

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33826.1.1 (B-4671)	1	8

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 33826.1.1 (B-4671) F.A. PROJ. BRZ-1532(3)  
COUNTY WAYNE  
PROJECT DESCRIPTION BRIDGE NO. 35 ON SR 1532 OVER NAHUNTA SWAMP AT -L- STA. 17+55

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**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 1919 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-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.

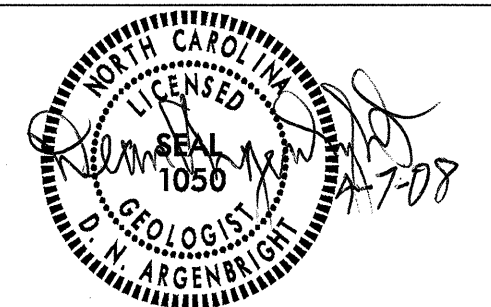
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT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

**PROJECT: 33826.1.1 ID: B-4671**

PERSONNEL

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DATE APRIL, 2008



DRAWN BY: C.P. TURNER

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 ENGINEERING UNIT**

PROJECT REFERENCE NO. 33826.11(B-4671)	SHEET NO. 2 OF 8
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**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 THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: <i>VERY STIFF, GRAY, SAT. CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HEAVY 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.  THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <u>ANGULAR</u> , <u>SUBANGULAR</u> , <u>SUBROUNDED</u> , OR <u>ROUNDED</u> .		HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:  WEATHERED ROCK (WR)  NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.  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 THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SCREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.					
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>		<b>MINERALOGICAL COMPOSITION</b>		<b>WEATHERING</b>		<b>ROCK HARDNESS</b>					
GENERAL CLASS. GRANULAR MATERIALS (< 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS		MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.		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 ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPARS ARE KAOLINIZED TO SOME EXTENT, SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, YIELDS SPT N VALUES &gt; 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 &lt; 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.		<b>COMPRESSIBILITY</b> SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50		FRESH VERY SLIGHT (V SLI.) SLIGHT (SLI.) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE		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.	
<b>PERCENTAGE OF MATERIAL</b>		<b>GROUND WATER</b>		<b>ROCK HARDNESS</b>		<b>BEDDING</b>					
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		WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP		VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT		TERM SPACING 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					
<b>TEXTURE OR GRAIN SIZE</b>		<b>ABBREVIATIONS</b>		<b>INDURATION</b>		<b>FRACURE SPACING</b>					
U.S. STD. SIEVE SIZE (OPENING IN MM) 4 10 40 60 200 270 4.75 2.00 0.42 0.25 0.075 0.053		AR - AUGER REFUSAL HI - HIGHLY BT - BORING TERMINATED MED. - MEDIUM CL - CLAY MICA - MICACEOUS CPT - CONE PENETRATION TEST MOD. - MODERATELY CSE - COARSE NP - NON PLASTIC DMT - DILATOMETER TEST ORG. - ORGANIC DPT - DYNAMIC PENETRATION TEST PMT - PRESSUREMETER TEST e - VOID RATIO SAP. - SAPROLITIC F - FINE SD. - SAND, SANDY FOSS. - FOSSILIFEROUS SL. - SILT, SILTY FRAC. - FRACTURED, FRACTURES SLI. - SLIGHTLY FRAGS. - FRAGMENTS TCR - TRICONE REFUSAL		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.		TERM SPACING 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					
<b>CONSISTENCY OR DENSENESS</b>		<b>EQUIPMENT USED ON SUBJECT PROJECT</b>		<b>INDURATION</b>		<b>FRACURE SPACING</b>					
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )		DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE: CORE SIZE: HAND TOOLS:		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.		TERM SPACING 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					
GENERAL GRANULAR MATERIAL (NON-COHESIVE) VERY LOOSE 4 TO 10 MEDIUM DENSE 10 TO 30 DENSE 30 TO 50 VERY DENSE >50		<input type="checkbox"/> MOBILE B- <input type="checkbox"/> BK-51 <input type="checkbox"/> CME-45C <input checked="" type="checkbox"/> CME-550 <input type="checkbox"/> PORTABLE HOIST <input checked="" type="checkbox"/> CME-45B		<input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL <input type="checkbox"/> B- <input type="checkbox"/> N- <input type="checkbox"/> H- <input type="checkbox"/> POST HOLE DIGGER <input type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST		BENCH MARK: BM #1.R. SPIKE IN BASE OF 14" TWIN RIVERBIRCH ELEVATION: 62.72 FT.					
GENERAL SILT-CLAY MATERIAL (COHESIVE) VERY SOFT 2 TO 4 SOFT 4 TO 8 MEDIUM STIFF 8 TO 15 STIFF 15 TO 30 HARD >30		<input type="checkbox"/> DRILL UNITS: <input type="checkbox"/> MOBILE B- <input type="checkbox"/> BK-51 <input type="checkbox"/> CME-45C <input checked="" type="checkbox"/> CME-550 <input type="checkbox"/> PORTABLE HOIST <input checked="" type="checkbox"/> CME-45B		<input type="checkbox"/> CORE SIZE: <input type="checkbox"/> B- <input type="checkbox"/> N- <input type="checkbox"/> H- <input type="checkbox"/> HAND TOOLS: <input type="checkbox"/> POST HOLE DIGGER <input type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST		NOTES:					
<b>SOIL MOISTURE - CORRELATION OF TERMS</b>		<b>PLASTICITY</b>		<b>INDURATION</b>		<b>FRACURE SPACING</b>					
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION		NONPLASTIC PLASTICITY INDEX (PI) DRY STRENGTH LOW PLASTICITY 0-5 VERY LOW MED. PLASTICITY 6-15 SLIGHT HIGH PLASTICITY 16-25 MEDIUM 26 OR MORE HIGH		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.		TERM SPACING 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					
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		DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		INDURATION: 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: BM #1.R. SPIKE IN BASE OF 14" TWIN RIVERBIRCH ELEVATION: 62.72 FT.					

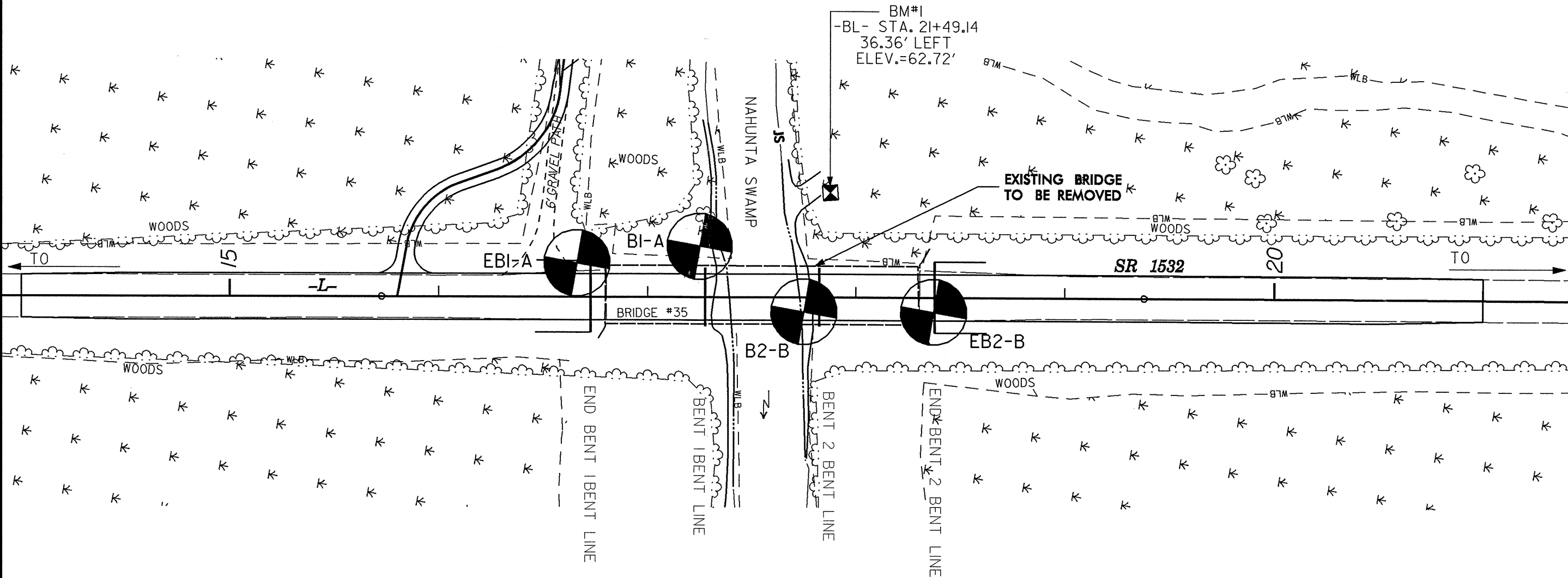
# BRIDGE 35 SITE PLAN

PROJECT REFERENCE NO. SHEET  
B-4671 3 OF 8

## SITE PLAN



SKEW = 90°



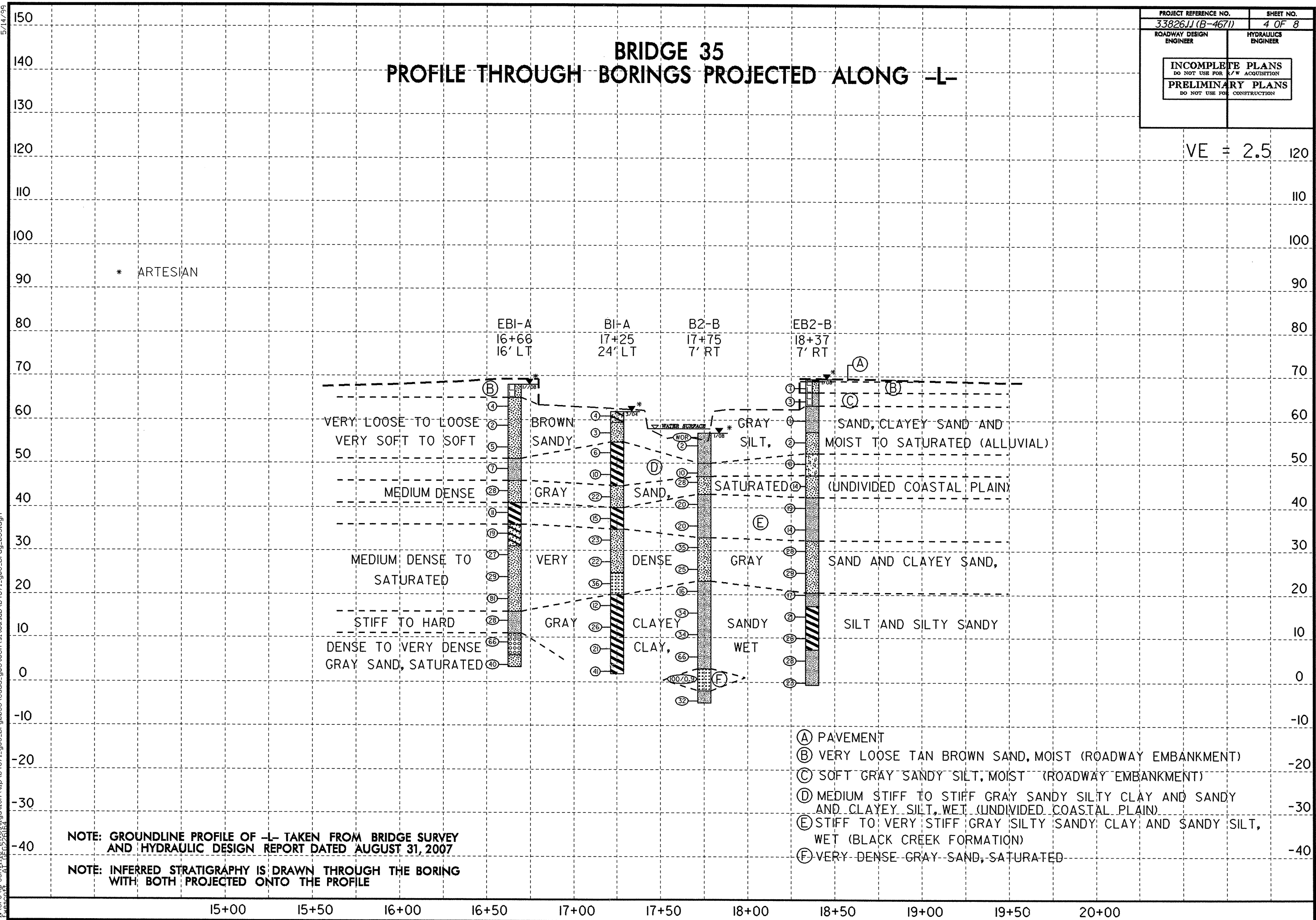
5/14/99

PROJECT REFERENCE NO. 33826JJ (B-4671)	SHEET NO. 4 OF 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

# BRIDGE 35

## PROFILE THROUGH BORINGS PROJECTED ALONG -L-

VE = 2.5



**NOTE: GROUNDLINE PROFILE OF -L- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED AUGUST 31, 2007**

**NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ONTO THE PROFILE**

- (A) PAVEMENT
- (B) VERY LOOSE TAN BROWN SAND, MOIST (ROADWAY EMBANKMENT)
- (C) SOFT GRAY SANDY SILT, MOIST (ROADWAY EMBANKMENT)
- (D) MEDIUM STIFF TO STIFF GRAY SANDY SILTY CLAY AND SANDY AND CLAYEY SILT, WET (UNDIVIDED COASTAL PLAIN)
- (E) STIFF TO VERY STIFF GRAY SILTY SANDY CLAY AND SANDY SILT, WET (BLACK CREEK FORMATION)
- (F) VERY DENSE GRAY SAND, SATURATED

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**NC DOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

PROJECT NO. 33826.1.1	ID. B-4671	COUNTY WAYNE	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION BRIDGE NO. 35 ON SR 1532 OVER NAHUNTA SWAMP			GROUND WTR (ft)
BORING NO. EB1-A	STATION 16+66	OFFSET 16ft LT	ALIGNMENT -L-
COLLAR ELEV. 68.0 ft	TOTAL DEPTH 64.6 ft	NORTHING 629,949	EASTING 2,348,416
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 02/04/08	COMP. DATE 02/04/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
70														GROUND SURFACE	0.0
65	64.0	4.0												BROWN SAND, MOIST (ROADWAY EMBANKMENT)	3.0
60	59.7	8.3	2	2	2						SS-10			GRAY SAND, MOIST TO SATURATED (ALLUVIAL)	
55	54.7	13.3	1	1	1										
50	49.7	18.3	6	3	2						SS-11			GRAY CLAYEY SANDY SILT, WET (UNDIVIDED COASTAL PLAIN)	17.0
45	44.7	23.3	4	3	4						SS-12			GRAY SAND, SATURATED	22.0
40	39.7	28.3	12	13	15						SS-13			GRAY SILTY SANDY CLAY, WET (BLACK CREEK FORMATION)	27.0
35	34.9	33.1	3	5	6						SS-14	12%		GRAY CLAYEY SAND, SATURATED	32.0
30	29.9	38.1	5	8	11						SS-15			GRAY SAND, SATURATED	37.0
25	24.9	43.1	8	12	15						SS-16			GRAY SAND, SATURATED	37.0
20	19.9	48.1	10	13	16										
15	14.9	53.1	18	25	56						SS-17			GRAY CLAYEY SANDY SILT, WET	52.0
10	9.9	58.1	4	16	12						SS-18			GRAY SAND, SATURATED	57.0
5	4.9	63.1	12	29	37						SS-19			GRAY SAND, SATURATED	62.0
0			6	16	24						SS-20			Boring Terminated at Elevation 3.4 ft in dense sand	64.6
-5														Hydraulic head was not measured in this boring.	

PROJECT NO. 33826.1.1	ID. B-4671	COUNTY WAYNE	GEOLOGIST Stone, J. L.
SITE DESCRIPTION BRIDGE NO. 35 ON SR 1532 OVER NAHUNTA SWAMP			GROUND WTR (ft)
BORING NO. B1-A	STATION 17+25	OFFSET 24ft LT	ALIGNMENT -L-
COLLAR ELEV. 61.9 ft	TOTAL DEPTH 60.0 ft	NORTHING 630,006	EASTING 2,348,398
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 03/16/04	COMP. DATE 03/16/04	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
65														GROUND SURFACE	0.0
60	61.9	0.0									SS-1			BROWN CLAYEY SAND, MOIST (ALLUVIAL)	2.5
55	58.0	3.9	1	2	1						SS-2			BROWN SAND, MOIST TO SATURATED	
50	53.4	8.5	2	2	4									GRAY SANDY SILTY CLAY, WET (UNDIVIDED COASTAL PLAIN)	7.0
45	48.4	13.5	2	4	6						SS-3				
40	43.4	18.5	5	10	12						SS-4			GRAY SAND, SATURATED	17.0
35	38.4	23.5	3	6	9						SS-5			GRAY SILTY SANDY CLAY, WET (BLACK CREEK FORMATION)	22.0
30	33.4	28.5	5	9	14						SS-6			GRAY SAND, SATURATED	27.0
25	28.4	33.5	6	11	11										
20	23.4	38.5	5	16	20						SS-7				
15	18.4	43.5	3	5	7						SS-8			GRAY SILTY SANDY CLAY, WET	42.0
10	13.4	48.5	7	10	16										
5	8.4	53.5	6	10	11						SS-9				
0	3.4	58.5	12	21	20									Boring Terminated at Elevation 1.9 ft in hard silty sandy clay	60.0
-5														Hydraulic head was not measured in this boring.	

NC DOT BORE DOUBLE B4671\_GEO\_BRDG.GPJ\_NC\_DOT.GDT\_04/07/08



**NC DOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

PROJECT NO. 33826.1.1	ID. B-4671	COUNTY WAYNE	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION BRIDGE NO. 35 ON SR 1532 OVER NAHUNTA SWAMP			GROUND WTR (ft)
BOHRING NO. B2-B	STATION 17+75	OFFSET 7ft RT	ALIGNMENT -L-
COLLAR ELEV. 57.0 ft	TOTAL DEPTH 61.8 ft	NORTHING 630,060	EASTING 2,348,420
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/29/08	COMP. DATE 01/30/08	SURFACE WATER DEPTH 0.2ft	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
60														
	57.0	0.0											WATER SURFACE (01/29/08)	0.0
55	55.1	1.9	WOR	WOR	WOR						SS-21		GRAY SANDY SILT, WET (ALLUVIAL)	
			WOR	WOH	2									
50	48.8	8.2	2	4	6						SS-22		GRAY CLAYEY SANDY SILT, WET (UNDIVIDED COASTAL PLAIN)	7.0
	46.7	10.3									SS-23		GRAY SAND, SATURATED	10.0
45			9	12	16									
	41.7	15.3	5	7	13						SS-24		GRAY SANDY SILT, WET (BLACK CREEK FORMATION)	14.0
40														
	36.7	20.3	7	7	13									
35														
	31.7	25.3	9	16	19						SS-25		GRAY SAND, SATURATED	24.0
30														
	26.7	30.3	11	10	15						SS-26			
25														
	21.7	35.3	4	7	9						SS-27		GRAY CLAYEY SANDY SILT, WET	34.0
20														
	16.7	40.3	10	13	21									
15														
	11.7	45.3	13	16	18						SS-28			
10														
	6.7	50.3	16	34	32									
5														
	1.7	55.3	31	48	52/0.4						SS-29			
0														
	-3.3	60.3	8	14	18									
-5														
-10														
-15														
-20														

PROJECT NO. 33826.1.1	ID. B-4671	COUNTY WAYNE	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION BRIDGE NO. 35 ON SR 1532 OVER NAHUNTA SWAMP			GROUND WTR (ft)
BOHRING NO. EB2-B	STATION 18+37	OFFSET 7ft RT	ALIGNMENT -L-
COLLAR ELEV. 69.3 ft	TOTAL DEPTH 69.9 ft	NORTHING 630,121	EASTING 2,348,409
DRILL MACHINE CME-45B	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 02/05/08	COMP. DATE 02/05/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
70														
	68.3	1.0	4	4	3						SS-31		GROUND SURFACE	0.0
65														
	65.3	4.0	2	1	2						SS-32		PAVEMENT	0.9
													TAN SAND, MOIST (ROADWAY EMBANKMENT)	3.0
													DARK GRAY SANDY SILT, MOIST (ROADWAY EMBANKMENT)	6.0
60													DARK GRAY SANDY SILT, MOIST TO WET (ALLUVIAL)	6.0
	60.9	8.4	WOH	WOH	1									
55											SS-33		BROWN SAND, SATURATED	12.0
	55.9	13.4	1	1	1									
50														
	50.9	18.4	2	3	3						SS-34		GRAY CLAYEY SILT, WET (UNDIVIDED COASTAL PLAIN)	17.0
45														
	45.9	23.4	5	6	8						SS-35		GRAY SAND, SATURATED	22.0
40														
	40.9	28.4	5	8	11						SS-36		GRAY SANDY SILT, WET (BLACK CREEK FORMATION)	27.0
35														
	35.9	33.4	4	5	9									
30														
	30.9	38.4	8	13	15						SS-37		GRAY SAND, SATURATED	37.0
25														
	25.9	43.4	11	12	17									
20														
	20.9	48.4	12	9	8						SS-38		GRAY SANDY SILT, WET	48.9
15														
	15.9	53.4	6	9	12						SS-39		GRAY SILTY CLAY, WET	52.0
10														
	10.9	58.4	9	12	14									
5														
	5.9	63.4	8	13	15						SS-40		GRAY SANDY SILT, WET	62.0
0														
	0.9	68.4	8	9	14									
-5														
-10														
-15														
-20														

NC DOT BORE DOUBLE B4671\_GEO\_BRDG.GPJ\_NC\_DOT.GDT\_04/07/08

## Bridge No. 35 on SR 1532 over Nahunta Swamp

HOLE #	SAMPLE #	PASS 10	PASS 40	PASS 200	CSESAND	FINESAND	SI	CL	LL	PI	CLASS	DEPTH	MOIST. ORG.
B1-A	SS-1	100	78	31	39.8	32.3	5.8	22.2	29	13	A-2-6(0)	1.0-1.5	
	SS-2	100	100	32	0.6	76.0	12.3	11.1	22	NP	A-2-4(0)	3.9-5.4	
	SS-3	100	100	78	0.6	28.9	30.2	40.4	47	27	A-7-6(21)	13.5-15.0	
	SS-4	100	84	23	52.0	27.5	11.4	9.1	24	NP	A-2-4(0)	18.5-20.0	
	SS-5	100	93	60	9.3	40.0	34.6	16.1	44	16	A-7-6(8)	23.5-25.0	
	SS-6	100	84	25	34.3	43.6	12.0	10.1	27	6	A-2-4(0)	28.5-30.0	
	SS-7	98	79	8	43.2	51.0	2.8	3.0	24	NP	A-3(0)	38.5-40.0	
	SS-8	100	99	82	1.0	33.5	21.1	44.4	44	27	A-7-6(22)	43.5-45.0	
	SS-9	100	99	47	0.8	58.5	8.4	32.3	43	22	A-7-6(6)	53.5-55.0	
EB1-A	SS-10	97	81	28	28.5	49.3	12.1	10.0	18	NP	A-2-4(0)	4.0-5.5	
	SS-11			NOT ENOUGH SAMPLE								13.3-14.8	
	SS-12			NOT ENOUGH SAMPLE								18.3-19.8	
	SS-13	100	73	12	64.0	26.3	7.7	2.0	17	NP	A-2-4(0)	23.3-24.8	
	SS-14	63	56	42	15.0	27.9	39.0	18.1	41	14	A-7-6(3)	28.3-29.8	11.5
	SS-15	99	85	33	27.9	42.3	17.6	12.1	32	14	A-2-6(1)	33.1-34.6	
	SS-16	100	92	15	30.3	58.5	11.2	0.0	22	NP	A-2-4(0)	38.1-39.6	
	SS-17	100	90	14	30.9	57.7	5.8	5.7	20	NP	A-2-4(0)	48.1-49.6	
	SS-18	100	99	59	4.6	47.8	21.7	25.8	25	5	A-4(1)	53.1-54.6	
	SS-19	94	33	8	78.7	14.3	1.3	5.7	18	NP	A-1-b(0)	58.1-59.6	
	SS-20	100	90	33	13.9	57.1	11.2	17.8	19	NP	A-2-4(0)	63.1-64.6	
B2-B	SS-21	100	92	40	18.0	49.8	20.5	11.7	23	NP	A-4(0)	1.9-3.4	
	SS-22	100	100	78	0.4	37.1	28.6	33.9	34	10	A-4(7)	8.2-9.7	
	SS-23	100	80	21	44.4	37.3	10.6	7.7	24	NP	A-2-4(0)	10.3-11.8	
	SS-24	100	94	59	11.5	45.6	33.2	9.7	31	4	A-4(1)	15.3-16.8	
	SS-25	100	95	22	16.5	66.8	11.0	5.7	25	NP	A-2-4(0)	25.3-26.8	
	SS-26	98	82	12	37.7	51.5	3.1	7.7	23	NP	A-2-4(0)	30.3-31.8	
	SS-27	100	98	78	2.6	29.9	43.7	23.8	38	9	A-4(8)	35.3-36.8	
	SS-28	100	100	65	0.4	57.9	15.8	25.8	21	3	A-4(0)	45.3-46.8	
	SS-29	100	97	8	43.8	50.5	2.1	3.6	16	NP	A-3(0)	55.3-56.7	
	SS-30	92	69	47	33.1	21.0	22.1	23.8	31	9	A-4(2)	60.3-61.8	
	EB2-B	SS-31	100	77	20	45.6	37.1	1.5	15.7	24	3	A-2-4(0)	1.0-2.5
SS-32		100	93	39	14.7	55.9	15.6	13.7	23	NP	A-4(0)	4.0-5.5	
SS-33		100	97	23	14.9	66.8	10.6	7.7	29	NP	A-2-4(0)	13.4-14.9	
SS-34		100	99	90	1.0	18.6	32.4	48.0	55	10	A-5(15)	18.4-19.9	
SS-35		100	65	31	49.0	25.8	17.5	7.7	26	6	A-2-4(0)	23.4-24.9	
SS-36		100	98	59	6.3	52.9	33.2	7.7	31	5	A-4(2)	28.4-29.9	
SS-37		100	91	11	26.8	65.8	5.8	1.6	22	NP	A-2-4(0)	38.4-39.9	
SS-38		96	78	39	37.5	31.1	15.6	15.7	20	NP	A-4(0)	48.9-49.9	
SS-39		100	99	91	1.0	13.1	33.8	52.1	52	14	A-7-5(18)	53.4-54.9	
SS-40		100	100	42	0.6	74.7	15.0	9.7	19	NP	A-4(0)	63.4-64.9	



**FIELD  
SCOUR REPORT**

WBS: 33826.1.1 TIP: B-4671 COUNTY: Wayne

DESCRIPTION(1): Bridge No. 35 on SR 1532 over Nahunta Swamp

**EXISTING BRIDGE**

Information from: Field Inspection  Microfilm \_\_\_\_\_ (reel \_\_\_\_\_ pos: \_\_\_\_\_)  
Other (explain) \_\_\_\_\_

Bridge No.: 35 Length: 150' Total Bents: 6 Bents in Channel: 2 Bents in Floodplain: 4  
Foundation Type: Timber piles

**EVIDENCE OF SCOUR(2)**

Abutments or End Bent Slopes: None noted

Interior Bents: None noted

Channel Bed: Note noted

Channel Bank: 3 to 5 feet of the north and south channel bank eroded beneath bridge.

**EXISTING SCOUR PROTECTION**

Type(3): Wooden wingwalls

Extent(4): 6' outside edge of bridge

Effectiveness(5): Appears satisfactory

Obstructions(6): Debris and branches in channel

**INSTRUCTIONS**

- 1 Describe the specific site's location, including route number and body of water crossed.
- 2 Note scour evidence at existing end bents or abutments (e.g. undermining, sloughing, degradations).
- 3 Note existing scour protection (e.g. rip rap).
- 4 Describe extent of existing scour protection.
- 5 Describe whether or not the scour protection appears to be working.
- 6 Note obstructions such as dams, fallen trees, debris at bents, etc.
- 7 Describe the channel bed material based on observation and/or samples. Include any lab results with report.
- 8 Describe the channel bank material based on observation and/or samples. Include any lab results with report.
- 9 Describe the material covering the banks (e.g. grass, trees, rip rap, none).
- 10 Determine the approximate floodplain width from field observation or a topographic map.
- 11 Describe the material covering the floodplain (e.g. grass, trees, crops).
- 12 Use professional judgement to specify if the stream is degrading, aggrading, or static.
- 13 Describe potential and direction of the stream to migrate laterally during the bridge's life (approx. 100 years).
- 14 Give the design scour elevation (DSE) expected over the life of the bridge (approx. 100 years). This elevation can be given as a range across the site, or for each bent. Discuss the relationship between the Hydraulics Unit theoretical scour and the DSE. If the DSE is dependent on scour counter measures, explain (e.g. rip rap armoring on slopes). The DSE is based on the erodability of materials, giving consideration to the influence of joints, foliation, bedding characteristics, % core recovery, % RQD, differential weathering, shear strength, observations at existing structures, other tests deemed appropriate, and overall geologic conditions at the site.

**DESIGN INFORMATION**

Channel Bed Material(7): Sandy silt (SS-21)

Channel Bank Material(8): Sand (SS-10, SS-2), sandy silt (SS-32) and clayey sand (SS-1)

Channel Bank Cover(9): Wooded

Floodplain Width(10): 500'

Floodplain Cover(11): Wooded

Stream is(12): Aggrading  Degrading \_\_\_\_\_ Static \_\_\_\_\_

Channel Migration Tendency(13): Not likely, but possibly north toward End Bent 2

Observations and Other Comments: Creek has been channelized

**DESIGN SCOUR ELEVATIONS(14)**

Feet  Meters \_\_\_\_\_

	BENTS									
	B1	B2								
25 YEAR SCOUR	60.5	51.8								

Comparison of DSE to Hydraulics Unit theoretical scour:  
Design Scour Elevation agrees with the Hydraulics Unit's 25 yr. theoretical scour

**SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL**

Bed or Bank									
Sample No.									
Retained #4									
Passed #10									
Passed #40									
Passed #200									
Coarse Sand									
Fine Sand									
Silt									
Clay									
LL									
PI									
AASHTO									
Station									
Offset									
Depth									

See Sheet 7,  
"Soil Test Results",  
for samples:  
Channel Bed SS-21  
Channel Bank SS-1, SS-2,  
SS-10, SS-32

Reported by: Fred M. [Signature]

Date: 4/7/08