

CONTRACT: C201495 ID: B-3684

CONTENTS:

LINE	STATION	SHEET NO.
-L-	14+00 TO 29+19	4, 5, 8
-L-	48+69 TO 60+65	7, 9
-L- X-SECT	14+00 TO 28+50	10-16
-L- X-SECT	49+00 TO 60+65	17-21

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

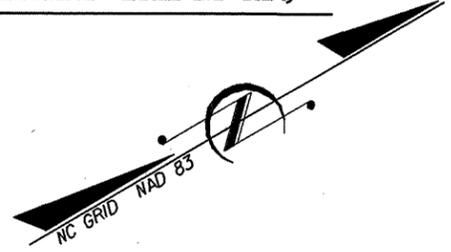
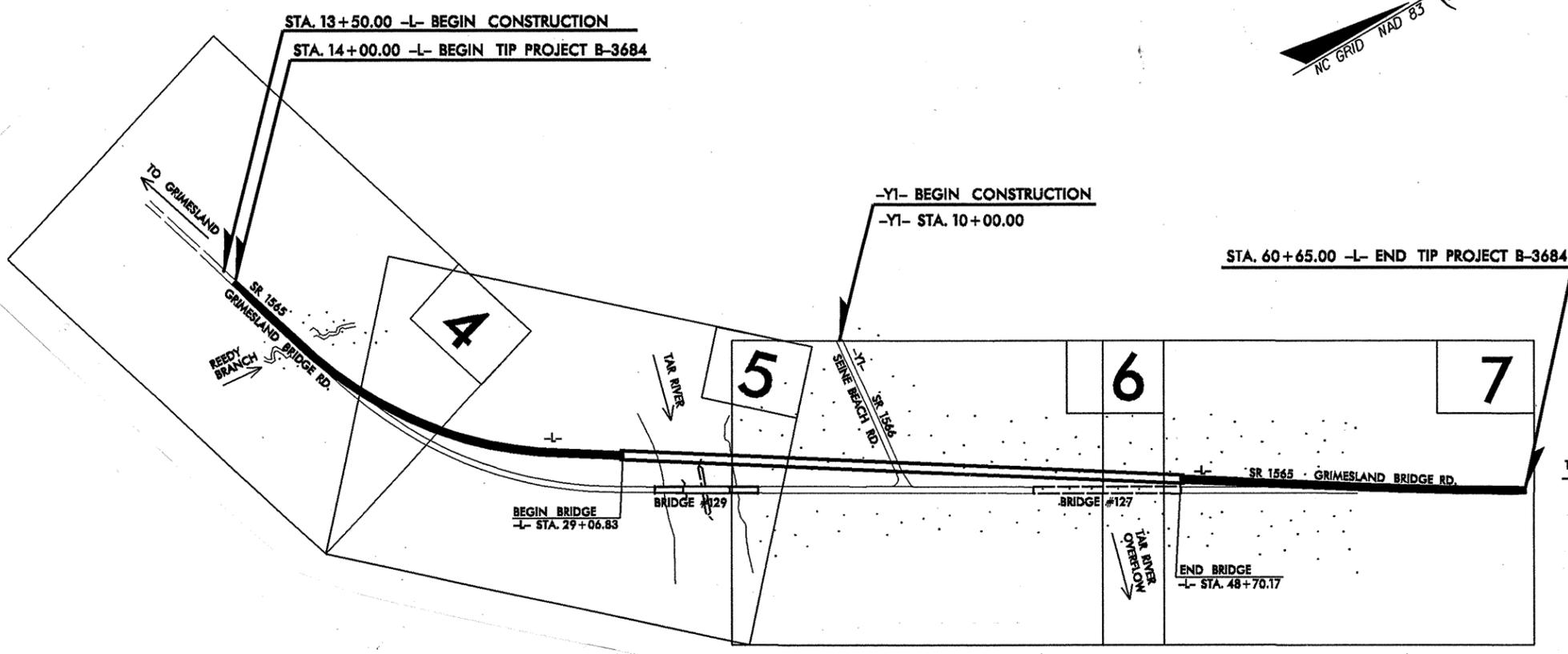
DIVISION OF HIGHWAYS

GEOTECHNICAL UNIT

SUBSURFACE INVESTIGATION

STATE PROJECT 33225.1.1 I.D. NO. B-3684
 F.A. PROJECT BRSTP-1565(4)
 COUNTY PITT
 DESCRIPTION BRIDGE NO. 129 OVER TAR RIVER AND BRIDGE
NO. 127 OVER TAR RIVER OVERFLOW ON SR 1565 (GRIMESLAND BRIDGE RD.)

INVENTORY



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3684	1	21
W.B.A.	F.A. PROJ. NO.	DESCRIPTION	
33225.1.1	BRSTP-1565(4)	P.E.	
33225.2.2	BRSTP-1565(4)	ROW & UTL.	
33225.3.1	BRSTP-1565(7)	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-PLACED) 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.

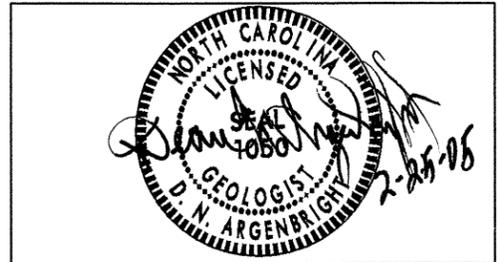
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT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

INVESTIGATED BY: FMW PERSONNEL: JLS
 CHECKED BY: FMW MMH
 SUBMITTED BY: DNA KBQ
 DATE: FEBRUARY, 2005 RES
LWD
MBO

DRAWN BY: FMW

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

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



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
B-3684	33225.1.1	2	21

SUBSURFACE INVESTIGATION

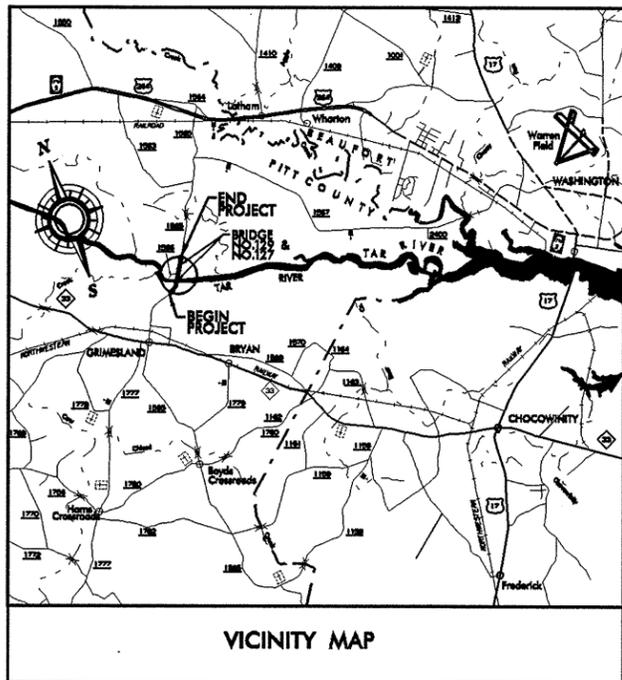
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

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 (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: <i>VERY STIFF, GRAY SILT CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>	WELL GRADED- INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE UNIFORM- INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED- INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES. ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS ARE DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	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 YIELD 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.	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. 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 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 (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.
SOIL LEGEND AND AASHTO CLASSIFICATION GENERAL CLASS. GRANULAR MATERIALS (<5% PASSING #200) SILT-CLAY MATERIALS (>5% 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 SYMBOL % PASSING: 10, 40, 200 LIQUID LIMIT PLASTIC INDEX: 6 MX, N.P., 40 MX, 41 MN, 10 MX, 11 MN 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, SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER, HIGHLY ORGANIC 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	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 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	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. <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.	
CONSISTENCY OR DENSENESS PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (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	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 SOUNDING ROD TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION SPT N-VALUE SPT REFUSAL	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 ABBREVIATIONS AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST V - 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	
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 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", 0.25, 0.05, 0.005	SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION LL - LIQUID LIMIT - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE PL - PLASTIC LIMIT - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE OM - OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE SL - SHRINKAGE LIMIT - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	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 PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S 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 FINGER NAIL.	
PLASTICITY UNPLASTIC PLASTICITY INDEX (PI) DRY STRENGTH LOW PLASTICITY 0-5 VERY LOW MED. PLASTICITY 6-15 SLIGHT HIGH PLASTICITY 16-25 MEDIUM 26 OR MORE HIGH 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.	EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: MOBILE B-47, BK-51, CME-45 B, CME-550, PORTABLE HOIST, OTHER, OTHER ADVANCING TOOLS: CLAY BITS, 6" CONTINUOUS FLIGHT AUGER, 8" HOLLOW AUGERS, HARD FACED FINGER BITS, TUNG-CARBIDE INSERTS, CASING w/ ADVANCER, TRICONE 2 1/16" STEEL TEETH, TRICONE TUNG-CARB., CORE BIT, OTHER HAMMER TYPE: AUTOMATIC, MANUAL CORE SIZE: B, N, H HAND TOOLS: POST HOLE DIGGER, HAND AUGER, SOUNDING ROD, VANE SHEAR TEST, OTHER	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 PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S 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 FINGER NAIL.	
		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.	
		BENCH MARK: ELEVATION: NOTES: APPROXIMATE FLOOD PLAIN LIMITS	

PROJECT: B-3684

CONTRACT:

See Sheet 1-A For Index of Sheets



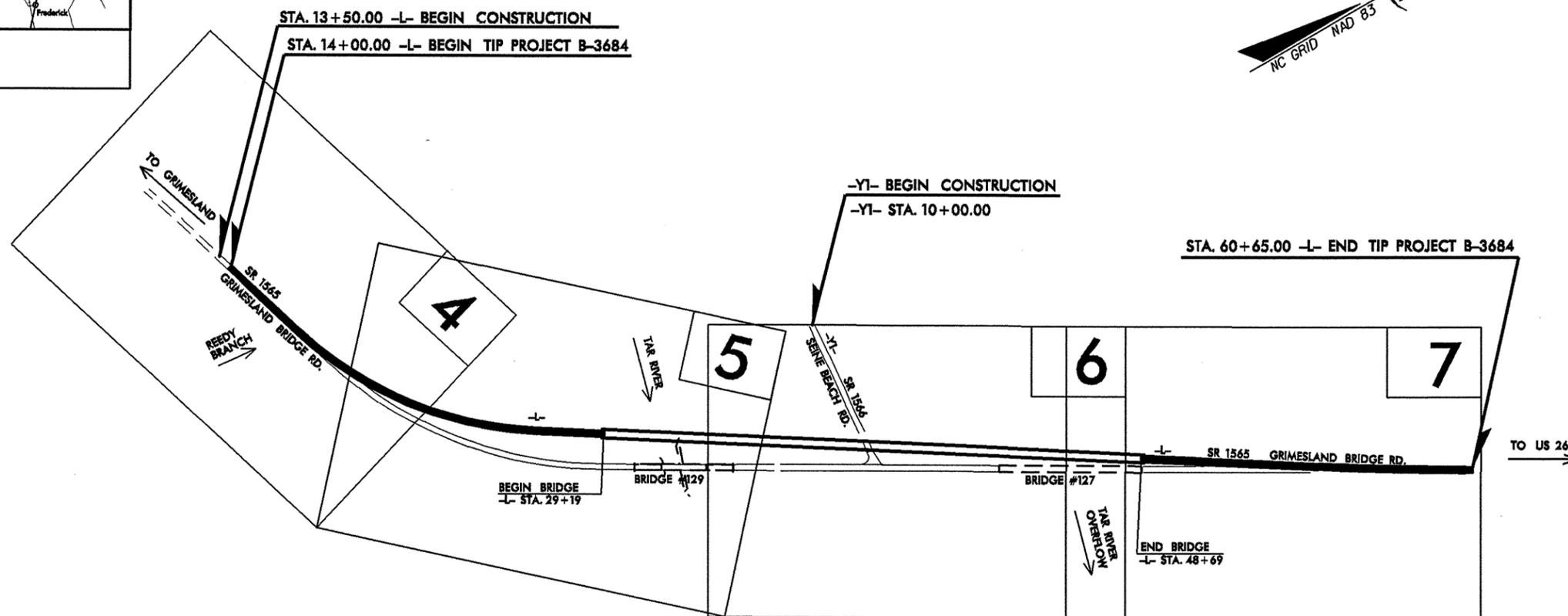
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PITT COUNTY

LOCATION: BRIDGE NO. 129 OVER TAR RIVER AND BRIDGE NO. 127 OVER TAR RIVER OVERFLOW ON SR 1565 (GRIMESLAND BRIDGE RD.)

TYPE OF WORK: PAVING, GRADING, DRAINAGE, AND STRUCTURE

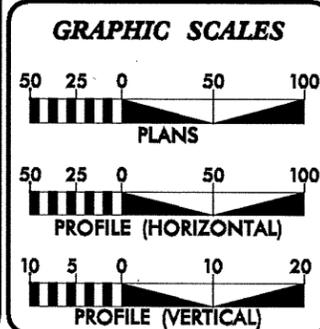
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3684	3	21
VAL.	P.A. PROJ. NO.	DESCRIPTION	
33225.1.1	BRSTP-1565(4)	P.E.	



CLEARING ON THIS PROJECT SHALL BE ESTABLISHED BY METHOD ____
THIS PROJECT IS NOT WITHIN THE MUNICIPAL BOUNDARIES OF GRIMESLAND.

NCDOT CONTACT: CATHY HOUSER, P.E., PROJECT ENGINEER - ROADWAY DESIGN

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



DESIGN DATA

ADT 2005 =	4,700
ADT 2025 =	6,800
DHV =	13 %
D =	55 %
T =	3 % *
V =	60 MPH
* TTST 1 %	DUAL 2 %
FUNC CLASS = RURAL COLLECTOR	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3684	=	0.515 mi.
LENGTH STRUCTURE TIP PROJECT B-3684	=	0.369 mi.
TOTAL LENGTH TIP PROJECT B-3684	=	0.884 mi.

Prepared In the Office of:

MULKEY ENGINEERING & CONSULTANTS
FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION

2002 STANDARD SPECIFICATIONS	PAMELA R. WILLIAMS PROJECT ENGINEER
MARCH 18, 2005 RIGHT OF WAY DATE:	
MARCH 21, 2006 LETTING DATE:	PADDY JORDAN 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

SCALE \$



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

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

LYNDO TIPPETT
SECRETARY

February 24, 2005

STATE PROJECT: 33225.1.1 B-3684
FEDERAL PROJECT: BRSTP-1565(4)
COUNTY: Pitt
DESCRIPTION: Bridge No. 129 over Tar River and Bridge No. 127 over Tar River overflow on SR 1565 (Grimesland Bridge Rd.)
SUBJECT: Geotechnical Report - Inventory

Project Description

The proposed project is located along and adjacent to SR 1565 at the existing bridges over the Tar River and the Tar River overflow approximately 1± miles northeast of Grimesland. Based on the current plans, the roadway portion of the project will primarily consist of constructing the approaches for the replacement structures which includes some widening of the SR 1565 embankment along the existing alignment and some relocation of SR 1565. The majority of the relocation will be constructed along the west side of SR 1565. The existing roadway (SR 1565) will be utilized as a detour during the construction of this project. The investigation of subsurface conditions was confined to the corridor of proposed new construction.

The following base line were investigated for this project:

<u>Line</u>	<u>Station(±)</u>
-L-	14+00 to 29+50
-L-	48+50 to 60+65

Areas of Special Geotechnical Interest

1) The following sections contain relatively soft organic/cohesive soils which have the potential to cause embankment stability and/or long term settlement problems:

<u>Line</u>	<u>Station (±)</u>
-L-	15+25 to 18+25
-L-	48+50 to 52+50

2) The following intervals were found to exhibit a high water table, seasonal high ground water or the potential for ground water related construction problems:

<u>Line</u>	<u>Station(±)</u>
-L-	15+00 to 18+60
-L-	48+50 to 60+65

Physiography, Geology and Ground Water

The project corridor is located in the Coastal Plain Physiographic Province and is underlain by Recent to Pleistocene soils and Pliocene age sediments of the Yorktown Formation. The scope of this investigation will involve upland soils (Recent to Pleistocene), floodplain (Recent) deposits and the existing embankment. Topography along the project is flat to moderately sloping with elevations ranging from -25± feet along the bed of Tar River to up to 27± feet along the existing SR 1565 embankment. A 3000± foot wide wooded flood plain lying at elevations ranging from 1 to 5± feet borders the project primarily on the northeast side of the Tar River. Elevations along the upland areas typically range from 27± to 30± feet and primarily occur along the south approach.

Ground water data was collected primarily from October to December 2003 during average rainfall. In low lying upland areas and/or floodplain areas the water levels are typically near or above the natural ground surface. In areas of moderate relief, as noted along most of the southern approach ground water levels are generally 6 feet or more below the ground surface. Based on borings within the existing SR 1565 embankment the water table is several feet below the existing shoulder along the majority of the project.

Soils

Soils along the majority of the upland areas (14+00± to 15+00± and 20+00± to 29+00±) of the project primarily consist of loose to medium dense fine to coarse sand (A-2-4, A-3). Some thin clay (A-7-6) layers were noted within the granular deposits. These soils generally exhibit fair to excellent engineering properties.

Surficial alluvial soils noted within the relatively narrow floodplain along the southern approach in the vicinity of -L- Station 17+00± primarily consists of up to 9 feet of soft muck. Moisture contents of tested organic samples range from 52 to 138 percent. Vane Shear tests taken left of -L- station 17+00 indicate shear strengths typically ranging from 110 to 740 psf. An undisturbed Shelby Tube was taken in the organic deposits at -L- Station 17+00, 74' LT and submitted for Triaxial Cu and Consolidation testing. Very soft to soft surficial organic silt/clay alluvial deposits are present along the northern approach from -L-Station 48+50 to 52+50±. Vane Shear tests taken at -L- Station 49+00 show shear strengths of 42 to 1002. Roots and/or wood may have given higher shear values than they actually are in both flood plain areas. Soils present beneath the cohesive/organic sediments and along the remaining floodplain from -L- Station 52+50± to 60+65 (end of project) consist of loose to medium dense alluvial sand (A-2-4, A-3). Due to the relatively poor engineering characteristics of the soils within the floodplains, undercut and/or fabric for soil stabilization may be required to assist in stabilizing portions of -L- where the organic/cohesive deposits occur.

Embankments are man-made fills built during construction of the existing SR 1565 roadway. The existing approach embankment soils are typically 6 to 17 feet thick and consist of loose to medium dense fine to coarse sand (A-2-4) underlain by medium dense to very dense alluvial sands (A-2-4, A-2-6, A-3). It appears the organic soils were possibly undercut prior to embankment construction along some portions of the SR 1565 roadway. The embankment material exhibits excellent engineering properties.

Three relatively deep SPT boring were made along the SR 1565 shoulder in the vicinities of -L- Stations 17+00, 49+00, and 51+00. Soils beneath the embankment and alluvial soils primarily consist of medium dense to very dense fine to coarse sand (A-2-4, A-3) and some thin stiff to hard sandy silt (A-4) layers. The compactness of the soils begins to increase below an elevation of -10± feet.

Prepared by:



Fred M Wescott III
Project Engineering Geologist

LOCATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
	TOTAL EXCAVATION	ROCK	UNDERCUT	UNSUITABLE	SUITABLE	TOTAL EMBANKMENT	ROCK	EARTH EMBANKMENT	EMBANKMENT PLUS 30%		ROCK	SUITABLE	UNSUITABLE	TOTAL
-L-														
14+00.00 - 29+06.83	1268		4438		1268	42239		42239	54911	53643			4438	4438
SUBTOTAL	1268		4438		1268	42239		42239	54911	53643			4438	4438
-L-	13		2674		13	12505		12505	16257	16244			2674	2674
48+70.17 - 60+65.00														
SUBTOTAL	13		2674		13	12505		12505	16257	16244			2674	2674
-L- Removal of exist. Roadbed														
34+00.00 - 43+50.00	21,587				21,587								21,587	21,587
SUBTOTAL	21,587				21,587								21,587	21,587
-Y1- Removal of exist. Roadbed														
10+00.00 - 15+50.00	2,391				2,391								2,391	2,391
SUBTOTAL	2,391				2,391								2,391	2,391
TOTAL	25,259		7,112		25,259	54,744		54,744	71,168	69,887			23,978	31,090
LOSS DUE TO CLEAR & GRUB														
WASTE TO REPLACE BORROW										-2,391			-2,391	-2,391
ADDITIONAL UNDERCUT			1,200			1,200		1,200	1,560	1,560			1,200	1,200
PROJECT TOTAL	25,259		8,312		25,259	55,944		55,944	72,728	69,056			21,587	29,899
5% TO REPLACE BORROW										3,460				
GRAND TOTAL	25,259		8,312		25,259	55,944		55,944	72,728	72,516			21,587	29,899
SAY	25,600		8,400							73,300			8,400	8,400

EST. DDE = 335 CY
 EST. SELECT GRANULAR MATERIAL = 8200 CY
 EST. FABRIC FOR SOIL STABILIZATION = 200 SY

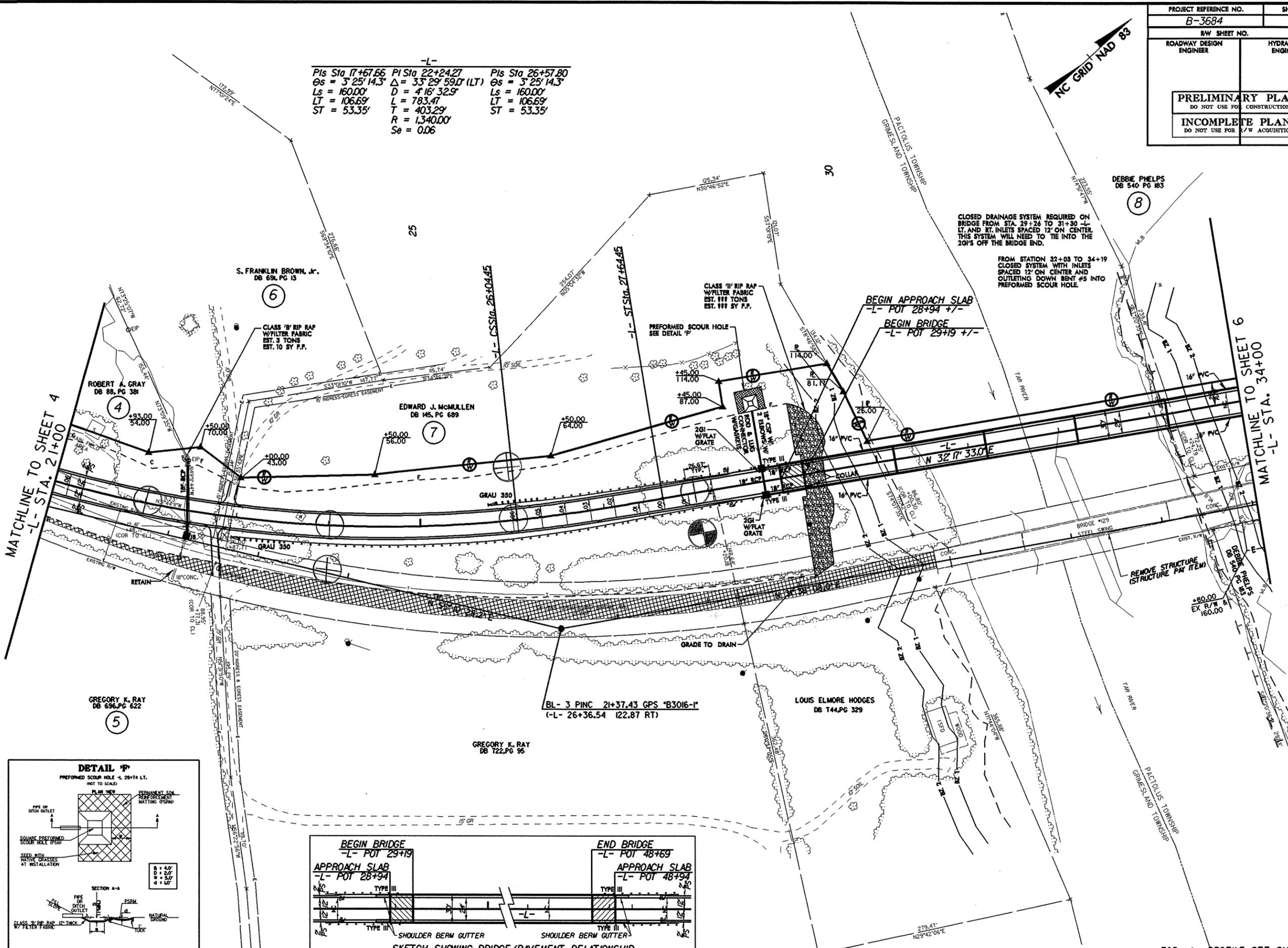
NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, CLEARING AND GRUBBING, FINE GRADING, REMOVAL OF EXISTING ASPHALT PAVEMENT AND BREAKING OF EXISTING ASPHALT PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

PROJECT REFERENCE NO. B-3684	SHEET NO. 5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

-L-

Pls Sta 17+67.66	PI Sta 22+24.27	Pls Sta 26+57.80
Os = 3° 25' 14.3"	Δ = 33° 29' 59.0" (LT)	Os = 3° 25' 14.3"
Ls = 160.00'	D = 416' 32.9"	Ls = 160.00'
LT = 106.69'	L = 783.47'	LT = 106.69'
ST = 53.35'	T = 403.29'	ST = 53.35'
	R = 1,340.00'	
	Se = 0.06	

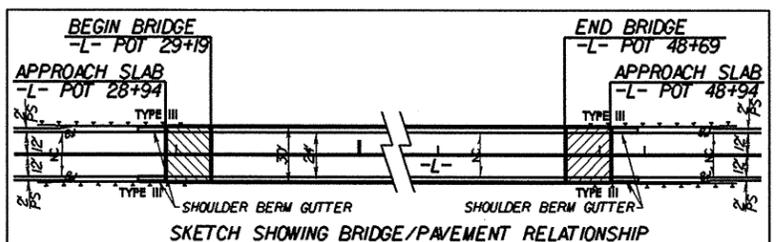
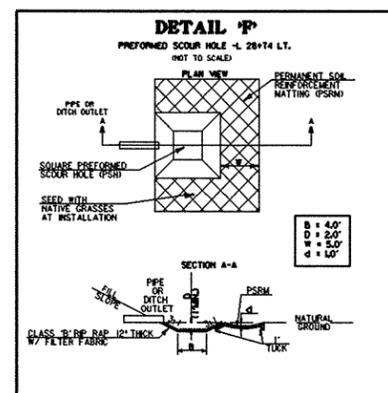


CLOSED DRAINAGE SYSTEM REQUIRED ON BRIDGE FROM STA. 29+26 TO 31+30 -L- LT AND RT INLETS SPACED 12' ON CENTER. THIS SYSTEM WILL NEED TO TIE INTO THE 20'S OFF THE BRIDGE END.

FROM STATION 32+03 TO 34+19 CLOSED SYSTEM WITH INLETS SPACED 12' ON CENTER AND OUTLETING DOWN BEST #5 INTO REFORMED SCOUR HOLE.

MATCHLINE TO SHEET 4
-L- STA. 21+00

MATCHLINE TO SHEET 6
-L- STA. 34+00



FOR -L- PROFILE SEE SHEET 8
 OBLITERATION OF EXISTING ROAD

REVISIONS

8/17/99

DATE & BY

8/17/99

PROJECT REFERENCE NO. B-3684		SHEET NO. 6	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NO REFERENCE
9

~~-YI-~~
~~PI Sta. 14+90.39~~
~~Δ = 453' 06.0" (RT)~~
~~D = 728' 14.3"~~
~~L = 65.2'~~
~~T = 32.6'~~
~~R = 765.2'~~

BEGIN CONSTRUCTION
-YI- POT Sta. 10+00.00

MATCHLINE TO SHEET 5
-L- STA. 34+00

MATCHLINE TO SHEET 7
-L- STA. 47+00

DEBBIE PHELPS
DB 540 PG 183
8

CLOSED DRAINAGE SYSTEM REQUIRED ON BRIDGE FROM STATION 32+03 TO 34+19 WITH INLETS SPACED 12' ON CENTER SYSTEM TO BE DISCHARGED DOWN BENT #5 INTO DISSIPATOR PAD.

+02.00
25.00 &
40.00

+38.00
25.00 &
40.00

DISSIPATOR PAD
CLASS 'B' RIP RAP
L = 6'
W = 6'
EST. 1.8 TONS
EST. 5 SV FF

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NO REFERENCE
9

BY- 2 PINC 8+77.39
-YI- 13+77.24 15.17 LT)

-YI- PCSta. 14+57.75

-L- POT Sta. 38+79.19 =
-YI- POC Sta. 14+80.95

16" PVC

N 32° 17' 33.0" E

N 31° 38' 08.0" E

N 29° 51' 10.3" E

N 29° 51' 14.5" E

BL- 4 PINC 30+69.93 =
(-L- 35+64.31 10.47 RT)

-YI- PTSta. 15+22.99

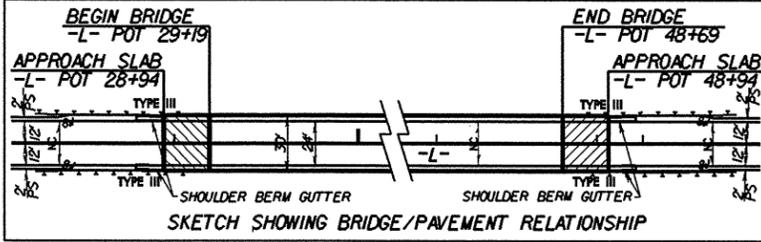
BL- 5 PINC 34+51.81 =
BY- 3 POT 10+95.32 =
(-L- 39+45.85 94.21 RT)

-YI- POTSta. 15+63.92

DEBBIE PHELPS
DB 540 PG 183
8

4" PVC DRAINS THROUGH THE RAIL ARE RECOMMENDED AS FOLLOWS
12' ON CENTER FROM 34+25 TO 48+61 -L- LT. & RT.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NO REFERENCE
9



FOR -L- PROFILE SEE SHEET 8 & 9

OBLITERATION OF EXISTING ROAD

REVISIONS

DATE#
FILE#

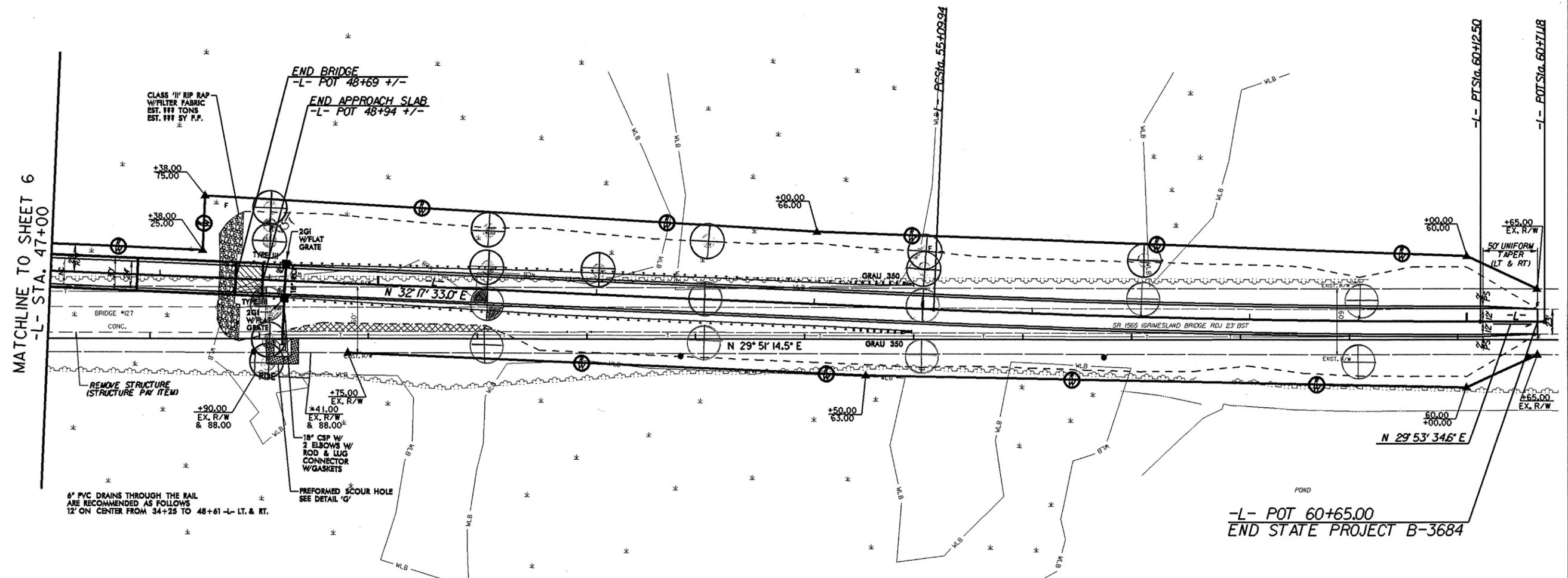
8/17/99

PROJECT REFERENCE NO. B-3684		SHEET NO. 7	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION			



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NO REFERENCE

9

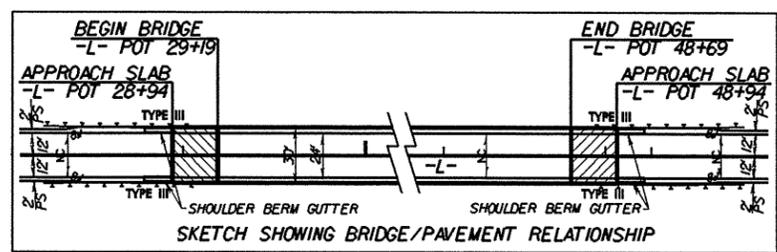


MATCHLINE TO SHEET 6
-L- STA. 47+00

6\"/>

PREFORMED SCOUR HOLE
SEE DETAIL 'G'

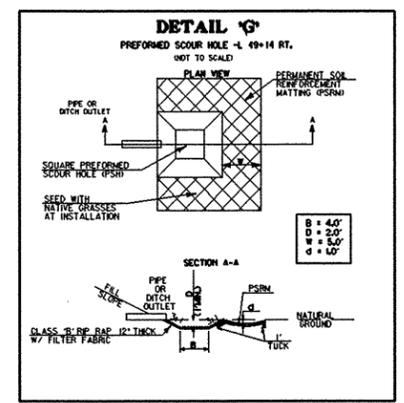
-L- POT 60+65.00
END STATE PROJECT B-3684



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NO REFERENCE

9

-L-
PI Sta 57+61.26
 $\Delta = 2' 23'' 58.4''$ (LT)
 $D = 0' 28'' 38.9''$
 $L = 502.56'$
 $T = 251.32'$
 $R = 12,000.00'$
 $S_e = NC$

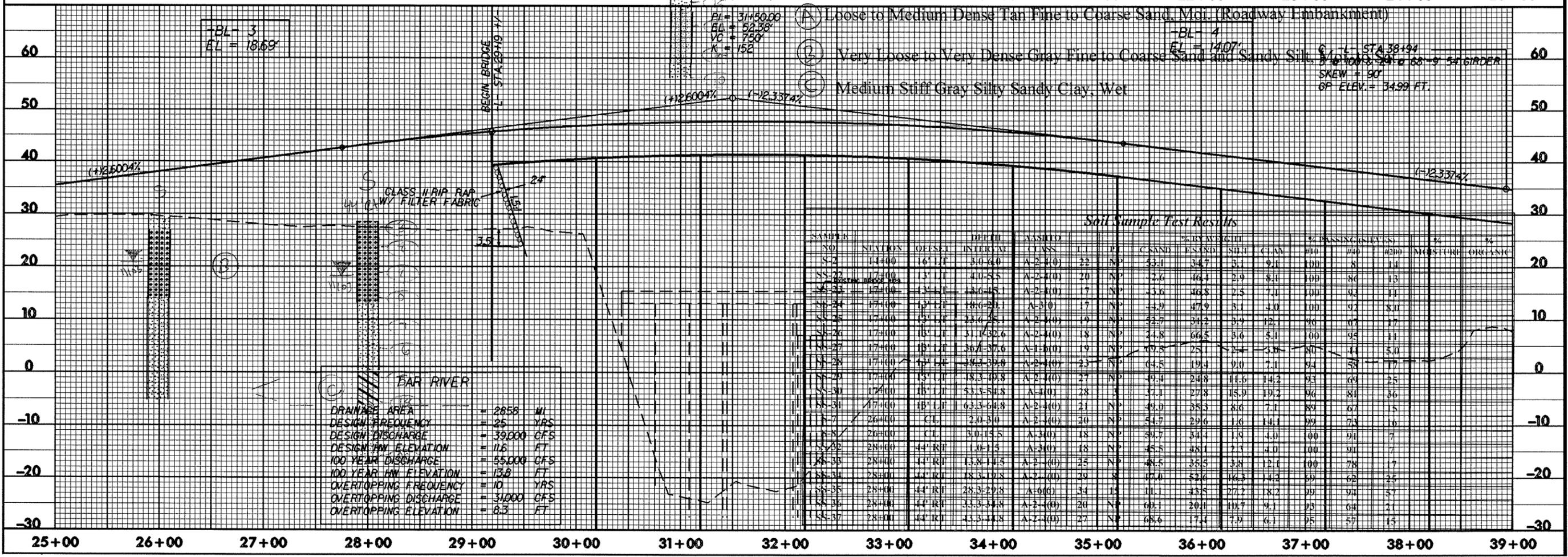
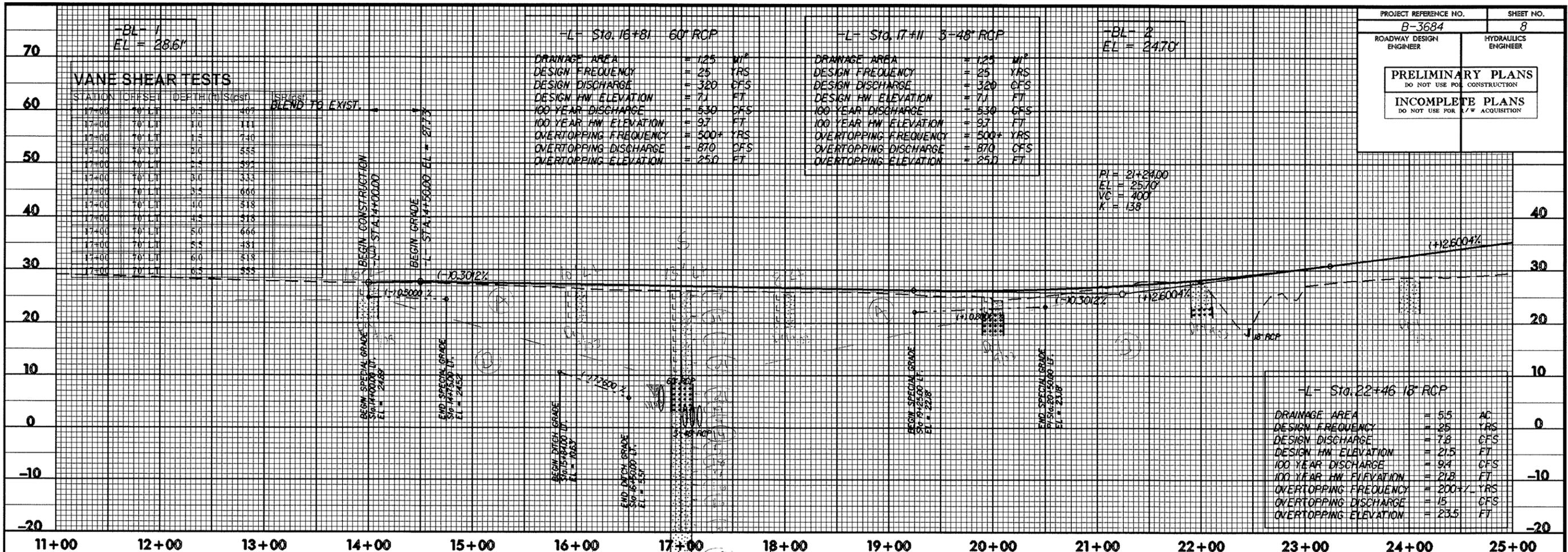


FOR -L- PROFILE SEE SHEET 9

OBLITERATION OF EXISTING ROAD

REVISIONS

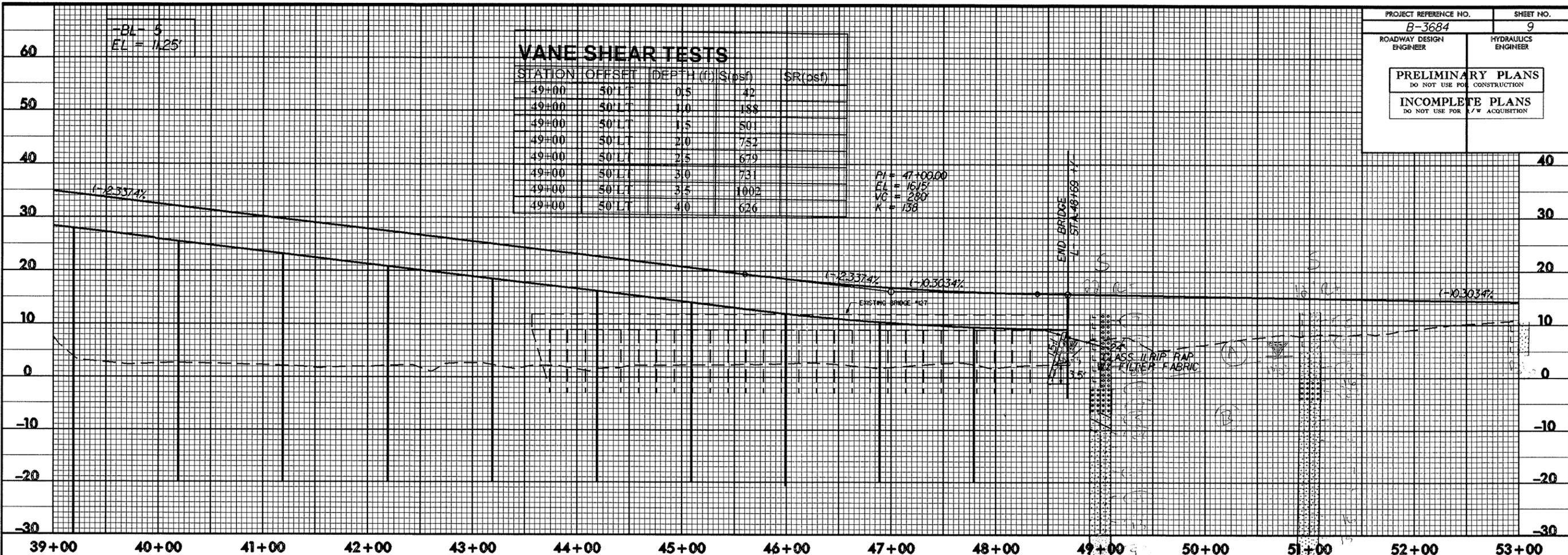
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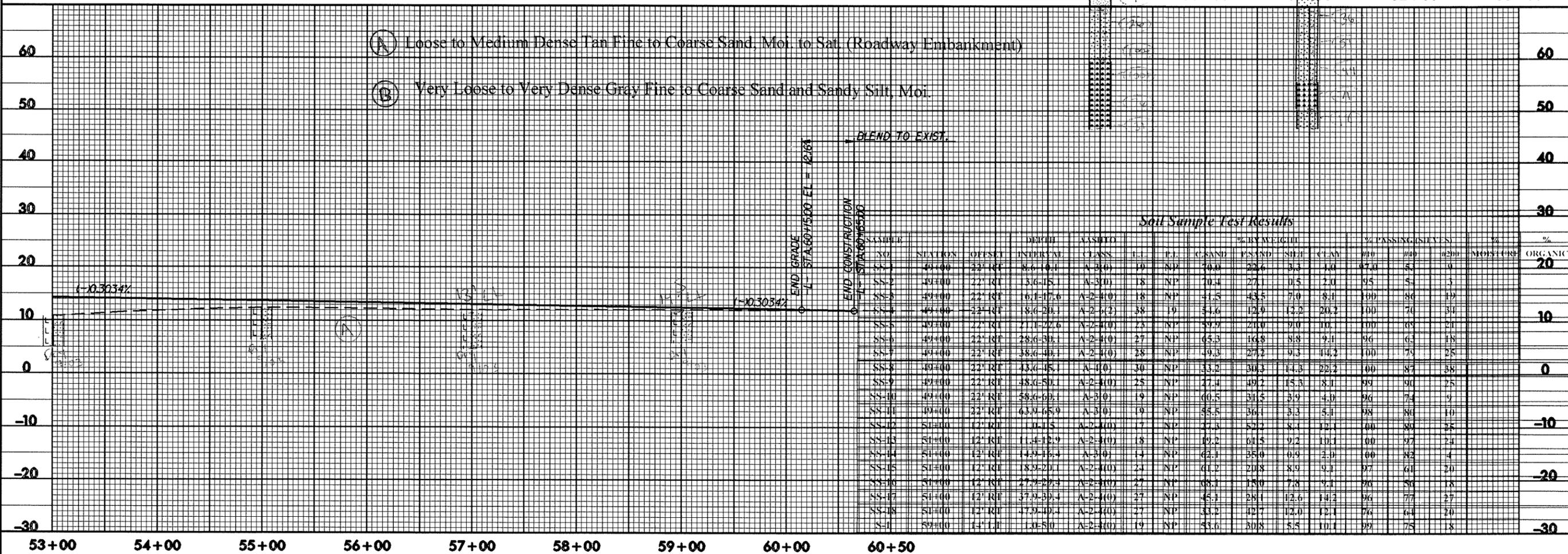
VANE SHEAR TESTS

STATION	OFFSET	DEPTH (ft)	SR (psf)
49+00	50' LT	0.5	42
49+00	50' LT	1.0	188
49+00	50' LT	1.5	501
49+00	50' LT	2.0	752
49+00	50' LT	2.5	679
49+00	50' LT	3.0	731
49+00	50' LT	3.5	1002
49+00	50' LT	4.0	626

PI = 47+00.00
 EL = 161.5
 VG = 280
 K = 138



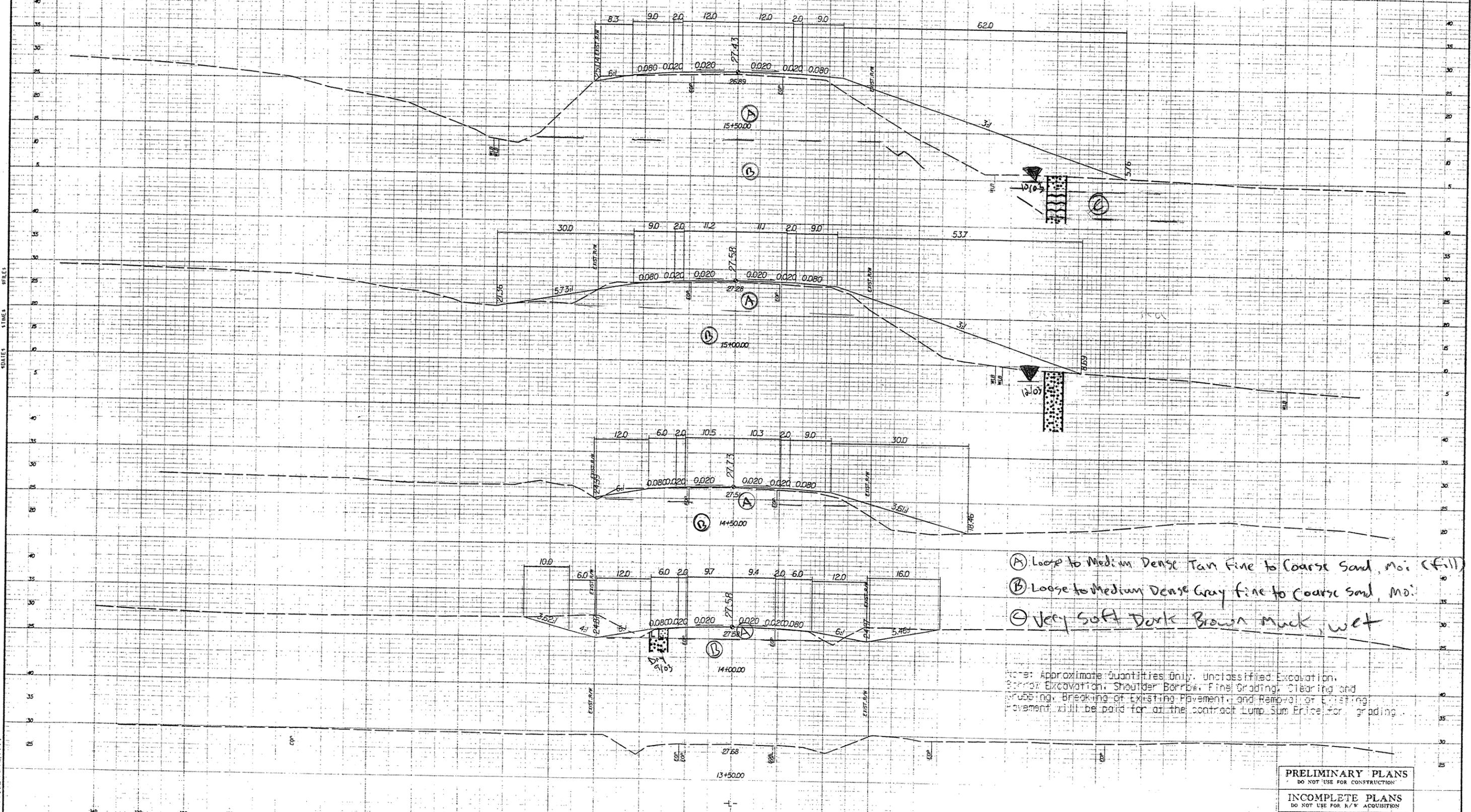
(A) Loose to Medium Dense Tan Fine to Coarse Sand, Moi. to Sat. (Roadway Embankment)
 (B) Very Loose to Very Dense Gray Fine to Coarse Sand and Sandy Silt, Moi.



Soil Sample Test Results

SAMPLE NO.	STATION	OFFSET	DEPTH	CLASS	U.C.	P.L.	% BY WEIGHT				% PASSING (SIEVE)			% ORGANIC
							G. SAND	F. SAND	SILT	CLAY	#10	#20	#40	
SS-1	49+00	22' RT	8.6-10.1	A-3(0)	10	NP	70.0	22.6	3.3	1.0	67.0	83	0	
SS-2	49+00	22' RT	5.6-15.1	A-3(0)	18	NP	70.4	27.1	0.5	2.0	95	5	3	
SS-3	49+00	22' RT	16.1-17.6	A-2-3(0)	18	NP	51.5	43.5	7.0	8.1	100	86	14	
SS-4	49+00	22' RT	18.6-20.1	A-2-3(0)	38	19	54.6	12.9	12.2	20.2	100	70	34	
SS-5	49+00	22' RT	21.1-22.6	A-2-3(0)	23	NP	59.9	21.0	9.0	10.0	100	69	21	
SS-6	49+00	22' RT	23.6-30.1	A-2-3(0)	27	NP	65.3	16.8	9.8	9.1	96	63	18	
SS-7	49+00	22' RT	38.6-40.1	A-2-3(0)	28	NP	49.3	27.2	9.3	14.2	100	79	25	
SS-8	49+00	22' RT	43.6-48.1	A-3(0)	30	NP	33.2	30.3	14.3	22.2	100	87	38	
SS-9	49+00	22' RT	48.6-50.1	A-2-3(0)	25	NP	27.4	49.2	15.3	8.1	99	90	25	
SS-10	49+00	22' RT	58.6-60.1	A-3(0)	19	NP	60.5	31.5	3.9	4.0	96	74	9	
SS-11	49+00	22' RT	63.6-65.9	A-3(0)	19	NP	55.5	36.1	3.3	5.1	98	80	10	
SS-12	51+00	12' RT	1.0-1.5	A-2-3(0)	17	NP	27.3	52.2	8.1	12.1	100	80	25	
SS-13	51+00	12' RT	1.4-1.9	A-2-3(0)	18	NP	69.2	61.5	9.2	10.1	100	97	24	
SS-14	51+00	12' RT	14.9-16.4	A-3(0)	14	NP	62.1	35.0	0.9	2.0	100	82	4	
SS-15	51+00	12' RT	18.9-20.1	A-2-3(0)	24	NP	61.2	20.8	8.9	9.1	97	61	20	
SS-16	51+00	12' RT	27.9-29.4	A-2-3(0)	27	NP	68.1	18.0	7.8	9.1	96	56	18	
SS-17	51+00	12' RT	37.9-39.4	A-2-3(0)	27	NP	45.1	28.1	12.6	14.2	96	77	27	
SS-18	51+00	12' RT	47.9-49.4	A-2-3(0)	27	NP	33.2	42.7	12.0	12.1	96	64	20	
SS-19	59+00	14' LT	1.0-5.0	A-2-3(0)	19	NP	53.6	30.8	5.5	10.1	99	75	18	

Rev. 3-10-01

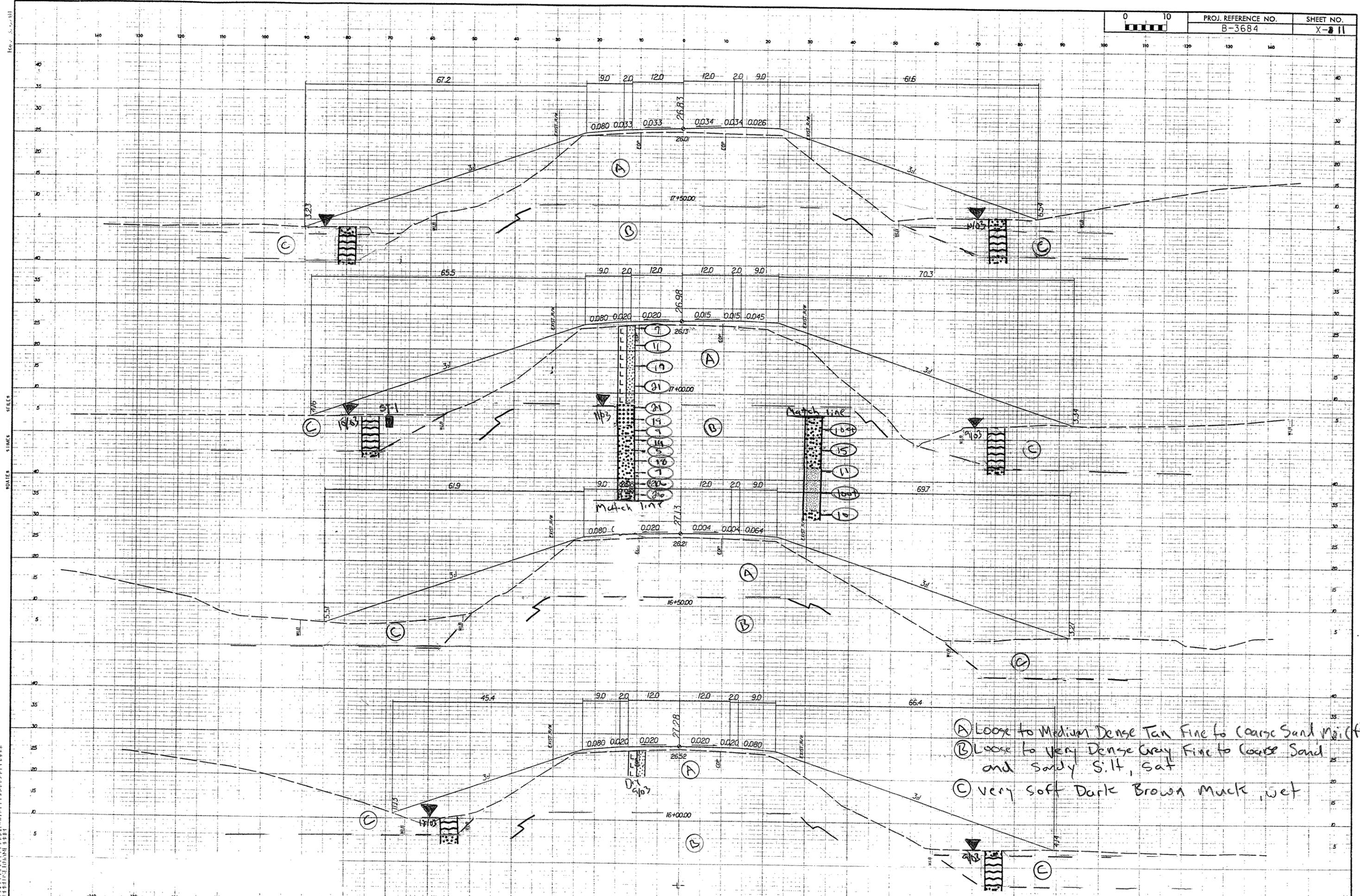
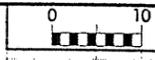


- Ⓐ Loose to Medium Dense Tan Fine to Coarse Sand, Mo. (fill)
- Ⓑ Loose to Medium Dense Gray fine to coarse sand, Mo.
- Ⓒ Very Soft Dark Brown Muck, wet

Note: Approximate quantities only. Unclassified Excavation, Scarer Excavation, Shoulder Borrow, 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.

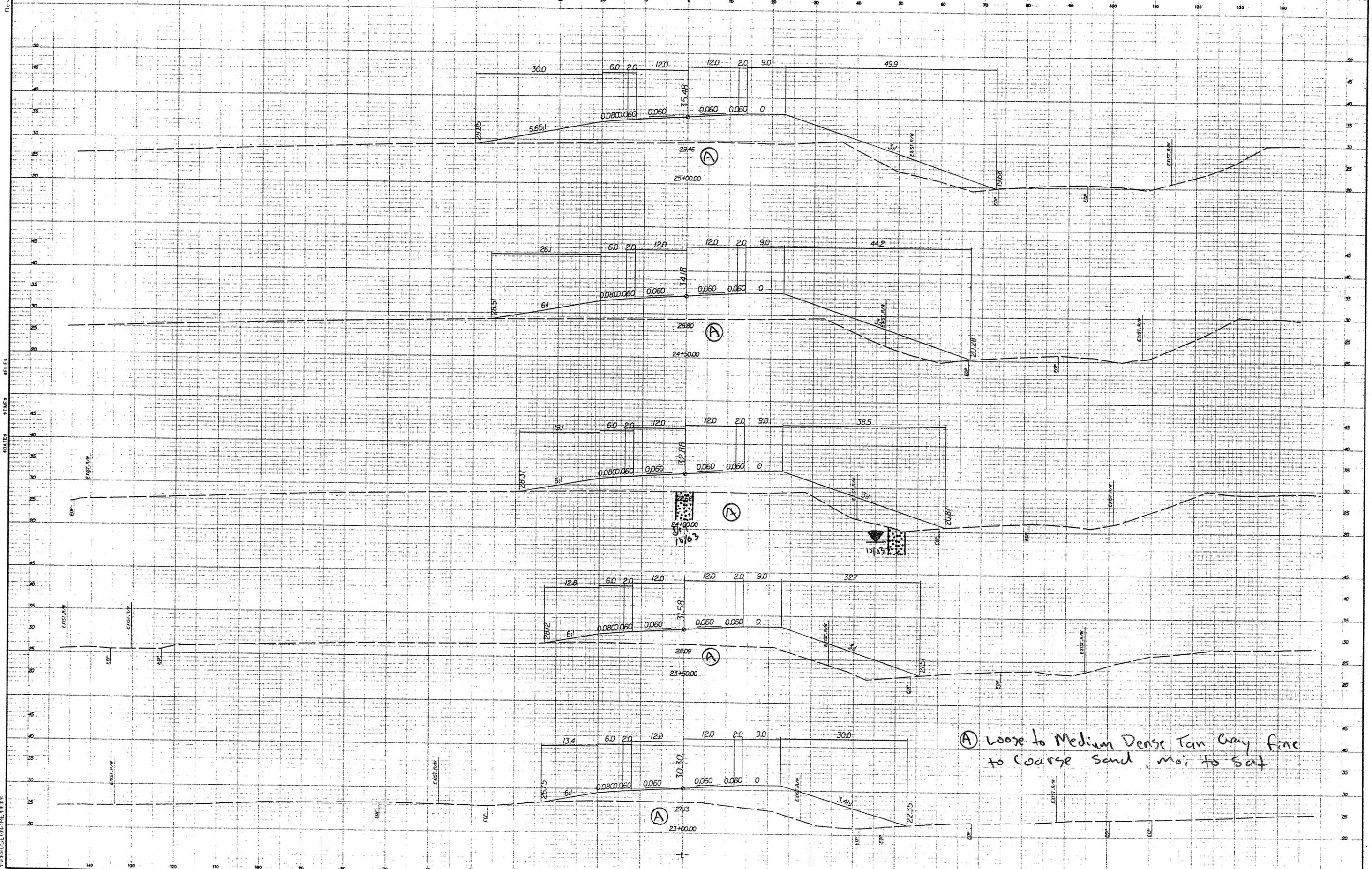
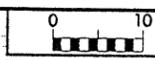
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



- Ⓐ Loose to Medium Dense Tan Fine to Coarse Sand M_{vi} (fill)
- Ⓑ Loose to Very Dense Gray Fine to Coarse Sand and sandy silt, sat
- Ⓒ very soft Dark Brown Muck, wet

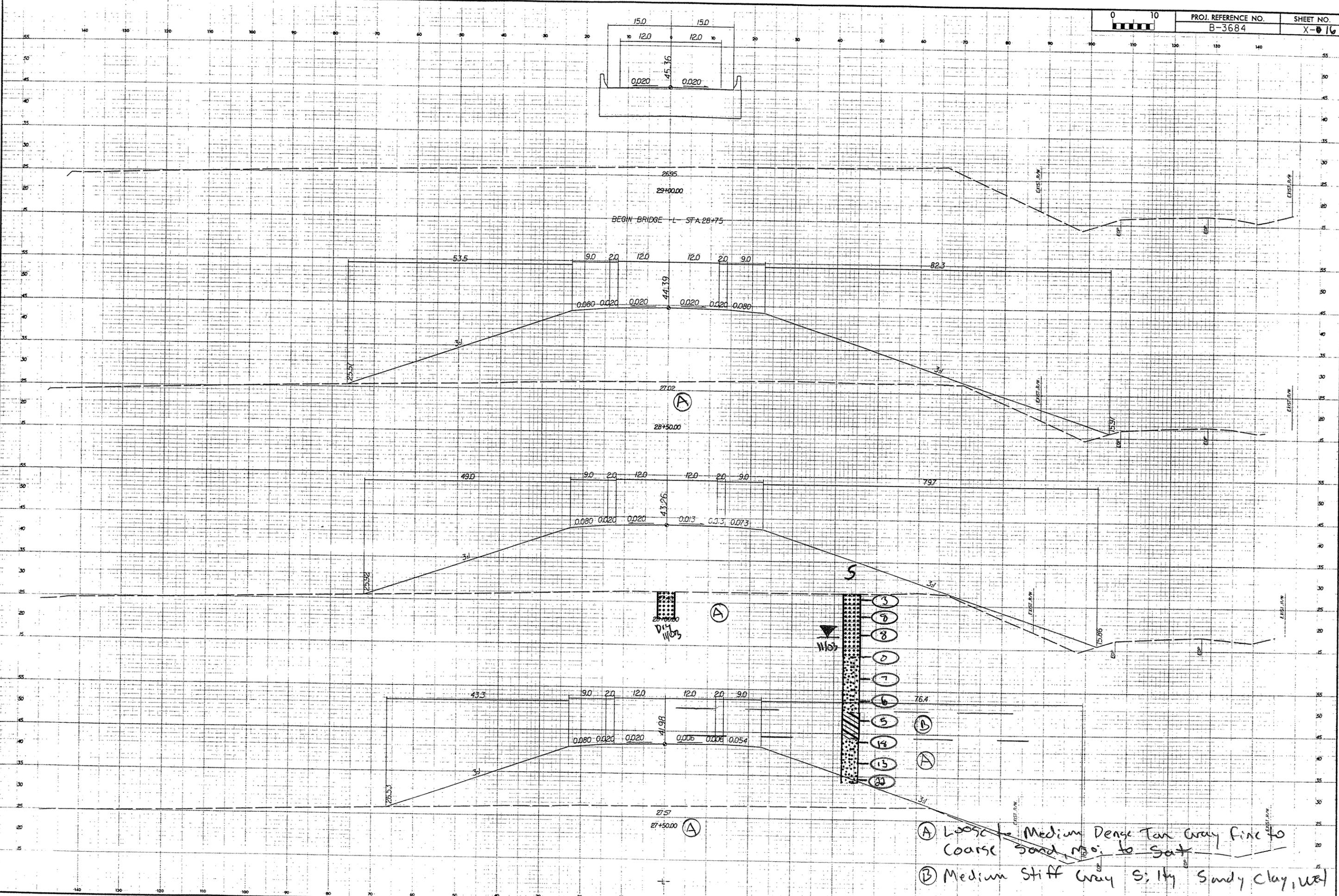
Rev. 3/1/01



Ⓐ Loose to Medium Dense Tan Gray Fine to Coarse Sand, mo. to sat

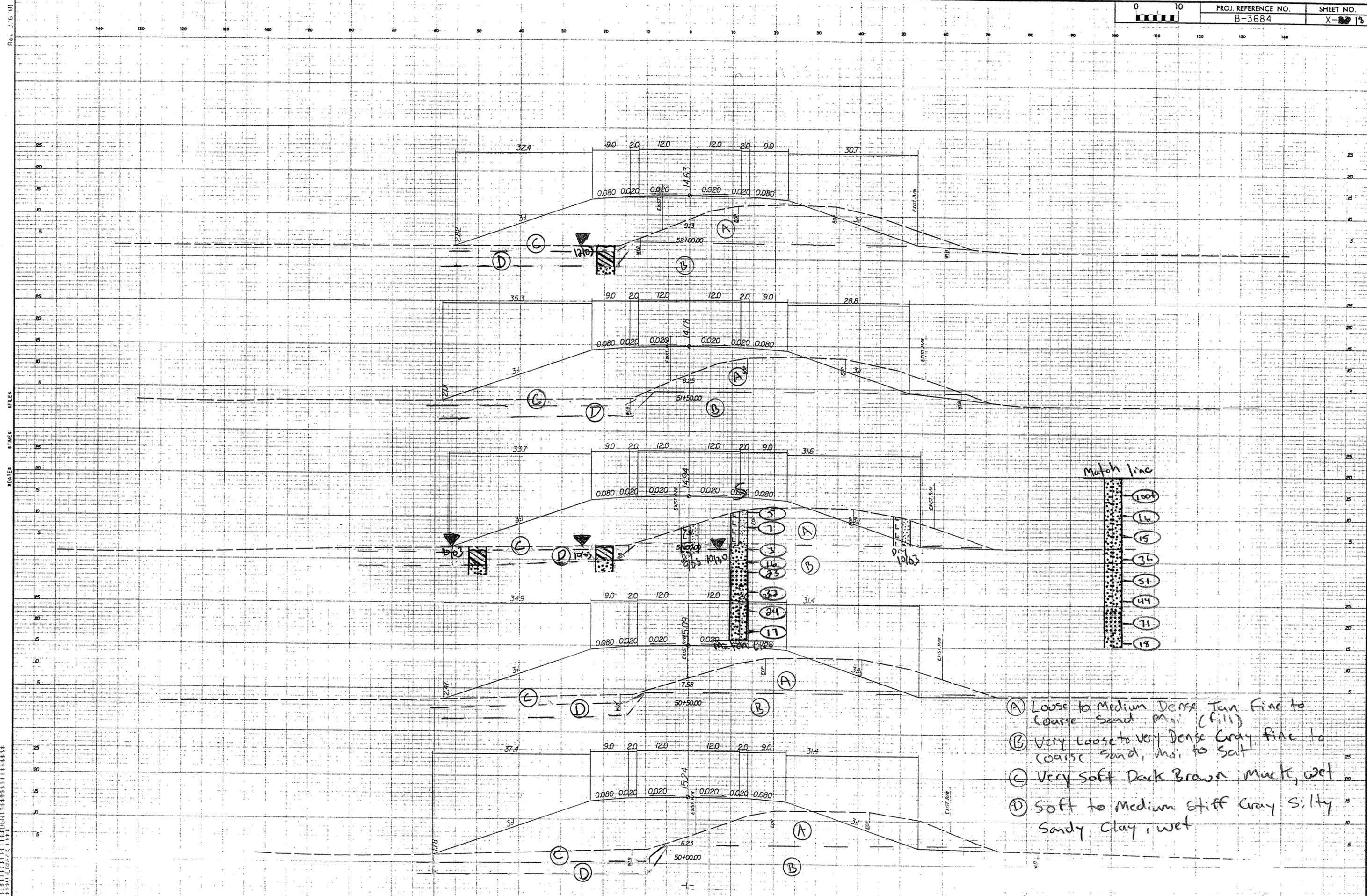
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***** DATE *****
***** USER *****

Rev. 2-15-11

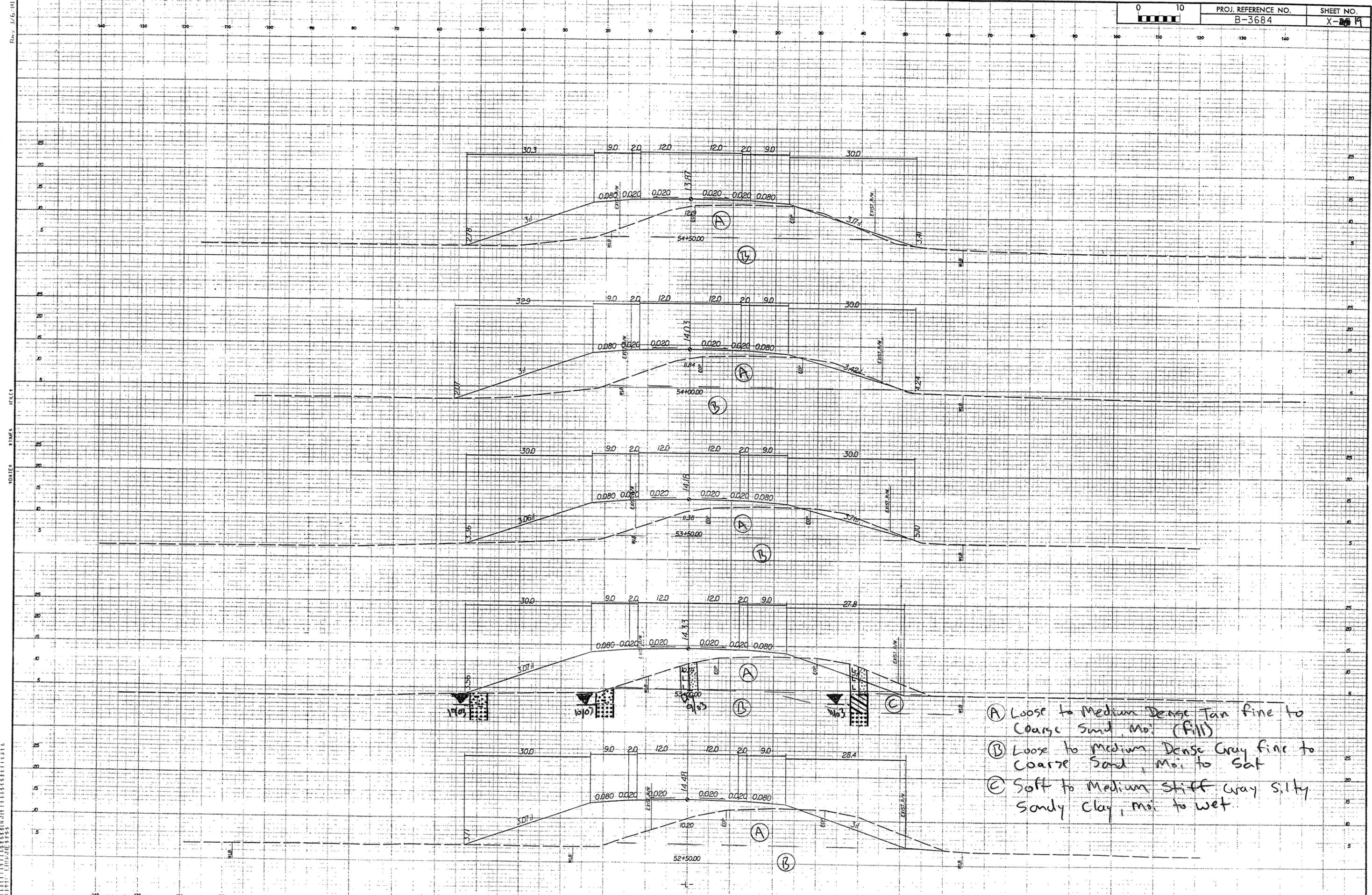


Ⓐ Loose to Medium Dense Tan Gray Fine to Coarse sand, mo: to sat

Ⓑ Medium Stiff Gray Silty Sandy clay, med



- (A) Loose to Medium Dense Tan Fine to Coarse Sand mic. (fill)
- (B) Very Loose to very Dense Gray fine to Coarse Sand, mo. to sat
- (C) Very Soft Dark Brown muck, wet
- (D) Soft to Medium stiff Gray silty Sandy Clay, wet

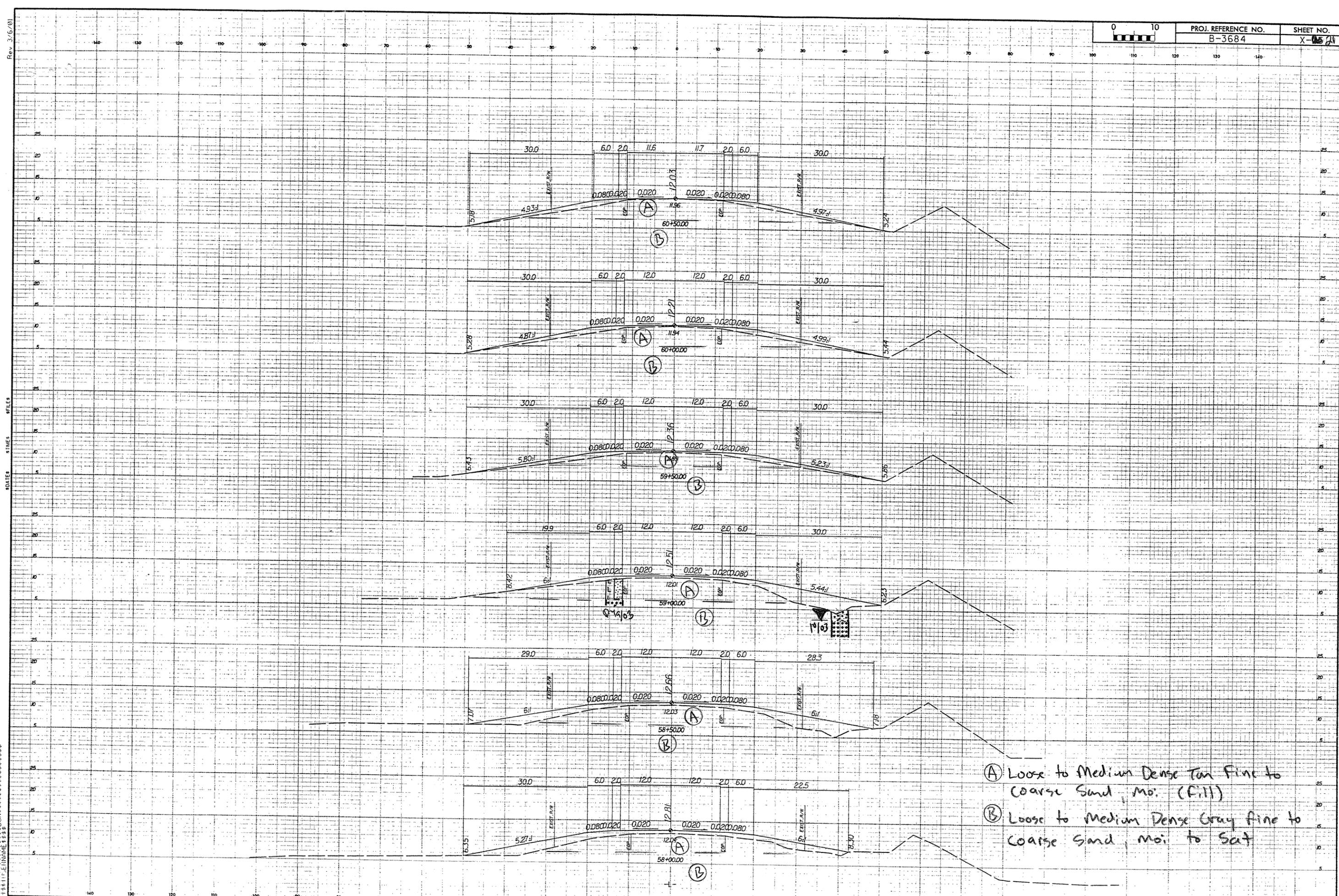


- Ⓐ Loose to Medium Dense Tan fine to Coarse Sand, Mo. (Fill)
- Ⓑ Loose to Medium Dense Gray fine to Coarse Sand, Mo. to Sat
- Ⓒ Soft to Medium stiff Gray Silty Sandy Clay, Mo. to Wet.

(1)
 (1)
 (1)
 (1)
 (1)

STATES
STAGES
FEET

***** TIME *****
***** DATE *****
***** NUMBER *****



- Ⓐ Loose to Medium Dense Tan Fine to Coarse Sand, mo. (fill)
- Ⓑ Loose to Medium Dense Gray fine to Coarse Sand, mo. to Sat