STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33455.1.1 (B-4097)	1	20

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

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 33455.1.1 (B-4097) F.A. PROJ. BRSTP-1147(6)

COUNTY DAVIDSON

PROJECT DESCRIPTION BRIDGE 405 OVER SECOND POTT'S CREEK ON SR 1147

SITE DESCRIPTION

ID: B-4097

PROJECT: 33455.1.1

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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 (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.

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PERSONNEL

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INVESTIGATED BY J.E. BEVERLY

CHECKED BY C.B. LITTLE

SUBMITTED BY C.B. LITTLE

DATE AUGUST 2008

NORTH CAROLINA PROFESSIONAL SEAL 25521 ENGINEER JOHN L. PILIPCHUK 10/3/08

DRAWN BY: J.K. McCLURE

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.

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PROJECT REFERENCE NO.	SHEET NO.
33455.1.1 (B-4097)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS 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:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1			A-3	A-2			A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b			A-2-4	A-2-5	A-2-6 A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING # 10 # 40 # 200	50 MX 30 MX 15 MX		51 MN 25 MX 10 MX		35 MX	35 MX	35 MX 35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
LIQUID LIMIT PLASTIC INDEX	6 MX		NP		40 MX 10 MX	41 MN 10 MX	40 MX 41 MN 11 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0		0		4 MX	8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND		SILTY OR CLAYEY GRAVEL AND SAND			SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

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

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 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

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SOUNDING ROD
- SPT CPT DPT DMT VST PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- SPT N-VALUE
- REF — SPT REFUSAL

SAMPLE DESIGNATIONS
S - BULK SAMPLE
SS - SPLIT SPOON SAMPLE
ST - SHELBY TUBE SAMPLE
RS - ROCK SAMPLE
RT - RECOMPACTED TRIAXIAL SAMPLE
CBR - CALIFORNIA BEARING RATIO SAMPLE

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ_w - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [X] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [X] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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 YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE 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 GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - 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.

BENCH MARK: BL-5 (4097)
-L- STA. 16+22.99=
-BL-5 PINC STA. 26+09.77 (16.25 RT.) ELEVATION: 662.05 FT.

NOTES:

REVISED 02/23/06

PROJECT REFERENCE NO.	SHEET
33455.1.1 (B-4097)	3

SITE PLAN

0 100 200

FEET

NAD 8395

510.00'
N73°51'16"E

LANNING FAMILY TRUST
C/O FREDDIE DARRELL LANNING
DB 1337 PG 597

FRANK S. STOKES AND WIFE
RACHEL F. STOKES
DB 354 PG 158

-L- BM 1
STA. 11+89.43
OFFSET 179.60' LEFT
ELEVATION= 661.31
-BL- STA. 21+63
OFFSET 162.70' LEFT

-L- PT STA. 10+70.25

-L- STA. 11+35.52 =
-BL- 4 PINC STA. 21+20.62
(20.54' LT.)

ALLUVIUM

RESIDUAL

ROBERT C. MACKINNON AND WIFE
TAMMY EVERHART MACKINNON
DB 963 PG 934

RESIDUAL

ALLUVIUM

WINDY MICHELLE COLE-HEDRICK
DB 948 PG 317
DB 948 PG 319
DB 948 PG 316

-BY- 8 PINC 5+00.00

RESIDUAL

ROADWAY EMBANKMENT (FILL) OLD SALISBURY ROAD SR 1147 23' BST

ROADWAY EMBANKMENT (FILL)

N 75°04'12.7" E

N 75°08'13.0" E

-DETOUR-

N 79°22'59.4" E

N 65° 05' 29.0" E

-L- PC STA. 9+50.07 =
-DETOUR- PC STA. 10+00.00

-DETOUR- PRC STA. 11+68.43

-DETOUR- PT STA. 13+40.26

-L- POT STA. 19+61.00

-DETOUR- PT STA. 20+07.93 =
-L- POT STA. 19+50.00
-BL- 6
-BL- PINC 31+68.82 =
-BY- POT 7+45.13
S 67° 07' 07.57" W TO
-L- POT STA. 19+61.00
DIST. = 221.21'

-DETOUR- PRC STA. 18+41.45

-L- STA. 16+22.99 =
-BL- 5 PINC STA.
26+09.77 (16.25' RT.)
-T- PINC STA. 7+02.34
ELEV=662.05

-DETOUR- PC STA. 16+74.27

FRANK S. STOKES ET ALS
DB 172 PG 425
DB 99 PG 33

DAVIDSON ELECTRIC MEMBERSHIP CORPORATION
DB 1021 PG 389

BEGIN TIP PROJECT B-4097
-L- POC STA. 10+00.00

END TIP PROJECT B-4097
-L- POT STA. 19+00.00

-L-	-DETOUR-			
PI STA. 10+10.25	PI STA. 10+85.48	PI STA. 12+54.94	PI STA. 17+58.41	PI STA. 19+25.23
N 67° 25' 08.3" E (BACK)	N 67° 25' 08.3" E (BACK)	Δ = 16° 24' 30.1" (LT)	Δ = 15° 57' 52.5" (LT)	N 75° 04' 12.7" E (AHEAD)
Δ = 7° 39' 04.3" (RT)	Δ = 24° 07' 34.8" (RT)	D = 9° 32' 57.5"	D = 9° 32' 57.5"	Δ = 15° 53' 52.2" (RT)
D = 6° 21' 58.3"	D = 14° 19' 26.2"	L = 171.83'	L = 167.18'	D = 9° 32' 57.5"
L = 120.18'	L = 168.43'	T = 86.51'	T = 84.14'	L = 166.48'
T = 60.18'	T = 85.48'	R = 600.00'	R = 600.00'	T = 83.78'
R = 900.00'	R = 400.00'	SE = 0.02	SE = 0.02	R = 600.00'
SE = SEE PLANS	SE = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS			RO = SEE PLANS

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4097	4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BEGIN OVERLAY
-L- STA. 9+50.07

BEGIN GRADE
END OVERLAY
-L- STA. 10+00.00
ELEV. = 675.20'

PI = 12+25.00
EL = 664.54'
VC = 356'
K = 80

-L-

PI = 17+75.00
EL = 662.89'
VC = 245'
K = 86

21" CORED SLAB BRIDGE
1 SPAN @ 40'
2 SPAN @ 50'
1 SPAN @ 40'
℄ -L- STA. 15+13.00
℄ ELEV. = 663.68
SKEW = 90 DEGREES

END OVERLAY
-L- STA. 19+50.00

END GRADE
BEGIN OVERLAY
-L- STA. 19+00.00
ELEV. = 666.06'

BEGIN BRIDGE
-L- STA. 14+23.00

SS-12
SS-13
SS-14
B1-B
14+63.00 -L-
23.00 RT

SS-9
SS-10
SS-11
B2-B
15+14.00 -L-
17.10 RT.

SS-1
SS-2
SS-3
SS-4
B3-B
15+68.00 -L-
17.10 RT.

SS-5
SS-6
SS-7
SS-8
EB2-B
16+02.00 -L-
16.00 RT.

EB1-A
14+26.00 -L-
31.50 LT.

END BRIDGE
-L- STA. 16+03.00

(-)4.7374%
(-)0.3000%
(+)2.5368%

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1650	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 657.6	FT
BASE DISCHARGE	= 2450	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 658.5	FT
OVERTOPPING DISCHARGE	= 7000	CFS
OVERTOPPING FREQUENCY	= 500++	YRS
OVERTOPPING ELEVATION	= 663.3	FT
NORMAL WATER SURFACE ELEVATION	= 649.8	FT
DATE OF SURVEY	= 11/8/2007	

ROADWAY EMBANKMENT (FILL)
ALLUVIUM
GRAY & WHITE V. LOOSE TO LOOSE SAT. TO MOIST CLAYEY SILTY SAND & SAND (A-1-B)
RESIDUAL
WEATHERED ROCK (SEV. WEATH. CRYSTALLINE ROCK)
BRN & GRAY TO RED-BRN & BRN-GRAY MED. STIFF TO V. STIFF MOIST TO SAT. LOW PLASTIC SILTY SANDY CLAY & SANDY SILTY CLAY (A-6, A-7-6)
BRN & GRAY LOOSE TO MED. DENSE MOIST TO WET SILTY SAND (A-2-4)
BRN & WHITE TO GRAY & RED-BRN MED. DENSE TO V. DENSE MOIST SILTY SAND (A-2-4, A-1-B)

END BENT EXCAVATION (STRUCTURE PAY ITEM)

NOTES:
1.) FOR -L- PLAN VIEW SEE SHEET 4.3
~~2.) FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-?~~

BM#1 RAILROAD SPIKE IN SOUTHWEST ROOT OF A BLACK GUM
179.60' LT. OF -L- STA. 11+89.44 ELEV. = 661.31' N 742,390 E 1,605,006

BEGIN GRADE -DETOUR- STA. 11+28.16
ELEV. = 671.04'

PI = 13+40.00
EL = 658.87'
VC = 420'
K = 65

-DETOUR-

PI = 18+00.00
EL = 662.39'
VC = 75'
K = 77

END GRADE -DETOUR- STA. 18+87.35
ELEV. = 663.91'

BEGIN BRIDGE
-DETOUR- STA. 15+57 +/-

SS-1
SS-2
SS-3
SS-4
SS-5
EB2-B DET
16+27.00 -DETOUR-
10.00 RT.

EB1-B DET
15+87.00 -DETOUR-
10.00 RT.

END BRIDGE
-DETOUR- STA. 16+27 +/-

(-)5.7465%
(+)0.7651%
(+)0.7651%
(+)1.7441%

DETOUR BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 880	CFS
DESIGN FREQUENCY	= 5	YRS
DESIGN HW ELEVATION	= 655.7	FT
BASE DISCHARGE	= 2450	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 662.0	FT
OVERTOPPING DISCHARGE	= 2300	CFS
OVERTOPPING FREQUENCY	= 100-	YRS
OVERTOPPING ELEVATION	= 660.0	FT
NORMAL WATER SURFACE ELEVATION	= 649.8	FT
DATE OF SURVEY	= 11/8/2007	

ROADWAY EMBANKMENT (FILL) OVER RESIDUAL
ALLUVIUM
BRN & GRAY MED. STIFF TO STIFF MOIST MED. PLASTIC SANDY SILTY CLAY (A-7-6)
BRN V. LOOSE TO LOOSE WET SILTY SAND (A-2-4)
RESIDUAL
BRN MED. DENSE TO V. DENSE MOIST SILTY SAND (A-2-4)
WEATHERED ROCK (SEV. WEATH. CRYSTALLINE ROCK)
BRN LOOSE SAT. SAND (A-2-4)
BRN MED. DENSE TO V. DENSE MOIST SILTY SAND (A-2-4)

NOTES:
1.) FOR -DETOUR- PLAN VIEW SEE SHEET 2-A.3

2j-AUG-2008 14:06
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mmcline

0	10	20
FEET		

PROJECT REFERENCE NO.	SHEET
33455.1.1 (B-4097)	5
Section Thru End Bent One STA. 14+23.00 -L- CENTERLINE SKEW=90°00'00"	

EB1-A
14+26.00 -L-
31.50 LT.

GROUND SURFACE

ROADWAY EMBANKMENT
(FILL)

ALLUVIUM

BRN-GRAY MED. STIFF MOIST SANDY SILTY CLAY (A-6)

ALLUVIUM

6 — 05/08

5

GRAY LOOSE SAT. TO MOIST CLAYEY SILTY SAND (A-1-B)

4

7

RESIDUAL

RESIDUAL

15

43

BRN & WHITE DENSE TO V. DENSE MOIST SILTY SAND (A-2-4)

83

73

76

BT

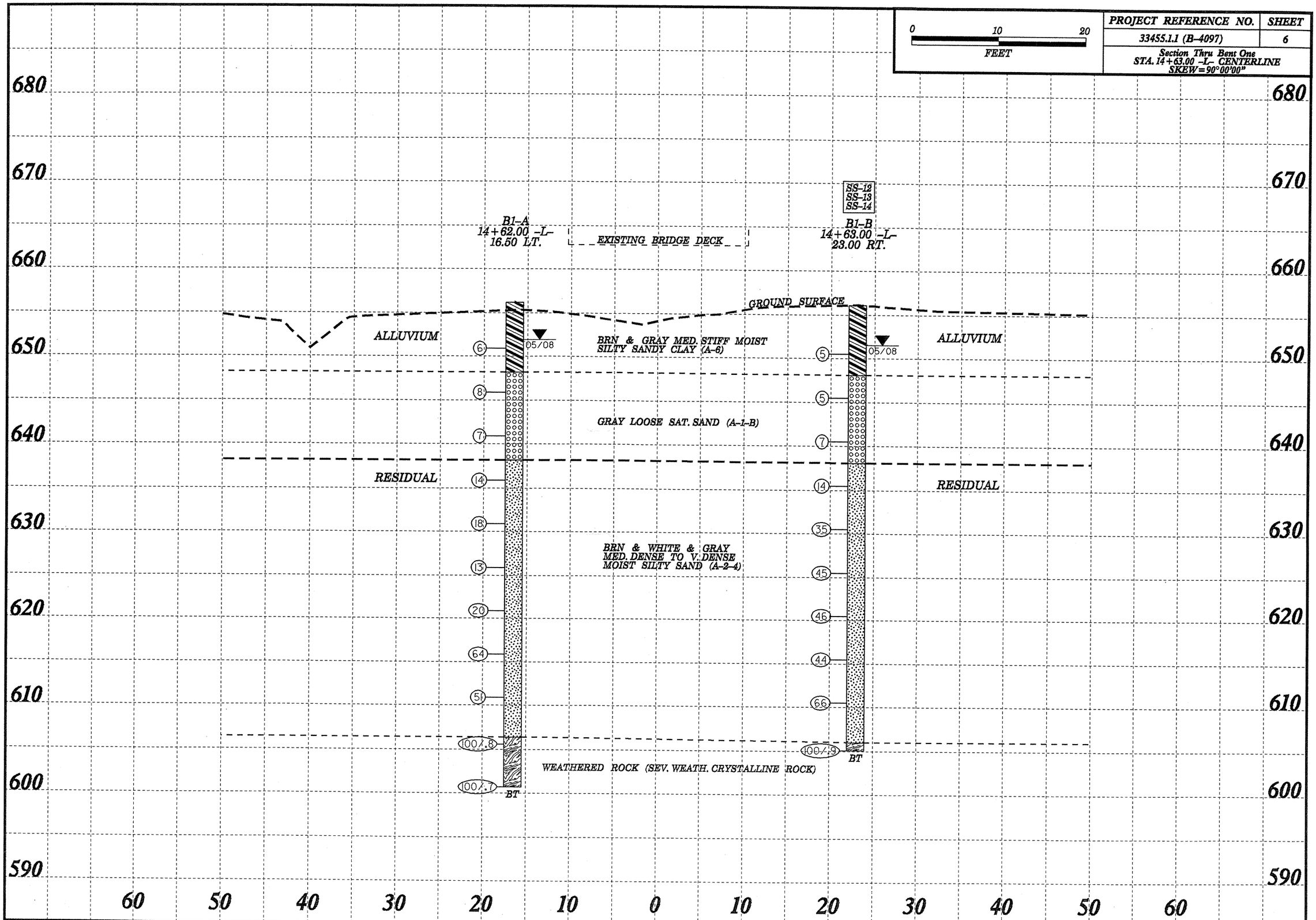
680 670 660 650 640 630 620 610 600 590

60 50 40 30 20 10 0 10 20 30 40 50 60

0	10	20
FEET		

PROJECT REFERENCE NO.	SHEET
33455.1.1 (B-4097)	6

Section Thru Bent One
STA. 14+63.00 -L- CENTERLINE
SKEW=90°00'00"



PROJECT REFERENCE NO.	SHEET
33455.1.1 (B-4097)	7

Section Thru Bent Two
STA. 15+13.00 -L- CENTERLINE
SKEW=90°00'00"

0 10 20
FEET

680 670 660 650 640 630 620 610 600 590

60 50 40 30 20 10 0 10 20 30 40 50 60

SS-9
SS-10
SS-11

EXISTING BRIDGE DECK

B2-B
15+14.00 -L-
17.10 RT

GROUND SURFACE

ALLUVIUM

10 — 05/08

ALLUVIUM
BRN-GRAY STIFF MOIST
SILTY SANDY CLAY (A-6)

6

GRAY & WHITE LOOSE SAT. SAND (A-1-B)

5

15

RESIDUAL

RESIDUAL

25

21

BRN & WHITE MED. DENSE TO V. DENSE
MOIST MICA SILTY SAND (A-2-4)

12

31

86

100/.9

100/.7

WEATHERED ROCK
BT (SEV. WEATH. CRYSTALLINE ROCK)

PROJECT REFERENCE NO.	SHEET
33455.1.1 (B-4097)	8

Section Thru Bent Three
STA. 15+63.00 -L- CENTERLINE
SKEW=90°00'00"

0 10 20
FEET

680
670
660
650
640
630
620
610
600
590

60 50 40 30 20 10 0 10 20 30 40 50 60

SS-1
SS-2
SS-3
SS-4

EXISTING BRIDGE DECK

B3-B
15+63.00 -L-
17.10 RT

GROUND SURFACE

ALLUVIUM

30 (P=15)

05/08

ALLUVIUM
RED-BRN V. STIFF MOIST MICA, LOW PLASTIC SILTY SANDY CLAY (A-7-6)

3

GRAY V. LOOSE MOIST TO WET SAND (A-1-B)

4

RESIDUAL

RESIDUAL

18

12

BRN & WHITE MED. DENSE TO V. DENSE SILTY SAND (A-2-4, A-1-B)

40

49

58

70

100/.8

WEATHERED ROCK
(SEV. WEATH. CRYSTALLINE ROCK)

BT

PROJECT REFERENCE NO.	SHEET
33455.1.1 (B-4097)	9

Section Thru End Bent Two
STA. 16+03.00 -L- CENTERLINE
SKEW=90°00'00"

0 10 20
FEET

SS-5
SS-6
SS-7
SS-8

EXISTING BRIDGE DECK

EB2-B
16+02.00 -L-
16.00 RT.

GROUND SURFACE

05/08

05/08

ALLUVIUM

ALLUVIUM

7

BRN & GRAY MED. STIFF MOIST TO SAT. SANDY SILTY CLAY (A-6)

9

10

BRN & GRAY LOOSE TO MED. DENSE MOIST TO WET SILTY SAND (A-2-4)

RESIDUAL

RESIDUAL

22

19

RED-BRN MED. DENSE TO DENSE MOIST MICA. SILTY SAND (A-2-4)

40

22

15

29

37

BT

680 670 660 650 640 630 620 610 600 590

60 50 40 30 20 10 0 10 20 30 40 50 60

PROJECT REFERENCE NO.	SHEET
33455.1.1 (B-4097)	10

Section Thru End Bent One
STA. 15+56.99 -DETOUR- CENTERLINE
SKEW = 90°00'00"

0 10 20
FEET

SS-9
SS-10
SS-11

15+67.64 -DETOUR-
28.67 LT.
=
B2-B
15+14.00 -L-
17.10 RT.

SS-5

EB1-B DET
15+57.00 -DETOUR-
10.00 RT.

EXISTING BRIDGE DECK

-L-

GROUND SURFACE

ALLUVIUM

BRN-GRAY STIFF MOIST
SILTY SANDY CLAY (A-6)

10 — 05/08

6

GRAY & WHITE LOOSE
SAT. SAND (A-1-B)

5

RESIDUAL

15

25

21

BRN & WHITE MED. DENSE TO V. DENSE
MOIST MICA SILTY SAND (A-2-4)

12

31

86

100/.9

WEATHERED ROCK
(SEV. WEATH. CRYSTALLINE ROCK)

100/.7

BT

ALLUVIUM

BRN & GRAY MED. STIFF MOIST
MED. PLASTIC SANDY SILTY CLAY (A-7-6)

7 — 11/07

3

BRN V. LOOSE TO LOOSE
WET SILTY SAND (A-2-4)

4

RESIDUAL

23

32

BRN MED. DENSE TO V. DENSE
MOIST SILTY SAND (A-2-4)

39

54

100/1.0

BT

WEATHERED ROCK
(SEV. WEATH. CRYSTALLINE ROCK)

680 670 660 650 640 630 620 610 600 590

60 50 40 30 20 10 0 10 20 30 40 50 60

PROJECT REFERENCE NO.	SHEET
33455.1.1 (B-4097)	11

Section Thru End Bent Two
STA. 16+26.99 -DETOUR- CENTERLINE
SKEW=90°00'00"

0 10 20
FEET

SS-1
SS-2
SS-3
SS-4

16+16.64 -DETOUR-
28.73 LT.
=
B3-B
15+63.00 -L-
17.10 RT.

SS-1
SS-2
SS-3
SS-4

EB2-B DET
16+27.00 -DETOUR-
10.00 RT.

EXISTING BRIDGE DECK

-L-

GROUND SURFACE

ALLUVIUM

30 (P=15) 05/08

RED-BRN V. STIFF MOIST MICA. LOW PLASTIC SILTY SANDY CLAY (A-7-6)

3

GRAY V. LOOSE MOIST TO WET SAND (A-1-B)

4

RESIDUAL

18

12

BRN & WHITE MED. DENSE TO V. DENSE SILTY SAND (A-2-4, A-1-B)

40

49

58

70

100/.8

WEATHERED ROCK
(SEV. WEATH. CRYSTALLINE ROCK)

BT

ALLUVIUM

7 (P=8) 11/07
11/07

BRN & GRAY MED. STIFF TO STIFF MOIST MED. PLASTIC SANDY SILTY CLAY (A-7-6)

14 (P=23)

4

BRN LOOSE SAT. SAND (A-2-4)

RESIDUAL

29

15

BRN MED. DENSE TO V. DENSE MOIST SILTY SAND (A-2-4)

22

28

55

BT

680 670 660 650 640 630 620 610 600 590

60 50 40 30 20 10 0 10 20 30 40 50 60

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET

12

PROJECT NO. 33455.1.1	**ID.** B4097	**COUNTY** DAVIDSON	**GEOLOGIST** Stickney, J. K.	
SITE DESCRIPTION BR 405 OVER 2ND POTTS CRK ON SR 1147				**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 14+26	**OFFSET** 32ft LT	**ALIGNMENT** -L-	**0 HR.** 4.7
COLLAR ELEV. 657.1 ft	**TOTAL DEPTH** 46.0 ft	**NORTHING** 742,308	**EASTING** 1,605,273	**24 HR.** 5.2
DRILL MACHINE CME-550X	**DRILL METHOD** NW Casing w/ Advancer		**HAMMER TYPE** Automatic	
START DATE 05/09/08	**COMP. DATE** 05/09/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** N/A	

ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
660									ELEV. (ft) DEPTH (ft)
									657.1 GROUND SURFACE 0.0
652.6	4.5								**ALLUVIAL** BRN-GRAY MED. STIFF MOIST SANDY SILTY CLAY (A-6)
647.6	9.5	4	3	3	6		M		649.1 8.0
642.6	14.5	2	2	3	5		Sat.		**ALLUVIAL** GRAY LOOSE SAT TO MOIST CLAYEY SILTY SAND (A-1-B)
637.6	19.5	1	2	2	4		Sat.		
632.6	24.5	1	3	4	7		M		635.1 22.0
627.6	29.5	4	7	8	15		M		**RESIDUAL** BRN AND WHITE DENSE TO V. DENSE MOIST SILTY SAND (A-2-4)
622.6	34.5	9	18	25	43		M		
617.6	39.5	12	35	48	83		M		
612.6	44.5	18	31	42	73		M		
		18	36	40	76		M		611.1 46.0
									Boring Terminated at Elevation 611.1 ft IN V. DENSE SILTY SAND (A-2-4)

NCDOT BORE SINGLE B4097_GEO_BRDG0405_DAVIDSON.GPJ NC_DOT.GDT 08/21/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET

PROJECT NO. 33455.1.1	**ID.** B4097	**COUNTY** DAVIDSON	**GEOLOGIST** Stickney, J. K.
SITE DESCRIPTION BR 405 OVER 2ND POTTS CRK ON SR 1147			**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 14+62	**OFFSET** 17ft LT	**ALIGNMENT** -L- — **0 HR.** 4.9
COLLAR ELEV. 656.2 ft	**TOTAL DEPTH** 55.5 ft	**NORTHING** 742,303	**EASTING** 1,605,312 — **24 HR.** 4.3
DRILL MACHINE CME-45 SKID	**DRILL METHOD** NW Casing w/ Advancer		**HAMMER TYPE** Automatic
START DATE 05/08/08	**COMP. DATE** 05/08/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** N/A

ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft) / DEPTH (ft)
660									656.2 GROUND SURFACE 0.0
651.9	4.3								**ALLUVIAL** BRN AND GRAY MED. STIFF MOIST SILTY SANDY CLAY (A-6)
646.9	9.3	1	4	2	6		M		648.2 8.0
641.9	14.3	2	3	5	8		Sat.		**ALLUVIAL** GRAY LOOSE SAT. SAND (A-1-B)
636.9	19.3	2	3	4	7		Sat.		638.2 18.0
631.9	24.3	6	7	7	14		M		**RESIDUAL** BRN AND WHITE MED. DENSE MOIST MICA. SILTY SAND (A-2-4)
626.9	29.3	5	8	10	18		M		
621.9	34.3	3	5	8	13		M		
616.9	39.3	10	12	8	20		M		
611.9	44.3	14	27	37	64		M		
606.9	49.3	14	25	26	51		M		
601.9	54.3	20	42	58/.3	100/.8		M		606.4 49.8 **WEATHERED ROCK** (SEV. WEATH. CRYSTALLINE ROCK)
		40	44	56/.2	100/.7		D		600.7 55.5 Boring Terminated at Elevation 600.7 ft IN WEATHERED ROCK (SEV. WEATH. CRYSTALLINE ROCK)

NCDOT BORE SINGLE B4097_GEO_BRDG0405_DAVIDSON.GPJ NC_DOT.GDT 08/21/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET 3

PROJECT NO. 33455.1.1	**ID.** B4097	**COUNTY** DAVIDSON	**GEOLOGIST** Stickney, J. K.
SITE DESCRIPTION BR 405 OVER 2ND POTTS CRK ON SR 1147			**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 14+63	**OFFSET** 23ft RT	**ALIGNMENT** -L- — **0 HR.** 4.6
COLLAR ELEV. 656.1 ft	**TOTAL DEPTH** 51.0 ft	**NORTHING** 742,265	**EASTING** 1,605,323 — **24 HR.** 4.6
DRILL MACHINE CME-550X	**DRILL METHOD** NW Casing w/ Advancer		**HAMMER TYPE** Automatic
START DATE 05/07/08	**COMP. DATE** 05/07/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** N/A

ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft) / DEPTH (ft)
660									656.1 GROUND SURFACE 0.0
651.5	4.6								**ALLUVIAL** BRN & GRAY MED. STIFF MOIST SILTY SANDY CLAYEY (A-6)
646.5	9.6	5	3	2	5		M		648.1 8.0
641.5	14.6	2	1	4	5	SS-12	Sat.		**ALLUVIAL** GRAY LOOSE SAT. SAND (A-1-B)
636.5	19.6	1	2	5	7		Sat.		638.1 18.0
631.5	24.6	3	5	9	14	SS-13	M		**RESIDUAL** BRN-WHITE & GRAY MED. DENSE TO V. DENSE MOIST SILTY SAND (A-2-4)
626.5	29.6	8	16	19	35		M		
621.5	34.6	12	22	23	45	SS-14	M		
616.5	39.6	9	19	27	46		M		
611.5	44.6	14	17	27	44		M		
606.5	49.6	14	28	38	66		M		606.0 50.1 **WEATHERED ROCK** (SEV. WEATH. CRYSTALLINE ROCK) 605.1 51.0
		20	46	54/.4	100/.9		M		Boring Terminated at Elevation 605.1 ft IN WEATHERED ROCK (SEV. WEATH. CRYSTALLINE ROCK)

NCDOT BORE SINGLE B4097_GEO_BRDG0405_DAVIDSON.GPJ NC_DOT.GDT 08/21/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET

PROJECT NO. 33455.1.1	**ID.** B4097	**COUNTY** DAVIDSON		**GEOLOGIST** Stickney, J. K.
SITE DESCRIPTION BR 405 OVER 2ND POTTS CRK ON SR 1147				**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 15+14	**OFFSET** 17ft RT	**ALIGNMENT** -L-	**0 HR.** 4.8
COLLAR ELEV. 656.2 ft	**TOTAL DEPTH** 55.3 ft	**NORTHING** 742,284	**EASTING** 1,605,371	**24 HR.** 4.9
DRILL MACHINE CME-550X	**DRILL METHOD** NW Casing w/ Advancer		**HAMMER TYPE** Automatic	
START DATE 05/06/08	**COMP. DATE** 05/07/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** N/A	

ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
660										
									656.2 GROUND SURFACE	0.0
652.1	4.1								ALLUVIAL BRN GRAY STIFF MOIST SILTY SANDY CLAY (A-6)	
		3	7	3	10	SS-9	M			
647.1	9.1								648.7	7.5
		1	2	4	6	SS-10	Sat.		ALLUVIAL GRAY AND WHITE LOOSE SAT. SAND (A-1-B)	
642.1	14.1									
		1	3	2	5		Sat.			
637.1	19.1								637.2	19.0
		4	6	9	15	SS-11	M		RESIDUAL BRN AND WHITE MED. DENSE TO V. DENSE MOIST MICA SILTY SAND (A-2-4)	
632.1	24.1									
		6	12	13	25		M			
627.1	29.1									
		5	9	12	21		M			
622.1	34.1									
		4	6	6	12		M			
617.1	39.1									
		10	10	21	31		M			
612.1	44.1									
		7	30	56	86		M			
607.1	49.1								606.6	49.6
		29	63	37/.4	100/.9		M		WEATHERED ROCK (SEV. WEATH. CRYSTALLINE ROCK)	
602.1	54.1									
		34	54	46/.2	100/.7		M		600.9	55.3
									Boring Terminated at Elevation 600.9 ft IN WEATHERED ROCK (SEV. WEATH. CRYSTALLINE ROCK)	

NCDOT BORE SINGLE B4097_GEO_BRDG0405_DAVIDSON.GPJ NC_DOT.GDT 08/21/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET 4

PROJECT NO. 33455.1.1	**ID.** B4097	**COUNTY** DAVIDSON		**GEOLOGIST** Stickney, J. K.
SITE DESCRIPTION BR 405 OVER 2ND POTTS CRK ON SR 1147				**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 15+63	**OFFSET** 17ft RT	**ALIGNMENT** -L-	**0 HR.** 5.5
COLLAR ELEV. 656.9 ft	**TOTAL DEPTH** 53.5 ft	**NORTHING** 742,297	**EASTING** 1,605,418	**24 HR.** 5.6
DRILL MACHINE CME-550X	**DRILL METHOD** NW Casing w/ Advancer		**HAMMER TYPE** Automatic	
START DATE 05/05/08	**COMP. DATE** 05/05/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** N/A	

ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
660										
									656.9 GROUND SURFACE	0.0
651.7	5.2								ALLUVIAL RED BRN V. STIFF MOIST MICA LOW PLASTIC (PI=15) SILTY SANDY CLAY (A-7-6)	
		4	12	18	30	SS-1	M			
646.7	10.2									
		1	2	1	3	SS-2	M			
641.7	15.2									
		1	2	2	4		W			
636.7	20.2								639.1	17.8
		8	8	10	18	SS-3	M		RESIDUAL BRN AND WHITE MED. DENSE MICA SILTY SAND (A-2-4)	
631.7	25.2									
		4	4	8	12		M			
626.7	30.2								628.9	28.0
		12	16	24	40	SS-4	M		RESIDUAL BRN AND WHITE DENSE TO V. DENSE SILTY SAND (A-1-B)	
621.7	35.2									
		10	19	30	49		M			
616.7	40.2									
		18	28	30	58		M			
611.7	45.2									
		17	32	38	70		M			
606.7	50.2								606.2	50.7
		22	52	48/.3	100/.8		M		WEATHERED ROCK (SEV. WEATH. CRYSTALLINE ROCK)	
									603.4	53.5
									Boring Terminated at Elevation 603.4 ft IN WEATHERED ROCK (SEV. WEATH. CRYSTALLINE ROCK)	

NCDOT BORE SINGLE B4097_GEO_BRDG0405_DAVIDSON.GPJ NC_DOT.GDT 08/21/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET

15

PROJECT NO. 33455.1.1	**ID.** B4097	**COUNTY** DAVIDSON	**GEOLOGIST** Stickney, J. K.	
SITE DESCRIPTION BR 405 OVER 2ND POTTS CRK ON SR 1147				**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 16+02	**OFFSET** 16ft RT	**ALIGNMENT** -L-	**0 HR.** 0.0
COLLAR ELEV. 655.8 ft	**TOTAL DEPTH** 51.3 ft	**NORTHING** 742,308	**EASTING** 1,605,455	**24 HR.** 3.5
DRILL MACHINE CME-550X	**DRILL METHOD** NW Casing w/ Advancer		**HAMMER TYPE** Automatic	
START DATE 05/06/08	**COMP. DATE** 05/06/08	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** N/A	

ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
660									
655.8	0.0								GROUND SURFACE
							▽		**ALLUVIAL** BRN AND GRAY MED. STIFF MOIST TO SAT. SANDY SILTY CLAY (A-6)
651.0	4.8								
646.0	9.8	3	3	4	7	SS-5	M		
641.0	14.8	3	4	5	9	SS-6	Sat.		
642.3	13.5								**ALLUVIAL** BRN AND GRAY LOOSE TO MED. DENSE MOIST TO WET SILTY SAND (A-2-4)
636.0	19.8	3	5	5	10	SS-7	M		
638.8	17.0								**RESIDUAL** RED BRN MED. DENSE TO DENSE MOIST MICA.SILTY SAND (A-2-4)
631.0	24.8	4	10	12	22	SS-8	M		
626.0	29.8	4	6	13	19		M		
621.0	34.8	7	13	27	40		M		
616.0	39.8	5	8	14	22		M		
611.0	44.8	5	7	8	15		M		
606.8	49.0	7	14	15	29		M		
604.5	51.3	8	17	20	37		M		Boring Terminated at Elevation 604.5 ft IN DENSE SILTY SAND (A-2-4)

NCDOT BORE SINGLE B4097_GEO_BRDG0405_DAVIDSON.GPJ NC_DOT.GDT 08/21/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET

PROJECT NO. 33455.1.1	**ID.** B4097	**COUNTY** DAVIDSON	**GEOLOGIST** Todd, R. W.
SITE DESCRIPTION BR 405 OVER 2ND POTTS CRK ON SR 1147			**GROUND WTR (ft)**
BORING NO. EB1-B_DET	**STATION** 15+57	**OFFSET** 10ft RT	**ALIGNMENT** -DETOUR-	**0 HR.** 6.0
COLLAR ELEV. 655.4 ft	**TOTAL DEPTH** 40.1 ft	**NORTHING** 742,244	**EASTING** 1,605,370	**24 HR.** 6.0
DRILL MACHINE CME-550X	**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic	
START DATE 11/07/00	**COMP. DATE** 11/07/07	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** N/A	

ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
									ELEV. (ft) DEPTH (ft)
660									
									655.4 GROUND SURFACE 0.0
651.3	4.1								**ALLUVIAL** BRN & GRAY MED. STIFF MOIST MED. PLASTIC SANDY SILTY CLAY (A-7-6)
		2	3	4	7		M		
646.3	9.1								647.4 8.0
641.3	14.1	2	1	2	3	SS-5	W		**ALLUVIAL** BRN V. LOOSE TO LOOSE WET SILTY SAND (A-2-4)
636.3	19.1	2	2	2	4		W		638.4 17.0
631.3	24.1	5	12	11	23		M		**RESIDUAL** BRN MED. DENSE TO V. DENSE MOIST SILTY SAND (A-2-4)
626.3	29.1	8	15	17	32		M		
621.3	34.1	13	16	23	39		M		
616.3	39.1	21	24	30	54		M		
		35	65/.5		100/1.0		M		616.3 39.1 615.3 40.1 **WEATHERED ROCK** (SEV. WEATH. CRYSTALLINE ROCK) Boring Terminated at Elevation 615.3 ft IN WEATHERED ROCK (SEV. WEATH. CRYSTALLINE ROCK)

NCDOT BORE SINGLE B4097_GEO_BRDG0405_DAVIDSON.GPJ NC_DOT.GDT 08/21/08

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

SHEET 16

PROJECT NO. 33455.1.1	**ID.** B4097	**COUNTY** DAVIDSON	**GEOLOGIST** Todd, R. W.
SITE DESCRIPTION BR 405 OVER 2ND POTTS CRK ON SR 1147			**GROUND WTR (ft)**
BORING NO. EB2-B_DET	**STATION** 16+27	**OFFSET** 10ft RT	**ALIGNMENT** -DETOUR-	**0 HR.** 7.0
COLLAR ELEV. 655.8 ft	**TOTAL DEPTH** 40.2 ft	**NORTHING** 742,262	**EASTING** 1,605,438	**24 HR.** 4.0
DRILL MACHINE CME-550X	**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic	
START DATE 11/07/07	**COMP. DATE** 11/07/07	**SURFACE WATER DEPTH** N/A	**DEPTH TO ROCK** N/A	

ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
									ELEV. (ft) DEPTH (ft)
660									
									655.8 GROUND SURFACE 0.0
652.1	3.7								**ALLUVIAL** BRN & GRAY MED. STIFF TO STIFF MOIST MED. (PI=18, 23) PLASTIC SANDY SILTY CLAY (A-7-6)
		2	3	4	7	SS-1	M		
647.1	8.7								
		3	6	8	14	SS-2	M		644.8 11.0
642.1	13.7								**ALLUVIAL** BRN LOOSE SAT. SAND (A-2-4)
		2	2	2	4	SS-3	Sat.		
637.1	18.7								638.8 17.0
		3	11	18	29	SS-4	M		**RESIDUAL** BRN MED. DENSE TO V. DENSE MOIST SILTY SAND (A-2-4)
632.1	23.7								
		6	7	8	15		M		
627.1	28.7								
		7	10	12	22		M		
622.1	33.7								
		5	11	17	28		M		
617.1	38.7								
		17	26	29	55		M		615.6 40.2 Boring Terminated at Elevation 615.6 ft IN V. DENSE MOIST SILTY SAND (A-2-4)

NCDOT BORE SINGLE B4097_GEO_BRDG0405_DAVIDSON.GPJ NC_DOT.GDT 08/21/08

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. B-4097

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project	33455.1	**County**	DAVIDSON	**Owner**	
Date: Sampled		**Received**	5/19/08	**Reported**	5/21/08
Sampled from	BRIDGE			**By**	J E BEVERLY
Submitted by	N WAINAINA				1995 **Standard Specifications**

LOCATION
746194 TO 746207
5/28/08

TEST RESULTS

Proj. Sample No.		SS-1	SS-2	SS-3	SS-4	SS-5	SS-6
Lab. Sample No.		746194	746195	746196	746197	746198	746199
Retained #4 Sieve	%	-	-	1	-	-	-
Passing #10 Sieve	%	100	92	82	83	100	100
Passing #40 Sieve	%	85	48	46	47	98	99
Passing #200 Sieve	%	56	14	22	20	74	73

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	23.6	65.1	53.8	55.2	5.4	3.4
Fine Sand Ret - #270	%	24.8	21.8	24.2	25.4	26.6	30.6
Silt 0.05 - 0.005 mm	%	23.5	7.2	18.0	15.4	27.7	31.7
Clay < 0.005 mm	%	28.2	6.0	4.0	4.0	40.3	34.2
Passing #40 Sieve	%	-	-	-	-	-	-
LOCATION	%	B3-B	B3-B	B3-B	B3-B	EB2-B	EB2-B

L. L.	44	21	32	29	34	34
P. I.	15	NP	7	4	13	14
AASHTO Classification	A-7-6(7)	A-1-b(0)	A-2-4(0)	A-1-b(0)	A-6(8)	A-6(9)
Station	15+63	15+63	15+63	15+63	16+02	16+02
OFFSET	17.1 RT	17.1 RT	17.1 RT	17.1 RT	16.0 RT	16.0 RT
LOCATION	L	L	L	L	L	L
Depth (Ft)	5.70	10.70	20.70	30.70	5.30	10.30
to	6.70	11.70	21.70	31.70	6.30	11.30

cc: J E BEVERLY
Soils File

Soils Engineer

M & T Form 503

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. B-4097

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 33455.1 County DAVIDSON Owner
Date: Sampled Received 5/19/08 Reported 5/21/08
Sampled from BRIDGE By J E BEVERLY
Submitted by N WAINAINA 1995 Standard Specifications

746194 TO 746207
5/28/08

TEST RESULTS

Proj. Sample No.		SS-7	SS-8	SS-9	SS-10	SS-11	SS-12
Lab. Sample No.		746200	746201	746202	746203	746204	746205
Retained #4 Sieve	%	1	-	15	-	-	2
Passing #10 Sieve	%	83	80	80	79	92	82
Passing #40 Sieve	%	51	51	62	44	65	49
Passing #200 Sieve	%	12	23	37	12	27	13

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	60.0	47.9	32.4	58.2	41.9	58.0
Fine Sand Ret - #270	%	28.2	27.8	25.8	29.2	33.8	29.6
Silt 0.05 - 0.005 mm	%	9.8	20.2	19.6	4.5	20.2	8.4
Clay < 0.005 mm	%	2.0	4.0	22.2	8.1	4.0	4.0
Passing #40 Sieve	%	-	-	-	-	-	-
LOCATION	%	EB2-B	EB2-B	B2-B	B2-B	B2-B	B1-B

L. L.	23	35	32	23	29	23
P. I.	NP	8	11	NP	NP	NP
AASHTO Classification	A-2-4(0)	A-2-4(0)	A-6(1)	A-1-b(0)	A-2-4(0)	A-1-b(0)
Station	16+02	16+02	15+13.8	15+13.8	15+13.8	14+63
OFFSET	16.0 RT	16.0 RT	17.1 RT	17.1 RT	17.1 RT	23 RT
LOCATION	L	L	L	L	L	L
Depth (Ft)	15.30	20.30	4.60	9.60	19.60	10.10
to	16.30	21.30	5.60	10.60	20.60	11.10

Soils Engineer

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. B-4097

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project	33455.1	**County**	DAVIDSON	**Owner**	
Date: Sampled		**Received**	5/19/08	**Reported**	5/21/08
Sampled from	BRIDGE			**By**	J E BEVERLY
Submitted by	N WAINAINA				1995 **Standard Specifications**

746194 TO 746207
5/28/08

TEST RESULTS

Proj. Sample No.		SS-13	SS-14				
Lab. Sample No.		746206	746207				
Retained #4 Sieve	%	-	-				
Passing #10 Sieve	%	86	84				
Passing #40 Sieve	%	55	52				
Passing #200 Sieve	%	25	19				

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	49.3	51.0				
Fine Sand Ret - #270	%	25.8	31.2				
Silt 0.05 - 0.005 mm	%	16.8	13.8				
Clay < 0.005 mm	%	8.1	4.0				
Passing #40 Sieve	%	-	-				
LOCATION	%	B1-B	B1-B				

L. L.	35	27				
P. I.	NP	NP				
AASHTO Classification	A-2-4(0)	A-2-4(0)				
Station	14+63	14+63				
OFFSET	23 RT	23 RT				
LOCATION	L	L				
Depth (Ft)	20.10	30.10				
to	21.10	31.10				

Soils Engineer

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAY
MATERIALS & TESTS UNIT
SOILS LABORATORY

T. I. P. No. B-4097

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project	33455.1.1	**County**	DAVIDSON	**Owner**	
Date: Sampled	11/7/07	**Received**	11/26/07	**Reported**	11/28/07
Sampled from	BRIDGE			**By**	J P ROGERS
Submitted by	N WAINAINA				1995 **Standard Specifications**

742290 TO 742294
11/29/07

TEST RESULTS

Proj. Sample No.		SS-1	SS-2	SS-3	SS-4	SS-5	
Lab. Sample No.		742290	742291	742292	742293	742294	
Retained #4 Sieve	%	-	1	3	-	-	
Passing #10 Sieve	%	100	97	68	99	100	
Passing #40 Sieve	%	99	96	59	59	84	
Passing #200 Sieve	%	77	85	14	30	23	

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	3.7	2.4	32.7	51.0	40.2	
Fine Sand Ret - #270	%	25.4	14.2	50.0	23.8	40.2	
Silt 0.05 - 0.005 mm	%	30.3	32.5	9.1	17.1	13.4	
Clay < 0.005 mm	%	40.7	50.8	8.1	8.1	6.1	
Passing #40 Sieve	%	-	-	-	-	-	
Passing #200 Sieve	%	-	-	-	-	-	

L. L.	41	46	25	33	29	
P. I.	18	23	NP	4	NP	
AASHTO Classification	A-7-6(14)	A-7-6(21)	A-2-4(0)	A-2-4(0)	A-2-4(0)	
Station						
ALIGNMENT	L DETOUR	L DETOUR	L DETOUR	L DETOUR	L DETOUR	
LOCATION	EB2-B	EB2-B	EB2-B	EB2-B	EB1-B	
Depth (Ft)	3.70	8.70	13.70	18.70	9.10	
to	5.20	10.20	15.20	20.20	10.60	

cc: J P ROGERS
Soils File

Soils Engineer

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT

FIELD SCOUR REPORT

WBS: 33455.1.1 TIP: B-4097 COUNTY: Davidson

DESCRIPTION(1):

EXISTING BRIDGE

Information from: Field Inspection X Microfilm ____ (reel ____ pos: ____)
Other (explain)

Bridge No.: 405 Length: 170 Total Bents: 5 Bents in Channel: 1 Bents in Floodplain: 4
Foundation Type: Footings on piles (?)

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: None noted

Interior Bents: Minor scour at Bent Two (in stream)

Channel Bed: None noted

Channel Bank: Banks are steep and unstable, trees leaning in, roots exposed from undermining especially at meanders

EXISTING SCOUR PROTECTION

Type(3): None

Extent(4):

Effectiveness(5):

Obstructions(6):

DESIGN INFORMATION

Channel Bed Material(7): Sand, as Sample SS-12 (A-1-b)

Channel Bank Material(8): Sandy silty clay, as Sample SS-9 (A-6)

Channel Bank Cover(9): Mature trees, grass

Floodplain Width(10): 550'

Floodplain Cover(11): Grass, mature trees

Stream is(12): Aggrading X Degrading ____ Static ____

Channel Migration Tendency(13): Slight

Observations and Other Comments:

DESIGN SCOUR ELEVATIONS(14) Feet ____ Meters ____

	50 yr	100 yr	500 yr								
Bent One	642.5	639	632								
Bent Two	642.5	639.5	630								
Bent Three	645.5	642	633								

Comparison of DSE to Hydraulics Unit theoretical scour:
DSE is equivalent to the Hydraulics Theoretical Scour

SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL

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

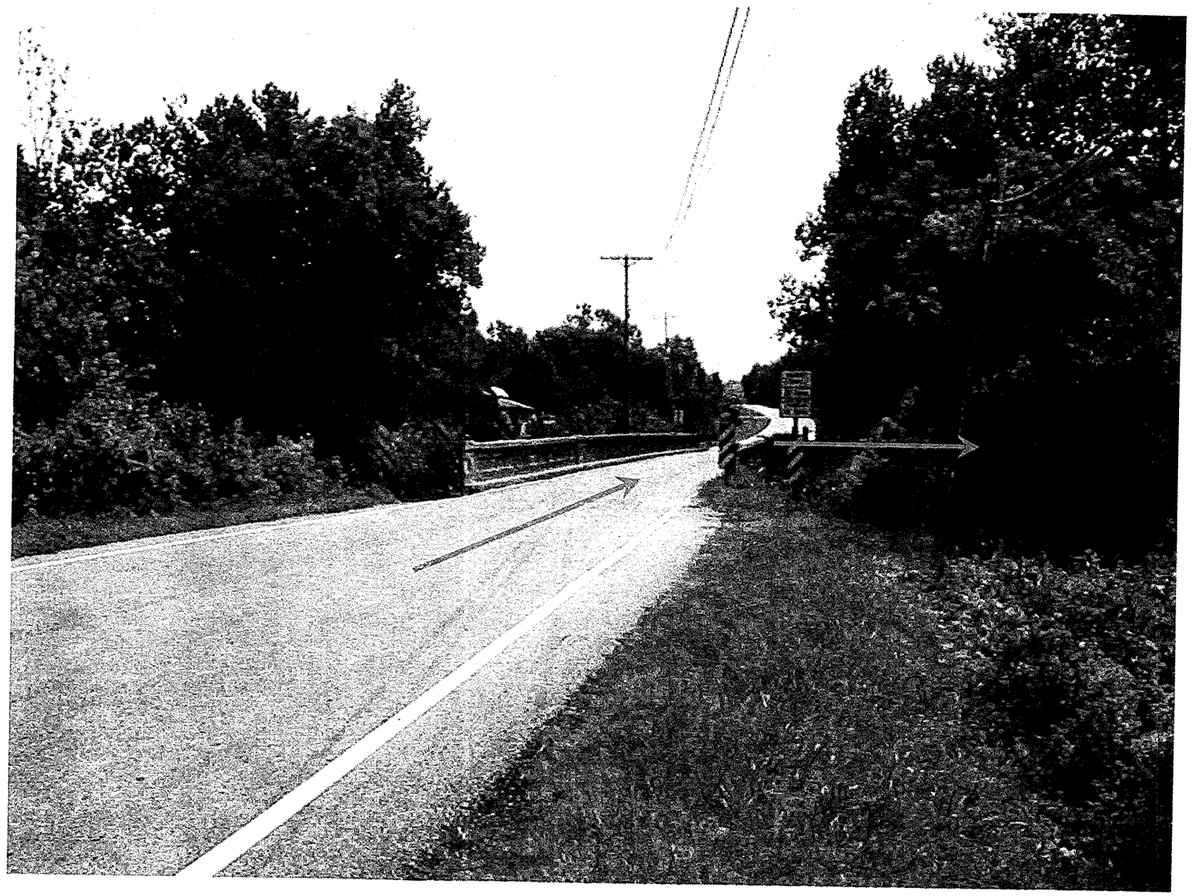
INSTRUCTIONS

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 theoritical 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.

Reported by: Stickney, Little Date: 6/30/2008

33455.1.1 B-4097
DAVIDSON COUNTY
BRIDGE NO. 405 OVER 2nd POTTS CREEK ON SR 1147

PHOTOS



CREEK FLOW ⟶

-L- ALIGNMENT DIRECTION ⟶