTIC, MOIST TO WET, SANDY CLAY AND SILTY CLAY
B: ROADWAY EMBANKMENT
C: ALLUVIAL, BROWN AND LIGHT GREY, SOFT, MOIST TO WET, SANDY SILT
D: ALLUVIAL, ORANGE-BROWN, BLACK, AND WHITE, MEDIUM TO VERY DENSE, MOIST TO WET, COARSE SAND
E: RESIDUAL, YELLOW-BROWN AND GREY-BROWN, STIFF, HIGHLY PLASTIC, MOIST, SILTY CLAY
F: WEATHERED ROCK (GRANITE)
G: CRYSTALLINE ROCK (GRANITE)



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$$$$USERNAME$$$$

8/23/99

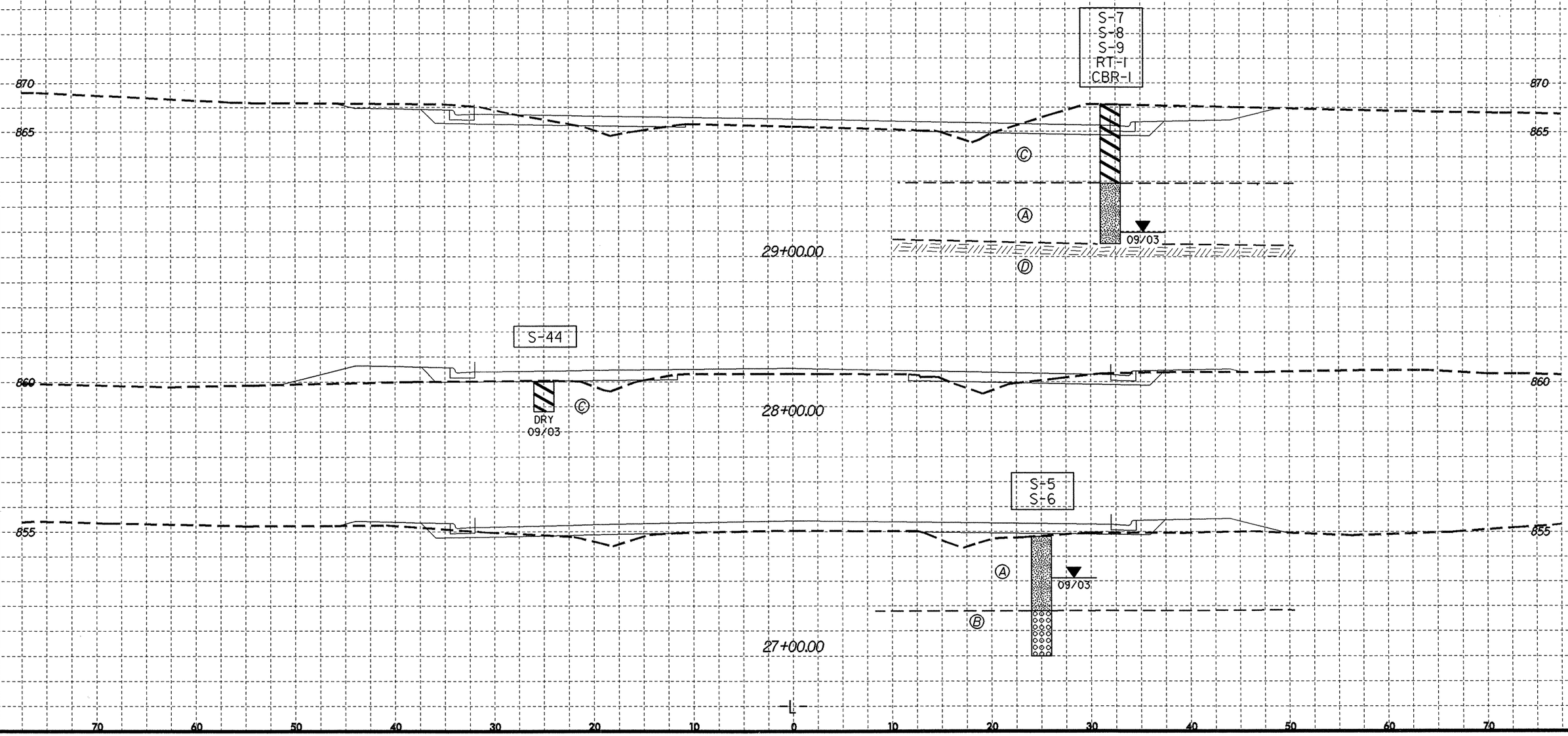
0 5	PROJ. REFERENCE NO.	SHEET NO.
	U-3612	10

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-5	25' RT	27+00	0.0-3.0	A-4(1)	31	9	36.3	25.8	17.6	20.3	93	74	41	-	-
S-6	25' RT	27+00	7.5-11.5	A-1-b(0)	29	6	62.5	19.1	10.3	8.1	78	39	17	-	-
S-44	25' LT	28+00	0.0-3.0	A-7-6(8)	42	29	36.4	17.8	17.6	28.3	94	67	46	-	-
S-7	32' RT	29+00	0.0-4.5	A-7-6(28)	57	33	13.2	7.5	30.6	48.7	99	89	81	-	-
S-8	32' RT	29+00	4.5-7.0	A-7-6(27)	55	32	12.8	9.7	30.8	46.7	100	90	80	-	-
S-9	32' RT	29+00	8.0-12.0	A-4(2)	32	6	30.6	17.4	35.7	16.2	97	76	55	-	-
RT-1	32' RT	29+00	0.0-3.0	A-7-6	42	21	18.9	9.5	37.1	34.5	98	86	73		
CBR-1	32' RT	29+00	3.0-6.0	A-6(11)	38	15	16.2	10.7	42.8	30.3	98	88	75	-	-

LEGEND

A: RESIDUAL, TAN AND LIGHT GREEN-GREY, MEDIUM STIFF TO STIFF, MOIST TO WET, SANDY SILT
B: RESIDUAL, DARK BROWN, MEDIUM DENSE TO DENSE, WET, COARSE SAND
C: RESIDUAL, LIGHT GREY AND YELLOW-BROWN, SOFT TO MEDIUM STIFF, HIGHLY PLASTIC, MOIST, SILTY CLAY
D: CRYSTALLINE ROCK (GRANITE)



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

8/23/99

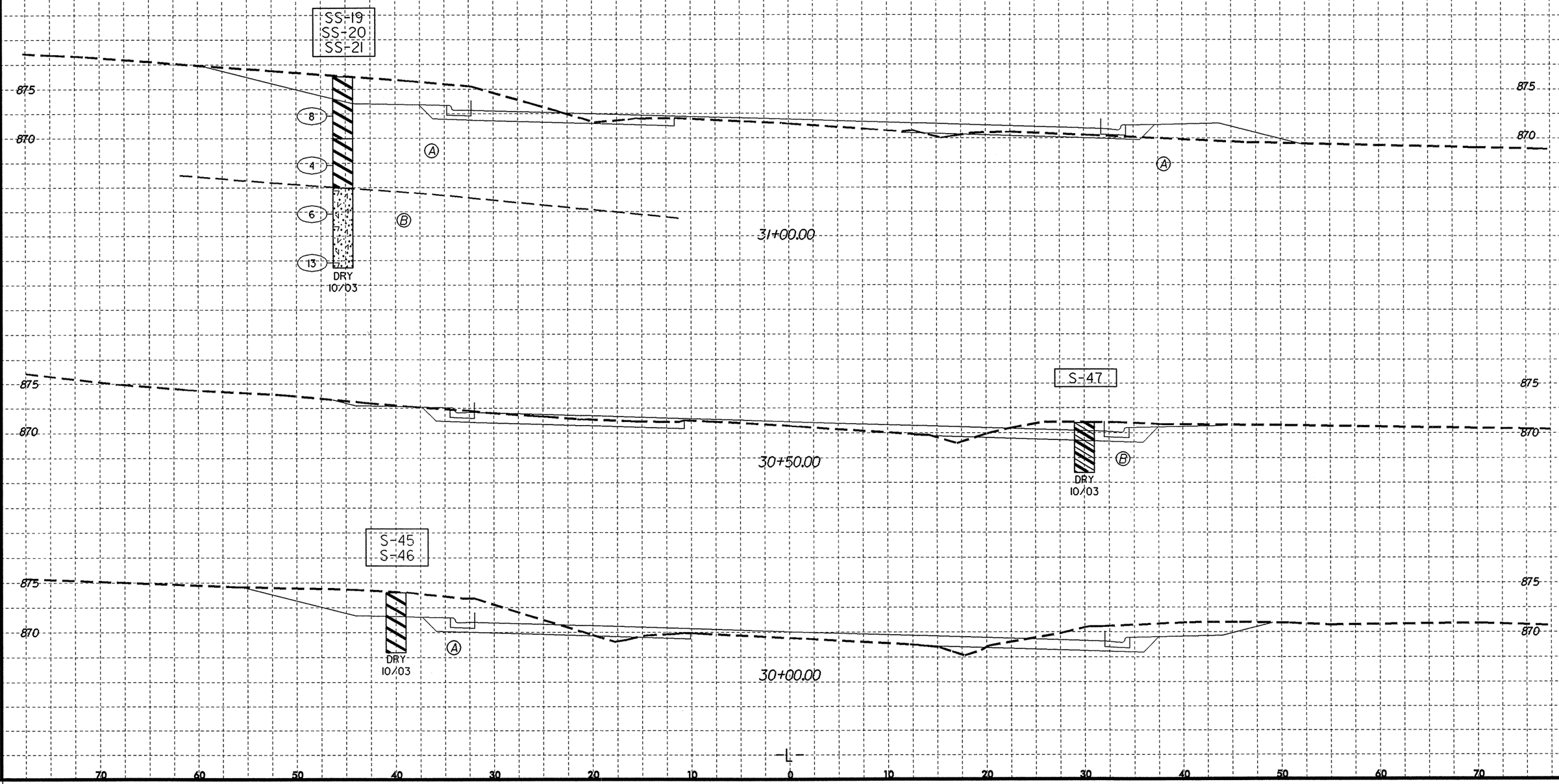
0 5	PROJ. REFERENCE NO.	SHEET NO.
	U-3612	11

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-45	40' LT	30+00	0.0-3.0	A-7-6(22)	61	33	25.3	7.1	13.1	54.5	96	76	67	-	-
S-46	40' LT	30+00	3.0-6.0	A-7-6(15)	55	26	26.1	11.9	23.6	38.4	95	78	62	-	-
S-47	30' RT	30+50	0.0-5.0	A-6(8)	40	23	30.7	21.8	19.2	28.3	98	77	50	-	-
SS-19	45' LT	31+00	3.0-4.5	A-7-5(37)	85	51	21.7	6.9	16.6	54.8	97	80	70	31.9	-
SS-20	45' LT	31+00	8.0-9.5	A-7-6(10)	53	26	33.1	15.6	27.0	24.3	96	72	52	-	-
SS-21	45' LT	31+00	13.0-14.5	A-5(1)	42	7	32.0	28.2	25.6	14.2	95	74	43	-	-

LEGEND

A: RESIDUAL, YELLOW-BROWN, MEDIUM STIFF, HIGHLY PLASTIC, MOIST, SILTY CLAY
B: RESIDUAL, TAN-PINK AND PINK-WHITE-GREY, MEDIUM STIFF TO STIFF, MOIST, CLAYEY SILT AND MODERATELY PLASTIC, SANDY CLAY



8/23/99

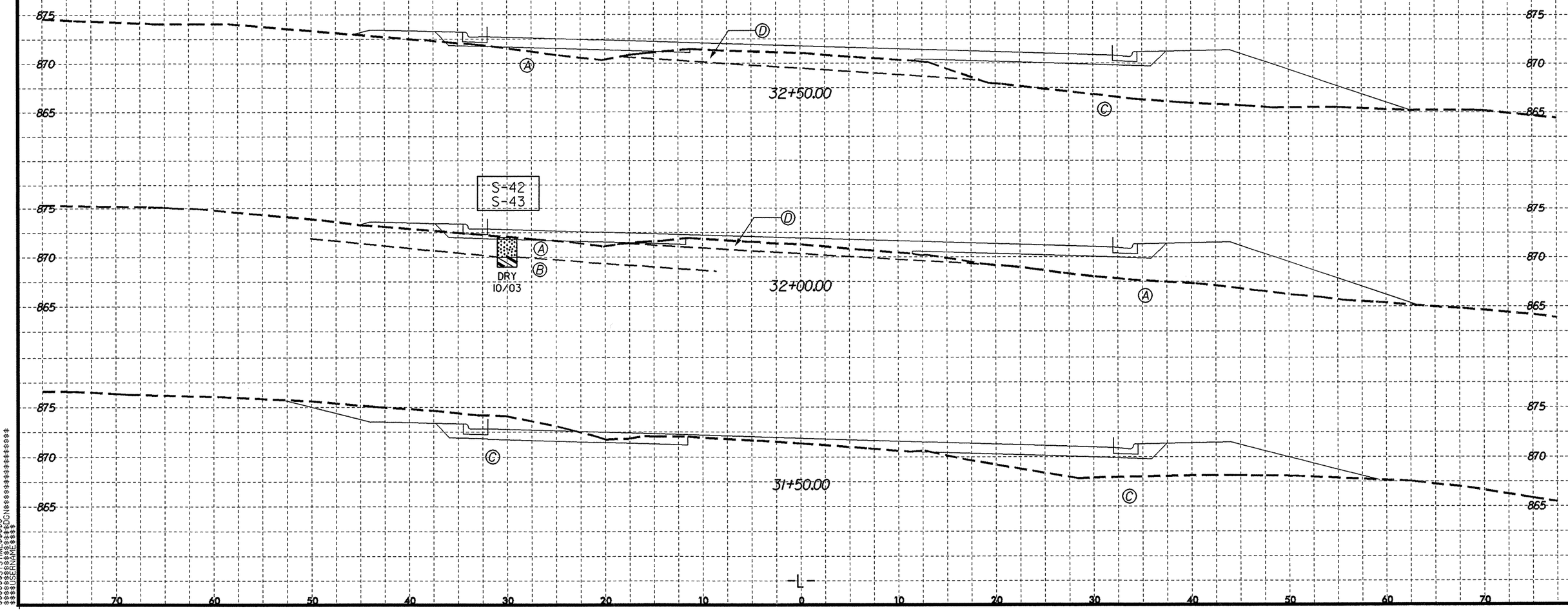
PROJ. REFERENCE NO.	SHEET NO.
U-3612	12

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-42	30' LT	32+00	1.0-2.0	A-2-4(0)	16	NP	43.8	27.7	18.4	10.1	95	70	32	-	-
S-43	30' LT	32+00	2.0-3.0	A-6(5)	37	16	28.5	20.4	18.8	32.3	95	75	52	-	-

LEGEND

A: RESIDUAL, LIGHT GREEN, LOOSE, DRY, SILTY SAND
B: RESIDUAL, LIGHT GREY AND YELLOW, MEDIUM STIFF, SLIGHTLY PLASTIC, MOIST, SANDY CLAY
C: RESIDUAL, YELLOW-BROWN AND ORANGE-BROWN, MEDIUM STIFF TO VERY STIFF, HIGHLY PLASTIC, MOIST, SILTY CLAY
D: ROADWAY EMBANKMENT



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PROJ. REFERENCE NO.	SHEET NO.
U-3612	13

SOIL TEST RESULTS

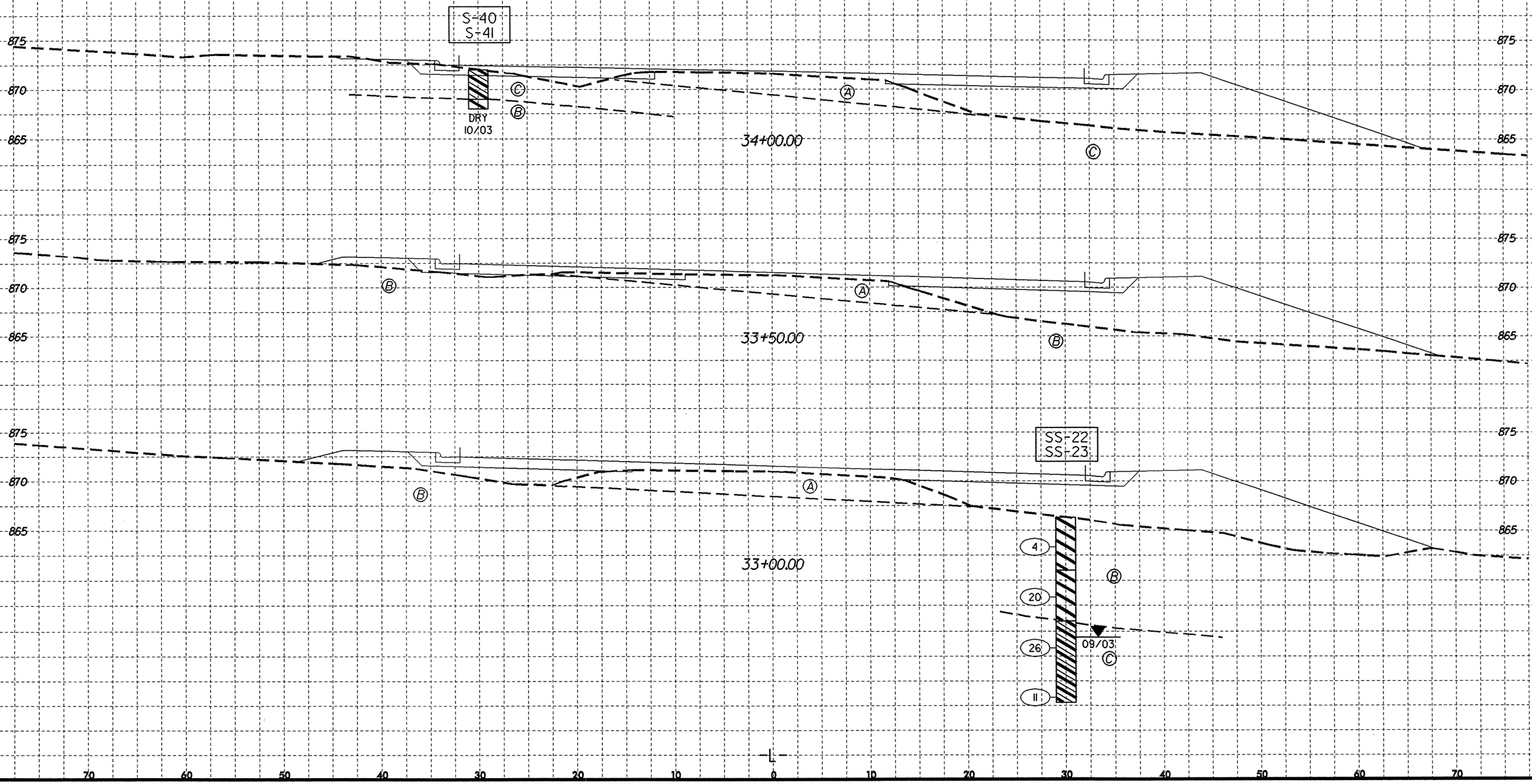
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-22	30' RT	33+00	12.0-13.5	A-6(8)	40	11	9.1	30.6	48.1	12.2	100	97	71	22.3	-
SS-23	30' RT	33+00	17.0-18.5	A-6(7)	38	18	24.5	19.1	34.1	22.3	90	73	56	-	-
S-40	30' LT	34+00	1.0-3.0	A-6(4)	37	20	41.6	16.0	14.1	28.3	96	63	43	-	-
S-41	30' LT	34+00	3.0-4.0	A-7-6(27)	77	53	31.3	10.5	13.7	44.4	97	72	58	-	-

LEGEND

A: ROADWAY EMBANKMENT

B: RESIDUAL, RED-BROWN, YELLOW-BROWN, ORANGE-BROWN, AND WHITE-GREY, MEDIUM STIFF TO VERY STIFF, HIGHLY PLASTIC, MOIST, SILTY CLAY

C: RESIDUAL, DARK BROWN, LIGHT GREY-WHITE, BROWN, AND YELLOW-BROWN, MEDIUM STIFF TO VERY STIFF, SLIGHTLY TO MODERATELY PLASTIC, MOIST TO WET, SANDY CLAY

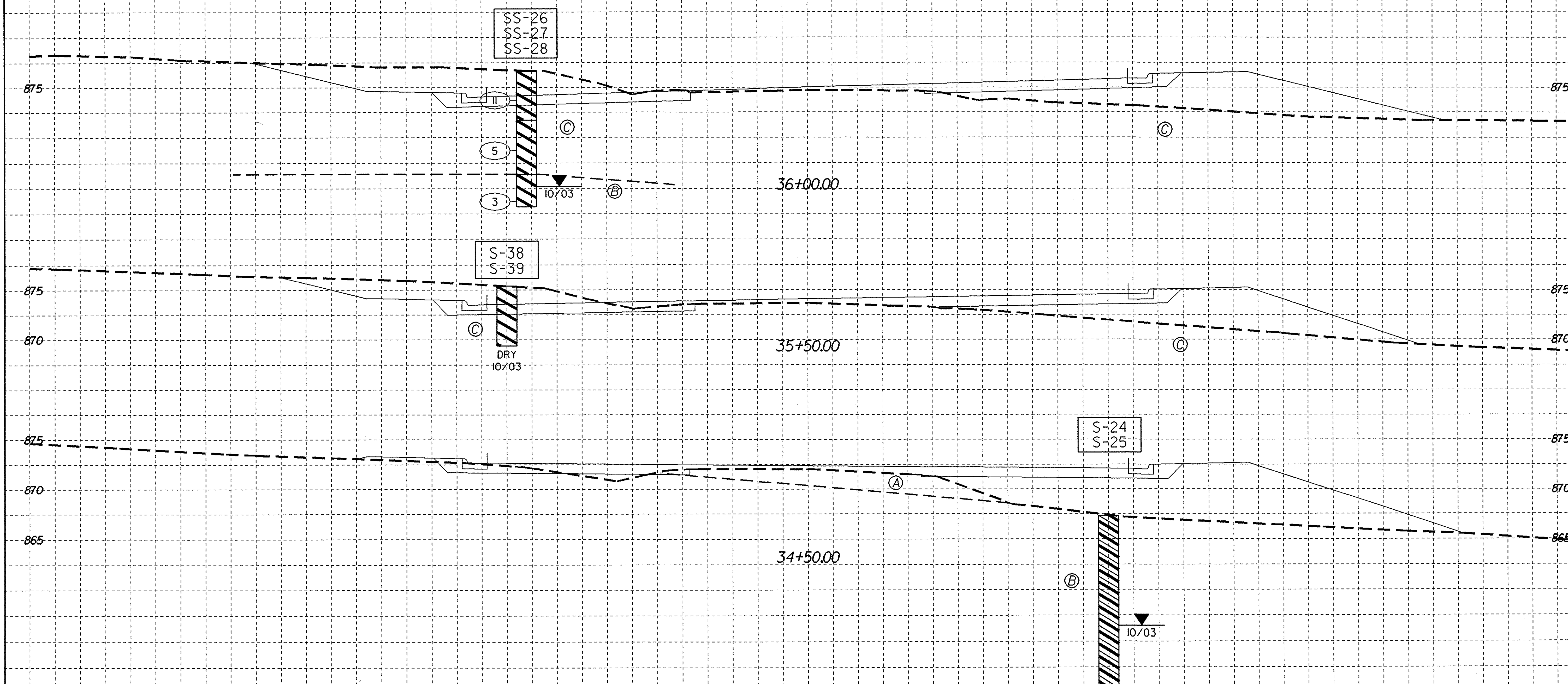


SOIL TEST RESULTS

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-24	30' RT	34+50	0.0-4.0	A-6(5)	36	21	39.4	18.1	16.2	26.4	94	66	43	-	-
S-25	30' RT	34+50	7.0-12.0	A-6(3)	39	13	33.7	24.7	23.3	18.3	95	71	44	-	-
S-38	30' LT	35+50	0.0-3.0	A-7-6(38)	80	57	21.0	10.5	18.0	50.5	97	84	68	-	-
S-39	30' LT	35+50	3.5-6.0	A-7-5(31)	78	43	24.0	7.1	18.4	50.5	97	77	69	-	-
SS-26	28' LT	36+00	2.0-3.5	A-7-5(36)	83	48	20.5	7.1	17.6	54.8	96	81	71	25.3	-
SS-27	28' LT	36+00	7.0-8.5	A-7-5(21)	65	31	19.9	13.8	31.8	34.5	94	79	67	-	-
SS-28	28' LT	36+00	12.0-13.5	A-7-5(4)	53	17	37.5	20.9	29.4	12.2	93	66	43	-	-

LEGEND

A: ROADWAY EMBANKMENT
B: RESIDUAL, YELLOW-BROWN, BROWN, AND TAN-WHITE-BLACK, SOFT TO STIFF, SLIGHTLY TO MODERATELY PLASTIC, MOIST TO WET, SANDY CLAY AND SILTY CLAY
C: RESIDUAL, YELLOW-BROWN AND RED-BROWN, SOFT TO STIFF, HIGHLY PLASTIC, MOIST, SILTY CLAY



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PROJ. REFERENCE NO.	SHEET NO.
U-3612	15

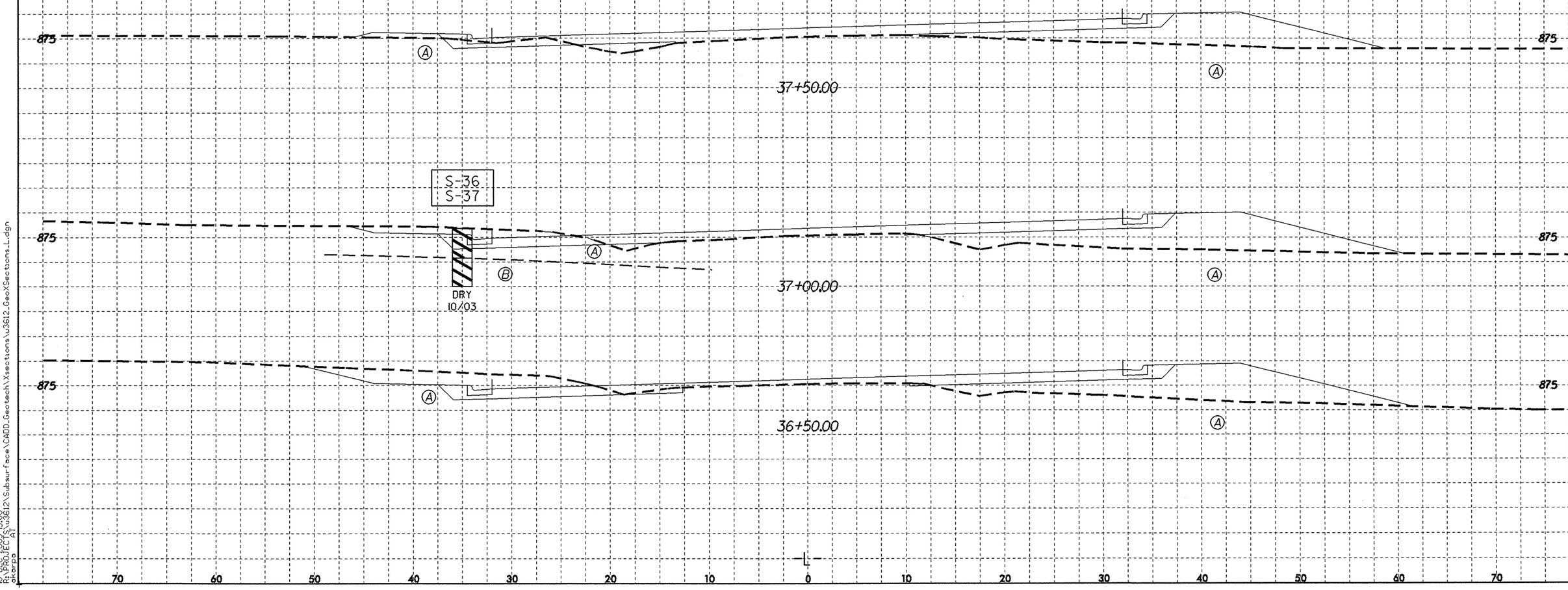
SOIL TEST RESULTS

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-36	35' LT	37+00	0.0-3.0	A-7-6(40)	75	46	11.1	9.9	20.4	58.6	98	90	80	-	-
S-37	35' LT	37+00	3.0-6.0	A-7-5(25)	63	25	6.3	16.0	35.4	42.4	100	97	83	-	-

LEGEND

A: RESIDUAL, YELLOW-BROWN, TAN, AND RED-BROWN, SOFT TO STIFF, HIGHLY PLASTIC, MOIST, SILTY CLAY

B: RESIDUAL, RED-BROWN, MEDIUM STIFF TO STIFF, MODERATELY PLASTIC, MOIST, SILTY CLAY



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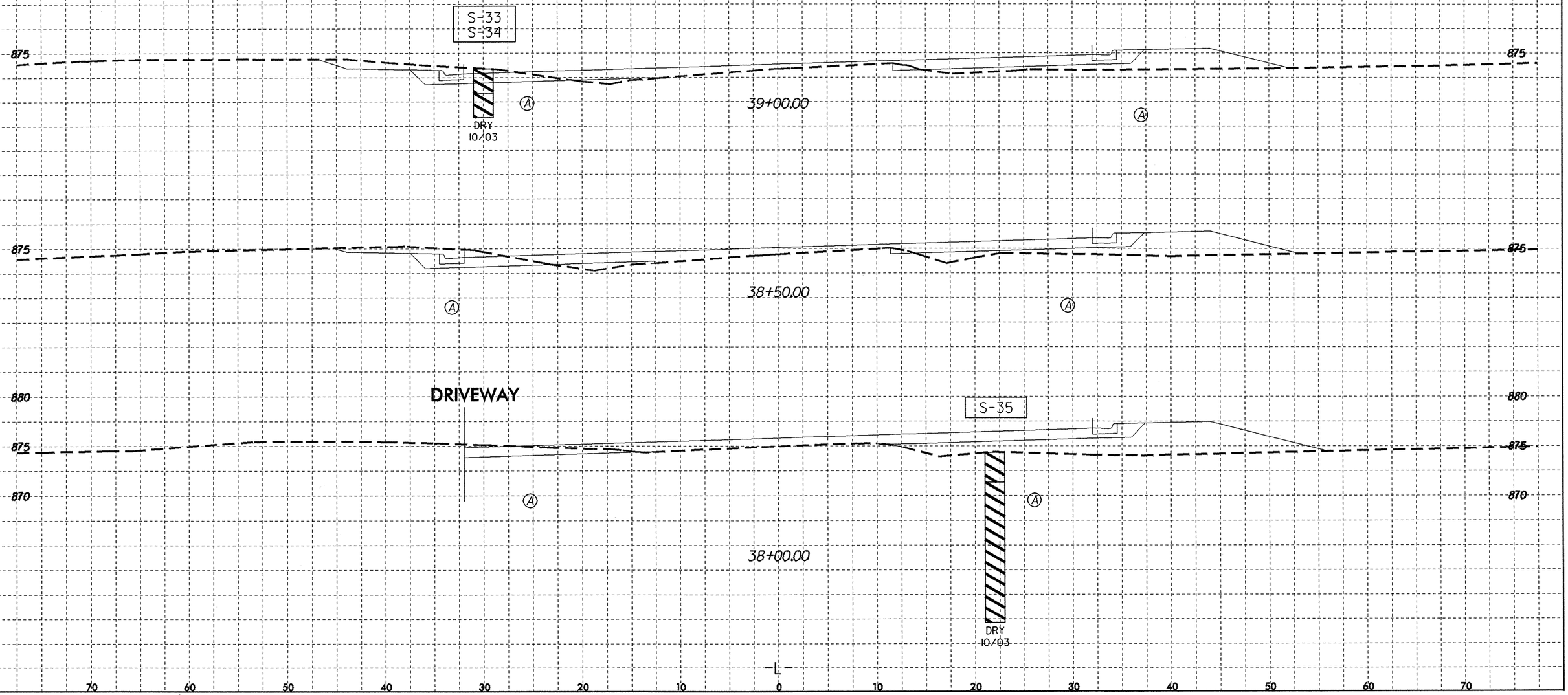
0	5	PROJ. REFERENCE NO.	SHEET NO.
		U-3612	16

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C. SAND	F. SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
S-35	22' RT	38+00	0.0-3.0	A-7-5(43)	86	53	18.4	6.1	14.9	60.6	97	82	75	-	-
S-33	30' LT	39+00	0.0-2.5	A-7-5(30)	75	44	20.8	9.7	19.0	50.5	95	79	68	-	-
S-34	30' LT	39+00	2.5-5.0	A-7-5(18)	65	26	22.8	9.3	21.4	46.5	94	78	66	-	-

LEGEND

A: RESIDUAL, RED-BROWN, YELLOW-BROWN, AND LIGHT GREY, SOFT TO MEDIUM STIFF, HIGHLY PLASTIC, MOIST, SILTY CLAY



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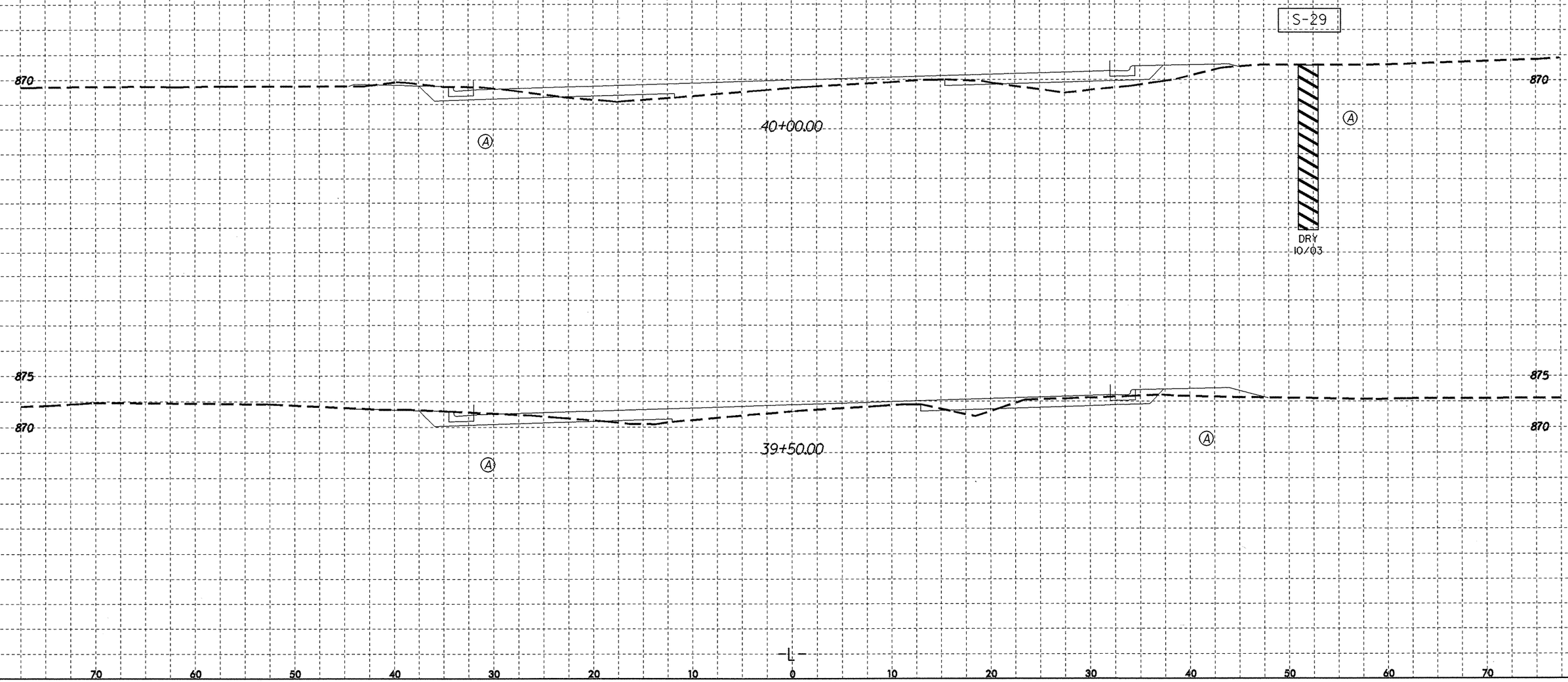
0 5	PROJ. REFERENCE NO.	SHEET NO.
	U-3612	17

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-29	52' RT	40+00	8.0- 14.0	A-7-5(20)	67	36	25.4	15.2	22.9	36.5	96	78	60	-	-

LEGEND

A: RESIDUAL, RED-BROWN, YELLOW-BROWN, AND LIGHT GREY, SOFT TO VERY STIFF, HIGHLY PLASTIC, MOIST, SILTY CLAY



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0 5	PROJ. REFERENCE NO.	SHEET NO.
	U-3612	18

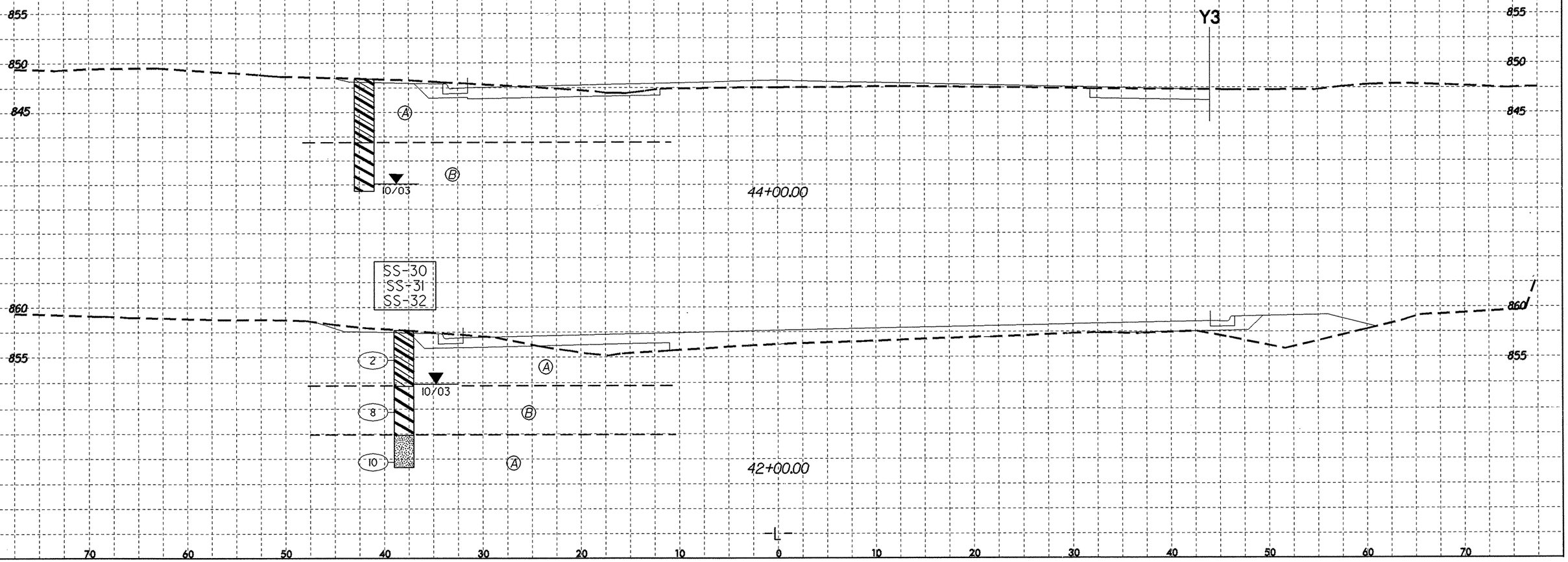
SOIL TEST RESULTS

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-30	38' LT	42+00	2.0-3.5	A-6(2)	28	13	36.9	22.7	18.1	22.3	97	75	43	17.3	-
SS-31	38' LT	42+00	7.0-8.5	A-7-6(21)	51	32	17.4	16.8	25.2	40.6	100	89	70	-	-
SS-32	38' LT	42+00	12.0-13.5	A-4(0)	32	7	42.2	23.3	22.3	12.2	96	67	37	-	-

LEGEND

A: RESIDUAL, TAN AND BLACK-GREY-WHITE, SOFT TO STIFF, MOIST TO WET, SANDY SILT AND SLIGHTLY PLASTIC, SANDY CLAY

B: RESIDUAL, BLUE-GREY AND BLUE-GREEN, MEDIUM STIFF TO STIFF, HIGHLY PLASTIC, MOIST TO WET, SILTY CLAY



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