

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

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3849	1	34
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34994.1.1	STP-1363(3)	P.E.	
34994.2.2	STP-1363(3)	RW & UTIL	
34994.3.2	STP-1363(5)	CONSTR.	

CONTENTS

LINE	STATION	SHEET NUMBER
-L-	5+13 TO 72+90	4-9, 12-14
-Y1-	10+00 TO 13+54	6
-Y2-	10+00 TO 11+50	6
-Y3-	10+00 TO 11+58	6
-Y4-	10+00 TO 12+39	7
-Y5-	10+00 TO 11+79	7
-Y6-	10+00 TO 10+93	8
-Y7-	9+50 TO 27+85	9, 10, 15
-Y7REV-	27+85 TO 37+46	9, 11, 15, 16
-Y7CONN1-	10+00 TO 12+48	10, 16
-Y7REVCONN2-	10+00 TO 13+06	11, 16
-Y8-	19+37 TO 37+15	9-11, 17-18
-DRIVE1-	10+00 TO 11+80	5, 18
-DRIVE1A-	10+00 TO 17+40	4-5, 18
-DRIVE2-	10+00 TO 25+77	5-6, 19
-DRIVE3-	10+00 TO 11+50	9

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34994.1.1 F.A. PROJ. STP-1363(3)
COUNTY CUMBERLAND
PROJECT DESCRIPTION SR 1363 (ELK ROAD) FROM SR 1132
(LEGION ROAD) TO US 301-95 BUSINESS

INVENTORY - REVISED

CROSS SECTIONS

LINE	STATION	SHEET NUMBER
-L-	29+00 TO 31+50	20
-L-	42+50 TO 53+00	21-25
-L-	55+50 TO 67+00	26-30
-Y7-	21+00 TO 22+50	31
-Y7REV-	28+00 TO 33+00	32-34

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.

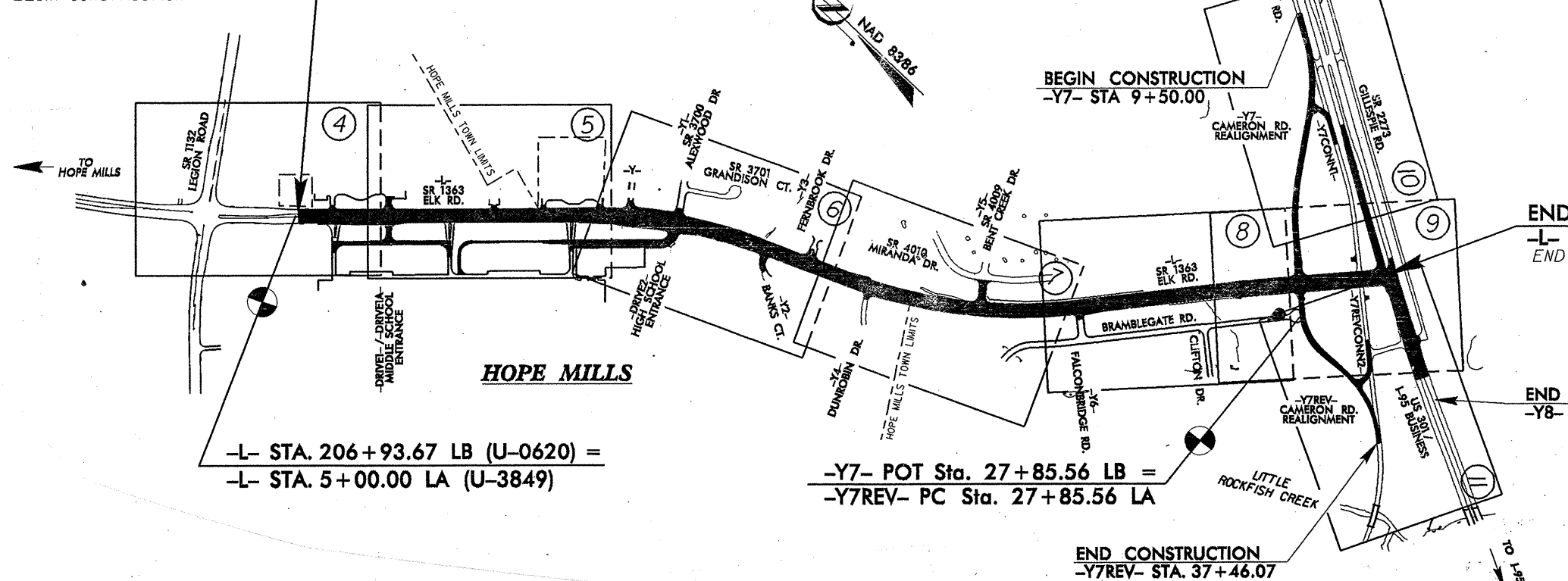
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT 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.

ID: U-3849

CONTRACT: C202086

BEGIN TIP PROJECT U-3849

-L- STA. 5+13.50
BEGIN CONSTRUCTION



-L- STA. 206+93.67 LB (U-0620) =
-L- STA. 5+00.00 LA (U-3849)

-Y7- POT Sta. 27+85.56 LB =
-Y7REV- PC Sta. 27+85.56 LA

END CONSTRUCTION
-Y7REV- STA. 37+46.07

PERSONNEL

JRM

KBQ

WNC

MMH

LWD

RES

S&ME PERSONNEL

S JOHNSON

G PAYNTER

K BAINES

R NORWOOD

S LOW

INVESTIGATED BY JRM

CHECKED BY JRM

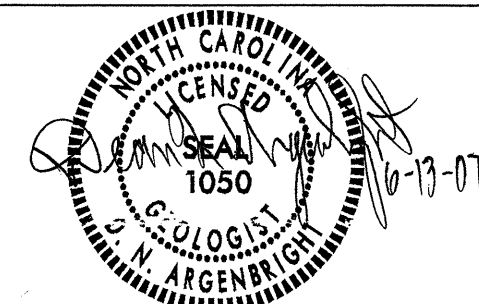
SUBMITTED BY DNA

DATE JUNE 2007

DRAWN BY: JRM, DNA

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

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
U-3849	34994.1.1	2	34

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

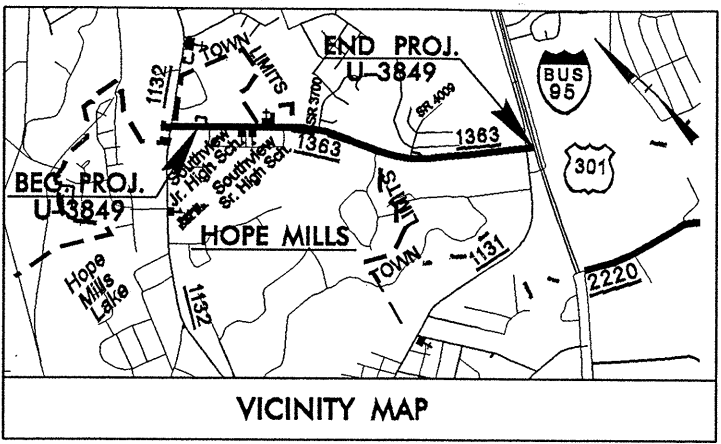
SOIL DESCRIPTION				GRADATION				ROCK DESCRIPTION				TERMS AND DEFINITIONS			
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (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: <i>VERY STIFF, SAND SILT CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i>				WELL GRADED: INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE UNIFORM: INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED: INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.				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:				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 IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCREOUS (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 DISLOGGED 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 (IN 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.			
SOIL LEGEND AND AASHTO CLASSIFICATION				MINERALOGICAL COMPOSITION				WEATHERING				WEATHERING			
GENERAL CLASS. GRANULAR MATERIALS (75% PASSING #200) SILT-CLAY MATERIALS (75% PASSING #200) ORGANIC MATERIALS				MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.				WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)				FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V. SL.) 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 (SLT) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH, OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION, ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i> SEVERE (SEV.) ALL 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. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i> VERY SEVERE (V. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i> COMPLETE ROCK REDUCED TO SOIL, ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.			
GROUP CLASS. A-1, A-3, A-2, A-4, A-5, A-6, A-7, A-7.5, A-7.6, A-1, A-2, A-3, A-4, A-5, A-6, A-7				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 OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% 20% HIGHLY 35% AND ABOVE							
SYMBOL (Grid of symbols for soil types)				GROUND WATER WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING. STATIC WATER LEVEL AFTER 24 HOURS. PERCHED WATER, SATURATED ZONE OR WATER BEARING STRATA SPRING OR SEEPAGE				WEATHERING ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. 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. 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. 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> 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. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i> 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> 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.							
CONSISTENCY OR DENSENESS PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)				MISCELLANEOUS SYMBOLS ROADWAY EMBANKMENT WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS INFERRED SOIL BOUNDARIES INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP/DIP DIRECTION OF ROCK STRUCTURES				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 U - UNIT WEIGHT U _d - DRY UNIT WEIGHT W - MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST							
TEXTURE OR GRAIN SIZE U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.76 2.0 0.42 0.25 0.075 0.053				SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION				EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: MOBILE B- BK-51 CME-45C CME-550 PORTABLE HOIST OTHER CME-750 OTHER CME-45B							
PLASTICITY NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW SLIGHT MEDIUM HIGH				ROCK HARDNESS VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS. MEDIUM HARD CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.				FRACTURE SPACING IERM SPACING IERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED > 4 FEET 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 THINLY LAMINATED < 0.008 FEET							
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.				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.				BENCH MARK: ELEVATION: NOTES: APPROXIMATE ALLUVIAL LIMIT APPROXIMATE ARTIFICIAL FILL LIMIT APPROXIMATE ARTIFICIAL FILL LIMIT OVER ALLUVIUM							

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34994.2.2	STP-1363(3)	RW & UTIL	

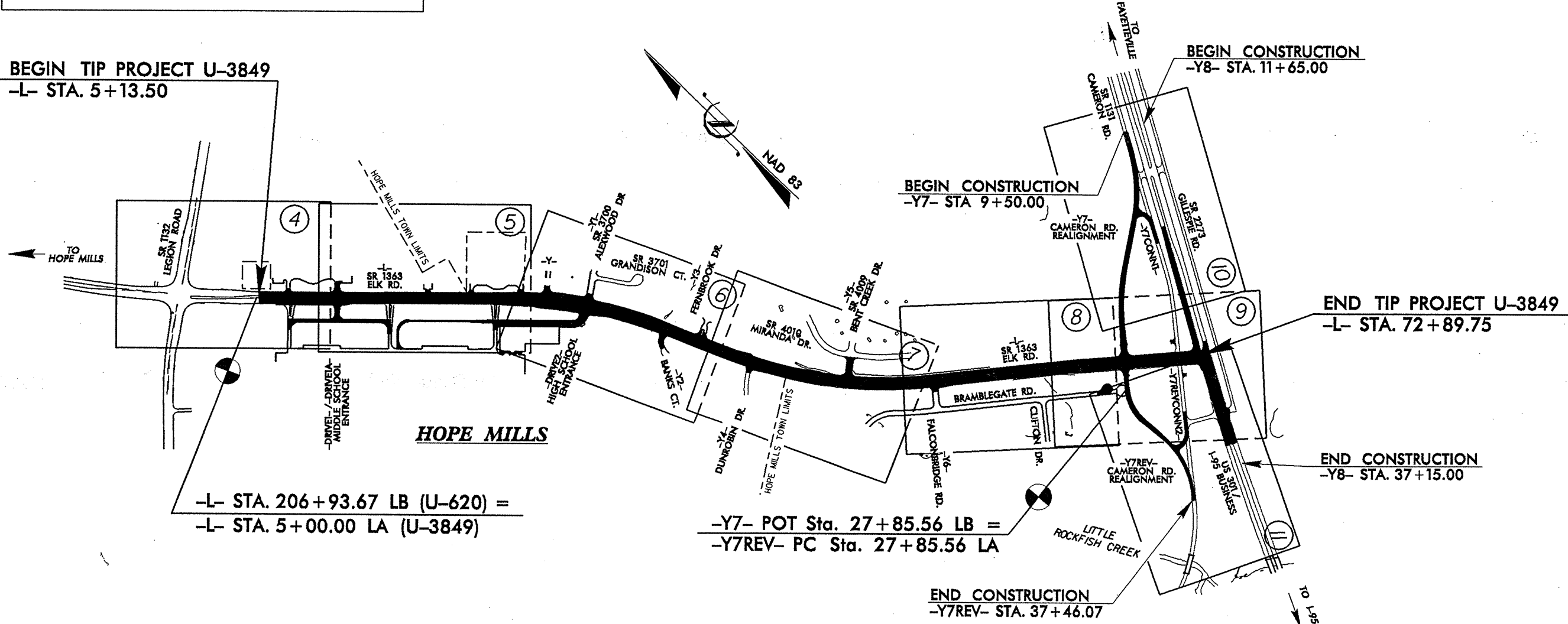
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CUMBERLAND COUNTY

LOCATION: HOPE MILLS - SR 1363 (ELK ROAD) FROM
SR 1132 (LEGION ROAD) TO US 301/95 BUSINESS
TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, CURB & GUTTER,
CULVERT, RETAINING WALLS, AND SIGNALS



BEGIN TIP PROJECT U-3849
-L- STA. 5+13.50



-L- STA. 206+93.67 LB (U-620) =
-L- STA. 5+00.00 LA (U-3849)

-Y7- POT Sta. 27+85.56 LB =
-Y7REV- PC Sta. 27+85.56 LA

END CONSTRUCTION
-Y7REV- STA. 37+46.07

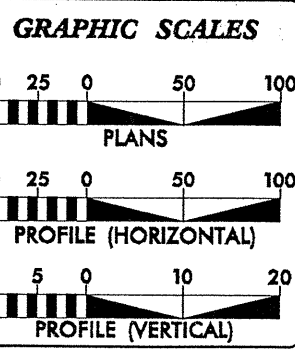
END TIP PROJECT U-3849
-L- STA. 72+89.75

END CONSTRUCTION
-Y8- STA. 37+15.00

NOTE: CLEARING ON THE PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III. THIS PROJECT IS PARTIALLY WITHIN THE TOWN LIMITS OF HOPE MILLS.

THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA

ADT 2006 =	12,700
ADT 2030 =	25,000
DHV =	10 %
D =	60 %
T =	5 % *
V =	50 MPH
* DUAL 3% + TTST 2%	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3849	=	1.283 MILES
TOTAL LENGTH TIP PROJECT U-3849	=	1.283 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2003 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 14, 2005

PRODUCTION LET:
JULY 15, 2008

LETTING DATE:
APRIL 21, 2009

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

SAMUEL L. ST. CLAIR
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

DATE

CONTRACT: TIP PROJECT: U-3849
 08-JUN-2007 11:33
 I:\ero\green\w\le_investigation\tip_u3849_geo_rdw\rev\cadd\geotech\planproj\U3849_r-dj_tsh1.dgn



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 13, 2007

STATE PROJECT: 34994.1.1 U-3849
F. A. PROJECT: STP-1363(3)
COUNTY: Cumberland
DESCRIPTION: SR 1363 (Elk Road) from SR 1132 (Legion Road) to US 301/I-95 Business

SUBJECT: Geotechnical Report – Revised Inventory

This report supercedes the Inventory report dated January 6, 2005.

Project Description

The proposed project is located in Hope Mills, beginning southeast of SR 1132 and extends 1.2± miles southeast to US 301/I-95 business. Based on the current plans, the project will consist of replacing the existing two lane SR 1363 to a four lane curb and gutter facility with a concrete median. The investigation of subsurface conditions was confined to the corridor of proposed construction.

The following alignments were investigated for this project:

Line	Station (±)
-L-	5+13 to 72+89
-Y1-	10+00 to 13+54
-Y2-	10+00 to 11+50
-Y3-	10+00 to 11+58
-Y4-	10+00 to 12+39
-Y5-	10+00 to 11+79
-Y6-	10+00 to 10+93
-Y7-	9+50 to 27+85
-Y7-Rev	27+85 to 37+46
-Y7CONN1-	10+00 to 12+98

Line	Station (±)
-Y7REVCNN2-	10+00 to 13+06
-Y8-	11+65 to 37+15
-DRIVE1-	10+00 to 11+80
-DRIVE1A-	10+00 to 17+40
-DRIVE2-	10+00 to 25+77
-DRIVE3-	10+00 to 11+50

Areas of Special Geotechnical Interest

1) The approximate limits of organic soil along the project are:

Line	Station (±)
-L-	42+18 to 48+48
-L-	60+25 to 62+78

2) The following sections contain cohesive soil with medium to high plasticity indices and greater than 50% passing no. 200 sieve:

Line	Station (±)
-L-	39+80 to 43+15
-L-	50+25 to 52+75
-L-	56+00 to 57+80
-L-	59+25 to 62+15
-L-	63+25 to 66+25
-Y7-REV	28+75 to 32+75

Physiography and Geology

The project corridor is located in Cumberland County along existing SR 1363 and SR 1131, within the Coastal Plain Physiographic Province. Topography along the project is gently rolling with good surface drainage. Floodplain elevations along the project vary between the drainages at -L- stations 46+10 and 61+34, which have an elevation of approximately 132.0 feet and 111.5 feet respectively. The surface elevations of the upland areas range from 93.3 feet along -Y7-REV to 210.0 feet near the beginning of the project.

Drainage along the project is confined to the Rockfish Creek drainage basin. Surface water flows to two tributaries of Rockfish Creek that cross the project at -L- stations 46+10 and 61+34, or directly to Rockfish Creek to the south of -Y7- and -Y8-.

The geology of this region consists of soils of the Black Creek and Cape Fear Formations, as well as Recent alluvial sediments. Organic soils with sand layers characterize alluvial soils, whereas upland soils consist primarily of granular soils with lesser amounts of cohesive soils.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

TELEPHONE: 919-250-4088
FAX: 919-250-4237

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

Ground Water

Ground water data was collected primarily from August through September 2004 and June 2007 during which period the area experienced normal precipitation conditions. It was noted that high ground water conditions are present within the floodplain limits of the tributaries to Rockfish Creek. Water levels along the upland areas were measured at 3.0' feet below natural ground or deeper. A perched water table is located along the left side of -L- from stations 65+20 to 66+20. The presence of a high P.I. clay lens is responsible for this water table.

Soils

Soils encountered during this investigation are separated into four major categories based on origin. These categories include alluvial soils, Coastal Plain formational soils, roadway embankment, and artificial fill.

Alluvial soils were encountered in the flood plains of the tributaries of Rockfish Creek from -L- stations 42+18 to 48+48 and 60+25 to 62+78, and have a maximum thickness of 11.2 feet. These recent soils consist of very soft to soft muck and very loose to medium dense silty coarse sand (A-2-4 and A-1-b). Typically, the organic sediments contain 11.2 to 51.5 percent organic material, moisture content of up to 180 percent, and exhibit poor engineering properties. Vane Shear Test data show shear strength values of the alluvial organic sediments ranging from 111 psf to 2004 psf with a majority of the test values being between 500 psf and 1200 psf. The measured apparent shear strength may be artificially high due to the presence of fibrous wood fragments and roots. The organic and cohesive sediments have the potential for subgrade failure due to their relatively poor engineering properties. Undercutting of the alluvial soils may be required to provide a suitable base for embankment along the new alignment.

Soils of the Black Creek Formation generally consist of loose to medium dense silty sand and sand (A-1-b, A-2-4, and A-3), clayey sand (A-2-6 and A-2-7), and very soft to hard silty and sandy clay (A-7-6 and A-6). The granular soils of this formation comprise the majority of the soils along the project and exhibit good to excellent engineering properties. The cohesive soils of the Black Creek Formation account for a much smaller percentage of soils along the project and exhibit moderate to poor engineering characteristics with low to high plasticity indices (Plasticity Index values ranging from 12 to 37) and greater than 50 percent passing the no. 200 sieve.

Medium dense coarse sand and sand (A-1-b and A-3) of the Cape Fear Formation were encountered in borings at -L- stations 60+25 and 61+00. These soils underlie the Black Creek Formation and exhibit good to excellent engineering properties.

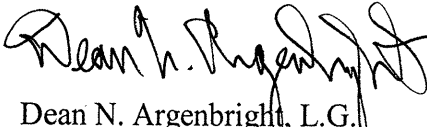
Roadway embankment constructed for SR 1363 exists along the entire project. The embankment consists primarily of loose to medium dense sand, silty sand, and clayey sand (A-3, A-2-4, and A-2-6) with lesser amounts of medium stiff silty clay (A-7-6). As much as 24.0 feet of embankment material has been placed under the roadway and exhibits good to excellent engineering properties. Artificial fill is present along the project as lot backfill material and consists of silty sand and silty sand with gravel (A-2-4, A-1-a, A-1-b) and

contains some small brick and concrete fragments. The artificial fill appears to have fair to good engineering qualities and is not expected to present a problem.

Culvert at -L- Station 46+10

A culvert is proposed for the drainage crossing -L- at station 46+10. Soils at this location consist of very soft to medium stiff alluvial muck, loose alluvial sand (A-2-4), and loose to medium dense coastal plain sand (A-2-4). The muck deposit is 7.0 feet at its thickest and appears to have been undercut under the existing roadway embankment. Alluvial sand underlies the muck from -L- station 44+40 to 46+30 and has a maximum thickness of 4.0 feet. Alluvial soils are underlain by loose to medium dense silty sand of the Black Creek Formation at an elevation of approximately 126.0 feet.

Prepared by,


Dean N. Argenbright, L.G.
Regional Geological Engineer

EARTHWORK BALANCE SHEET
(in Cubic Yards)

PROJECT U-3849

CUMBERLAND COUNTY

DATE: Jan. 5, 2010

COMPILED BY: BKA

SHEET 3B OF 34 SHEETS

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE						
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+) 25%		ROCK	SUITABLE	UNSUIT.	TOTAL			
L RT.																		
6+36.00	34+00.00	1469				1469	3432		3432	4290	2821							
DRIVE 1																		
10+46.75	11+56.00	33				33	172		172	215	182							
DRIVE 1A																		
10+30.40	17+09.30	2031				2031	240		240	300			1731				1731	
DRIVE 2																		
10+55.00	25+68.70	10199				10199	10		10	13			10186				10186	
SUMMARY 1		13732				13732	3854		3854	4818	3003		11917				11917	
L LT.																		
9+55.00	36+50.00	468				468	8588		8588	10735	10267							
SUMMARY 2		468				468	8588		8588	10735	10267							
L RT.																		
34+00.00	68+00.00	1989		1049		1989	12822		12822	16028	14039				1049		1049	
Y2																		
10+38.34	11+50.00	66				66	18		18	23			43				43	
SUMMARY 3		2055		1049		2055	12840		12840	16051	14039		43		1049		1092	
L LT.																		
36+50.00	68+00.00	15774		4981	576	15198	27475		27475	34344	19146				5557		5557	
Y3																		
10+50.00	11+21.22	10				10	16		16	20	10							
Y5																		
10+05.00	11+42.98	825				825	0		0	0			825				825	
Y7																		
9+50.00	25+61.06	14516				14516	1063		1063	1329			13187				13187	
Y7 CONN1																		
10+12.00	12+98.29	16				16	386		386	483	467							
SUMMARY 4		31141		4981	576	30565	28940		28940	36176	19623		14012		5557		19569	
Y7																		
26+47.06	27+85.56 LB	0				0	6938		6938	8673	8673							
Y7REV																		
27+85.56 LA	37+46.07	30771		301	3639	27132	3970		3970	4963			22169		3940		26109	
Y7REV CONN2																		
10+12.00	13+06.50	1226				1226	65		65	81			1145				1145	
SUMMARY 5		31997		301	3639	28358	10973		10973	13717	8673		23314		3940		27254	
L																		
68+00.00	72+46.38	5171				5171	3474		3474	4343			828				828	
Y8 RT.																		
19+37.00	28+00.00	618				618	300		300	375			243				243	
SUMMARY 6		5789				5789	3774		3774	4718			1071				1071	
Y8 MED																		
11+65.00	22+23.00	388				388	90		90	113			275				275	
Y8 MED																		
28+00.00	37+15.00	379				379	207		207	259			120				120	
SUMMARY 7		767				767	297		297	372			395				395	
SUMMARY TOTALS		85949		6331	4215	81734	69266		69266	86587	55605		50752		10546		61298	
Est. Grade Point Undercut (per Geotech)				1000			1000		1000	1250	1250				1000		1000	
Add'l Undercut (per Geotech)				700			700		700	875	875				700		700	
Select Mat. to replace Borrow (Geotech)							-6160		-6160	-7700	-7700							
Waste to replace Borrow											-50030		-50030				-50030	
GRAND TOTAL		85949		8031	4215	81734	64806		64806	81012	0		722		12246		12968	
SAY TOTAL =		86400																

SHALLOW UNDERCUT (per Geotech) = 100 CY

SHOULDER BORROW = 2136 CY

DDE = 815 CY

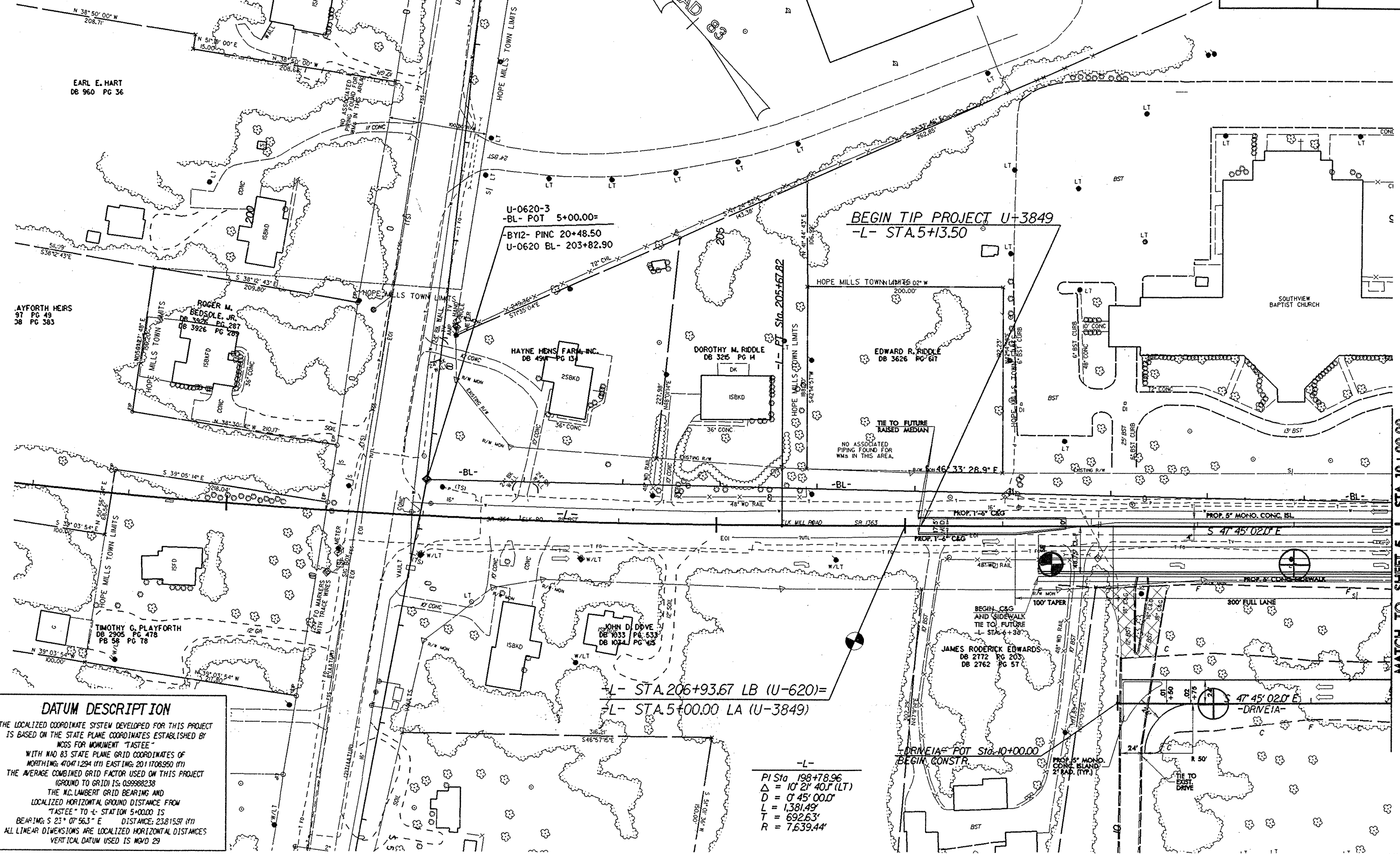
-L-, DRIVE1A, DRIVE2, -Y7-, & -Y7REV- PAVEMENT STRUCTURE VOLUME = 9232 CY

Note: 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.

7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3849	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 "MGS FOR MONUMENT 'TASTEE'" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 47041294 (11) EASTING: 2011706950 (11) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988238 THE N.C. LAMBERT GRID BEARINGS AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM 'TASTEE' TO 'L' STATION 5+000.00 IS BEARING: S 23° 07' 56.3" E DISTANCE: 23815.91 (11) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS MVD 29

U-0620-3
-BL- POT 5+00.00=
-BYI2- PINC 20+48.50
U-0620 BL- 203+82.90

BEGIN TIP PROJECT U-3849
-L- STA. 5+13.50

-L- STA. 206+93.67 LB (U-620)=
-L- STA. 5+00.00 LA (U-3849)

-L-
PI Sta 198+78.96
Δ = 10' 21" 40.1' (LT)
D = 0' 45" 00.0"
L = 1,381.49'
T = 692.63'
R = 7,639.44'

MATCH TO SHEET 5 -L- STA. 10+00.00

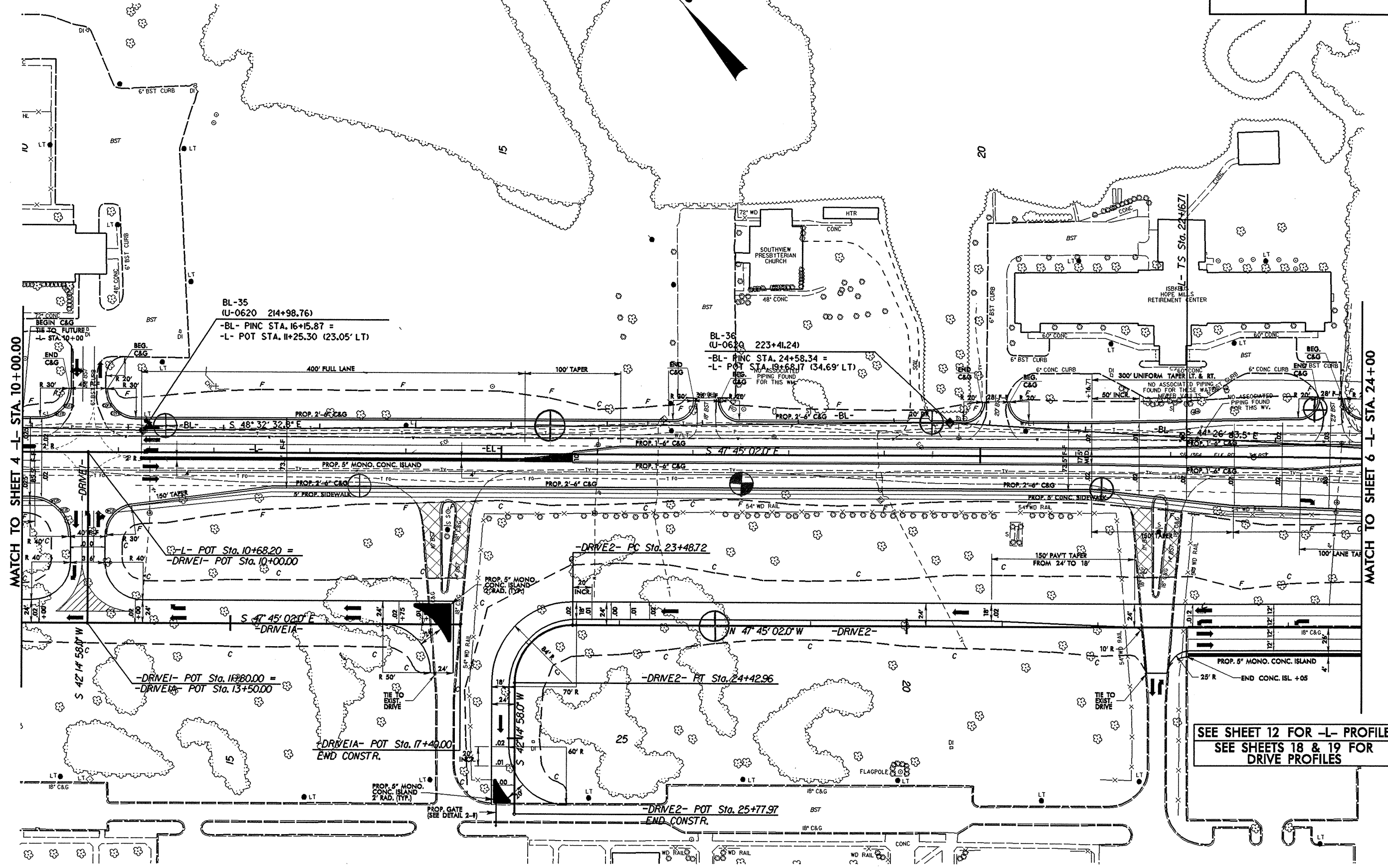
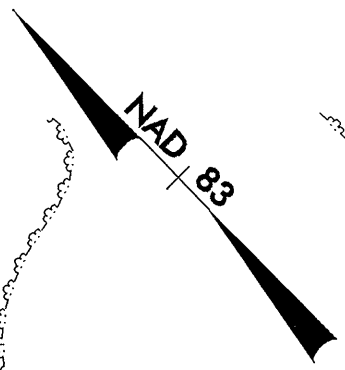
SEE SHEET 12 FOR -L- PROFILE
SEE SHEET 19 FOR -DRIVE1A- PROFILE

7/2/99

REVISIONS

PROJECT REFERENCE NO. U-3849	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-DRVE2-	-L-	-L-	
PI Sta 24+08.72	PIs Sta 23+50.05	PI Sta 28+44.92	PIs Sta 33+33.51
$\Delta = 90^{\circ}00'00.0"$ (LT)	$\Theta s = 2^{\circ}00'00.0"$	$\Delta = 17^{\circ}00'09.4"$ (RT)	$\Theta s = 2^{\circ}00'00.0"$
D = 95'29'34.7"	Ls = 200.00'	D = 2'00'00.0"	Ls = 200.00'
L = 94.25'	LT = 133.34'	L = 850.13'	LT = 133.34'
T = 60.00'	ST = 66.67'	T = 428.21'	ST = 66.67'
R = 60.00'		R = 2,864.79'	SE = 0.04



MATCH TO SHEET 4 -L- STA. 10+00.00

MATCH TO SHEET 6 -L- STA. 24+00

SEE SHEET 12 FOR -L- PROFILE
SEE SHEETS 18 & 19 FOR
DRIVE PROFILES

*****SYTIME*****
*****SERIAL*****

7/12/99

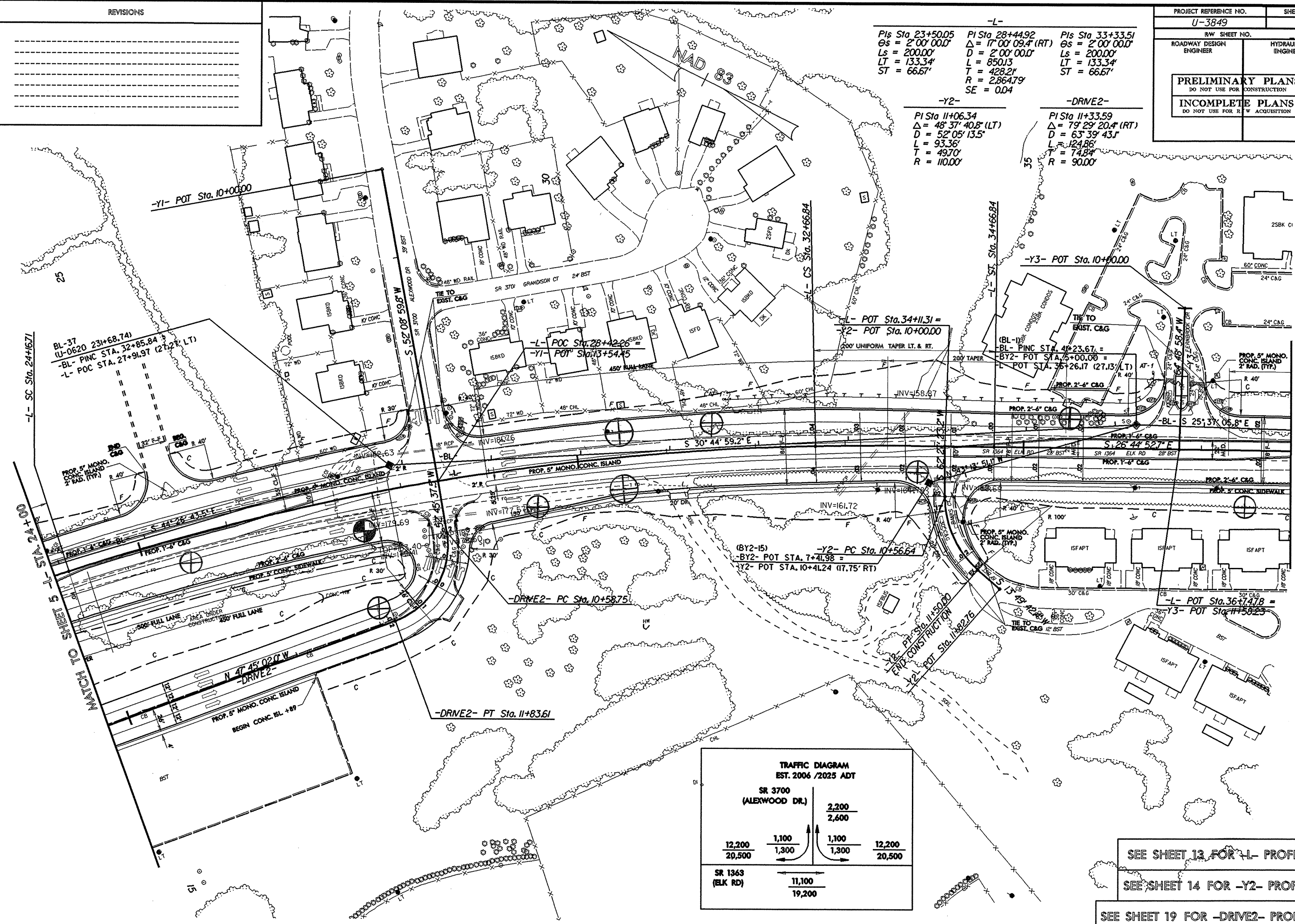
REVISIONS

PROJECT REFERENCE NO.		SHEET NO.	
U-3849		6	
RWY SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			

-L-
 PIs Sta 23+50.05 Δ = 2°00'00.0" Ls = 200.00' LT = 133.34' ST = 66.67'
 PI Sta 28+44.92 Δ = 17°00'09.4" (RT) D = 2°00'00.0" L = 850.13 T = 428.21 R = 2,864.79 SE = 0.04
 PI Sta 33+33.51 Δs = 2°00'00.0" Ls = 200.00' LT = 133.34' ST = 66.67'

-Y2-
 PI Sta 11+06.34 Δ = 48°37'40.8" (LT) D = 52°05'13.5" L = 93.36' T = 49.70' R = 110.00'

-DRVE2-
 PI Sta 11+33.59 Δ = 79°29'20.4" (RT) D = 63°39'43.1" L = 124.86' T = 74.84' R = 90.00'



BL-37 (U-0620 23+68.74)
 -BL- PINC STA. 32+85.84
 -L- POC STA. 27+91.97 (27.27' LT)

-L- POC Sta. 28+42.26 =
 -Y1- POT Sta. 33+54.45

-L- POT Sta. 34+11.31 =
 -Y2- POT Sta. 10+00.00

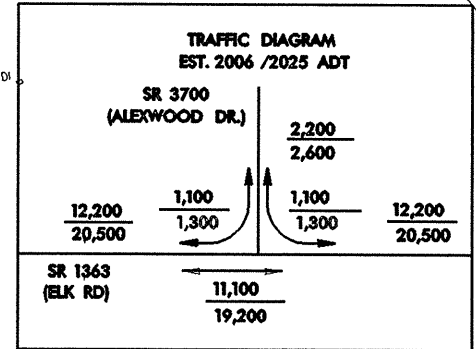
-Y3- POT Sta. 10+00.00

-BL- PINC STA. 41+23.67 =
 -BY2- POT STA. 5+00.00 =
 -L- POT STA. 35+26.17 (27.13' LT)

(BY2-15)
 -BY2- POT STA. 7+41.98 =
 -Y2- POT STA. 10+41.24 (17.75' RT)

-DRVE2- PC Sta. 10+58.75

-DRVE2- PT Sta. 11+83.61



SEE SHEET 13 FOR -L- PROFILE

SEE SHEET 14 FOR -Y2- PROFILE

SEE SHEET 19 FOR -DRIVE2- PROFILE

MATCH TO SHEET 7 -L- STA. 38+00

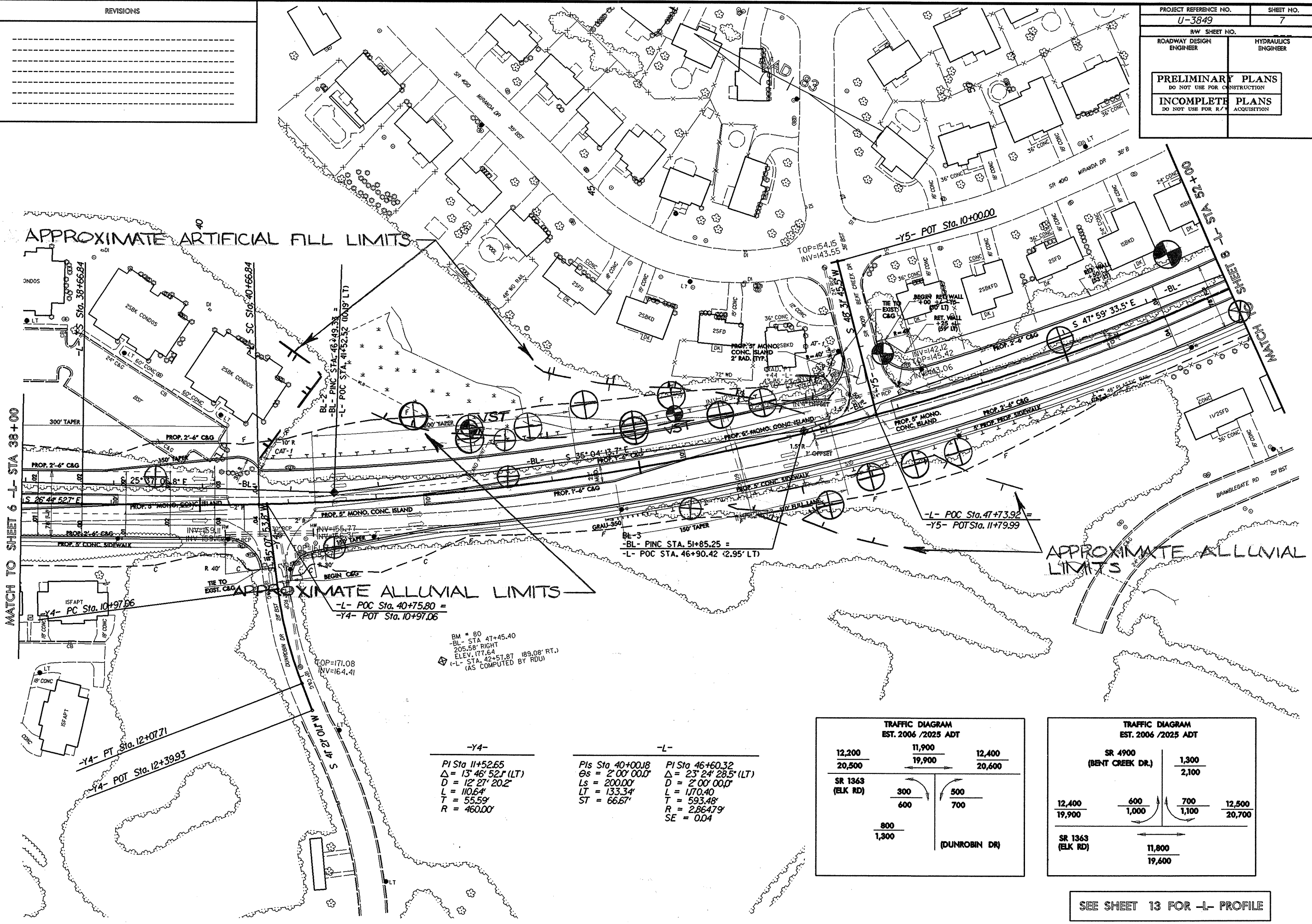
MATCH TO SHEET 5 -L- STA. 24+00

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\$\$\$USERNAME\$\$\$

7/2/99

REVISIONS

PROJECT REFERENCE NO. U-3849	SHEET NO. 7
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	



MATCH TO SHEET 6 -L- STA 38+00

MATCH TO SHEET 7 -L- STA 40+00

APPROXIMATE ALLUVIAL LIMITS
-L- POC Sta. 40+75.80 =
-Y4- POT Sta. 10+97.06

APPROXIMATE ALLUVIAL LIMITS

BM = 80
BL- STA 47+45.40
205.58' RIGHT
ELEV. 177.64
(-L- STA. 42+57.87 189.08' RT.)
(AS COMPUTED BY RDU)

-Y4-
PI Sta 11+52.65
Δ = 13° 46' 52" (LT)
D = 12' 27" 20.2"
L = 110.64'
T = 55.59'
R = 460.00'

-L-
PIs Sta 40+00.18
Δs = 2° 00' 00.0"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

-L-
PI Sta 46+60.32
Δ = 23° 24' 28.5" (LT)
D = 2° 00' 00.0"
L = 170.40'
T = 593.48'
R = 2,864.79'
SE = 0.04

TRAFFIC DIAGRAM
EST. 2006 /2025 ADT

12,200	11,900	12,400
20,500	19,900	20,600
SR 1363 (ELK RD)	300 / 600	500 / 700
800		1,300
		(DUNROBIN DR)

TRAFFIC DIAGRAM
EST. 2006 /2025 ADT

	SR 4900 (BENT CREEK DR.)	1,300	2,100
12,400	600	700	12,500
19,900	1,000	1,100	20,700
SR 1363 (ELK RD)		11,800	19,600

SEE SHEET 13 FOR -L- PROFILE

*****SYTIME*****
*****DON*****
*****USER*****

7/2/99

REVISIONS

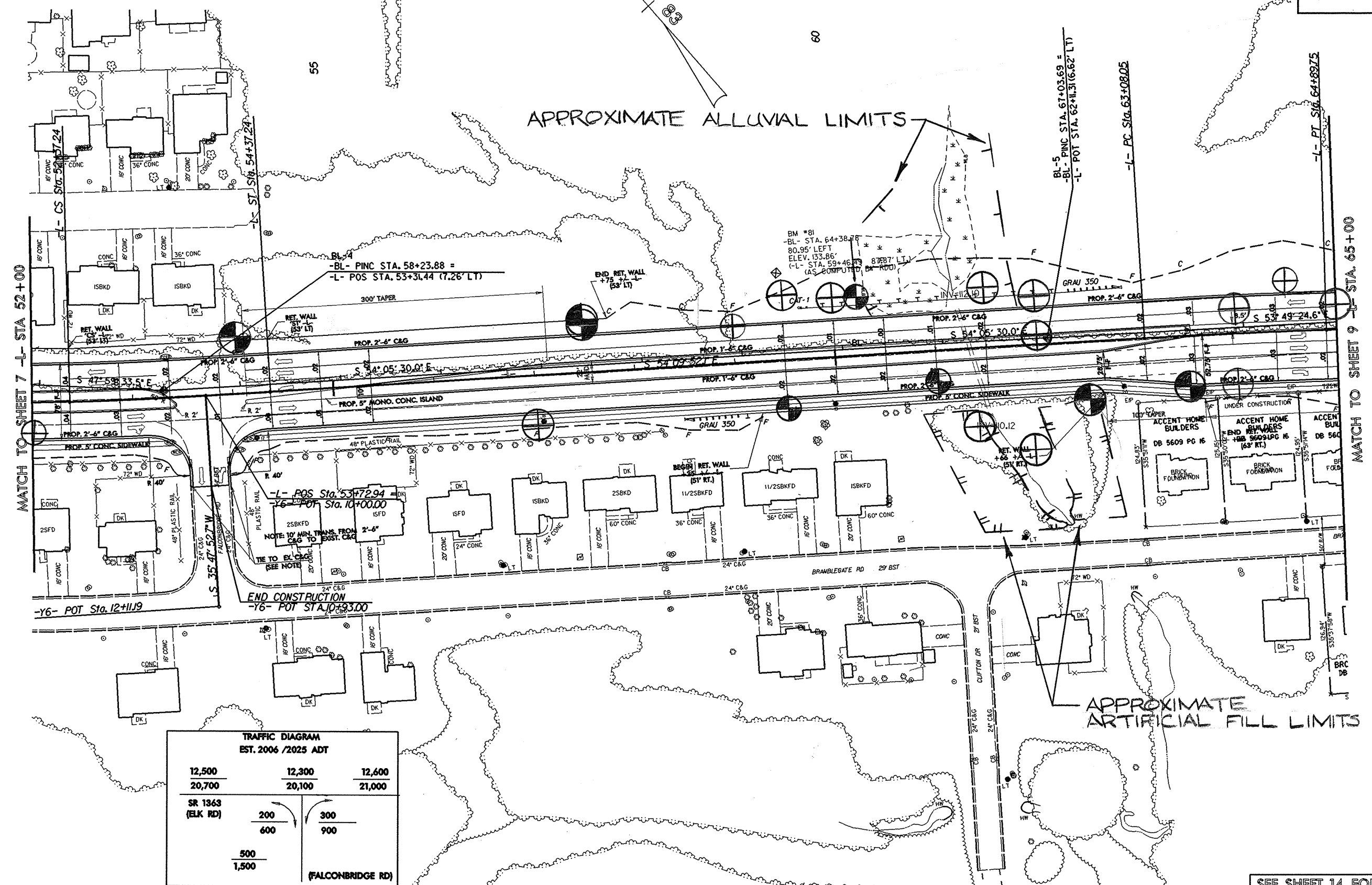
PROJECT REFERENCE NO. U-3849	SHEET NO. 8
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	CONSTRUCTION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	

-L-

PI Sta 53+03.91	PI Sta 63+98.91
Es = 2'00'00.0"	Δ = 1'49'01.4" (RT)
Ls = 200.00'	D = 1'00'00.0"
LT = 133.34'	L = 181.71'
ST = 66.67'	T = 90.86'
	R = 5,729.58'

APPROXIMATE ALLUVIAL LIMITS

APPROXIMATE ARTIFICIAL FILL LIMITS



TRAFFIC DIAGRAM
EST. 2006 /2025 ADT

12,500	12,300	12,600
20,700	20,100	21,000
SR 1363 (ELK RD)	200	300
	600	900
500		
1,500		
	(FALCONBRIDGE RD)	

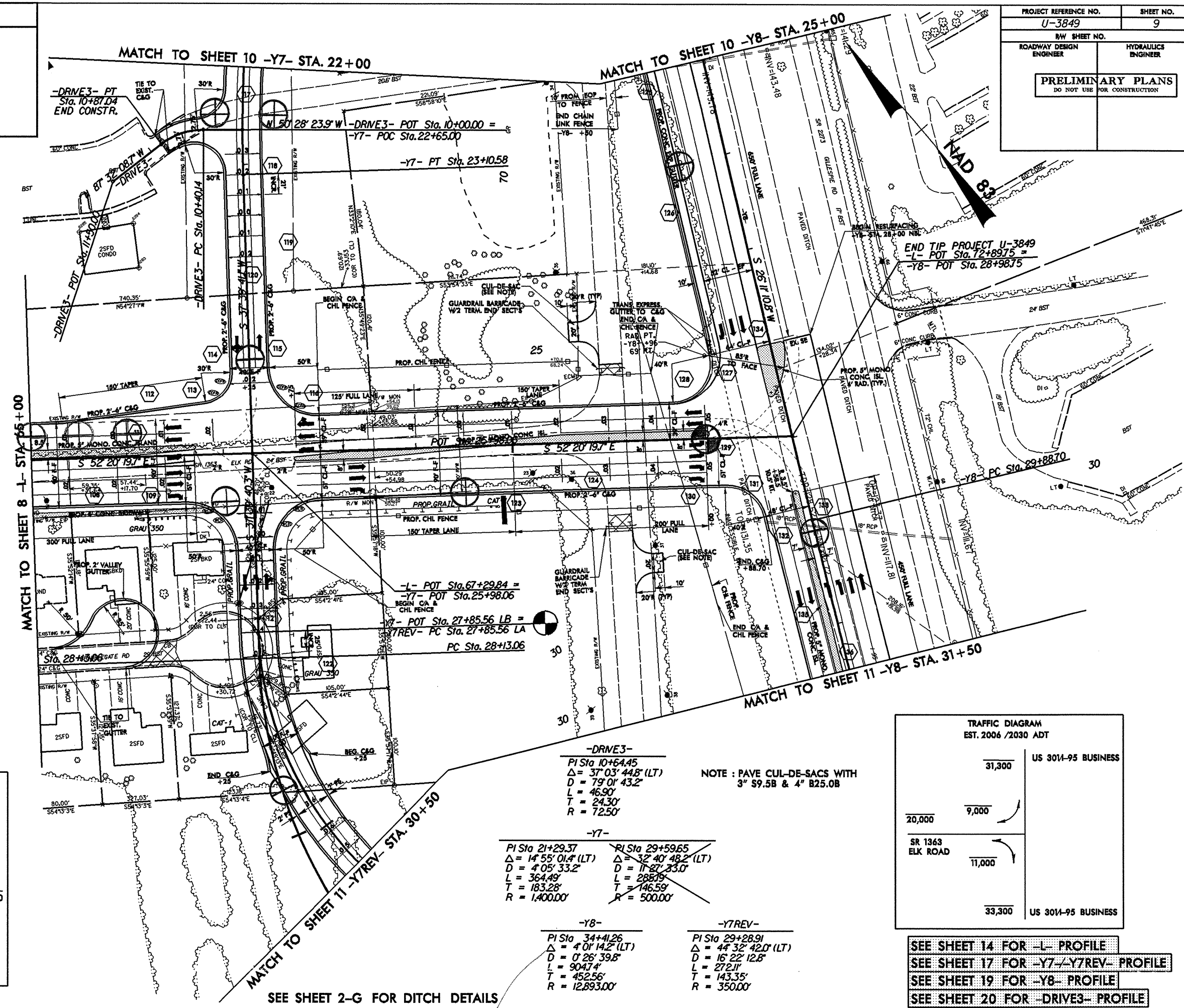
SEE SHEET 14 FOR -L- PROFILE

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*****DGN*****
*****USERNAME*****

7/2/99
 01-JUN-2007 11:40
 C:\pwork\green\proj\geodocs\3849\top\3849_gco_rdwj_rev\cadd\original\3849_rdy_pah9.dgn
 SPANNER AT 06221378

REVISIONS

PROJECT REFERENCE NO. U-3849	SHEET NO. 9
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



TRAFFIC DIAGRAM
EST. 2006 /2030 ADT

6,300	SR 2273 GILLESPIE STREET	6,200
12,300	4,800	800
24,000	2,400	
SR 1363 ELK ROAD	7,500	20,000
	3,500	1,100
	9,000	SR 1131 CAMERON ROAD
	7,600	

-DRIVE3-
 PI Sta 10+64.45
 $\Delta = 37^{\circ} 03' 44.8" (LT)$
 $D = 79^{\circ} 01' 43.2"$
 $L = 46.90'$
 $T = 24.30'$
 $R = 72.50'$

-Y7-
 PI Sta 21+29.37
 $\Delta = 14^{\circ} 55' 01.4" (LT)$
 $D = 4^{\circ} 05' 33.2"$
 $L = 364.49'$
 $T = 183.28'$
 $R = 1,400.00'$

-Y7REV-
 PI Sta 29+59.65
 $\Delta = 32^{\circ} 40' 48.2" (LT)$
 $D = 11^{\circ} 27' 33.0"$
 $L = 288.79'$
 $T = 146.59'$
 $R = 500.00'$

-Y8-
 PI Sta 34+41.26
 $\Delta = 4^{\circ} 01' 14.2" (LT)$
 $D = 0^{\circ} 26' 39.8"$
 $L = 904.74'$
 $T = 452.56'$
 $R = 12,893.00'$

-Y7REV-
 PI Sta 29+28.91
 $\Delta = 44^{\circ} 32' 42.0" (LT)$
 $D = 16^{\circ} 22' 12.8"$
 $L = 272.11'$
 $T = 143.35'$
 $R = 350.00'$

NOTE: PAVE CUL-DE-SACS WITH
3" S9.5B & 4" B25.0B

TRAFFIC DIAGRAM
EST. 2006 /2030 ADT

31,300	US 301A-95 BUSINESS
20,000	9,000
SR 1363 ELK ROAD	11,000
33,300	US 301A-95 BUSINESS

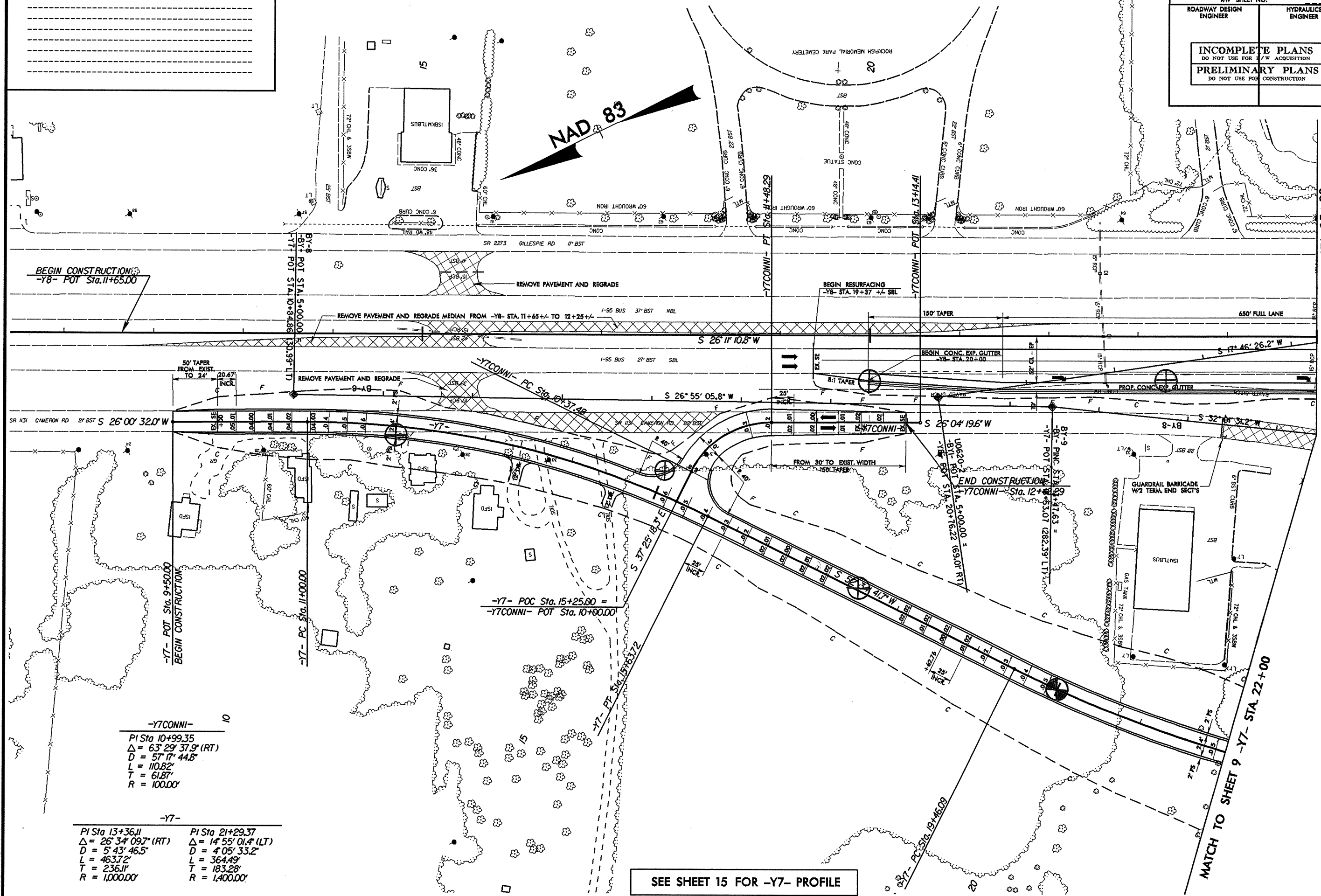
SEE SHEET 14 FOR -L- PROFILE
 SEE SHEET 17 FOR -Y7/-Y7REV- PROFILE
 SEE SHEET 19 FOR -Y8- PROFILE
 SEE SHEET 20 FOR -DRIVE3- PROFILE

SEE SHEET 2-G FOR DITCH DETAILS

7/2/99

REVISIONS

PROJECT REFERENCE NO. U-3849		SHEET NO. 10	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



-Y7CONNI-
 PI Sta 10+99.35
 $\Delta = 63^\circ 29' 37.9''$ (RT)
 $D = 57' 17'' 44.8''$
 $L = 110.82'$
 $T = 61.87'$
 $R = 100.00'$

-Y7-
 PI Sta 13+36.11 PI Sta 21+29.37
 $\Delta = 26^\circ 34' 09.7''$ (RT) $\Delta = 14^\circ 55' 01.4''$ (LT)
 $D = 5^\circ 43' 46.5''$ $D = 4^\circ 05' 33.2''$
 $L = 46.372'$ $L = 364.49'$
 $T = 236.11'$ $T = 183.28'$
 $R = 1,000.00'$ $R = 1,400.00'$

SEE SHEET 15 FOR -Y7- PROFILE

*****SYTIME*****
*****DGN*****
*****SERIAL*****

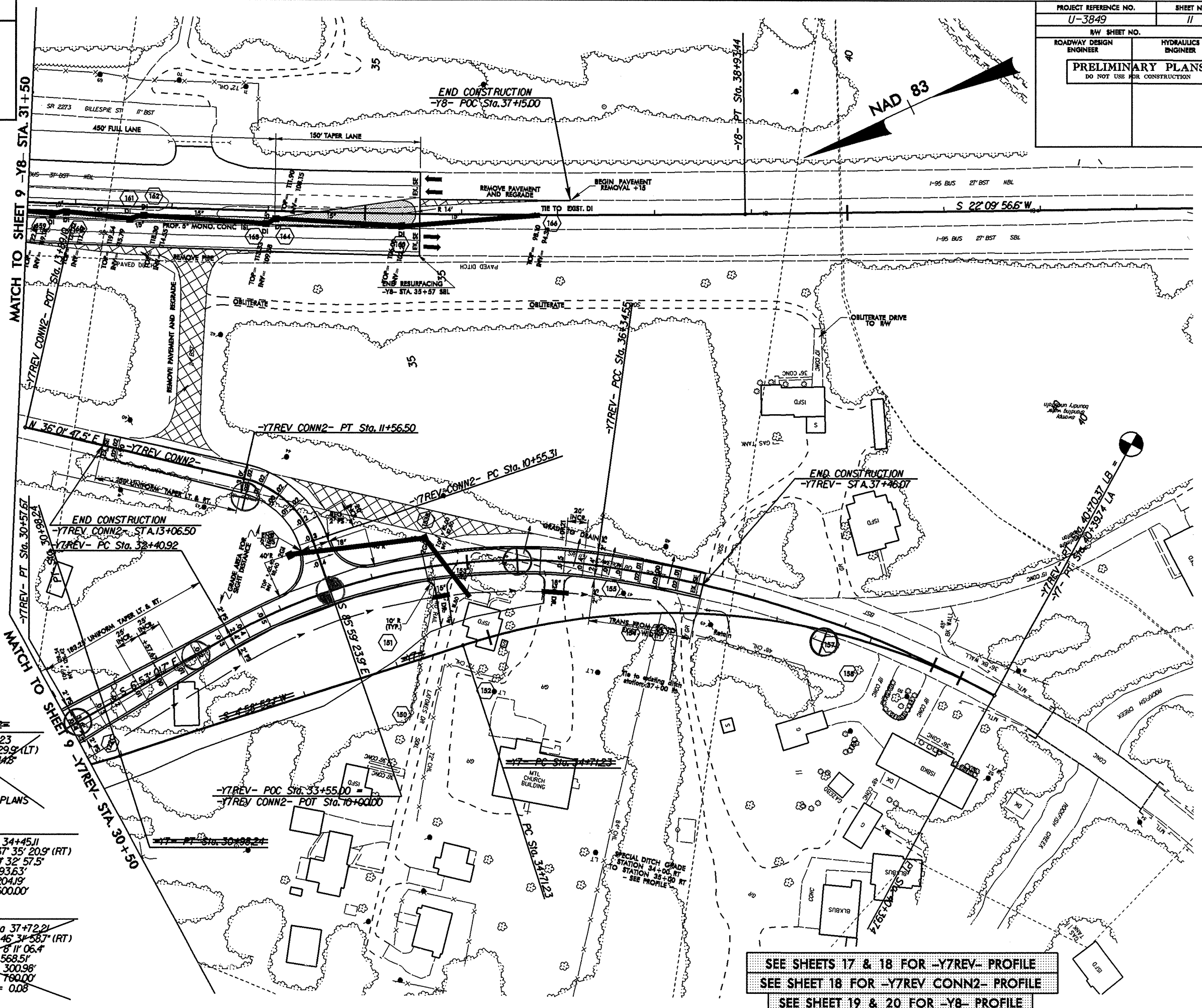
MATCH TO SHEET 9 -Y8- STA. 25+00

MATCH TO SHEET 9 -Y7- STA. 22+00

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REVISIONS

PROJECT REFERENCE NO. U-3849	SHEET NO. 11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



-Y8-
 PI Sta. 34+41.26
 $\Delta = 4^{\circ} 01' 14.2''$ (LT)
 D = 0' 26' 39.8"
 L = 904.74'
 T = 452.56'
 R = 12893.00'
 SE = EXIST.

-Y7REV CONN2-
 PI Sta. 11+10.71
 $\Delta = 57^{\circ} 58' 48.6''$ (LT)
 D = 57' 17" 44.8"
 L = 101.19'
 T = 55.41'
 R = 100.00'
 SE = SEE PLANS

-Y7CONN2-
 PI Sta. 11+03.23
 $\Delta = 63^{\circ} 25' 29.9''$ (LT)
 D = 57' 17" 44.8"
 L = 110.70'
 T = 61.79'
 R = 100.00'
 SE = SEE PLANS

-Y7REV-
 PI Sta. 29+28.91
 $\Delta = 44^{\circ} 32' 42.0''$ (LT)
 D = 16' 22" 12.8"
 L = 272.11'
 T = 143.35'
 R = 350.00'

-Y7CONN2-
 PI Sta. 34+45.11
 $\Delta = 37^{\circ} 35' 20.9''$ (RT)
 D = 9' 32" 57.5"
 L = 393.63'
 T = 204.19'
 R = 600.00'

-Y7REV-
 PI Sta. 29+59.65
 $\Delta = 32^{\circ} 48' 48.2''$ (LT)
 D = 11' 27" 33.0"
 L = 285.19'
 T = 146.59'
 R = 500.00'
 SE = 0.08

-Y7CONN2-
 PI Sta. 37+72.21
 $\Delta = 46^{\circ} 31' 58.7''$ (RT)
 D = 8' 11" 06.4"
 L = 568.51'
 T = 300.98'
 R = 700.00'
 SE = 0.08

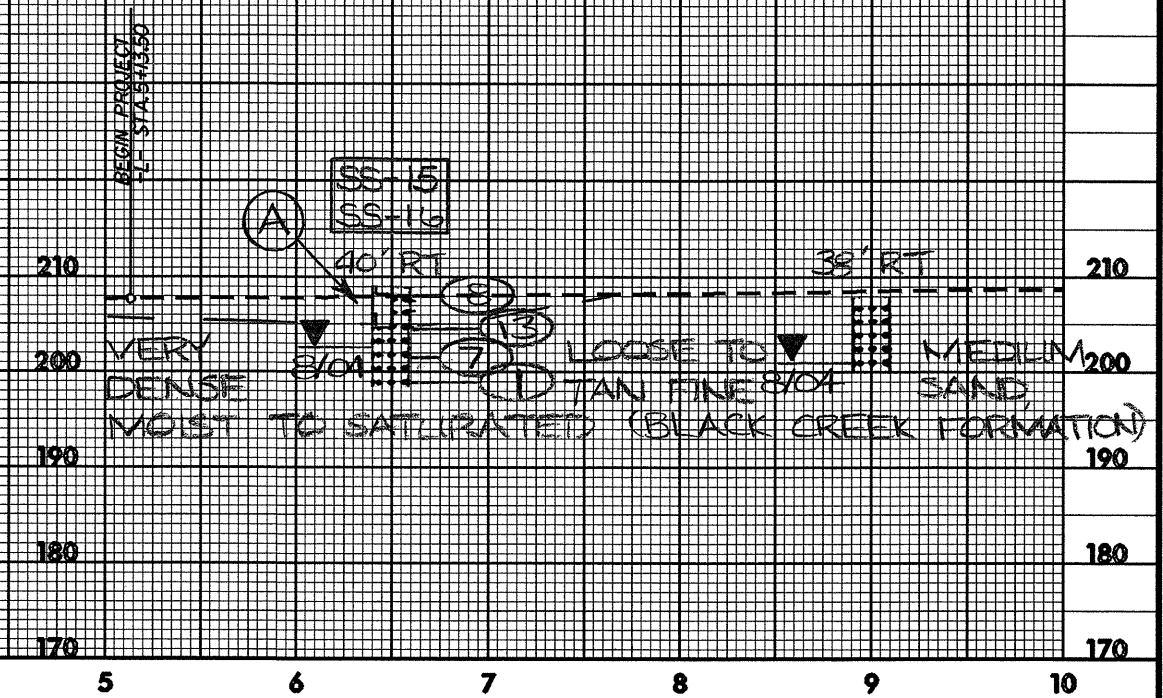
SEE SHEETS 17 & 18 FOR -Y7REV- PROFILE
 SEE SHEET 18 FOR -Y7REV CONN2- PROFILE
 SEE SHEET 19 & 20 FOR -Y8- PROFILE

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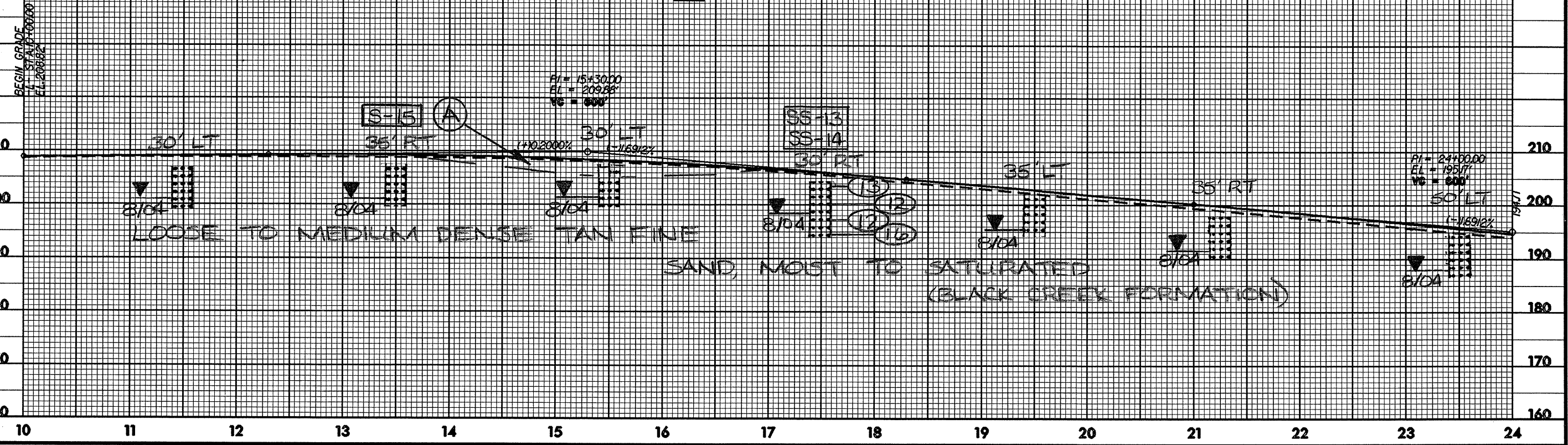
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	ASHFORD CLASS	LL	PI	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	CLAY	#10	#40	#200		
SS-15	6+50	40' RT	3.3-8.8	A-3	22	NP	48.8	51.6	0.5	2	100	85	3		
SS-16	6+50	40' RT	9.0-10.5	A-3	18	NP	31.3	61.3	0.9	2.1	100	95	8		

PROJECT REFERENCE NO. U-3849	SHEET NO. 12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Ⓐ ROADWAY EMBANKMENT LOOSE TAN SAND, MOST



SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	ASHFORD CLASS	LL	PI	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	CLAY	#10	#40	#200		
S-15	13+50	35' RT	1.0-6.0	A-3	19	NP	38.2	52.5	0.2	9.1	100	81	10		
SS-13	17+50	30' RT	6.3-7.8	A-3	21	NP	41.7	56.1	0.2	7	100	80	3		
SS-14	17+50	30' RT	9.0-10.5	A-3	20	NP	43.5	52.5	0.9	3	100	82	5		



CONSTRUCTION
 SECTION
 10+00 TO 24+00
 1/2" = 10'

5/28/99

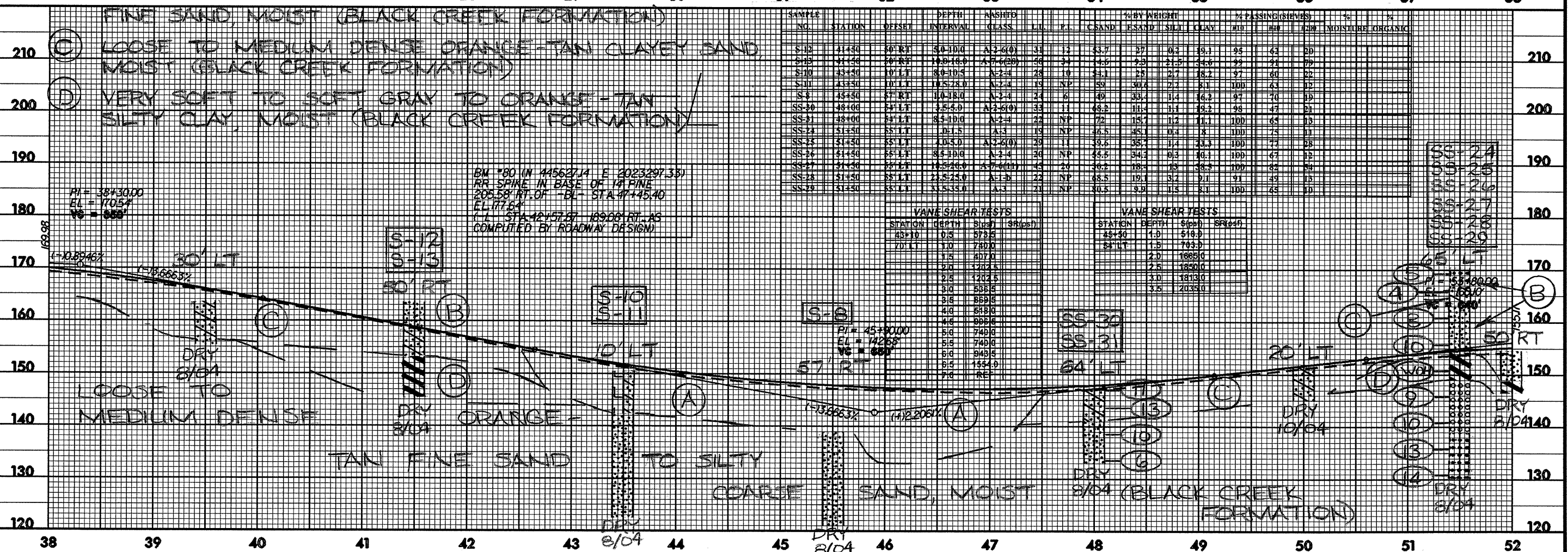
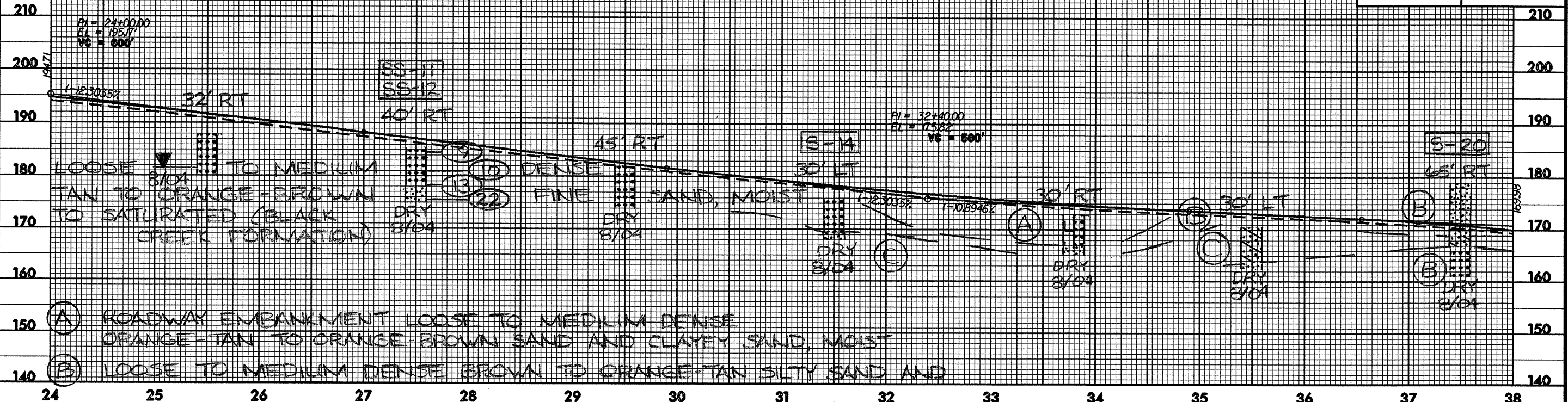
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	ASHSTO CLASS	LL	PL	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	#10	#40	#200		
SS-11	27+40	14'S RT	3.8-3.8	A-3	21	NP	46.6	48.7	0.6	100	78	6		
SS-12	27+40	14'S RT	9.0-10.5	A-2.4	29	N	74.7	54.4	11.7	100	71	25		
S-14	31+40	30' LT	1.0-6.5	A-3	18	NP	56.3	36.7	0	100	62	8		
S-20	37+40	65' RT	13.0-18.0	A-3	22	NP	42.5	45.4	0	12.1	97	3		

PROJECT REFERENCE NO. U-3849 SHEET NO. 13

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR A/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	ASHSTO CLASS	LL	PL	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	#10	#40	#200		
S-12	41+40	50' RT	5.0-10.0	A-2.6(0)	31	1	53.7	27	0.2	19.1	95	63	50	
S-13	41+40	50' RT	14.0-18.0	A-7.6(28)	26	34	14.0	7.3	21.5	34.0	99	91	59	
S-10	43+40	10' LT	8.0-10.5	A-2.4	28	10	53.1	2.5	2.7	18.2	97	60	22	
S-11	43+40	10' LT	10.5-28.0	A-2.4	19	NP	59	30.2	2.2	8.1	100	63	12	
S-9	45+40	5' RT	1.0-18.0	A-2.4	24	6	49	33.2	11.4	16.2	97	70	19	
SS-30	48+00	5' LT	3.5-5.0	A-2.6(0)	33	11	68.2	11.1	11.1	19.2	98	47	51	
SS-31	48+00	5' LT	8.3-10.0	A-2.4	22	NP	72	15.7	11.2	11.1	100	65	10	
SS-24	51+30	55' LT	10.1-5	A-3	19	NP	46.5	45	0.4	8	100	75	11	
SS-25	51+30	55' LT	10.5-0	A-2.6(0)	29	11	39.6	35.7	11.4	23.3	100	77	28	
SS-24	51+40	55' LT	8.5-10.0	A-2.4	20	NP	65.5	34.2	0.3	10.1	100	67	12	
SS-27	51+40	55' LT	14.5-20.0	A-7.6(10)	25	20	40.2	18.3	10	38.2	100	82	54	
SS-28	51+40	55' LT	21.5-25.0	A-1-3	22	NP	68.5	19.1	3.2	9.1	91	49	13	
SS-29	51+40	55' LT	31.5-35.0	A-3	21	NP	40.5	9.0	11.3	8.1	100	65	10	

VANE SHEAR TESTS

STATION	DEPTH	Slush	SR(ps)
40+10	0.5	573.5	
40+1	1.0	740.0	
	1.5	407.0	
	2.0	1202.5	
	2.5	1202.5	
	3.0	535.5	
	3.8	869.5	
	4.0	548.0	
	4.8	906.6	
	5.0	740.0	
	5.8	740.0	
	6.0	943.5	
	6.5	1554.0	
	7.0	RE	

VANE SHEAR TESTS

STATION	DEPTH	SR(ps)	SR(ps)
45+30	1.0	518.0	
52+1	1.5	793.0	
	2.0	1665.0	
	2.5	1830.0	
	3.0	1813.0	
	3.5	2035.0	

BM *80 IN 445627.14 E 2023297.38)
RR SPIKE IN BASE OF 1" PINE
206.58' RT OF -BL- STA 47+45.40
EL 177.64
L STA 42+57.67 169.08' RT AS
COMPUTED BY ROADWAY DESIGN

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5/28/99

SYSTEMS
DESIGN
ENGINEER

Soil Sample Test Results

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	ASHFLO CLASS	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE	ORGANIC	
					LL	PL	CSAND	FSAND	SILT	CLAY	#10			#40
SS-101	54+05	56' LT	2.6-4.0	A-2-4(0)	20	NP	54	38.1	4.8	8	100	72	14	13.4
SS-102	54+05	56' LT	7.5-9.9	A-2-6(1)	36	L7	66.7	10.2	9	4	100	48	25	
SS-103	54+05	56' LT	7.6-9.2	A-1-B(0)	24	NP	79.9	8.8	17	8	96	43	11	
SS-104	54+05	56' LT	31.6-34.1	A-2-4(0)	21	NP	78.1	19.6	5.2	6	100	58	12	

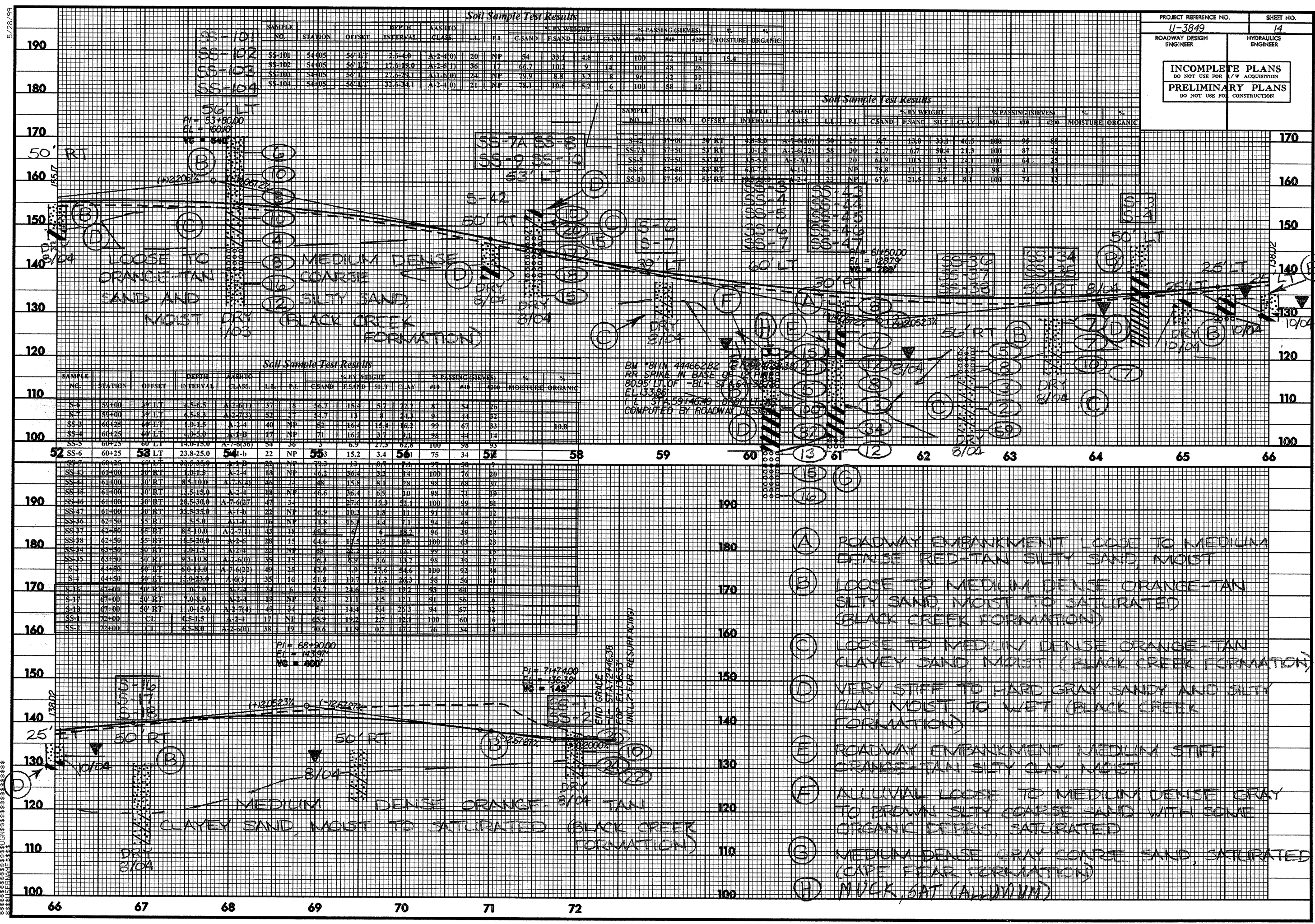
Soil Sample Test Results

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	ASHFLO CLASS	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE	ORGANIC	
					LL	PL	CSAND	FSAND	SILT	CLAY	#10			#40
S-12	57+00	50' RT	4.8-8.0	A-2-6(2)	30	27	62	19.0	33.3	46.5	100	95	88	
SS-7A	57+50	52' RT	1.0-1.5	A-1-B(22)	58	30	2.7	6.7	59.4	21.9	100	87	72	
SS-8	57+50	52' RT	1.5-3.0	A-1-B(1)	47	20	6.9	10.5	6.5	28.1	100	64	45	
SS-9	57+50	52' RT	6.0-7.8	A-1-B	73	NP	74.8	11.3	11.7	17.1	98	41	7	
SS-10	57+50	52' RT	25.2-28.9	A-2-4	23	NP	67.6	21.4	2.8	9.1	100	74	12	

Soil Sample Test Results

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	ASHFLO CLASS	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE	ORGANIC	
					LL	PL	CSAND	FSAND	SILT	CLAY	#10			#40
SS-6	60+25	53' LT	23.8-25.0	54-b	22	NP	55.3	15.2	3.4	56.1	75	34	57	
SS-7	60+25	53' LT	33.6-35.0	A-1-B	25	NP	79.9	1.9	0.9	7.1	99	56	9	
SS-11	61+00	40' RT	1.0-1.5	A-2-4	18	NP	46.2	36.4	3.5	14	100	76	20	
SS-14	61+00	40' RT	8.5-10.0	A-2-6(4)	46	L3	48	15.8	8.1	78	98	68	57	
SS-15	61+00	40' RT	1.5-1.9	A-2-4	18	NP	46.6	36.4	6.9	10	98	71	19	
SS-16	61+00	40' RT	24.5-30.0	A-2-6(27)	47	L3	1	27.6	19.3	42.1	100	93	81	
SS-17	61+00	40' RT	3.5-5.5	A-1-B	22	NP	76.2	10.3	1.8	11	91	44	12	
SS-18	62+50	35' RT	1.5-5.0	A-1-B	16	NP	71.8	15.1	11.4	7.1	94	46	17	
SS-19	62+50	35' RT	8.4-10.0	A-2-7(1)	43	L8	69.8	6	4	18.2	96	39	24	
SS-20	62+50	35' RT	14.5-20.0	A-2-6	28	L5	44.6	19.5	31.9	18	100	63	29	
SS-21	63+50	30' RT	1.0-2.2	A-2-4	22	NP	80	24.2	2.7	12	99	73	15	
SS-22	63+50	30' RT	9.3-10.8	A-2-6(0)	55	L5	74.1	6.9	3.6	13.7	98	39	17	
S-3	64+50	40' LT	6.0-13.0	A-2-6(23)	49	L8	13.9	4.9	27.6	44.4	100	93	84	
S-4	64+50	40' LT	13.0-23.0	A-0(3)	35	L6	51.8	19.7	11.2	26.3	98	36	41	
S-15	67+00	40' RT	10.7-11	A-2-4	14	NP	43.7	24.6	2.5	19.2	93	61	11	
S-17	67+00	40' RT	1.0-3.0	A-2-4	19	NP	63.2	21.1	3.5	12.1	91	56	6	
S-18	67+00	40' RT	1.0-1.9	A-2-7(4)	49	L3	50	14.4	5.4	25.3	94	57	32	
SS-1	72+00	CL	0.5-11.3	A-2-4	17	NP	65.9	19.2	2.7	12.1	100	60	6	
SS-2	72+00	CL	0.5-8.0	A-2-6(0)	38	L9	70.6	11.9	0.2	17.1	76	34	13	

BM #81N 44466282
RR SPIKE IN BASE OF 2" PIPE
8095' LT OF -BL- STA 67+38.8
EL 133.86'
COMPUTED BY ROADWAY DESIGN



PROJECT REFERENCE NO. U-3849 SHEET NO. 14
 ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER
INCOMPLETE PLANS
 DO NOT USE FOR ACQUISITION
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

5/28/99

-Y7-

Soil Sample Test Results

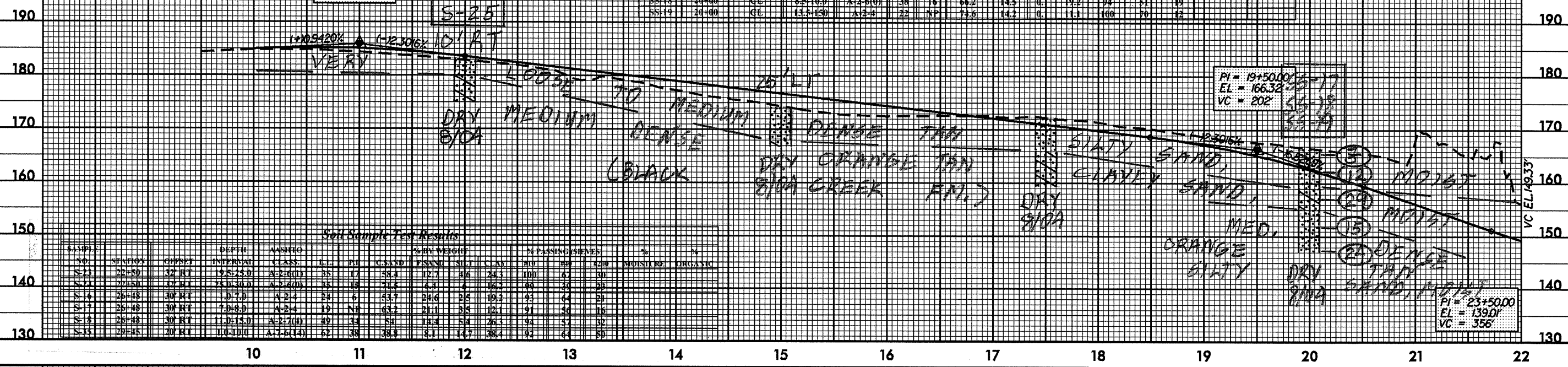
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					LL	PL	CI	US	US	US	20	40	60	W	P
SS-25	12+00	CL	3.0-8.0	A-2-7(1)	52	11	41	71	6.8	1.4	21.2	99	84	23	
SS-17	20+00	CL	11.0-15.0	A-2-4	48	NP	44.3	46.8	2.5	6.1	100	69	31		
SS-19	19+00	CL	9.5-10.0	A-2-5(1)	38	16	66.2	14.5	0	19.2	94	61	33		
SS-14	20+00	CL	15.5-15.0	A-2-4	22	NP	74.6	14.2	0	11.1	100	70	30		

PI = 11+00.00
EL = 185.88
VC = 200

PI = 19+50.00
EL = 166.32
VC = 202

PI = 23+50.00
EL = 139.01
VC = 356

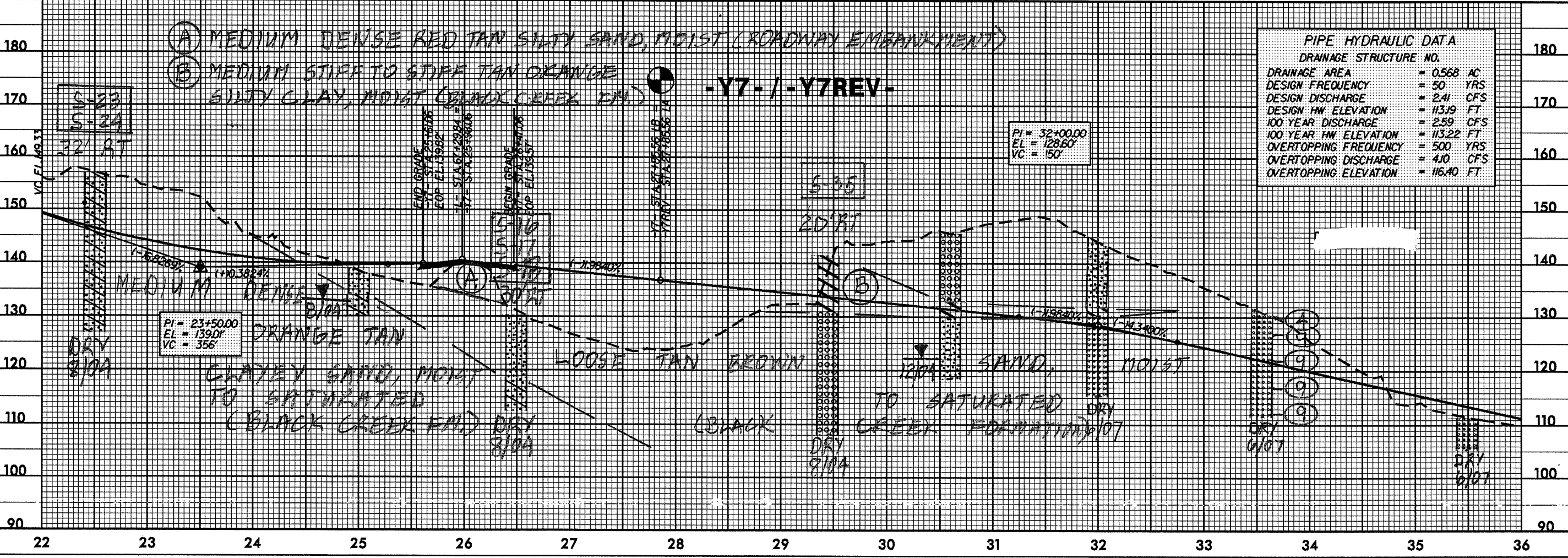
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				LL	PL	CI	US	US	US	20	40	60	W	P
S-25	22+50	12-17 RT	A-2-6(1)	55	17	38.4	17.7	16	24.5	100	67	30		
S-24	27+50	12-17 RT	A-2-6(1)	35	0.5	34.5	6.1	0	36.2	80	30	23		
S-16	25+18	30 RT	A-2-4	24	6	63.7	24.6	2.5	19.2	93	64	21		
S-17	26+48	30 RT	A-2-4	19	NP	63.2	21.1	0.5	12.1	91	46	16		
S-18	26+48	30 RT	A-2-7(1)	49	34	54	18.4	5.4	26.5	94	57	32		
S-15	29+45	20 RT	A-2-5(1)	62	38	38.3	6.1	1.4	38.4	93	64	50		



- (A) MEDIUM DENSE RED TAN SILTY SAND, MOIST (ROADWAY EMBANKMENT)
- (B) MEDIUM STIFF TO STIFF TAN ORANGE SILTY CLAY, MOIST (BLACK CREEK FM.)

-Y7- / -Y7REV-

PIPE HYDRAULIC DATA	
DRAINAGE STRUCTURE NO.	
DRAINAGE AREA	= 0.568 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 2.41 CFS
DESIGN HW ELEVATION	= 113.9 FT
100 YEAR DISCHARGE	= 2.59 CFS
100 YEAR HW ELEVATION	= 113.22 FT
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING DISCHARGE	= 4.10 CFS
OVERTOPPING ELEVATION	= 116.40 FT



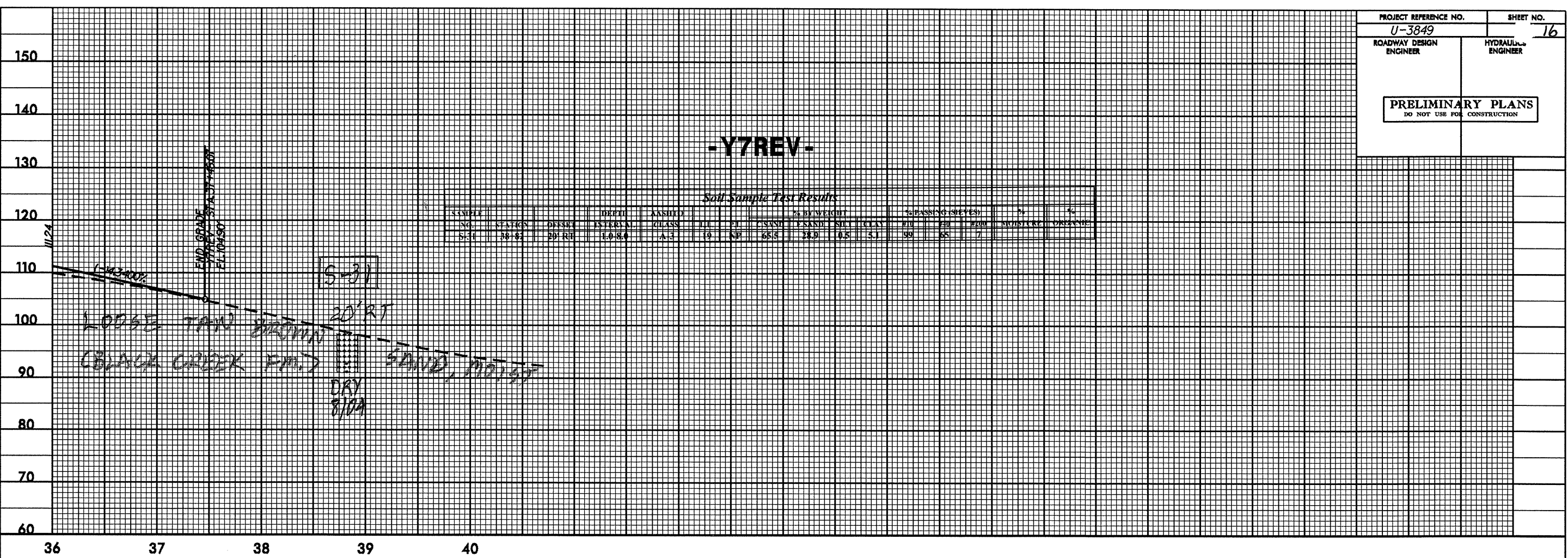
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-Y7REV-

Soil Sample Test Results

SAMPLE NO.	STATION	DEPTH	AASHTO CLASS	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
				LL	PL	C SAND	F SAND	SILT	CLAY	#10		
S-31	20+82	20' RT	A-2	19	8.8	68.5	28.0	0.5	2.1	99	65	7

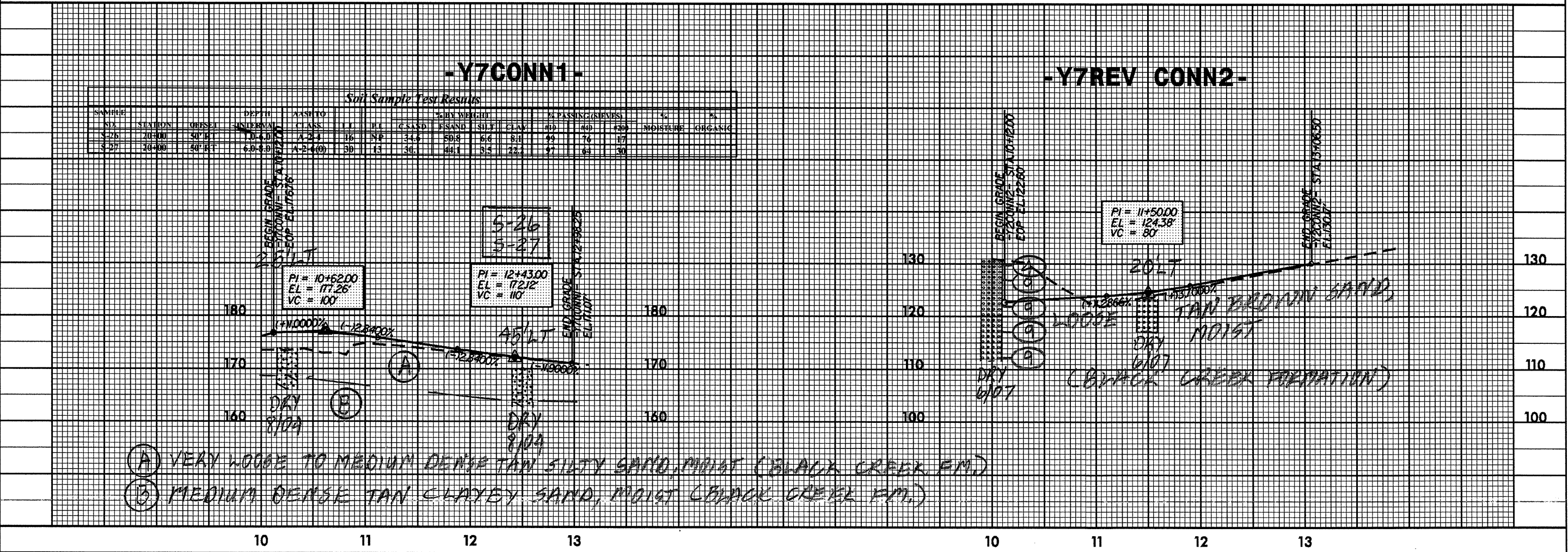


-Y7CONN1-

Soil Sample Test Results

SAMPLE NO.	STATION	DEPTH	AASHTO CLASS	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
				LL	PL	C SAND	F SAND	SILT	CLAY	#10		
S-26	20+00	40' RT	A-2-4	16	8.8	34.6	59.8	6.6	8.1	95	76	17
S-27	20+00	60' RT	A-2-4(0)	30	13	30.1	48.1	0.5	22.2	97	63	30

-Y7REV CONN2-



- (A) VERY LOOSE TO MEDIUM DENSE TAN SILTY SAND, MOIST (BLACK CREEK FM.)
- (B) MEDIUM DENSE TAN CLAYEY SAND, MOIST (BLACK CREEK FM.)

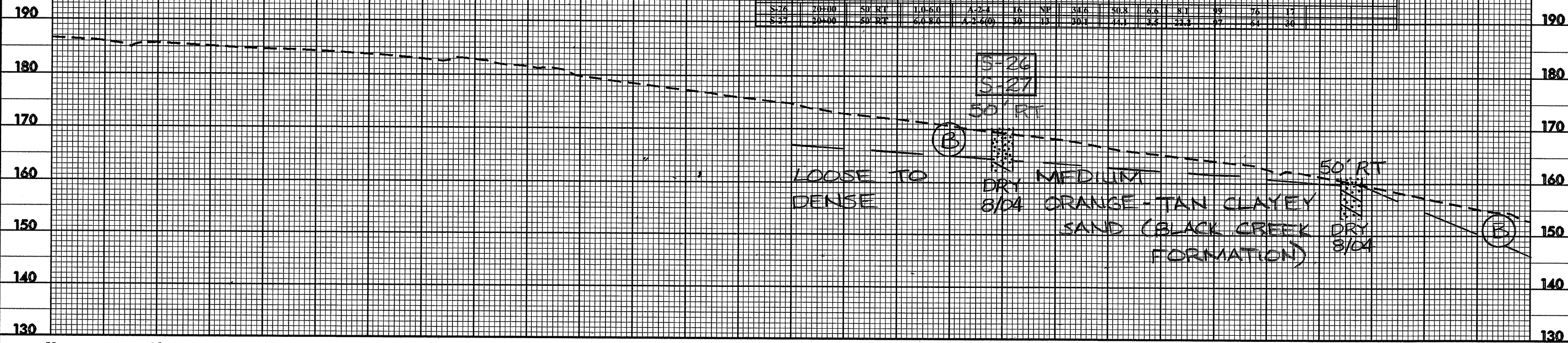
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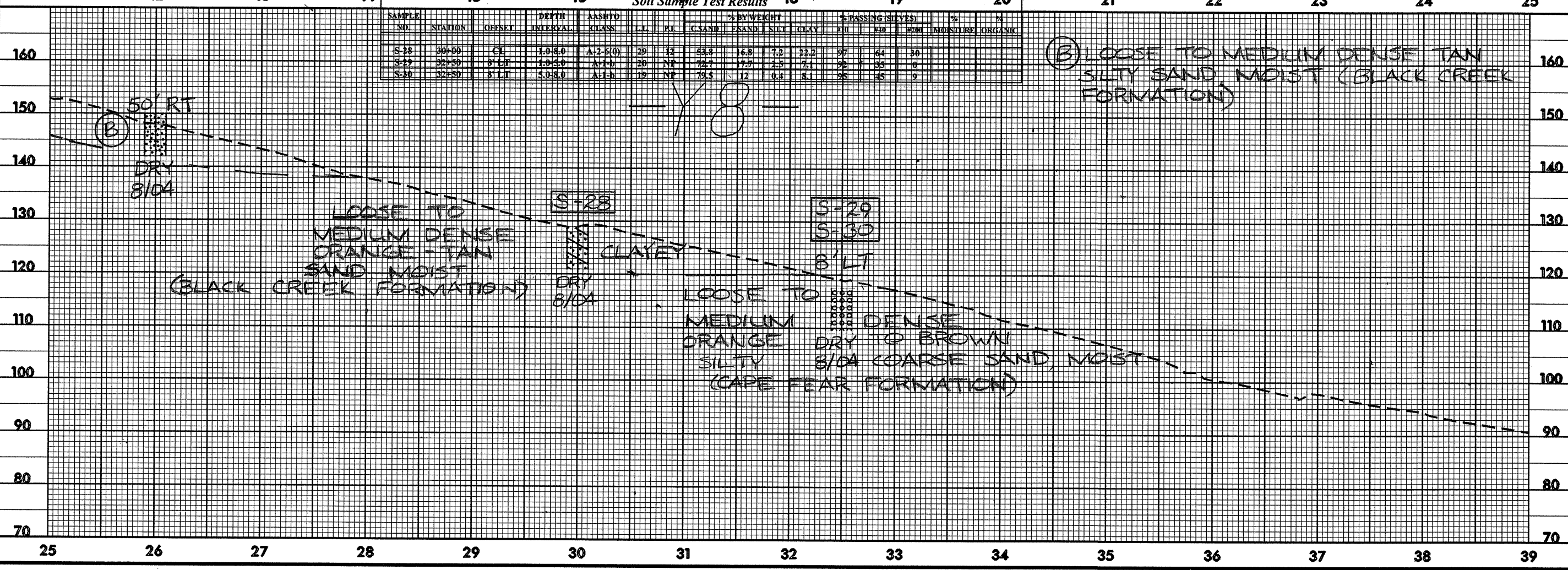
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

LOOSE TO MEDIUM DENSE TAN SILTY SAND MOIST (BLACK CREEK FORMATION)

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE	ORGANIC
							C SAND	F SAND	SILT	CLAY	#10	#40	#200		
S-26	20+00	50' RT	1.0-6.0	A-2-4	16	NP	34.6	50.8	6.6	8.1	99	76	17		
S-27	20+00	50' RT	6.0-8.0	A-2-6(0)	30	13	30.1	47.1	3.4	17.3	97	64	30		



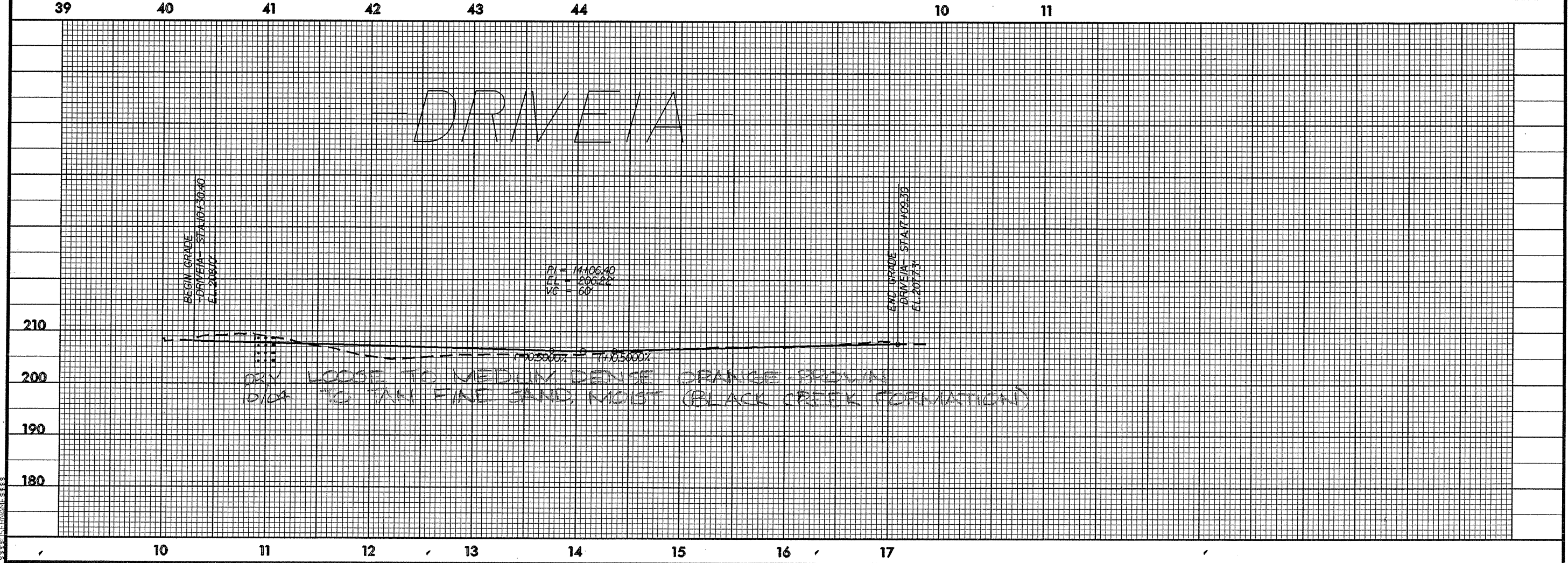
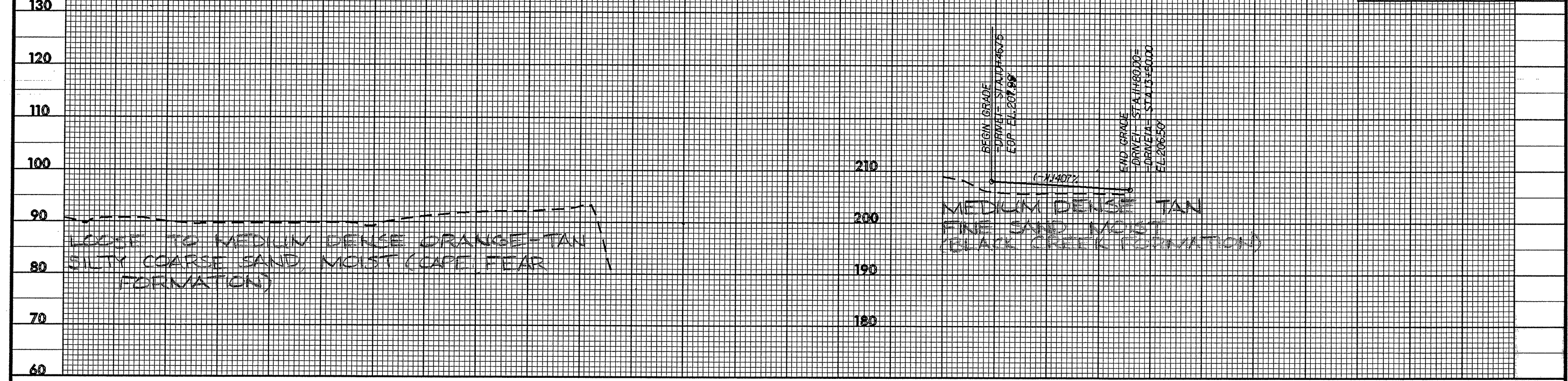
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE	ORGANIC
							C SAND	F SAND	SILT	CLAY	#10	#40	#200		
S-28	30+00	CL	1.0-8.0	A-1-6(0)	29	12	63.8	16.8	7.2	22.2	97	64	30		
S-29	32+50	8' LT	1.0-5.0	A-1-6	20	NP	72.7	17.7	2.5	7.1	98	35	8		
S-30	32+50	8' LT	5.0-8.0	A-1-6	19	NP	79.5	12	0.8	8.1	95	45	9		



VERTICAL SCALE IN FEET

5/28/99

PROJECT REFERENCE NO. U-3849	SHEET NO. 18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

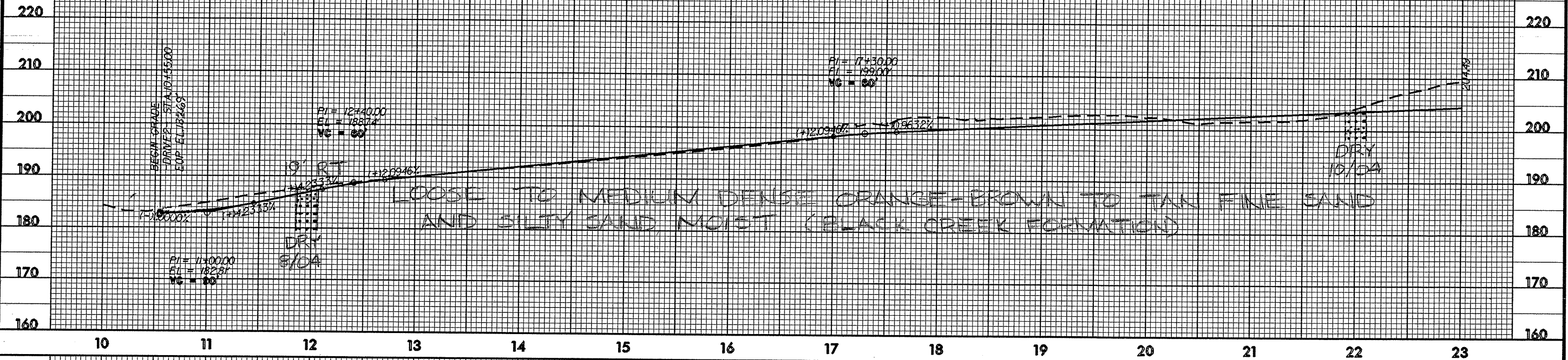


VERTICAL CURVE DATA
STATIONING
ELEVATION

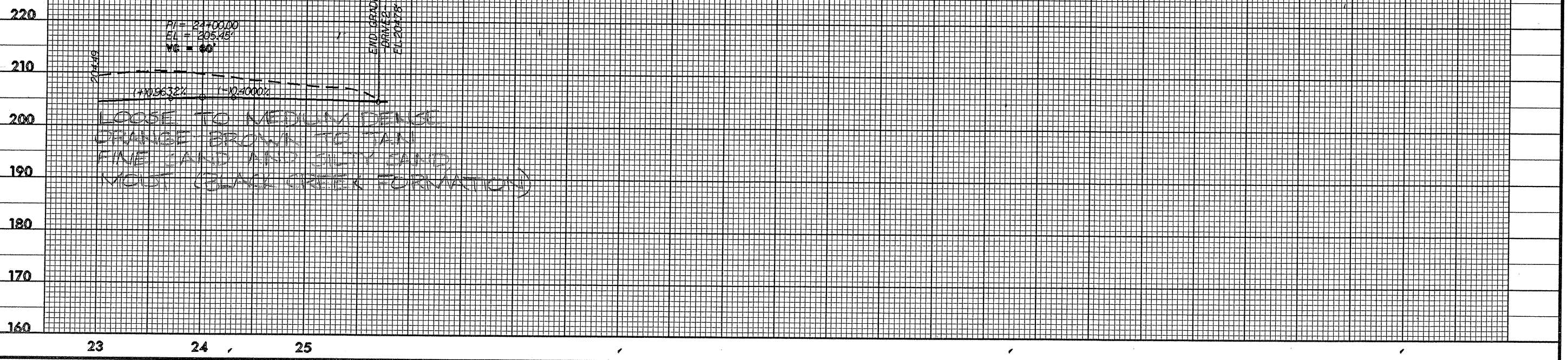
5/28/99

PROJECT REFERENCE NO. U-3849	SHEET NO. 19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

DRIVE 2



DRIVE 2



DATE PLOTTED: 5/28/99

8/23/99

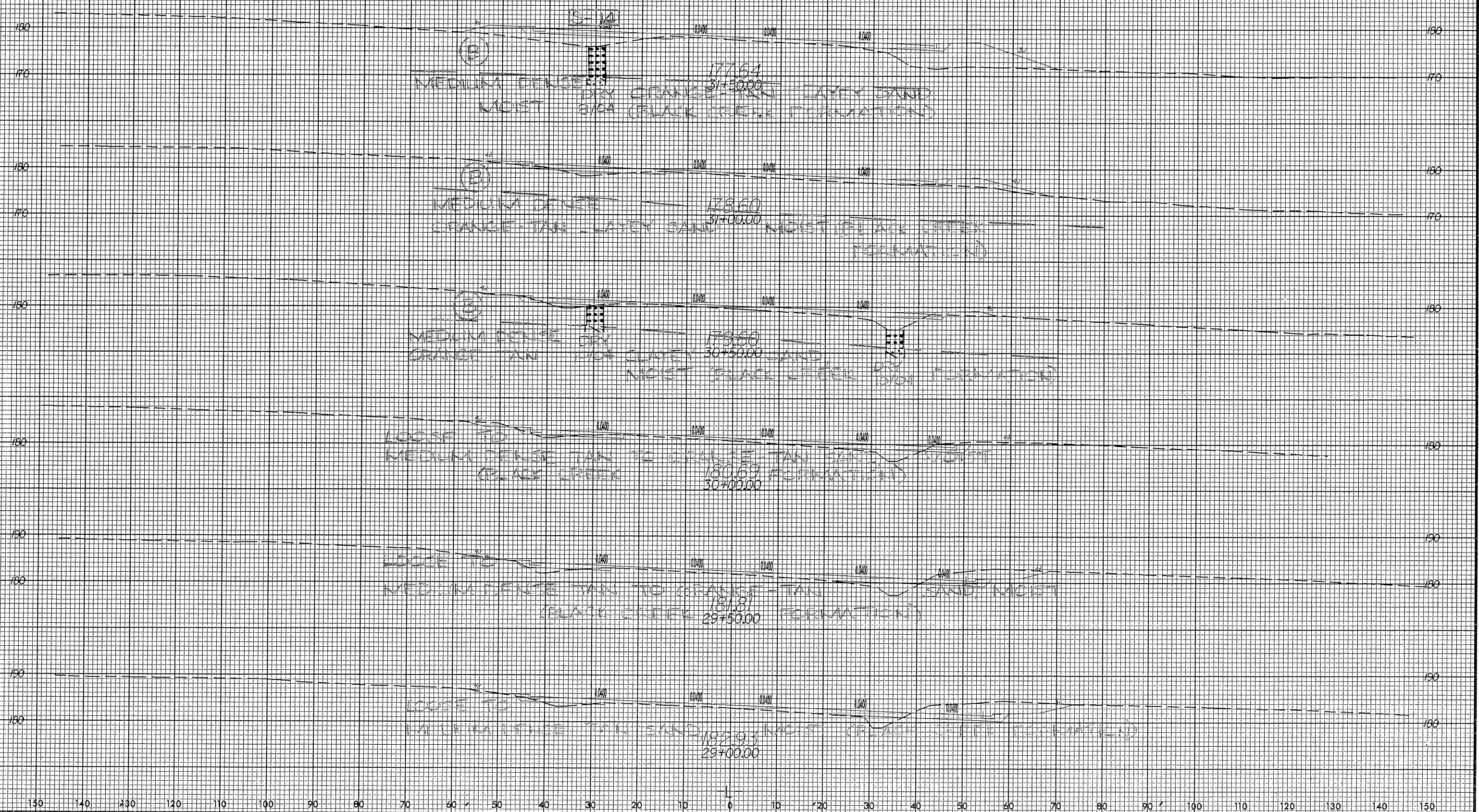


130 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

(B) LOOSE TO MEDIUM DENSE TAN TO ORANGE-TAN SAND, MOIST (BLACK CREEK FORMATION)

Soil Sample Test Results

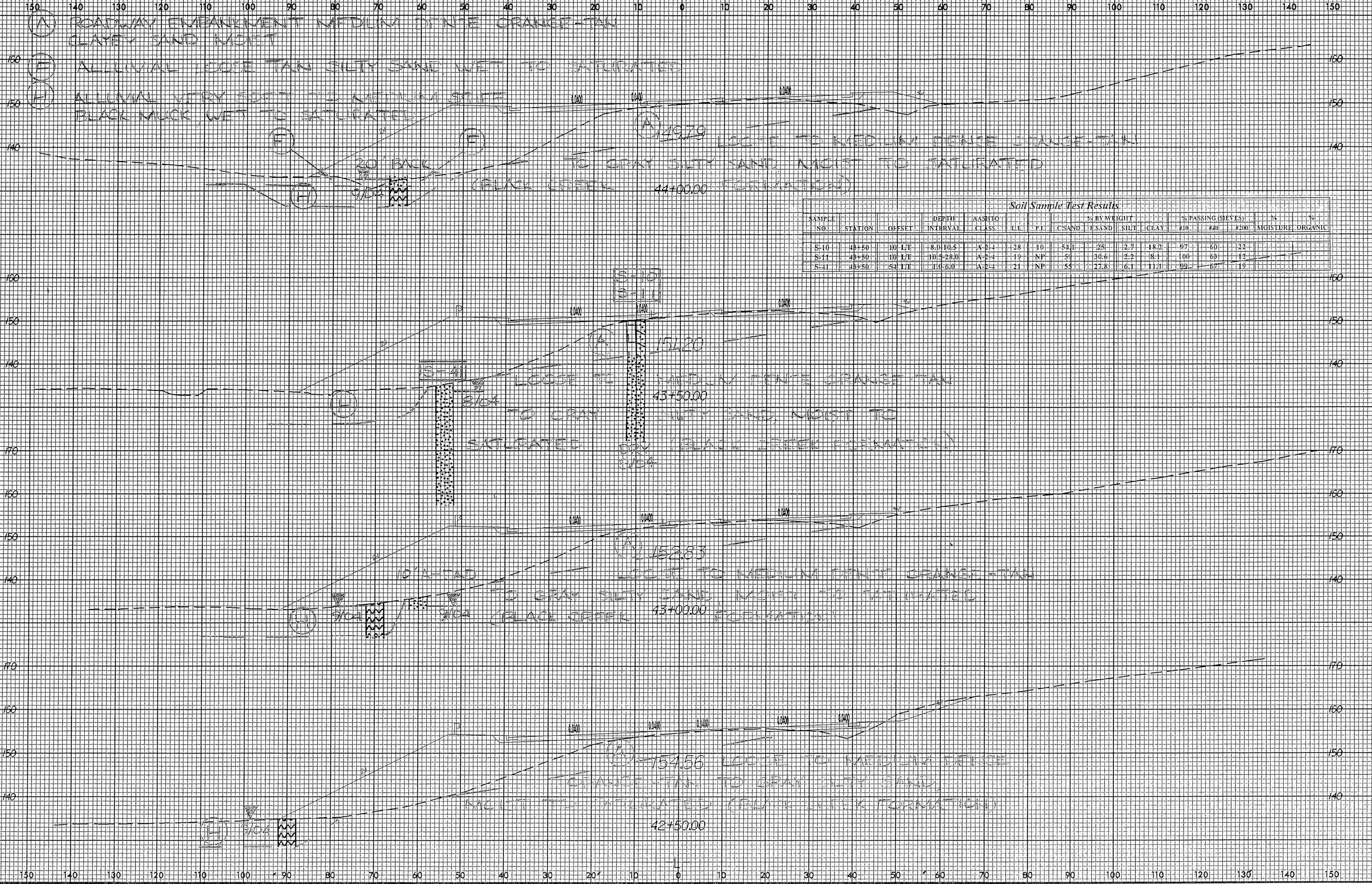
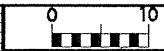
SAMPLE NO.	STATION	DEPTH (FEET)	AASHTO CLASS	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE ORGANIC	
				C SAND	F SAND	SILT	CLAY	#40	#200		
S-14	31+50	30-11T	A-3	56.3	36.7	0	7	100	162	18	



130 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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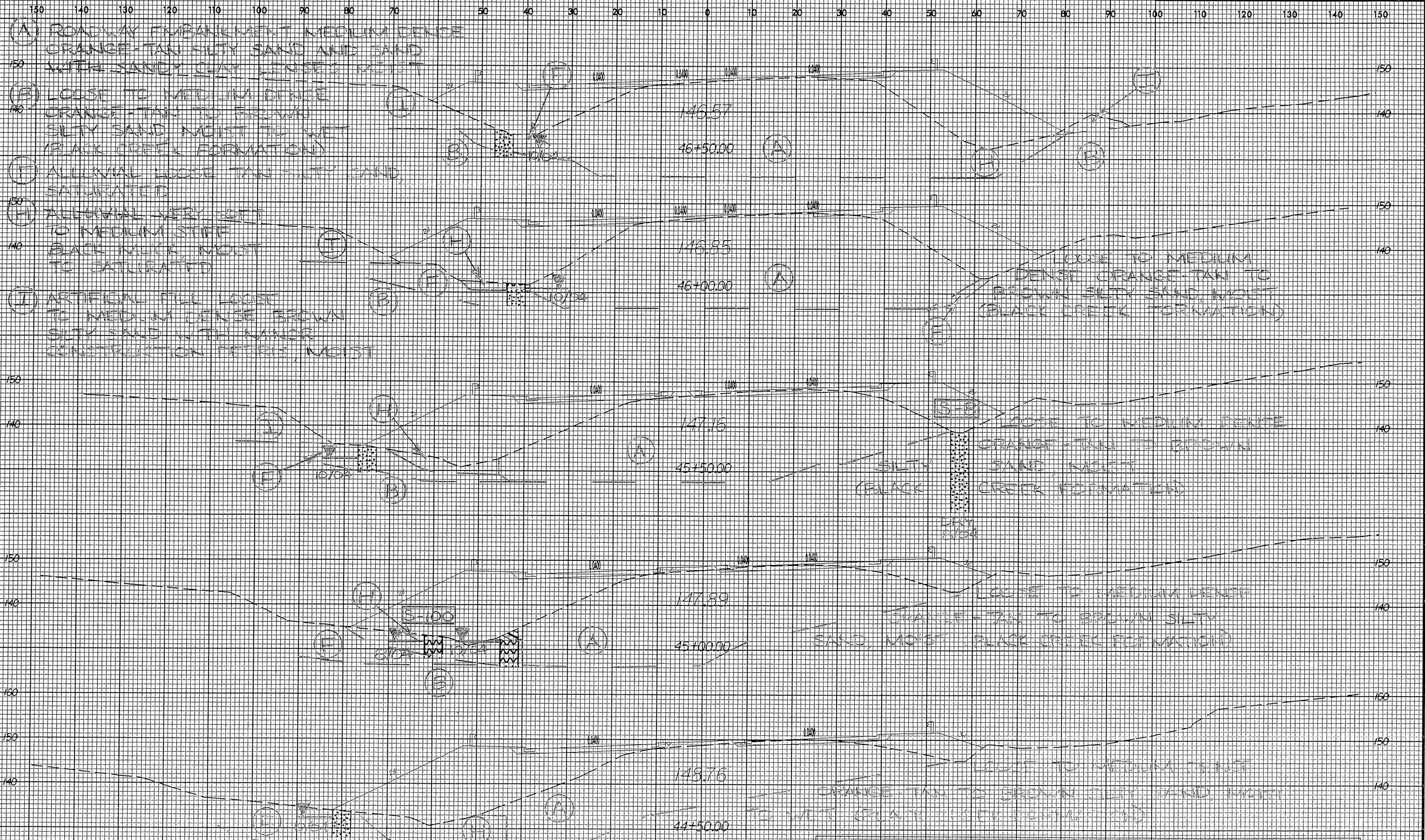


Soil Sample Test Results

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	ASTM CLASS	LL	PI	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	CLAY	#10	#40	#200		
S-10	48+50	10' LT	8.0-10.5	A-2-4	28	10	54.1	25	2.7	18.2	97	60	22		
S-11	48+50	10' LT	10.5-28.0	A-2-4	19	NP	59	30.6	2.2	8.1	100	63	12		
S-11	48+50	5' LT	1.0-5.0	A-2-4	21	NP	55	27.8	6.1	11.1	99	67	19		

SYTIME

8/23/99



Soil Sample Test Results

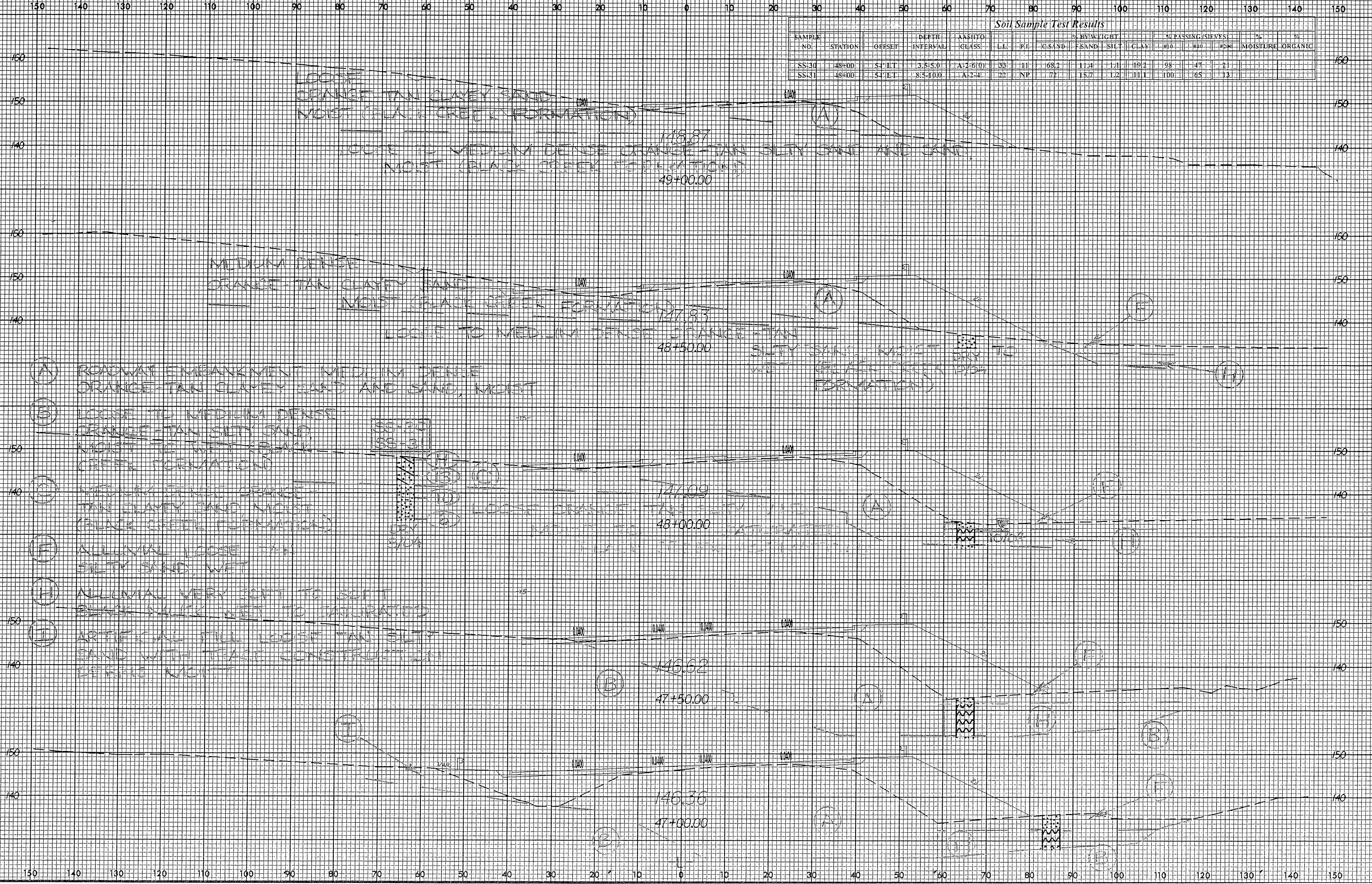
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				L	P	SAND	SILT	CLAY	#10	#40			#200
S-100	45+00	60' LT	A-5(1)	112	NP	16.5	9.6	33.7	40.2	100	90	75	51.5
S-8	45+50	57' RT	A-2-4	24	0	49	33.4	1.4	6.2	97	70	19	

US TIME S&S

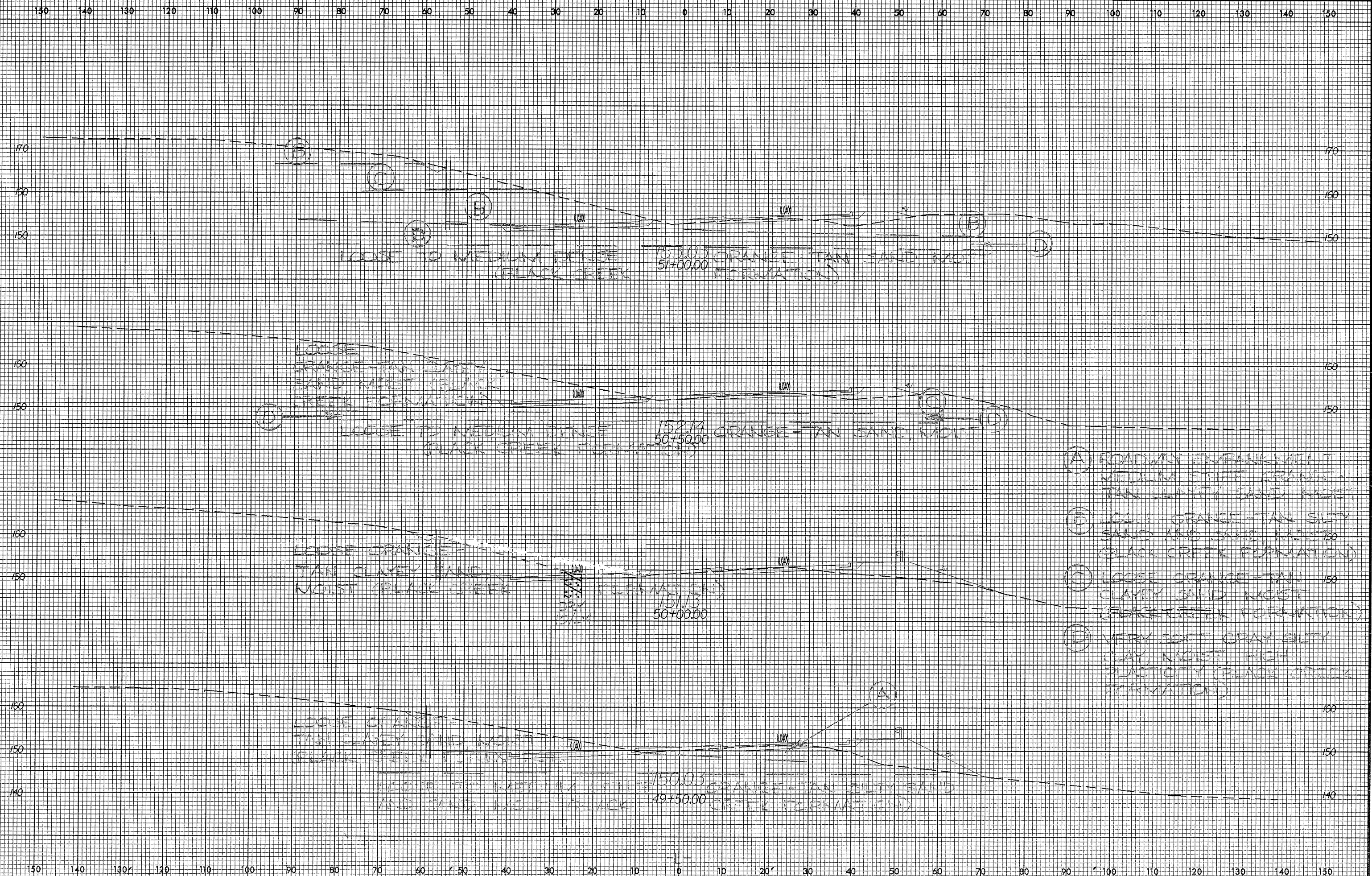
8/23/99

Soil Sample Test Results

SAMPLE NO.	STATION	DEPTH INTERVAL	AASHTO CLASS.	% BY WEIGHT			% PASSING/SIEVES			% MOISTURE ORGANIC			
				LL	PL	C.SAND	SAND	SILT	CLAY	#40	#40	#200	MOISTURE
SS30	48+00	54" ULT	A-2-6(0)	33	11	68.2	11.4	1.1	19.2	98	147	2	
SS31	48+00	54" ULT	A-2-4	22	NP	72	15.7	1.2	11.1	100	65	13	



- (A) ROADWAY EMBANKMENT MEDIUM DENSE CRANGE-TAN CLAYEY SAND AND SAND, MOIST
- (B) LOOSE TO MEDIUM DENSE CRANGE-TAN SILTY SAND MOIST (BLACK CREEK FORMATION)
- (C) MEDIUM DENSE CRANGE-TAN CLAYEY SAND MOIST (BLACK CREEK FORMATION)
- (F) ALLUVIAL LOOSE TO MEDIUM DENSE CRANGE-TAN SILTY SAND, WET
- (H) ALLUVIAL VERY SOFT TO SOFT SAND, WET TO SATURATED
- (I) ARTIFICIAL FILL LOOSE TAN SILTY SAND WITH TRACE CONSTRUCTION DEBRIS, MOIST



SYTIME

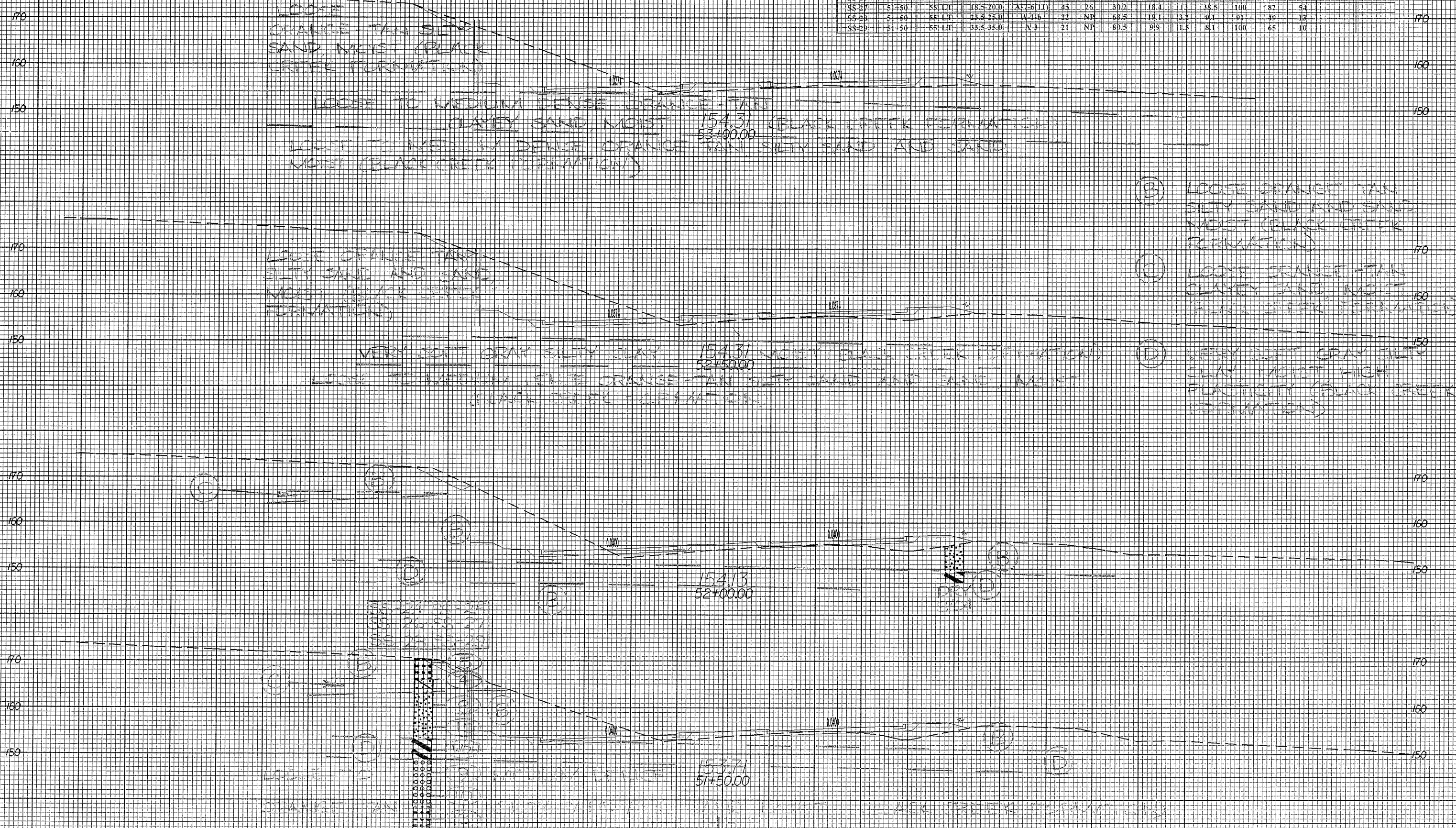
B-23-99



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

Soil Sample Test Results

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	WASH TO CLASS	LL	PL	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	CLAY	#40	#100	#200		
SS-24	51+50	55' LT	1.0-1.5	A-3	19	NP	46.5	48.1	0.4	8	100	75	11		
SS-25	51+50	55' LT	4.0-5.0	A-2(6)	29	11	39.6	35.7	1.4	23.3	100	77	28		
SS-26	51+50	55' LT	8.5-10.0	A-2(4)	20	NP	55.5	31.2	0.3	10.1	100	67	12		
SS-27	51+50	55' LT	18.5-20.0	A-7(6)(11)	45	26	30.2	18.4	1.1	38.5	100	82	34		
SS-28	51+50	55' LT	23.5-25.0	A-7(6)	22	NP	68.5	19.1	3.2	9.1	91	49	13		
SS-29	51+50	55' LT	33.5-35.0	A-3	21	NP	80.5	9.9	1.5	8.1	100	65	10		

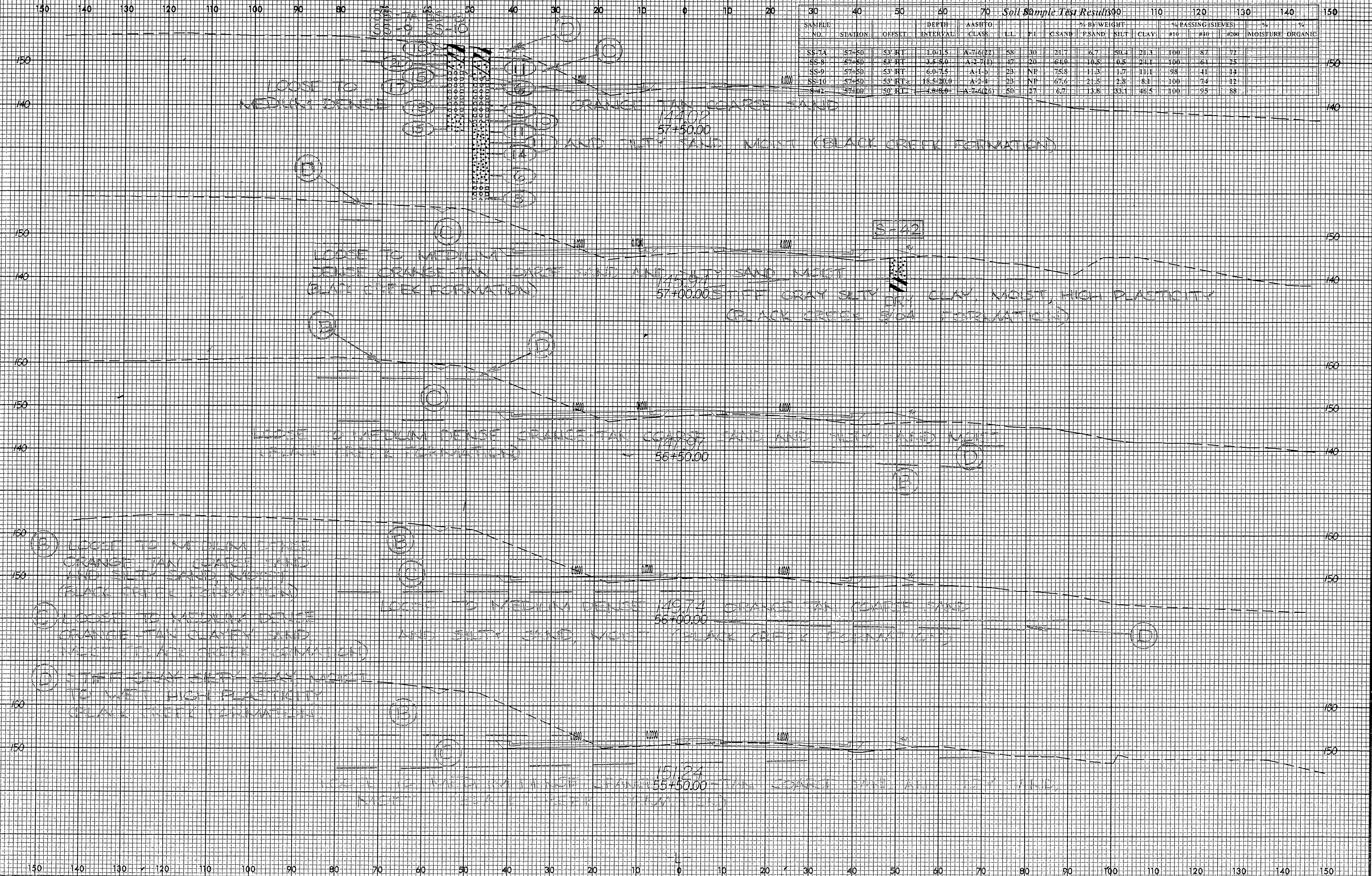


SYSTEMS TIME

8/23/99



SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS	% BY WEIGHT					% PASSING (SIEVES)			% MOISTURE	% ORGANIC
					LL	PI	CSAND	FSAND	SILT	CLAY	#10	#40		
SS-7A	57+50	5' RT	1.0-1.5	A-7-6(22)	58	30	21.7	6.7	50.4	21.3	100	87	72	
SS-8	57+50	5' RT	3.5-5.0	A-2-7(1)	47	20	64.0	10.5	6.8	24.1	100	64	25	
SS-9	57+50	5' RT	6.0-7.5	A-1-1	23	NP	75.8	11.3	1.7	11.1	98	41	14	
SS-10	57+50	5' RT	16.5-20.0	A-2-4	23	NP	67.6	21.5	2.8	8.1	100	74	12	
S-42	57+00	5' RT	1.0-8.0	A-7-6(26)	50	27	6.7	13.8	33.1	46.5	100	95	88	



LOOSE TO MEDIUM DENSE

ORANGE-TAN COARSE SAND

AND SILTY SAND MOIST (BLACK CREEK FORMATION)

LOOSE TO MEDIUM DENSE ORANGE-TAN COARSE SAND AND SILTY SAND MOIST (BLACK CREEK FORMATION)

STIFF GRAY SILTY CLAY MOIST, HIGH PLASTICITY (BLACK CREEK FORMATION)

LOOSE TO MEDIUM DENSE ORANGE-TAN COARSE SAND AND SILTY SAND MOIST (BLACK CREEK FORMATION)

LOOSE TO MEDIUM DENSE ORANGE-TAN COARSE SAND AND SILTY SAND MOIST (BLACK CREEK FORMATION)

LOOSE TO MEDIUM DENSE ORANGE-TAN CLAYEY SAND MOIST (BLACK CREEK FORMATION)

STIFF GRAY SILTY CLAY MOIST TO WET HIGH PLASTICITY (BLACK CREEK FORMATION)

LOOSE TO MEDIUM DENSE ORANGE-TAN COARSE SAND AND SILTY SAND MOIST (BLACK CREEK FORMATION)

LOOSE TO MEDIUM DENSE ORANGE-TAN COARSE SAND AND SILTY SAND MOIST (BLACK CREEK FORMATION)

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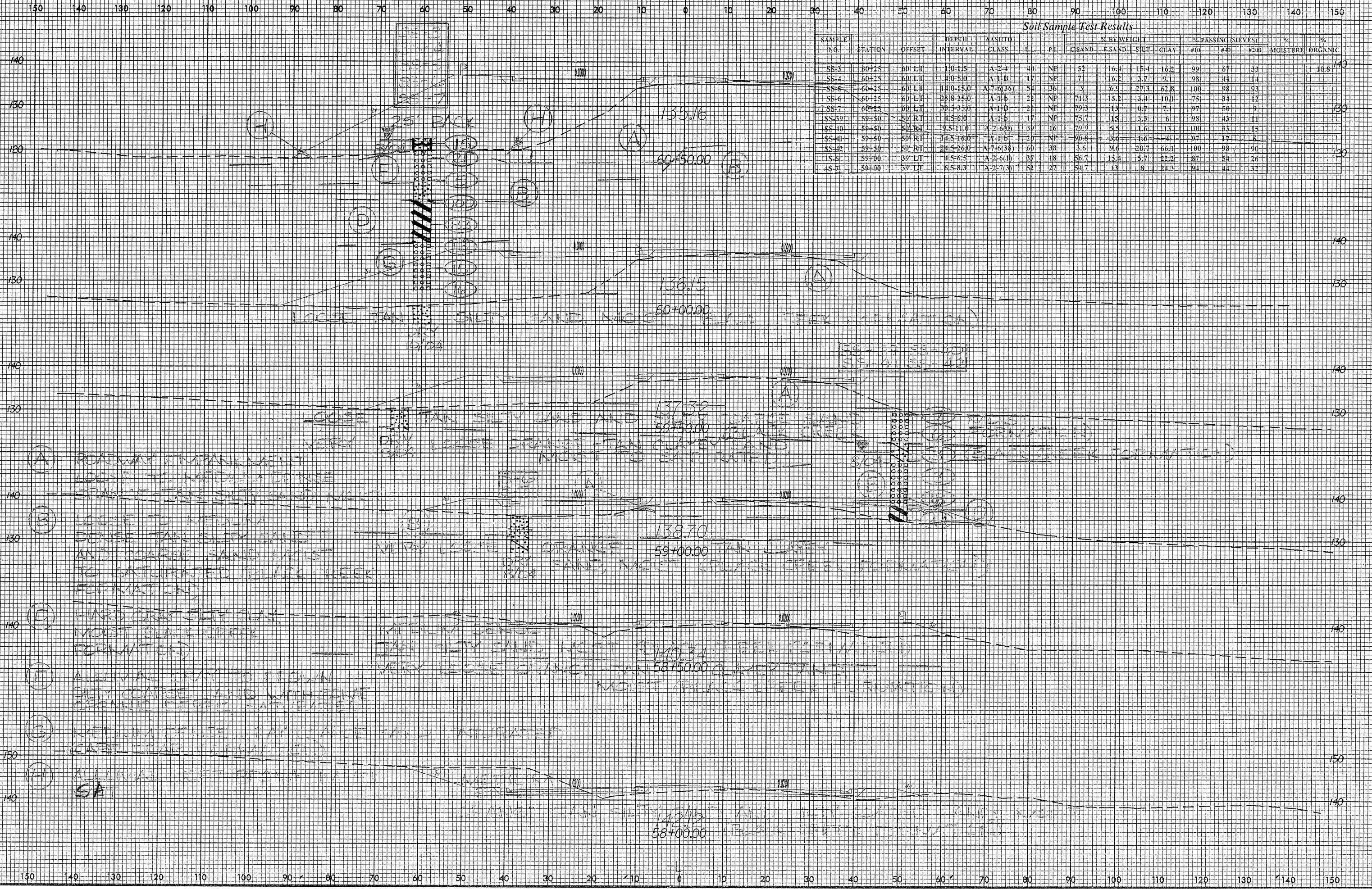
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PROJ. REFERENCE NO. U-3849

SHEET NO. 27

Soil Sample Test Results

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.L.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	#10	#40	#200		
SS-3	60+25	60' LTI	1.0-1.5	A-2-4	40	NP	52	16.4	15.4	16.2	99	67	53		
SS-4	60+25	60' LTI	4.0-5.0	A-1-B	17	NP	71	16.2	3.7	9.1	98	44	14		
SS-5	60+25	60' LTI	11.0-15.0	A-7-6(36)	54	36	3	6.9	27.3	62.8	100	98	93		
SS-6	60+25	60' LTI	28.8-25.0	A-1-b	29	NP	71.3	15.2	3.9	10.1	75	34	12		
SS-7	60+25	60' LTI	39.3-35.0	A-1-B	22	NP	79.3	13	0.7	7.1	97	50	9		
SS-39	59+50	50' RTI	4.5-6.0	A-1-b	17	NP	75.7	15	3.3	6	98	43	11		
SS-40	59+50	50' RTI	9.5-11.0	A-2-6(0)	39	16	79.9	5.5	1.6	13	100	33	15		
SS-41	59+50	50' RTI	14.5-16.0	A-1-b	20	NP	90.8	3.6	1.6	1.4	97	17	6		
SS-42	59+50	50' RTI	24.5-26.0	A-7-6(38)	60	38	3.6	9.6	20.7	66.1	100	98	90		
S-5	59+00	39' LTI	4.5-6.5	A-2-6(1)	37	18	56.7	15.4	5.7	21.2	87	54	26		
S-7	59+00	59' LTI	6.5-8.3	A-2-7(3)	52	27	54.7	13	8	24.3	94	44	32		



SYSTEMS TIME SYSTEMS

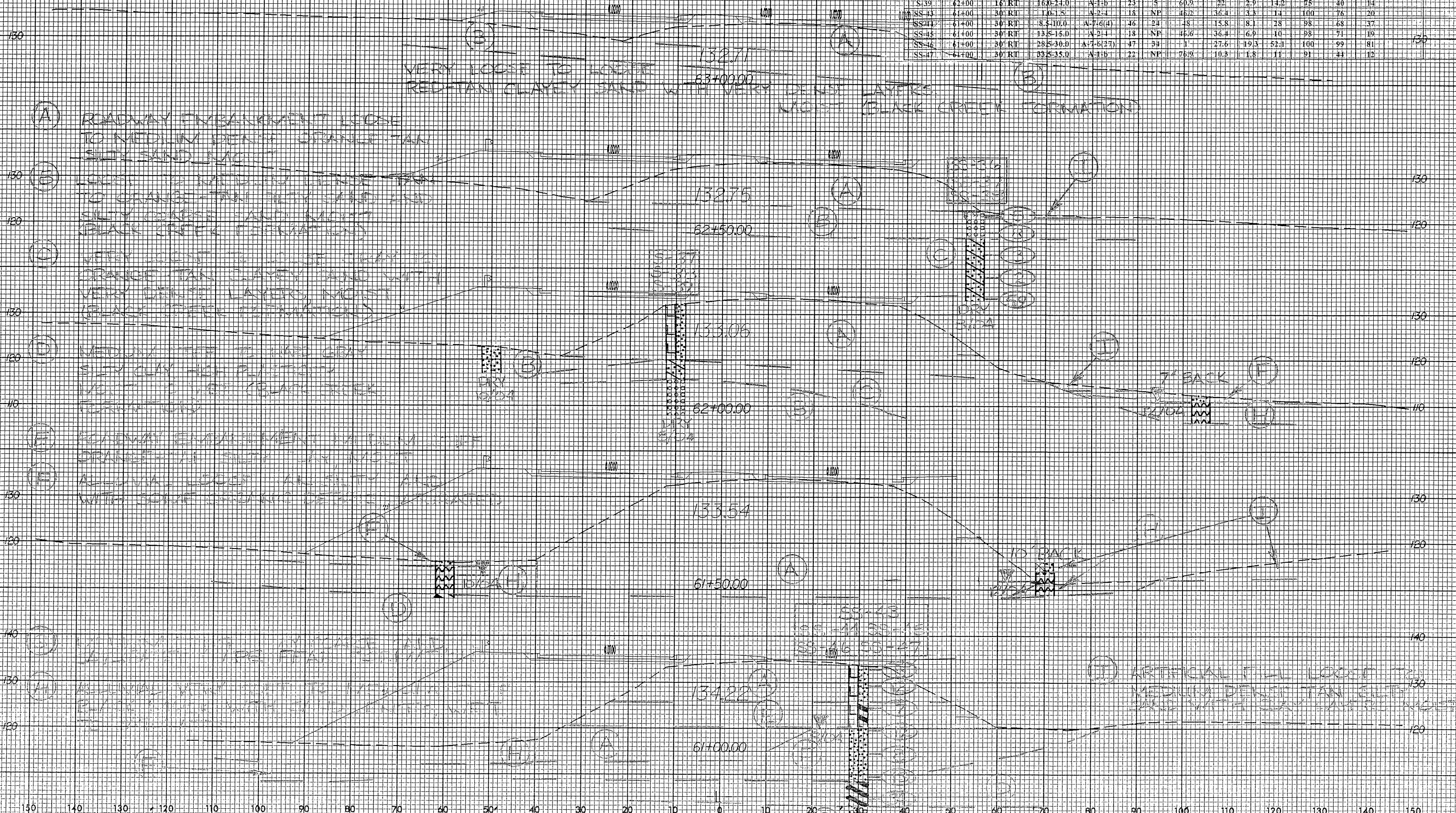
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Soil Sample Test Results

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	ASTM CLASS	LL	PL	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	CLAY	#10	#40	#200		
SS-36	62+50	55' RT	3.5-5.0	A-1-b	16	NP	71.8	16.8	4.4	7.1	94	46	112		
SS-37	62+50	55' RT	8.5-10.0	A-2-7(1)	52	18	69.8	6	6	18.2	96	39	24		
SS-38	62+50	55' RT	18.5-20.0	A-2-6	28	15	64.6	13.5	3.9	18	100	63	23		
S-37	62+00	16' RT	11.0-12.0	A-2-4	19	NP	50.9	28.8	6.2	14.2	98	69	22		
S-38	62+00	16' RT	12.0-16.0	A-2-6(3)	36	17	51.9	20.3	7.7	20.2	98	69	20		
S-39	62+00	16' RT	16.0-24.0	A-1-b	23	5	60.9	22	2.9	14.2	75	40	14		
SS-43	61+00	30' RT	1.0-1.5	A-2-4	18	NP	46.2	36.4	3.3	14	100	76	20		
SS-44	61+00	30' RT	8.5-10.0	A-2-6(4)	46	24	48	15.8	8.1	28	98	68	37		
SS-45	61+00	30' RT	13.5-15.0	A-2-4	18	NP	46.6	36.4	6.9	10	98	71	19		
SS-46	61+00	30' RT	28.5-30.0	A-2-6(27)	47	34	1	27.6	19.3	52.1	100	99	81		
SS-47	61+00	30' RT	33.5-35.0	A-1-b	22	NP	76.9	10.3	1.8	11	91	44	12		



(A) ROADWAY ENVIRONMENT LOOSE TO MED. DENSE ORANGE-TAN SILTY SAND, NA...

(B) LOOSE TO MED. DENSE TAN TO ORANGE-TAN SILTY SAND AND SILTY CLAY AND MOIST BLACK CREEK FORMATION

(C) VERY LOOSE TO LOOSE ORANGE-TAN CLAYEY SAND WITH VERY DENSE LAYERS, MOIST BLACK CREEK FORMATION

(D) MED. DENSE TO DENSE CLAY SILTY CLAY HIGH PLASTICITY MOIST TO WET (BLACK CREEK FORMATION)

(E) ROADWAY ENVIRONMENT TO LOOSE ORANGE-TAN SILTY SAND, MOIST

(F) ALLUVAL LOOSE TO SILTY SAND WITH SOME ORANGE-TAN FORMATION

(G) ALLUVAL TO BE ORANGE-TAN SAND

(H) ALLUVAL VERY LOOSE TO MED. DENSE BLACK CREEK WITH SILTY SAND, WET

(I) ARTIFICIAL FILL LOOSE TO MED. DENSE TAN SILTY SAND WITH SAND LAYER

VERY LOOSE TO LOOSE RED-TAN CLAYEY SAND WITH VERY DENSE LAYERS. MOST BLACK CREEK FORMATION

8/23/99

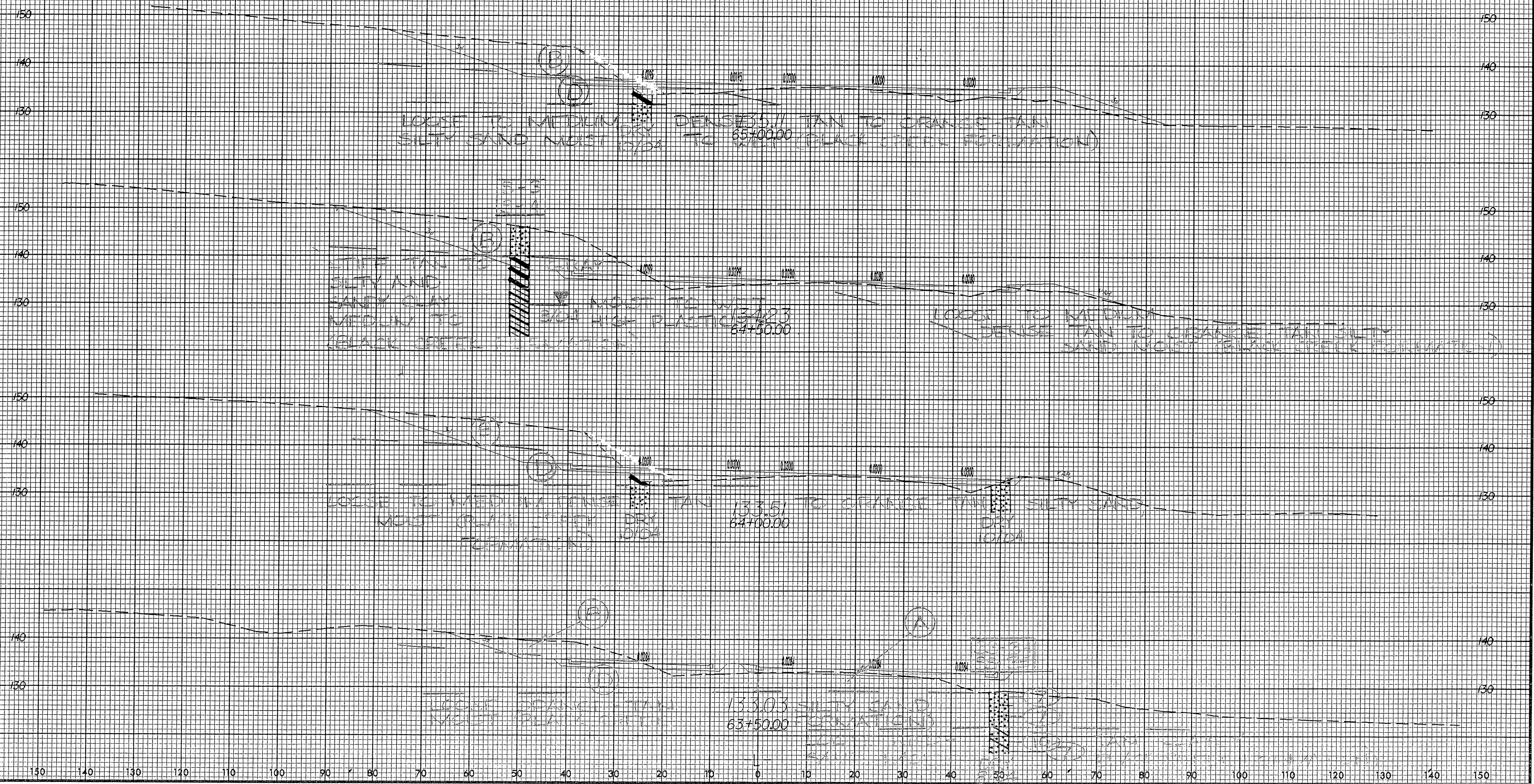
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130 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

- (A) ROADWAY EMBANKMENT LOOSE TO MEDIUM DENSE RED-TAN SILTY SAND, MOIST
- (B) LOOSE TO MEDIUM DENSE TAN TO RED-TAN SILTY SAND, MOIST (BLACK CREEK FORMATION)
- (C) STIFF TO VERY STIFF GRAY TO ORANGE AND GRAY MOTTLED SILTY CLAY, MOIST TO WET, HIGH PLASTICITY (BLACK CREEK FORMATION)

SAMPLE NO.	STATION	DEPTH INTERVAL	ASTM CLASS	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
				LL	PL	C SAND	F SAND	SILT	CLAY	#10		
S-3	64+50	30" LT	A-7-6(22)	49	25	12.9	4.9	27.6	54.6	100	92	84
S-	64+50	30" LT	A-6(3)	35	16	51.8	10.7	11.2	26.3	98	56	41
SS-34	63+50	30" RT	A-2-4	22	NP	63	22.2	2.7	12.1	98	73	15
SS-35	63+50	30" RT	A-2-6(1)	35	13	76.3	6.9	3.6	13.2	98	39	17



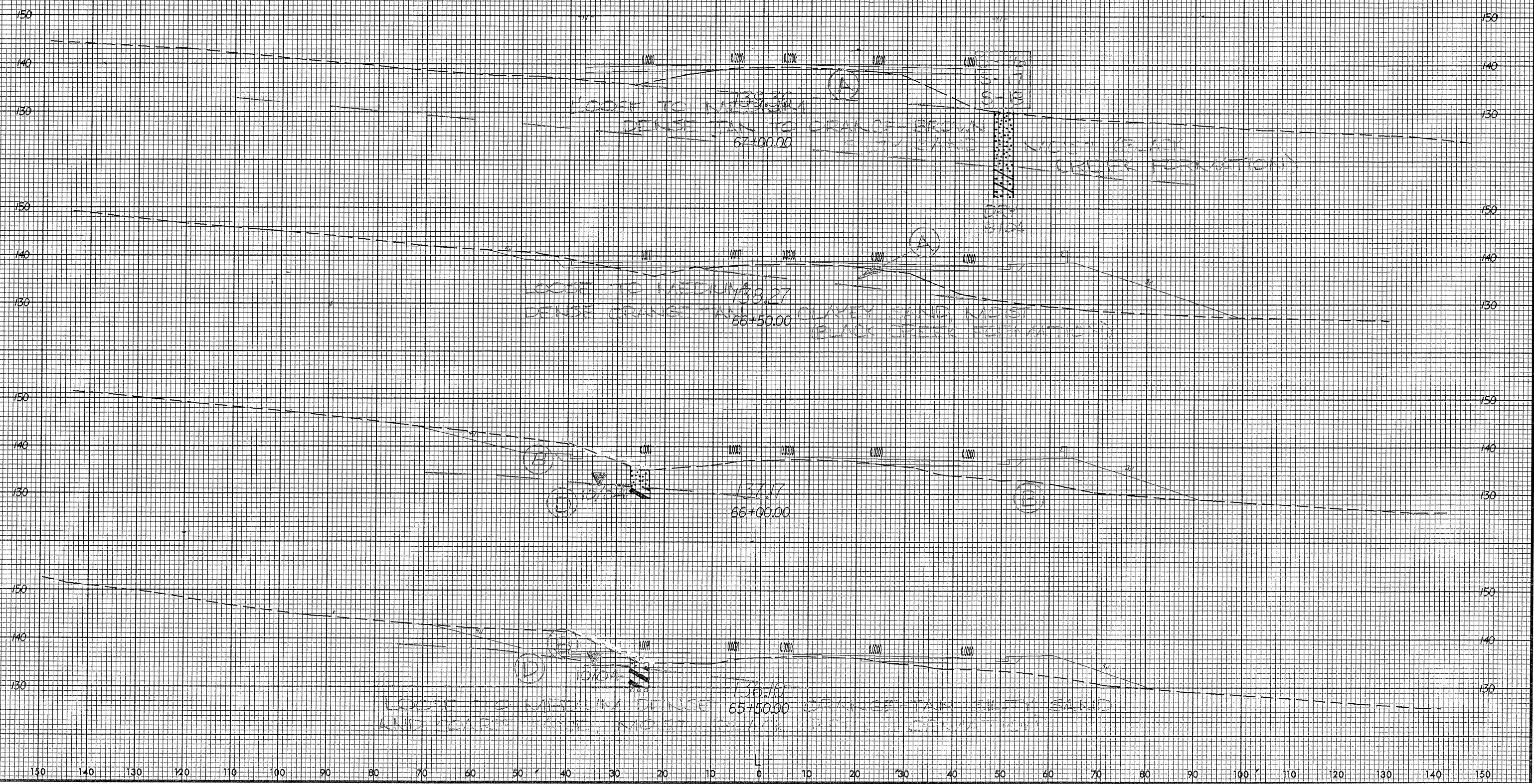
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Soil Sample Test Results

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS	% BY WEIGHT					% PASSING (SIEVES)		% MOISTURE ORGANIC	
					LL	PL	C.SAND	F.SAND	SILT	CLAY	#10	#40	#200
S-16	67+00	50 RT	1-0-7.0	A-2-H	24	6	53.7	24.6	2.5	19.2	93	64	21
S-17	67+00	50 RT	7-0-8.0	A-2-H	19	NP	63.2	21.1	3.5	12.1	91	56	16
S-18	67+00	50 RT	11.0-15.0	A-2(7.4)	92	34	54	14.4	5.4	26.3	94	57	32

- (A) ROADWAY ENVIROMENT (LOOSE TO MEDIUM DENSE RED-TAN SILTY SAND, MOIST)
- (B) LOOSE TO MEDIUM DENSE ORANGE-TAN SILTY SAND MOST TO SATURATED (BLACK CREEK FORMATION)
- (C) STIFF GRAY TO ORANGE-TAN SILTY CLAY, MOST HIGH PLASTICITY (BLACK CREEK FORMATION)

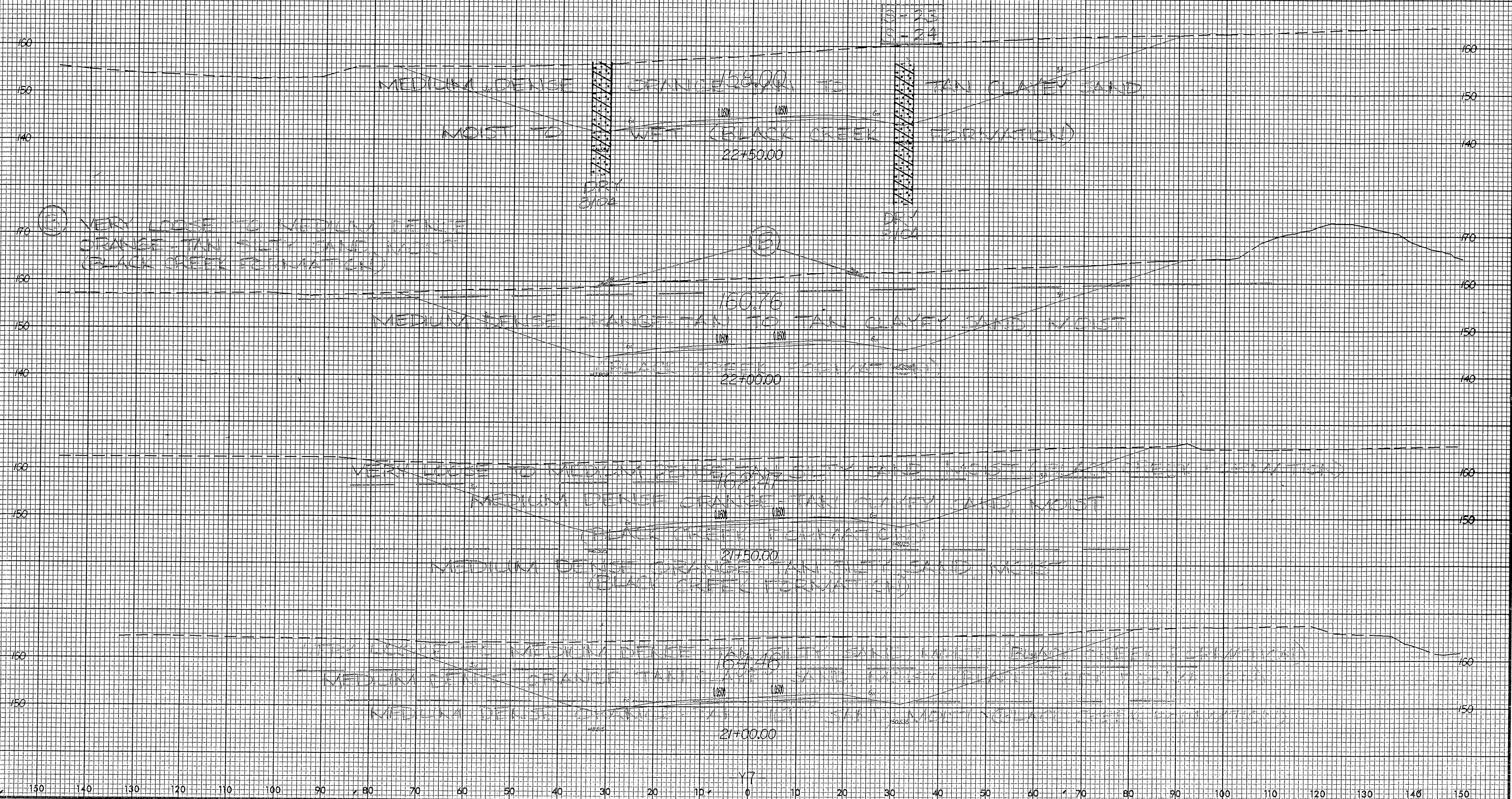


SYTIME

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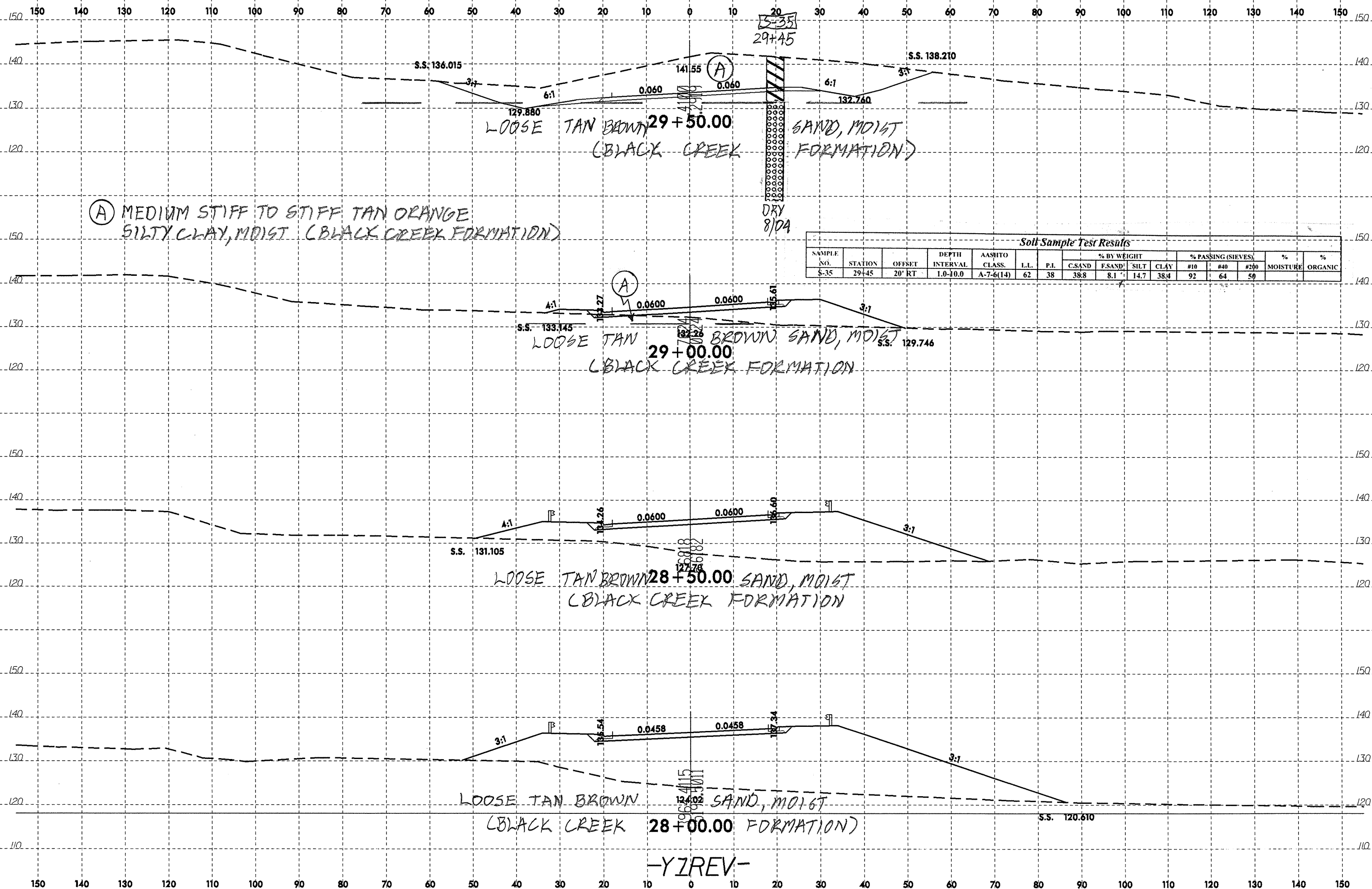
Soil Sample Test Results															
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	PL	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							CSAND	F.SAND	SILT	CLAY	#10	#40	#200		
S-23	22+50	32 RT	19.5-25.0	A-2-6(1)	35	17	58.4	12.7	4.6	23.3	100	67	30		
S-24	22+50	32 RT	25.0-30.0	A-2-6(0)	35	15	71.5	6.4	6	16.2	99	89	23		



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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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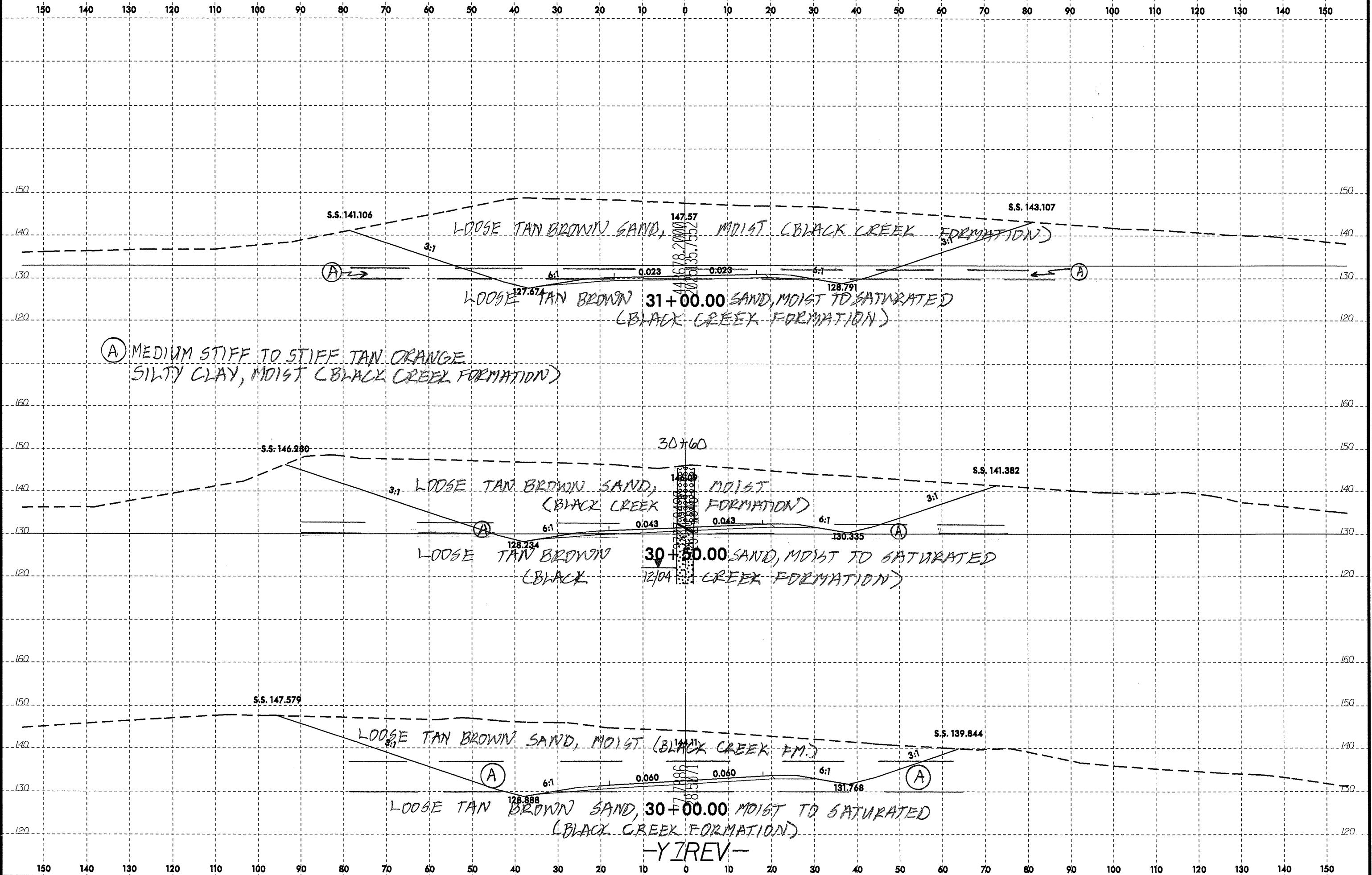
Soil Sample Test Results

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	#10	#40	#200		
S-35	29+45	20' RT	1.0-10.0	A-7-6(14)	62	38	38.8	8.1	14.7	38.4	92	64	50		

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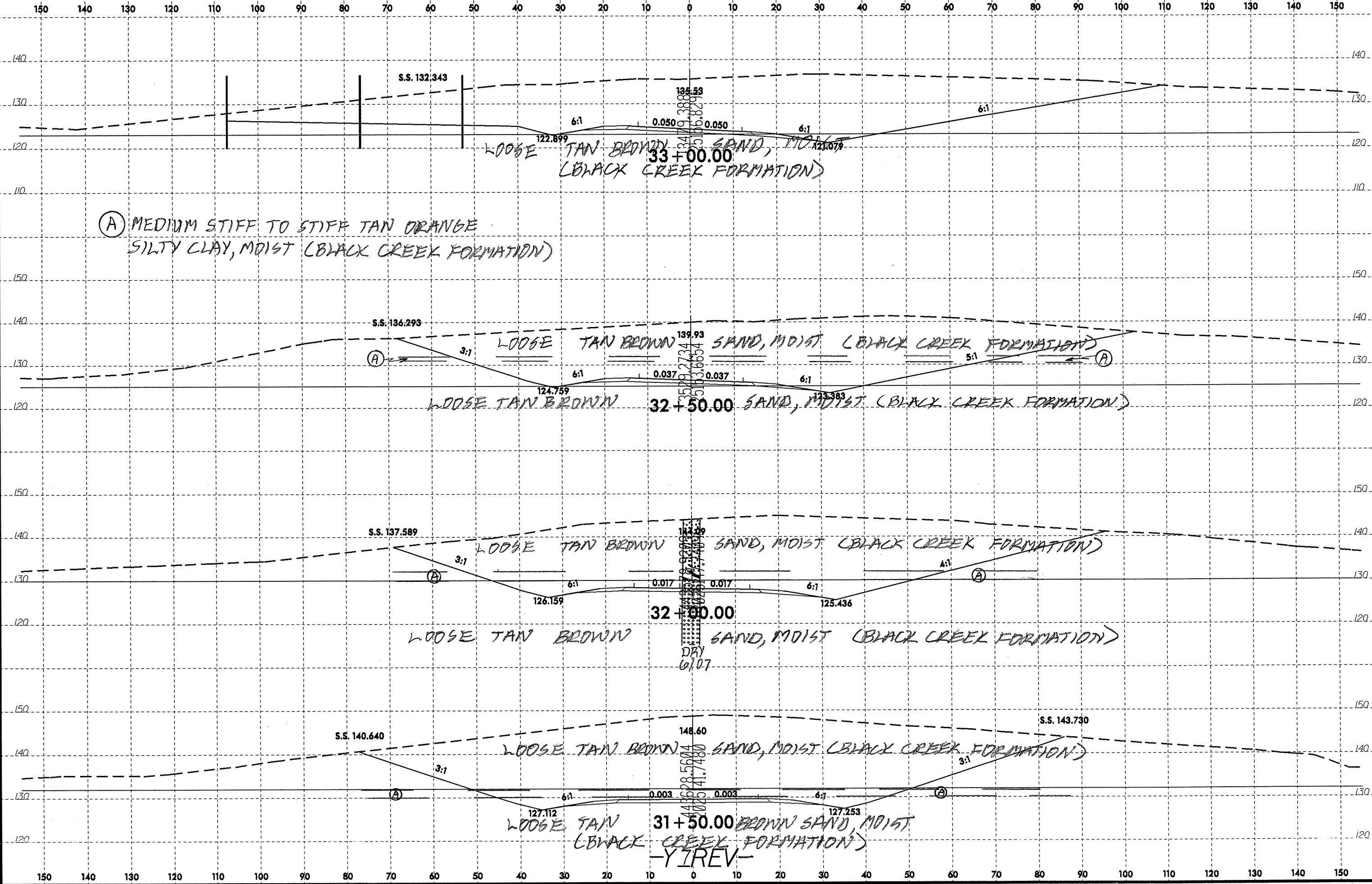
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YREV