ID: B-4507 *

CONTRACT: C202258

NOTE: SEE SHEET 1A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

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

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34409.1.1 (R-2247CC) * F.A. PROJ. _____

COUNTY FORSYTH

PROJECT DESCRIPTION BRIDGES NO. 221 & NO. 222 OVER MUDDY CREEK ON US 421

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4507 *	1	17

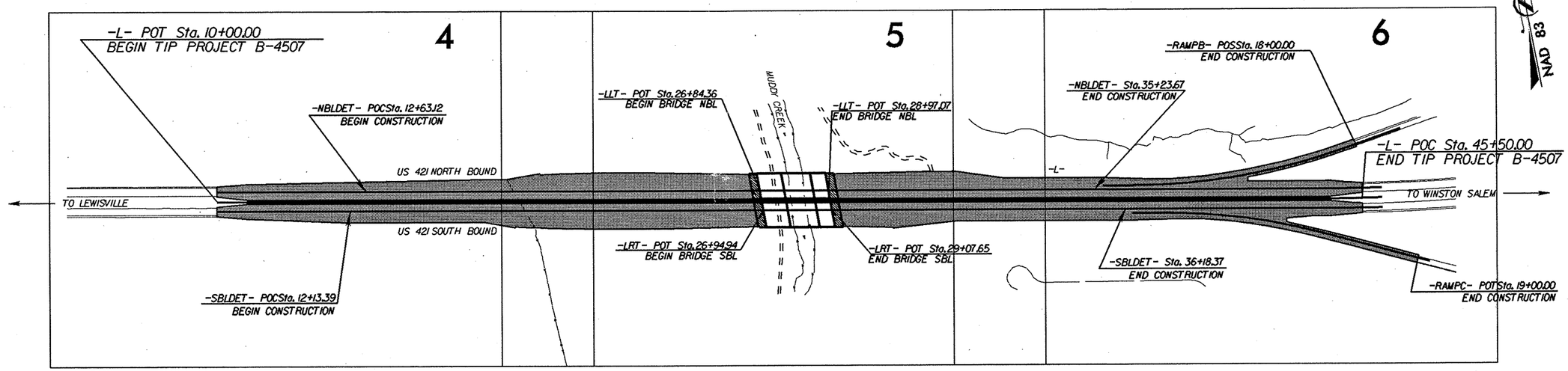
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
38396.1.1	BRNHS-421(33)	P.E.
38396.2.1	BRNHS-421(33)	RW/UTL.
38396.3.1	BRNHS-421(33)	CONST.

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.



INVESTIGATED BY C. B. LITTLE

CHECKED BY C. B. LITTLE

SUBMITTED BY C. B. LITTLE

DATE FEBRUARY 2008

NORTH CAROLINA LICENSED SEAL 110 GEOLOGIST CLINTON B. LITTLE

*** TIP B-4507 inventory was performed under TIP R-2247CC. Therefore, pages other than this Title Sheet and the Earthwork Balance Sheet only refer to the initial TIP.**

DRAWN BY: C. E. BURRIS

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.

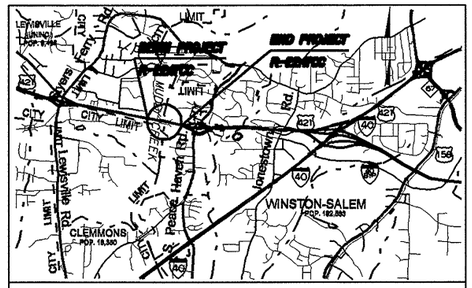
NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

09/08/99

TIP PROJECT: R-2247CC

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

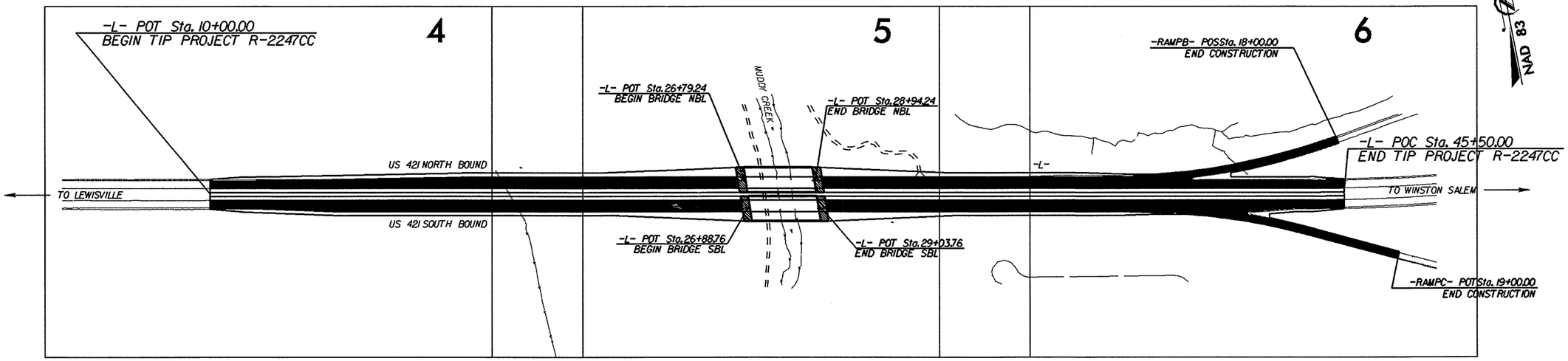
FORSYTH COUNTY

LOCATION: BRIDGES No. 221 AND No. 222 OVER MUDDY CREEK ON US 421

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2247CC	1A	17

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34409.1.1	NA	PE



THERE IS CONTROL OF ACCESS ON THIS PROJECT.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CLEMONS AND WINSTON-SALEM.
CLEARING ON THIS PROJECT SHOULD BE PREFORMED TO THE LIMITS ESTABLISHED BY METHOD____ .

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

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 100
PROFILE (VERTICAL)

DESIGN DATA

ADT 2000 = 39,000
ADT 2025 = 58,600
DHV = 10 %
D = 60 %
T = 10 % *
V = 60 MPH
FUNC CLASS = FREEWAY
* TTST 7% DUAL 6%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2247CC = 0.631 MILE
LENGTH STRUCTURE TIP PROJECT R-2247CC = 0.041 MILE
TOTAL LENGTH TIP PROJECT R-2247CC = 0.672 MILE

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: January 18, 2008

LETTING DATE: January 20, 2009

TONY HOUSER, PE
PROJECT ENGINEER

JASON TALLEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

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cburris AT GEH226157

PROJECT REFERENCE NO.	SHEET NO.
34409.1.1 (R-2247CC)	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	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
# 40	30 MX	50 MX	51 MN											
# 200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	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				
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	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

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

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, 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
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR 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 DHT 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 - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [X] CME-850
- [X] AD II ACKER TM

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -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 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:

ELEVATION: FT.

NOTES:

REVISED 02/23/06

EARTHWORK BALANCE SHEET

TIP PROJECT: B-4507 COUNTY: FORSYTH SHEET 3 OF 17

Computed By: AJF 2/08
Checked By: JMT 7/08

SUMMARIES / STATION RANGES	TOTAL EXCAV. (UNCL)	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	EARTH EMB.	EMB. + %	BORROW	ROCK WASTE	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
PHASE 1: CONSTRUCT DETOURS														
NBLDET 14+63.10 TO 26+77.48 BEG BR	409				409	15,302	0	15,302	18,362	17,953	0	0	0	0
NBLDET END BR 28+90.19 TO 37+21.75	5,473				5,473	10,296	0	10,296	12,355	6,882	0	0	0	0
SBLDET 14+13.37 TO 27+01.81 BEG BR	6,193				6,193	13,254	0	13,254	15,905	9,712	0	0	0	0
SBLDET END BR 29+14.52 TO 38+16.43	10,956				10,956	6,828	0	6,828	8,194	0	0	2,762	0	2,762
SUBTOTAL	**23,031**	**0**	**0**	**0**	**23,031**	**45,680**	**0**	**45,680**	**54,816**	**34,547**	**0**	**2,762**	**0**	**2,762**
PHASE 2: CONSTRUCT MEDIAN L														
-L- 10+00.00 TO 26+89.65 BEG BR	933				933	1,057	0	1,057	1,268	335	0	0	0	0
-L- END BR 29+02.35 TO 45+50.00	805				805	1,123	0	1,123	1,348	543	0	0	0	0
SUBTOTAL	**1,738**	**0**	**0**	**0**	**1,738**	**2,180**	**0**	**2,180**	**2,616**	**878**	**0**	**0**	**0**	**0**
PHASE 3: CONSTRUCT LT AND RT														
OF L AND RAMPS B AND C														
LLT 10+00.00 TO 26+84.35 BEG BR	506				506	753	0	753	904	398	0	0	0	0
LLT END BR 28+97.07 TO 45+50.00	1,299				1,299	475	0	475	570	0	0	729	0	729
RAMPB 14+56.77 TO 18+00.00	43				43	558	0	558	670	627	0	0	0	0
LRT 10+00.00 TO 26+94.94 BEG BR	7,944				7,944	390	0	390	468	0	0	7,476	0	7,476
LRT END BR 29+07.65 TO 45+50.00	2,994				2,994	291	0	291	349	0	0	2,645	0	2,645
RAMPC 14+65.22 TO 19+00.00	690				690	343	0	343	412	0	0	278	0	278
SUBTOTAL	**13,476**	**0**	**0**	**0**	**13,476**	**2,810**	**0**	**2,810**	**3,372**	**1,024**	**0**	**11,128**	**0**	**11,128**
PROJECT SUBTOTAL	**38,245**	**0**	**0**	**0**	**38,245**	**50,670**	**0**	**50,670**	**60,804**	**36,450**	**0**	**13,891**	**0**	**13,891**

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

EARTHWORK BALANCE SHEET

PROJECT: B-4507 COUNTY: FORSYTH SHEET 3A OF 17 Computed By: AJF 3/08 Checked By: JMT 7/08

SUMMARIES / STATION RANGES	TOTAL EXCAV. (UNCL)	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	EARTH EMB.	EMB. + %	BORROW	ROCK WASTE	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
FROM SHEET 1														
PROJECT SUBTOTAL	**38,245**	**0**	**0**	**0**	**38,245**	**50,670**	**0**	**50,670**	**60,804**	**36,450**	**0**	**13,891**	**0**	**13,891**
LOSS DUE TO CLEAR AND GRUB	-1,500									1,500				
SHOULDER MATERIAL						8,100		8,100	9,720	8,100				
WASTE IN LIEU OF BORROW										-3,787	0	-3,787	0	-3,787
PROJECT TOTAL	**36,745**	**0**	**0**	**0**	**38,245**	**58,770**	**0**	**58,770**	**70,524**	**42,263**	**0**	**10,104**	**0**	**10,104**
EST. FOR REPL. TOPSOIL ON BOR. PIT										2,113				
GRAND TOTAL	**36,745**	**0**	**0**							**44,376**				**10,104**
SAY	**36,800**									**44,400**				

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

February 21, 2008

STATE PROJECT: 34409.1.1 (R-2247CC)
FEDERAL PROJECT: NA
COUNTY: Forsyth
DESCRIPTION: Bridges No. 221 and 222 over Muddy Creek on US 421
SUBJECT: Geotechnical Report - Inventory

PROJECT DESCRIPTION

The project is located just west of Winston-Salem, near the I-40/US 421 intersection. This segment was originally part of project R-2247CA (Winston-Salem Outer Loop). The project includes replacement of 2 structures (Bridges 221 & 222), improvements to the approaches on US 421, and on-site temporary detours for both the NBL and SBL. Data for this project was excerpted from the original R-2247CA structure investigations.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Micaceous Soils: The residual soils in the area tend to contain significant quantities of mica. This often leads to difficulty in obtaining adequate compaction during embankment construction.

Weathered Rock: While we did not obtain borings specifically in the proposed cut areas, it appears likely that weathered rock will be encountered.

PHYSIOGRAPHY AND GEOLOGY

The project is located in the piedmont region of North Carolina. The geology is Charlotte/Milton Belt, CZbg, biotite gneiss and schist. Project elevations range from 700 to 750 feet.

SOIL PROPERTIES

Residual Soils

The residual soils are derived from mica schist or mica gneiss rocks. They are predominantly A-2-4 silty sands and A-4 sandy silts, medium dense rapidly grading to weathered rock, with high mica content.

Artificial/Roadway Fill Soils

The existing roadway embankments have a maximum height of about 30 feet, at the bridges. They contain soils similar in classification to the residual soils, medium dense or stiff to very stiff. Standard Penetration Blow counts ranged from 10 to 19 where tested.

Alluvial Soils

Alluvial soils are present in the floodplain associated with Muddy Creek. They consisted of tan, loose to medium dense, silty sand (A-2-4). The floodplain is about 1,000 feet wide, present from about Station 20 to 30 –L-.

GROUNDWATER

Groundwater was present in all of the referenced test borings. It occurred at depths of about five feet in the upland borings, and near the natural floodplain surface elevation (or the embankment fill/alluvial contact elevation) of 705 to 710 feet.

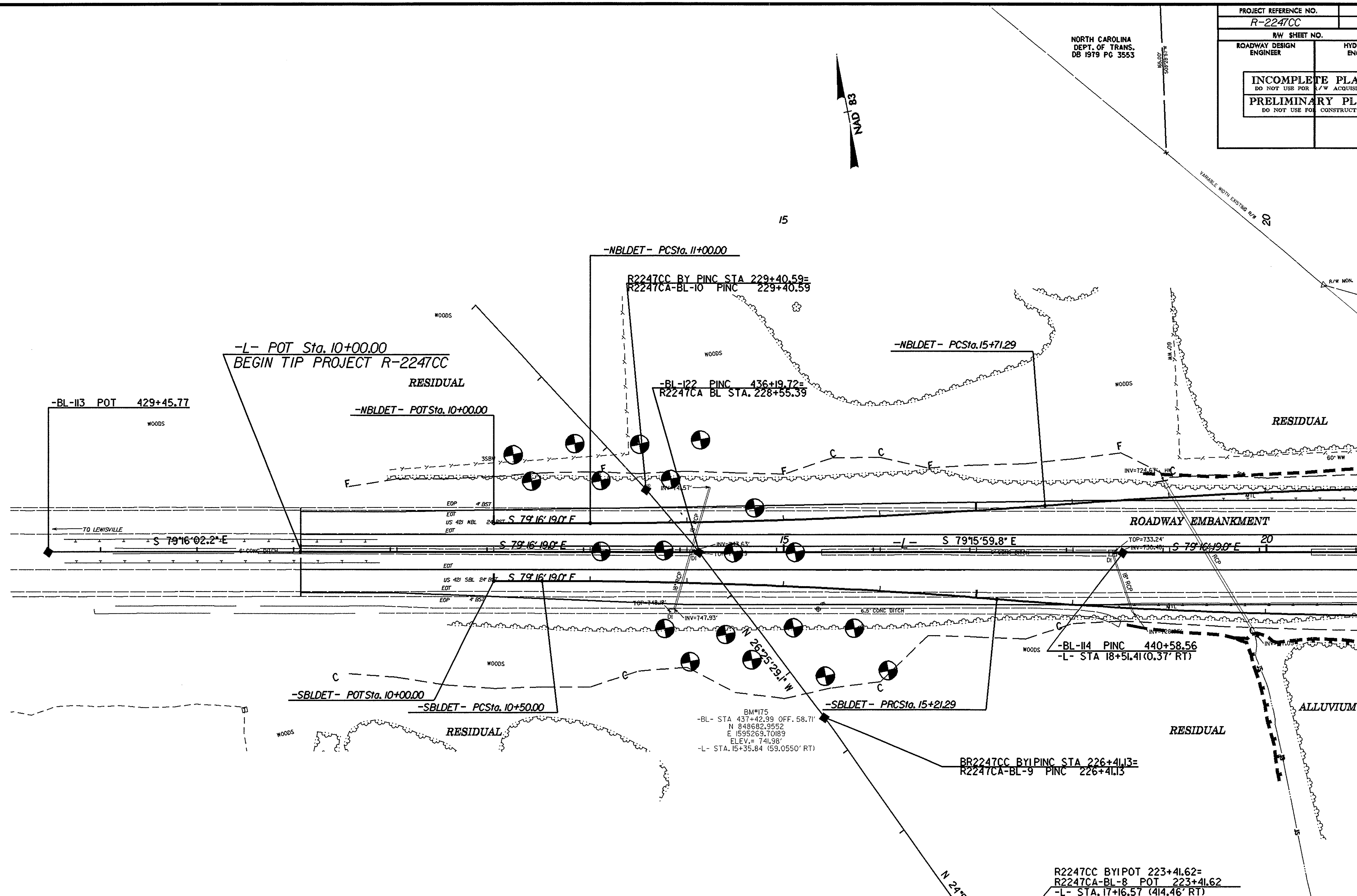
Respectfully submitted,

Clint Little
Regional Geological Engineer

PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-NBLDET-

PI Sta 13+35.77	PI Sta 18+07.06
Δ = 4°30'01.7" (LT)	Δ = 4°30'01.7" (RT)
D = 0°57'17.7"	D = 0°57'17.7"
L = 471.29'	L = 471.29'
T = 235.77'	T = 235.77'
R = 6,000.00'	R = 6,000.00'
SE = .02	SE = .02 (REVERSE)

-SBLDET-

PI Sta 12+85.77	PI Sta 17+57.06
Δ = 4°30'01.7" (RT)	Δ = 4°30'01.8" (LT)
D = 0°57'17.7"	D = 0°57'17.7"
L = 471.29'	L = 471.29'
T = 235.77'	T = 235.77'
R = 6,000.00'	R = 6,000.00'
SE = .02	SE = .02 (REVERSE)

NOTE:
ADDITIONAL BORING INFORMATION IS AVAILABLE FROM PROJECT R-2247CA

NOTES:

- FOR -L- PROFILE, SEE SHEETS NO. 10 TO NO. 13
- FOR DETOUR PLANS, SEE SHEETS 7 THRU 9
- FOR DETOUR PROFILES, SEE SHEETS NO. 15 & NO. 16
- FOR RAMP PLANS, SEE SHEET NO. 6
- FOR RAMP PROFILES, SEE SHEET NO. 14

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PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

MATCH LINE SHEET 4 -L- STA 21+00

MATCH LINE SHEET 6 -L- STA 35+00

-TI-638 POT 5+00.00 ELEV 716.53'
IRON & CAP SET

-TI-638 POT 5+00.00 ELEV 716.53'
IRON & CAP SET

-L- Sta.28+94.24
END BRIDGE NBL

-L- Sta.29+19.24
END APPROACH SLAB NBL

-L- Sta.26+79.24
BEGIN BRIDGE NBL

-L- Sta.26+54.24
BEGIN APPROACH SLAB NBL

-NBLDET- PTSta. 20+42.58

-NBLDET- PCSta. 27+50.97
-BL-115 PINC 453+59.67
-L- STA 31+52.52 (0.37' RT)

-NBLDET- PRCSta. 32+22.26

TIMOTHY D. WELBORN
MICHELLE WARREN WELBORN
DB 2434 PG 3768

RICHARD F. ALSPAUGH
DB 1939 PG 947

RICHARD F. ALSPAUGH
DB 1939 PG 947

ALLUVIUM

ALLUVIUM

ALLUVIUM

RESIDUAL

ROADWAY EMBANKMENT

ROADWAY EMBANKMENT

BRIDGE #222
CONCRETE AND STEEL

BRIDGE #221
CONCRETE AND STEEL

29' CONC

29' CONC

42" TYPE LINK

42" TYPE LINK

15" CMP

15" RCP

30" SANITARY SEWER EASEMENT

WATER EASEMENT

MUDDY CREEK

MUDDY CREEK

S 79°16'19.0" E

S 79°16'18.2" E

S 79°16'19.0" E

S 79°16'19.0" E

S 9° 22' 48.6" W

-L- Sta.26+63.76
BEGIN APPROACH SLAB SBL

-L- Sta.26+88.76
BEGIN BRIDGE SBL

-BL- POT 449+42.57=
-TI- POT 8+38.93=
-L- STA. 27+35.42 (0.37' RT)

-L- Sta.29+03.76
END BRIDGE SBL

-L- Sta.29+28.76
END APPROACH SLAB SBL

-SBLDET- PTSta. 19+92.58

-SBLDET- PCSta. 27+50.97

-SBLDET- PRCSta. 32+22.26

-TI-637 POT 11+88.89 ELEV=716.02'
IRON & CAP SET

NOTE:
ADDITIONAL BORING INFORMATION IS AVAILABLE FROM PROJECT R-2247CA

-NBLDET-

PI Sta 18+07.06	PI Sta 29+86.74	PI Sta 34+58.03
Δ = 4° 30' 01.7" (RT)	Δ = 4° 30' 01.8" (RT)	Δ = 4° 30' 01.8" (LT)
D = 0° 57' 17.7"	D = 0° 57' 17.7"	D = 0° 57' 17.7"
L = 471.29'	L = 471.29'	L = 471.29'
T = 235.77'	T = 235.77'	T = 235.77'
R = 6,000.00'	R = 6,000.00'	R = 6,000.00'
SE = .02 (REVERSE)	SE = .02 (REVERSE)	SE = .02

-SBLDET-

PI Sta 17+57.06	PI Sta 29+86.74	PI Sta 34+58.03
Δ = 4° 30' 01.8" (LT)	Δ = 4° 30' 01.7" (LT)	Δ = 4° 30' 01.7" (RT)
D = 0° 57' 17.7"	D = 0° 57' 17.7"	D = 0° 57' 17.7"
L = 471.29'	L = 471.29'	L = 471.29'
T = 235.77'	T = 235.77'	T = 235.77'
R = 6,000.00'	R = 6,000.00'	R = 6,000.00'
SE = .02 (REVERSE)	SE = .02 (REVERSE)	SE = .02

NOTES:

FOR -L- PROFILE, SEE SHEETS NO. 10 TO NO. 13
FOR DETOUR PLANS, SEE SHEETS 7 THRU 9
FOR DETOUR PROFILES, SEE SHEETS NO. 15 & NO. 16
FOR RAMP PLANS, SEE SHEET NO. 6
FOR RAMP PROFILES, SEE SHEET NO. 14

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PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

MATCH LINE SHEET 5 -L- STA 35+00

-RAMPB- POSSta. 18+00.00
END CONSTRUCTION

-RAMPB- CSSta. 16+57.70

-RAMPB- STSta. 18+73.70

-RAMPB- POTSta. 19+47.04

-NBLDET- POTSta. 38+51.94

IVEYSTONE HOMEOWNERS ASSOC. FC. INC.
DB 2273 PG 341

-RAMPB- SCSta. 12+16.00

-NBLDET- PTSta. 36+93.55

-RAMPB- STSta. 10+00.00

-L- POTSta. 37+45.20 (42.00' LT)

WOODS

VARIABLE WIDTH EXISTING R/W

TIE TO EXIST. GUARDRAIL

N 80°53'40.3" E

-L- POC Sta. 45+50.00
END TIP PROJECT R-2247CC

RESIDUAL

216' TAPER

100' TAPER

12' FDPS

4' FDPS

4' BST

S 79°16'19.0" E

S 76°48'53.4" E

S 82°13'35.4" E

TO WINSTON SALEM

US 421 NBL 24' BST

US 421 SBL 24' BST

-L- PTSta. 46+11.26

-L- PCSta. 44+20.22

NCDOT TRAFFIC CAMERA MOUNTED ON UTILITY POLE

ABANDONED NCDOT DYNAMIC TRAFFIC SIGN

-SBLDET- POTSta. 38+53.55

-SBLDET- PTSta. 36+93.55

-RAMPC- SCSta. 12+16.00

-RAMPC- CSSta. 14+85.67

-BL-116 PINC 465+73.11

-L- STA 43+64.85 (52.40' RT)

-RAMPC- STSta. 17+01.67

-RAMPB- POTSta. 19+00.00
END CONSTRUCTION

-RAMPB- POTSta. 19+39.02

-RAMPB- POTSta. 38+37.00 (42.00' RT)

-RAMPB- STSta. 10+00.00

RICHARD SCOTT WHEELING DB 434 PG

ANDREW S. PATTON JULIA B. PATTON DB 2601 PG 127

MPJ PROPERTIES, LLC DB 2029 PG 3745

THOMAS MCKIERNAN AND WIFE ANNE MCKIERNAN DB 2206 PG 1023

CHARLOTTE COURT 22' BST

CAMERON WAY COURT

-NBLDET-

PI Sta 34+58.03
Δ = 4° 30' 01.8" (LT)
D = 0° 57' 17.7"
L = 471.29'
T = 235.77'
R = 6,000.00'
SE = .02

-SBLDET-

PI Sta 34+58.03
Δ = 4° 30' 01.7" (RT)
D = 0° 57' 17.7"
L = 471.29'
T = 235.77'
R = 6,000.00'
SE = .02

-RAMPB-

PIs Sta 11+44.02	PI Sta 14+37.85	PIs Sta 17+29.73
Θs = 3° 15' 24.5"	Δ = 13° 19' 11.6" (LT)	Θs = 3° 15' 24.5"
Ls = 216.00'	D = 3° 00' 56.0'	Ls = 216.00'
LT = 144.02'	L = 441.70'	LT = 144.02'
ST = 72.02'	T = 221.85'	ST = 72.02'
	R = 1,900.00'	
	SE = .06	
	INC = 5.4'	
	RO = 216'	

-RAMPC-

PIs Sta 11+44.03	PI Sta 13+51.07	PIs Sta 15+57.69
Θs = 3° 20' 41.4"	Δ = 8° 21' 06.3" (RT)	Θs = 3° 20' 41.4"
Ls = 216.00'	D = 3° 05' 49.4"	Ls = 216.00'
LT = 144.03'	L = 269.67'	LT = 144.03'
ST = 72.02'	T = 135.07'	ST = 72.02'
	R = 1,850.00'	
	SE = .06	
	INC = 5.4'	
	RO = 216'	

-L-

PI Sta 45+15.74
Δ = 1° 44' 14.7" (LT)
D = 0° 54' 34.0"
L = 191.04'
T = 95.53'
R = 6,300.00'
SE = .02
INC = 4.0'
RO = 80'

NOTES:

FOR -L- PROFILE, SEE SHEETS NO. 10 TO NO. 13
FOR DETOUR PLANS, SEE SHEETS 7 THRU 9
FOR RAMP PROFILES, SEE SHEET NO. 14
FOR DETOUR PROFILES, SEE SHEETS NO. 15 & NO. 16

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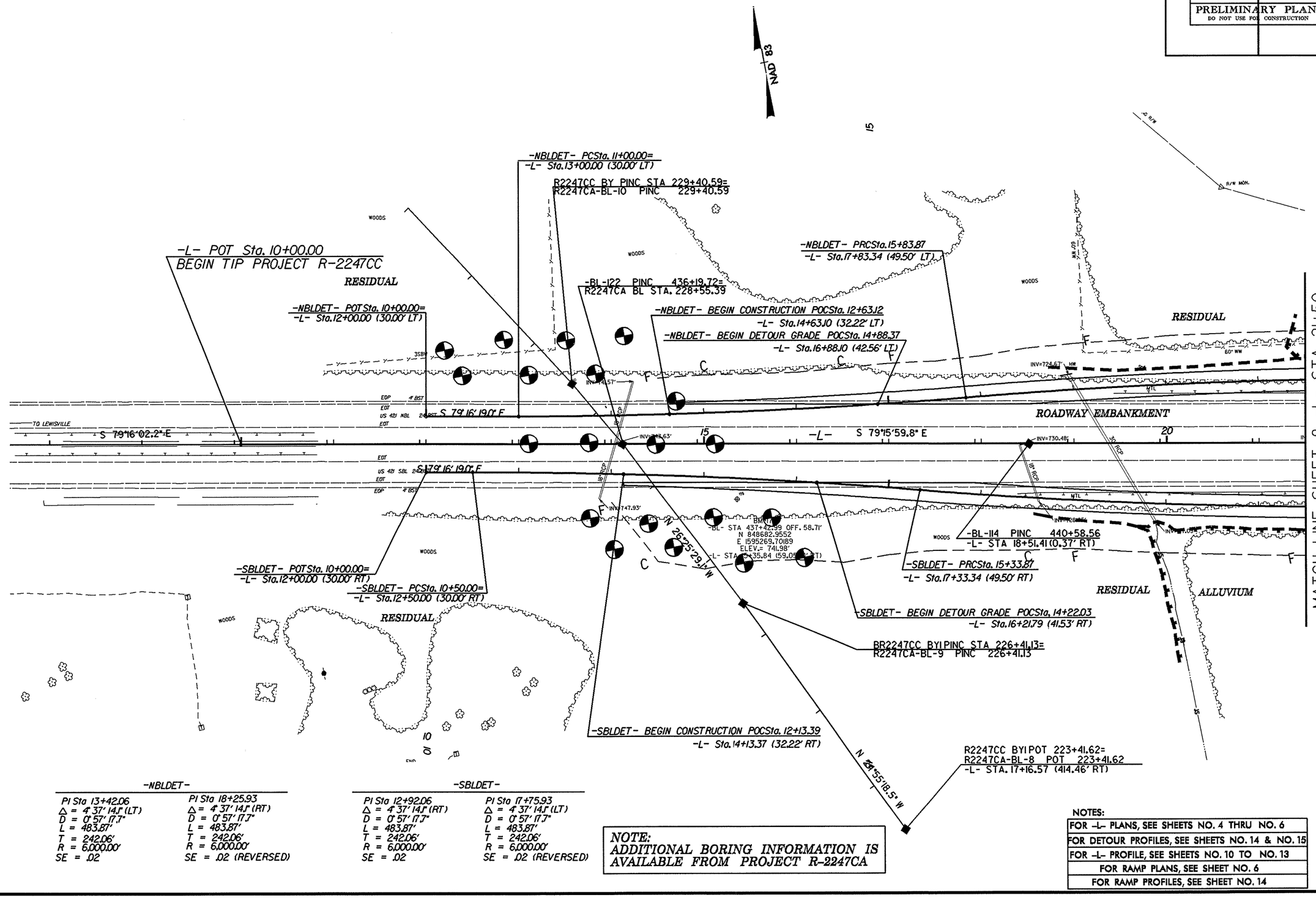
**DETAIL OF ON-SITE DETOURS

PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-NBLDET-

PI Sta 13+42.06	PI Sta 18+25.93
Δ = 4° 37' 14.1" (LT)	Δ = 4° 37' 14.1" (RT)
D = 0° 57' 17.7"	D = 0° 57' 17.7"
L = 483.87'	L = 483.87'
T = 242.06'	T = 242.06'
R = 6,000.00'	R = 6,000.00'
SE = .02	SE = .02 (REVERSED)

-SBLDET-

PI Sta 12+92.06	PI Sta 17+75.93
Δ = 4° 37' 14.1" (RT)	Δ = 4° 37' 14.1" (LT)
D = 0° 57' 17.7"	D = 0° 57' 17.7"
L = 483.87'	L = 483.87'
T = 242.06'	T = 242.06'
R = 6,000.00'	R = 6,000.00'
SE = .02	SE = .02 (REVERSED)

NOTE:
ADDITIONAL BORING INFORMATION IS AVAILABLE FROM PROJECT R-2247CA

NOTES:

FOR -L- PLANS, SEE SHEETS NO. 4 THRU NO. 6
FOR DETOUR PROFILES, SEE SHEETS NO. 14 & NO. 15
FOR -L- PROFILE, SEE SHEETS NO. 10 TO NO. 13
FOR RAMP PLANS, SEE SHEET NO. 6
FOR RAMP PROFILES, SEE SHEET NO. 14

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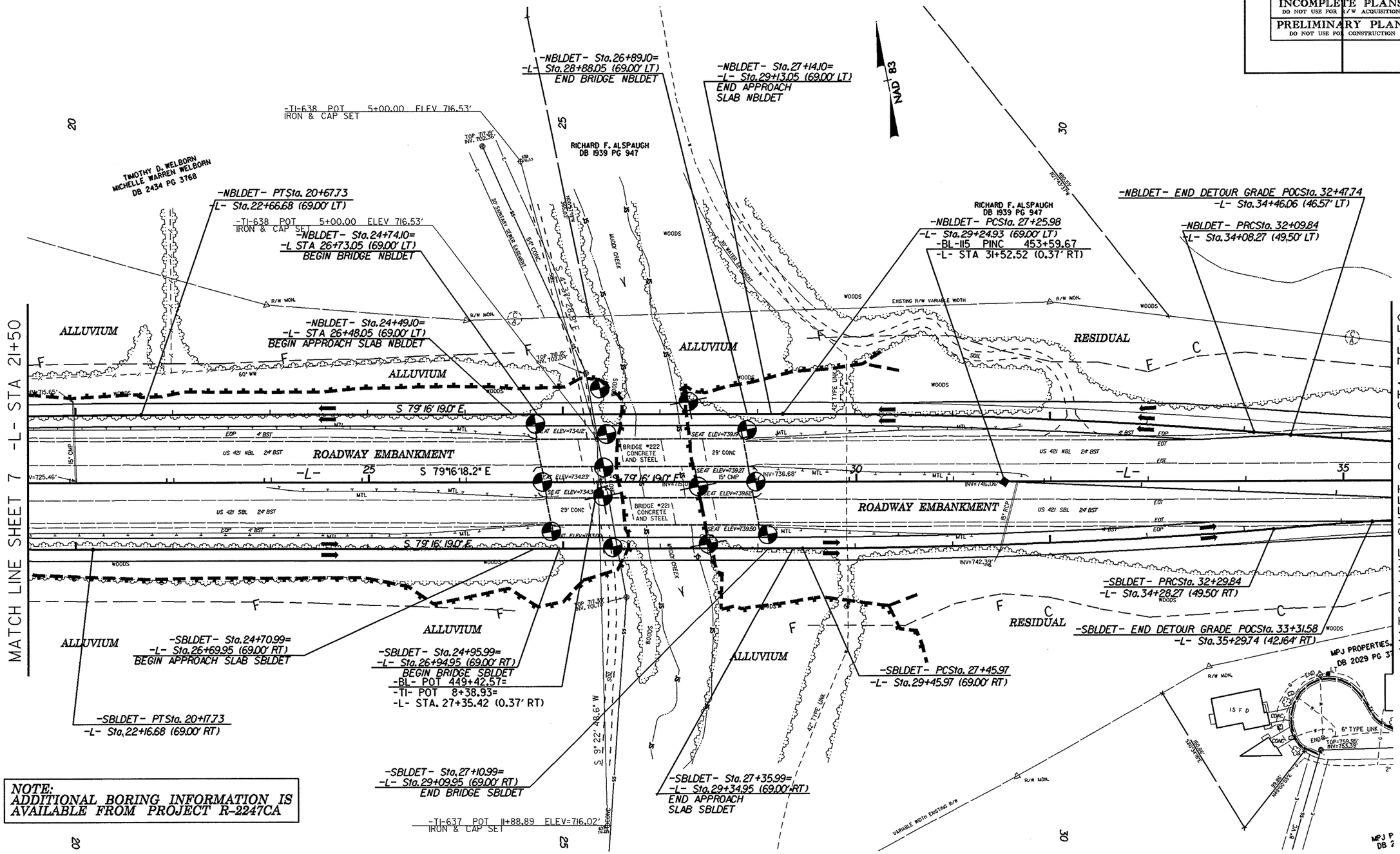
PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

**DETAIL OF ON-SITE DETOURS



NOTE:
ADDITIONAL BORING INFORMATION IS AVAILABLE FROM PROJECT R-2247CA

-NBLDET-		
PI Sta 18+25.93	PI Sta 29+68.04	PI Sta 34+51.91
Δ = 4° 37' 14.1" (RT)	Δ = 4° 37' 14.1" (RT)	Δ = 4° 37' 14.1" (LT)
D = 0° 57' 17.7"	D = 0° 57' 17.7"	D = 0° 57' 17.7"
L = 483.87'	L = 483.87'	L = 483.87'
T = 242.06'	T = 242.06'	T = 242.06'
R = 6,000.00'	R = 6,000.00'	R = 6,000.00'
SE = .02 (REVERSE)	SE = .02 (REVERSE)	SE = .02

-SBLDET-		
PI Sta 17+75.93	PI Sta 29+88.04	PI Sta 34+71.91
Δ = 4° 37' 14.1" (LT)	Δ = 4° 37' 14.1" (LT)	Δ = 4° 37' 14.1" (RT)
D = 0° 57' 17.7"	D = 0° 57' 17.7"	D = 0° 57' 17.7"
L = 483.87'	L = 483.87'	L = 483.87'
T = 242.06'	T = 242.06'	T = 242.06'
R = 6,000.00'	R = 6,000.00'	R = 6,000.00'
SE = .02 (REVERSE)	SE = .02 (REVERSE)	SE = .02

NOTES:

FOR -L- PLANS, SEE SHEETS NO. 4 THRU NO. 6
FOR DETOUR PROFILES, SEE SHEETS NO. 15 & NO. 16
FOR -L- PROFILE, SEE SHEETS NO. 10 TO NO. 13
FOR RAMP PROFILES, SEE SHEET NO. 14
FOR RAMP PLANS, SEE SHEET NO. 6

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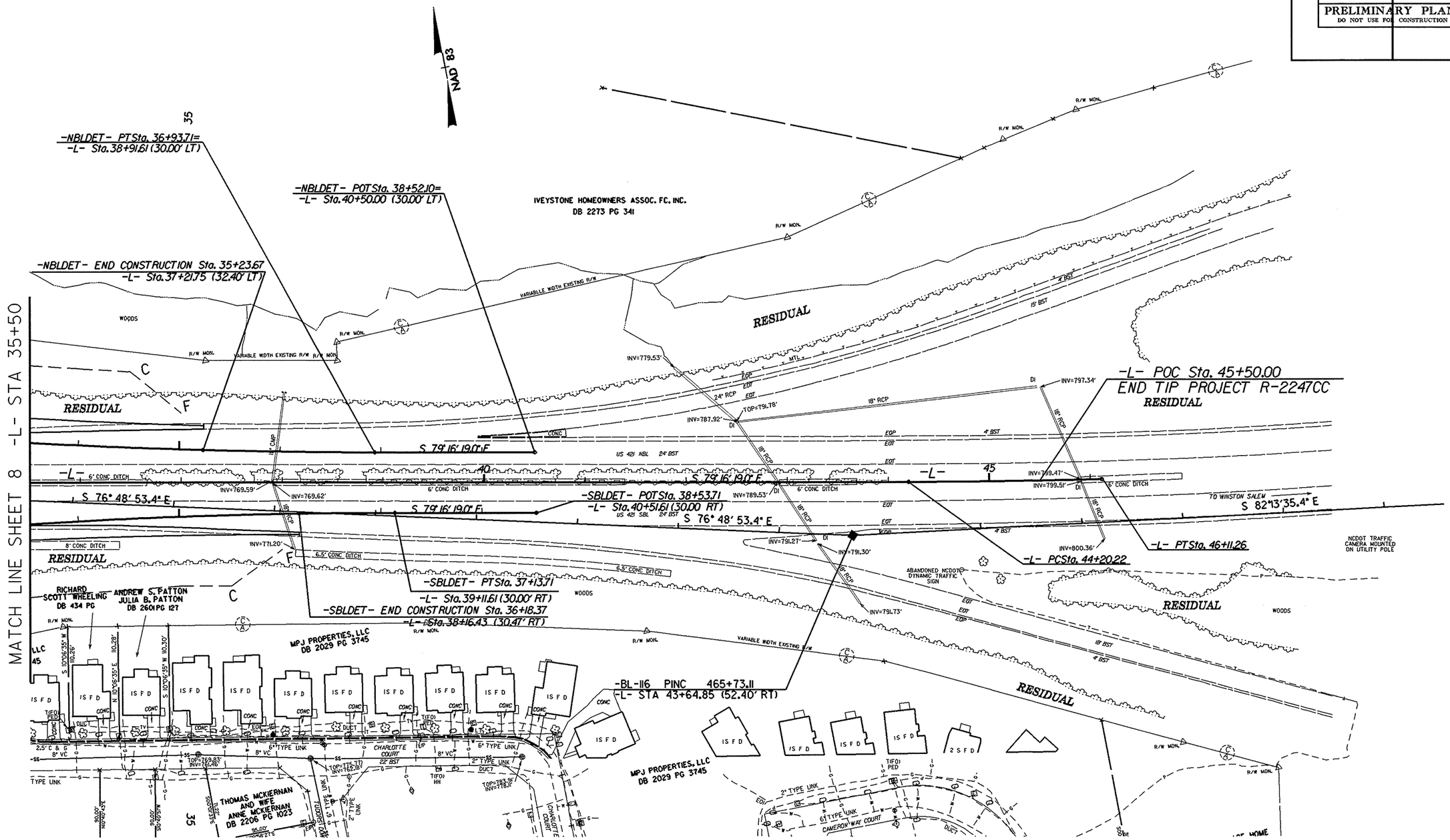
8/17/99

**DETAIL OF ON-SITE DETOURS

PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



-NBLDET-	-SBLDET-	-L-
PI Sta 34+51.91	PI Sta 34+71.91	PI Sta 45+15.74
Δ = 4° 37' 14.1" (LT)	Δ = 4° 37' 14.1" (RT)	Δ = 1° 44' 14.7" (LT)
D = 0° 57' 17.7"	D = 0° 57' 17.7"	D = 0° 54' 34.0"
L = 483.87'	L = 483.87'	L = 191.04'
T = 242.06'	T = 242.06'	T = 95.53'
R = 6,000.00'	R = 6,000.00'	R = 6,300.00'
SE = .02	SE = .02	SE = .02
		INC = 40'
		RO = 80'

NOTES:

FOR -L- PLANS, SEE SHEETS NO. 4 THRU NO. 6
FOR DETOUR PROFILES, SEE SHEETS NO. 15 & NO. 16
FOR -L- PROFILES, SEE SHEETS NO. 10 TO NO. 13
FOR RAMP PROFILES, SEE SHEET NO. 14
FOR RAMP PLANS, SEE SHEET NO. 6

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LLT

PI = 13+00.00
EL = 754.72'
VC = 300'
K = 340.91

BM#175
-BL- STA 437+42.99 OFF. 58.71'
N 848682.9552
E 1595269.70189
ELEV.= 741.98'
-L- STA 15+35.84 (59.0550' RT)

PI = 18+00.00
EL = 736.59'
VC = 350'
K = 151

PI = 21+00.00
EL = 732.68'
VC = 135'
K = 138

PI = 22+50.00
EL = 732.19'
VC = 165'
K = 136

733.60

-LLT- BEGIN GRADE
STA. 10+00.00
ELEV. 765.58'

(-)13.6180%
(-)13.6268%
(-)11.3030%
(-)10.3267%
(+)10.8830%

SS-11A
B2-A SBL
13+11.0 -L-
0.6 LT

B2-B SBL
13+76.0 -L-
1.4 LT

SS-4A
B2-A NBL
14+48.0 -L-
0.6 RT

SS-6A
SS-7A
B2-B NBL
15+12.0 -L-
0.3 RT

RESIDUAL
06/97
BT
AR
CRYSTALLINE ROCK (GNEISS /SCHIST)

BORING DESCRIPTIONS

- (A) RESIDUAL, REDDISH BROWN & GREEN TO OLIVE GRAY & REDDISH BROWN & DARK TAN MEDIUM STIFF TO STIFF MOIST CLAYS (A-7, A-6)
- (B) RESIDUAL, GREENISH GRAY & TAN TO BROWN & BEIGE STIFF TO HARD MOIST SILT, SAPROLITIC IN PART (A-4)
- (C) RESIDUAL, GRAY & LIGHT TAN MEDIUM DENSE MOIST SILTY OR CLAYEY SAND W/ROCK FRAGMENTS IN PART, SAPROLITIC (A-2-4)
- (D) RESIDUAL, GRAY BROWN, TAN, GREENISH GRAY & WHITE LOOSE TO VERY DENSE MOIST TO WET SILTY OR CLAYEY SAND W/ROCK FRAGMENTS, SAPROLITIC (A-2-4)
- (E) SEVERELY WEATHERED CRYSTALLINE ROCK (GNEISS /SCHIST)
- (F) RESIDUAL, BROWN, WHITE, & BEIGE HARD MOIST SILT (A-4)

SEE SHEETS 4, 5, & 6 FOR -L- ALIGNMENT

760
750
740
730
720
710
700
690
680
670

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

LRT

PI = 13+00.00
EL = 755.32'
VC = 300'
K = 928

BM#175
-BL- STA 437+42.99 OFF. 58.71'
N 848682.9552
E 1595269.70189
ELEV.= 741.98'
-L- STA 15+35.84 (59.0550' RT)

PI = 18+00.00
EL = 736.59'
VC = 355'
K = 136

PI = 21+00.00
EL = 733.18'
VC = 150'
K = 184

PI = 22+50.00
EL = 732.70'
VC = 140'
K = 137

733.82

-LRT- BEGIN GRADE
STA. 10+00.00
ELEV. 765.59'

(-)13.4233%
(-)13.7466%
(-)11.1367%
(-)10.3200%
(+)10.7024%

SS-11A
B2-A SBL
13+11.0 -L-
0.6 LT

B2-B SBL
13+76.0 -L-
1.4 LT

SS-4A
B2-A NBL
14+48.0 -L-
0.6 RT

SS-6A
SS-7A
B2-B NBL
15+12.0 -L-
0.3 RT

RESIDUAL
06/97
BT
AR
CRYSTALLINE ROCK (GNEISS /SCHIST)

BORING DESCRIPTIONS

- (A) RESIDUAL, REDDISH BROWN & GREEN TO OLIVE GRAY & REDDISH BROWN & DARK TAN MEDIUM STIFF TO STIFF MOIST CLAYS (A-7, A-6)
- (B) RESIDUAL, GREENISH GRAY & TAN TO BROWN & BEIGE STIFF TO HARD MOIST SILT, SAPROLITIC IN PART (A-4)
- (C) RESIDUAL, GRAY & LIGHT TAN MEDIUM DENSE MOIST SILTY OR CLAYEY SAND W/ROCK FRAGMENTS IN PART, SAPROLITIC (A-2-4)
- (D) RESIDUAL, GRAY BROWN, TAN, GREENISH GRAY & WHITE LOOSE TO VERY DENSE MOIST TO WET SILTY OR CLAYEY SAND W/ROCK FRAGMENTS, SAPROLITIC (A-2-4)
- (E) SEVERELY WEATHERED CRYSTALLINE ROCK (GNEISS /SCHIST)
- (F) RESIDUAL, BROWN, WHITE, & BEIGE HARD MOIST SILT (A-4)

SEE SHEETS 4, 5, & 6 FOR -L- ALIGNMENT

760
750
740
730
720
710
700
690
680
670

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

LLT

-LLT- BEGIN BRIDGE
STA. 26+79.24
ELEV. 739.33'

-LLT- END BRIDGE
STA. 28+94.24
ELEV. 744.37'

PI = 24+50.00
EL = 733.96'
VC = 200'
K = 137

PI = 31+00.00
EL = 749.19'
VC = 205'
K = 139

PI = 33+50.00
EL = 758.73'
VC = 250'
K = 1802

733.60

764.58

(+)0.8830% (+)2.3435% (+)2.3435% (+)3.8160% (+)3.8160% (+)3.9548%

SS-5
EB1-C
26+78.0 -L-
CVL

SS-17
EB2-C
28+97.0 -L-
CVL

SS-13
B2-C
28+38.3 -L-
4.9 RT

LL B1-B
27+41.0 -L-
14.8 LT

CONCRETE AND GRAVEL

ROADWAY EMBANKMENT

ROADWAY EMBANKMENT

BROWN MEDIUM DENSE MICACEOUS SILTY MEDIUM TO FINE SAND (A-2-4)

BROWN VERY STIFF MEDIUM TO FINE SANDY CLAYEY SILT (A-5)

BROWN MEDIUM DENSE MICACEOUS SILTY MEDIUM TO FINE SAND (A-2-4)

ALLUVIAL
TAN-BROWN LOOSE TO MEDIUM DENSE SLIGHTLY SILTY MEDIUM TO FINE SAND (A-2-4)

CRYSTALLINE ROCK
BROWN-GREEN AND GRAY-GREEN SCHIST

BT

BORING DESCRIPTIONS:

- (A) ROADWAY EMBANKMENT, BROWN AND RED-BROWN STIFF MICACEOUS TO SLIGHTLY MICACEOUS MEDIUM TO FINE SANDY SILT (A-4)
- (B) ROADWAY EMBANKMENT, RED-BROWN VERY STIFF SLIGHTLY MICACEOUS FINE SANDY SILTY CLAY (A-7-5)
- (C) ROADWAY EMBANKMENT, BROWN STIFF SLIGHTLY MICACEOUS FINE SANDY SILT (A-4)
- (D) ALLUVIAL, GRAY MEDIUM DENSE SLIGHTLY SILTY MEDIUM TO FINE SAND (A-2-4)
- (E) WEATHERED ROCK, SEVERELY WEATHERED SCHIST
- (F) ARTIFICIAL FILL (ENGINEERED), RIP-RAP
- (G) ROADWAY EMBANKMENT, RED-BROWN SOFT SLIGHTLY MICACEOUS CLAYEY MEDIUM TO FINE SANDY SILT (A-4)
- (H) ROADWAY EMBANKMENT, RED-BROWN LOOSE SLIGHTLY MICACEOUS SLIGHTLY CLAYEY SILTY TO FINE SILTY SAND (A-2-4)
- (I) ALLUVIAL, GRAY LOOSE SLIGHTLY MICACEOUS SILTY MEDIUM TO FINE SAND (A-2-4)
- (J) WEATHERED ROCK, GRAY-WHITE SEVERELY WEATHERED GRANITE
- (K) RESIDUAL, TAN-BROWN MEDIUM DENSE MICACEOUS SILTY MEDIUM TO FINE SAND (A-2-4)
- (L) ALLUVIAL, BROWN AND GRAY LOOSE SLIGHTLY SILTY MEDIUM TO FINE SAND (A-2-4)
- (M) CRYSTALLINE ROCK, (SCHIST)

SEE SHEETS 4, 5, & 6 FOR -L- ALIGNMENT

780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620 610 600

24 26 28 30 32 34 36 38 40 42 44 46

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

LRT

-LRT- BEGIN BRIDGE
STA. 26+88.76
ELEV. 739.31'

-LRT- END BRIDGE
STA. 29+03.76
ELEV. 744.84'

PI = 25+00.00
EL = 734.46'
VC = 290'
K = 155

PI = 31+00.00
EL = 749.89'
VC = 200'
K = 172

PI = 33+50.00
EL = 759.23'
VC = 200'
K = 1032

733.82

765.12

(+)0.7024%

(+)2.5722%

(+)2.5722%

(+)3.7360%

(+)3.7360%

(+)3.9298%

SS-6
EB1-C
26+78.0 -L-
C/L

SS-17
EB2-C
28+97.0 -L-
C/L

SS-7
RS-1
RS-2

SS-13
RS-3
RS-4

RL B1-A
27+40.0 -L-
14.8 RT

B2-C
28+38.0 -L-
4.9 RT

CONCRETE AND GRAVEL

ROADWAY EMBANKMENT

ROADWAY EMBANKMENT

BROWN MEDIUM DENSE MICACEOUS SILTY MEDIUM TO FINE SAND (A-2-4)

BROWN VERY STIFF MEDIUM TO FINE SANDY CLAYEY SILT (A-5)

BROWN MEDIUM DENSE MICACEOUS SILTY MEDIUM TO FINE SAND (A-2-4)

ALLUVIAL
TAN-BROWN LOOSE TO MEDIUM DENSE SLIGHTLY SILTY MEDIUM TO FINE SAND (A-2-4)

CRYSTALLINE ROCK
TAN GRAY SCHIST

CRYSTALLINE ROCK
GRAY SCHIST

CRYSTALLINE ROCK
GRAY SCHIST

BT

BORING DESCRIPTIONS:

- (A) ROADWAY EMBANKMENT, BROWN AND RED-BROWN STIFF MICACEOUS TO SLIGHTLY MICACEOUS MEDIUM TO FINE SANDY SILT (A-4)
- (B) ROADWAY EMBANKMENT, RED-BROWN VERY STIFF SLIGHTLY MICACEOUS FINE SANDY SILTY CLAY (A-7-5)
- (C) ROADWAY EMBANKMENT, BROWN STIFF SLIGHTLY MICACEOUS FINE SANDY SILT (A-4)
- (D) ALLUVIAL, GRAY MEDIUM DENSE SLIGHTLY SILTY MEDIUM TO FINE SAND (A-2-4)
- (E) WEATHERED ROCK, SEVERELY WEATHERED SCHIST
- (F) ARTIFICIAL FILL (ENGINEERED), RIP-RAP
- (G) ROADWAY EMBANKMENT, BROWN SOFT SLIGHTLY MICACEOUS MEDIUM TO FINE SANDY SILT (A-4)
- (H) ROADWAY EMBANKMENT, BROWN SOFT SLIGHTLY MICACEOUS CLAYEY MEDIUM TO FINE SANDY SILT (A-4)
- (I) ALLUVIAL, GRAY LOOSE SLIGHTLY MICACEOUS SILTY COARSE TO FINE SAND (A-2-4)
- (J) RESIDUAL, GRAY-BLACK AND GRAY-TAN VERY DENSE SLIGHTLY MICACEOUS SILTY MEDIUM TO FINE SAND (A-2-4)
- (K) ALLUVIAL, BROWN AND GRAY LOOSE SLIGHTLY SILTY MEDIUM TO FINE SAND (A-2-4)
- (L) RESIDUAL, GRAY-BLACK VERY DENSE SLIGHTLY MICACEOUS SILTY COARSE TO FINE SAND (A-2-4)
- (M) CRYSTALLINE ROCK, (SCHIST)

SEE SHEETS 4, 5, & 6 FOR -L- ALIGNMENT

780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620 610 600

24 26 28 30 32 34 36 38 40 42 44 46

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MicroStation V8 2004 Edition

PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	13

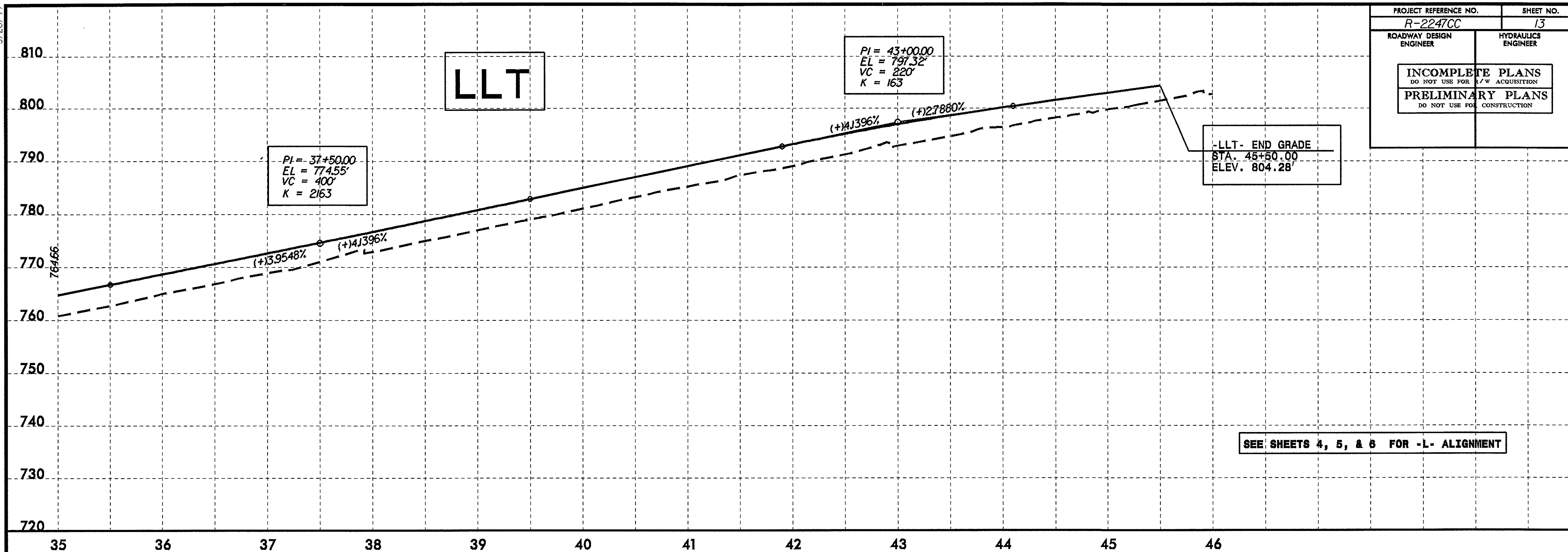
ROADWAY DESIGN ENGINEER

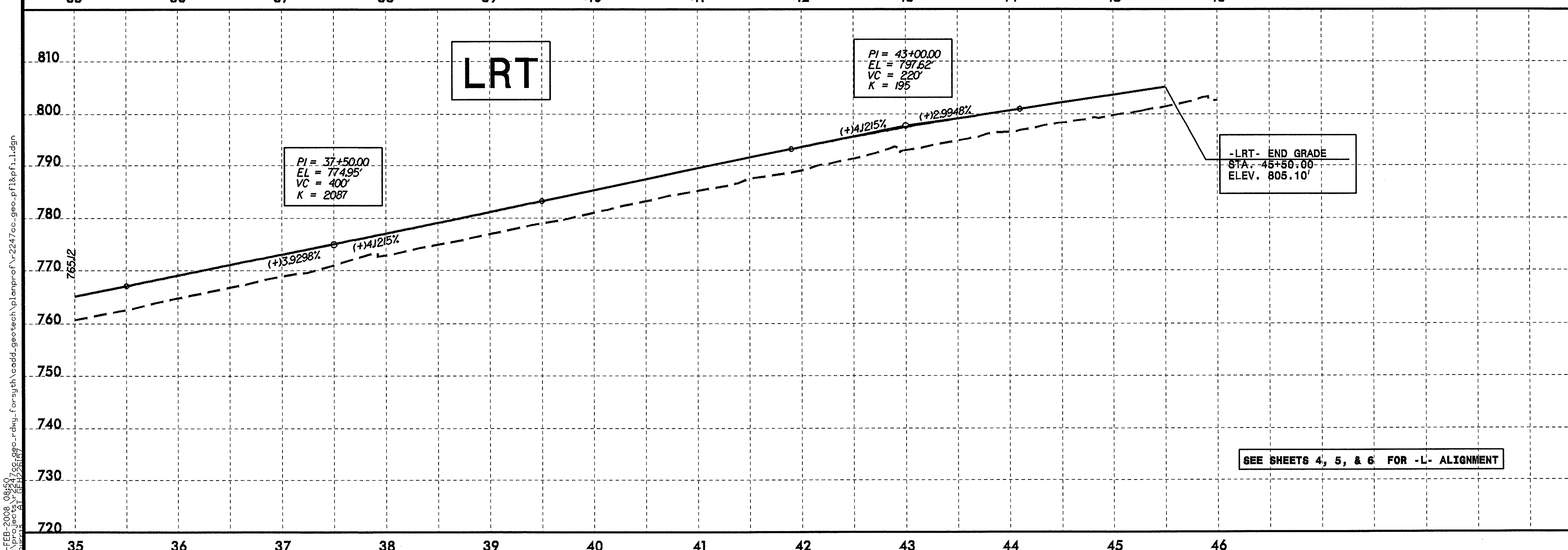
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/28/99





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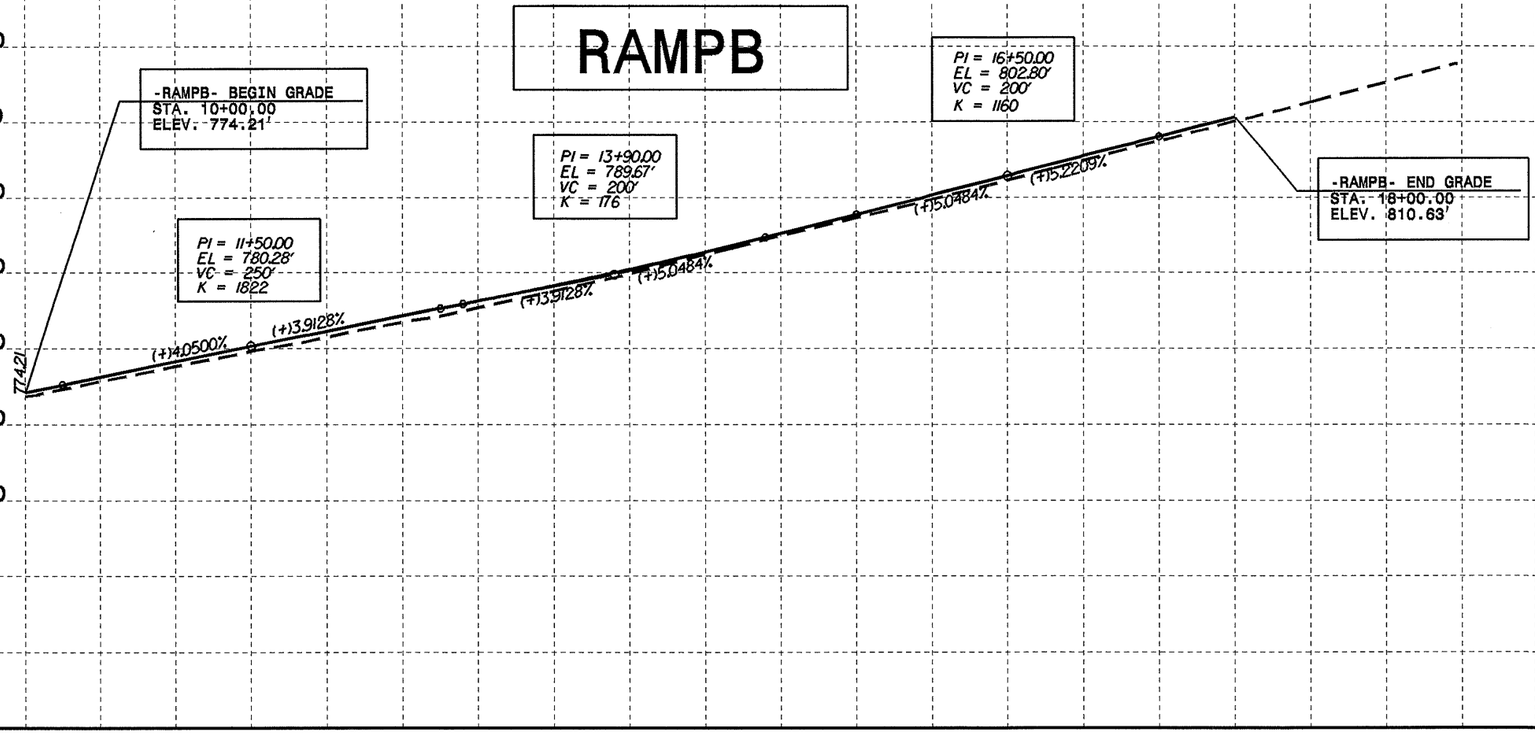
churris AT GFH22615?

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

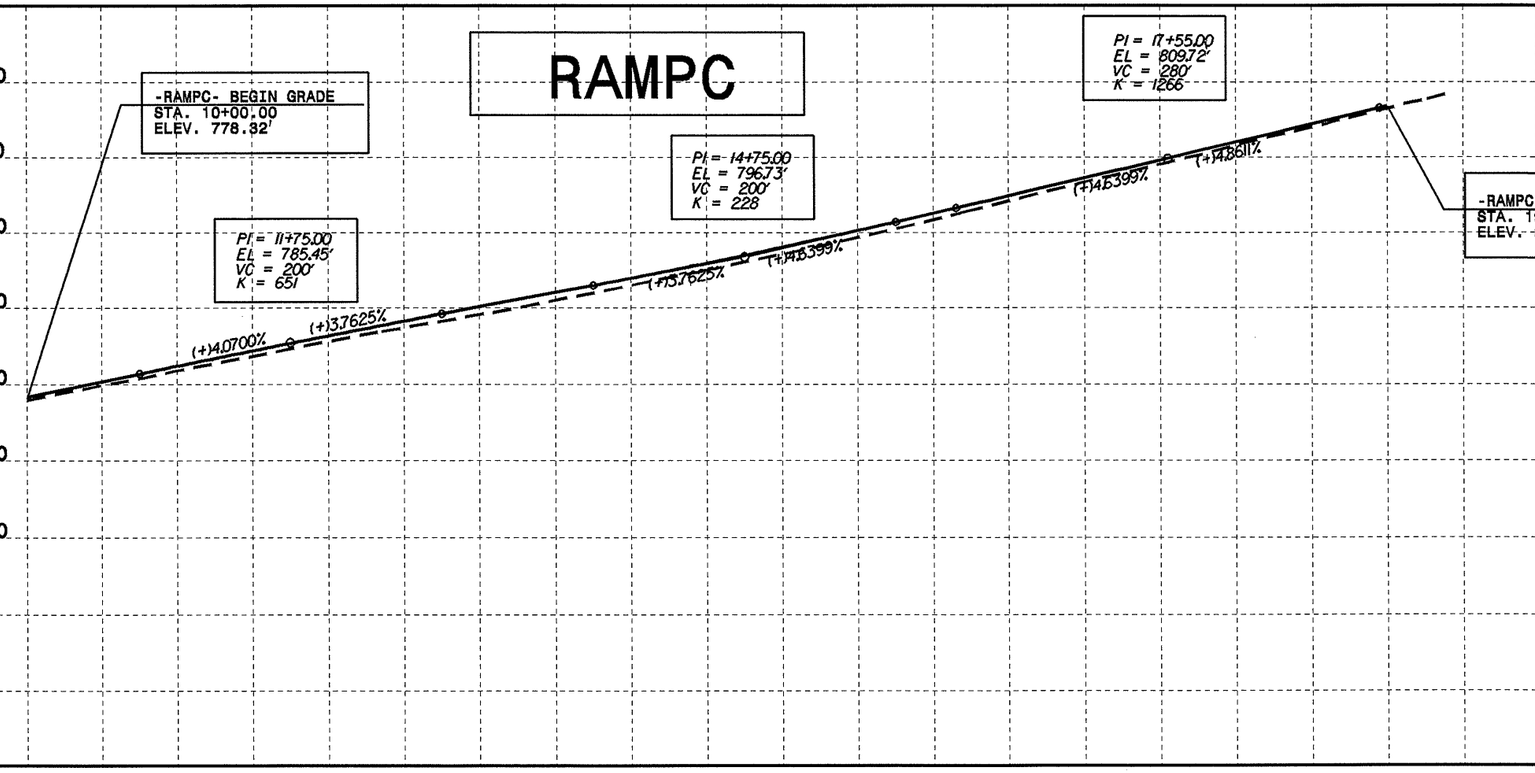
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RAMPB



SEE SHEET 6 FOR RAMP ALIGNMENTS

RAMPC



SEE SHEET 6 FOR RAMP ALIGNMENTS

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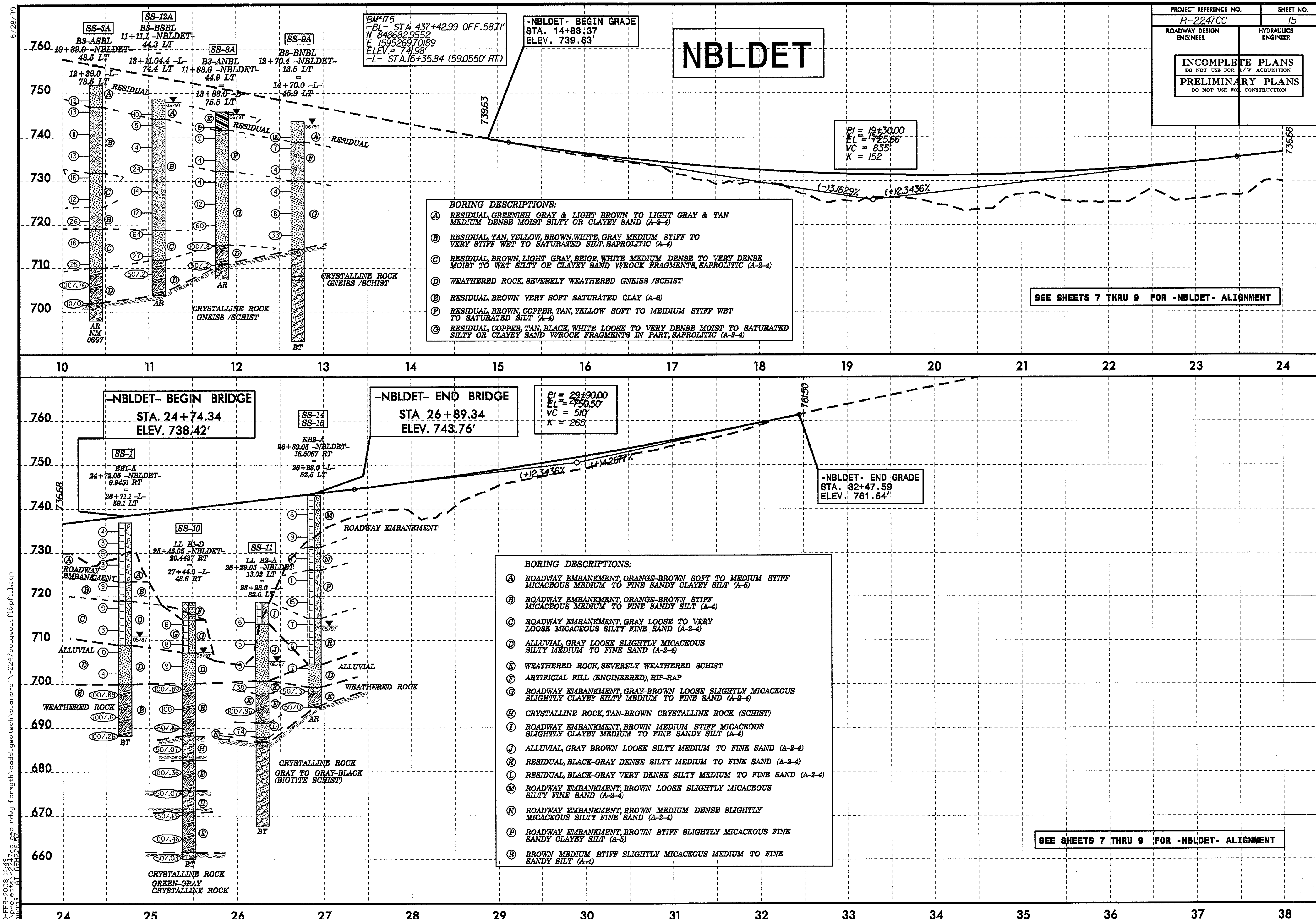

PROJECT REFERENCE NO. R-2247CC
SHEET NO. 15
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
NBLDET
BM#175 -BL- STA 437+42.99 OFF. 58.71' N 848682.9552 E 1595269.70189 ELEV.= 741.98' -L- STA.15+35.84 (59.0550' RT.)
-NBLDET- BEGIN GRADE STA. 14+88.37 ELEV. 739.63'
PI = 19+30.00 EL = 725.66' VC = 835' K = 152
(-)3.1629%
(+)2.3436%
SS-3A B3-ASBL 10+89.0 -NBLDET- 43.5 LT = 12+39.0 -L- 73.5 LT
SS-12A B3-BSBL 11+11.1 -NBLDET- 44.3 LT = 13+11.04.4 -L- 74.4 LT
SS-8A B3-ANBL 11+83.6 -NBLDET- 44.9 LT = 13+83.0 -L- 75.5 LT
SS-9A B3-BNBL 12+70.4 -NBLDET- 13.5 LT = 14+70.0 -L- 45.9 LT
RESIDUAL
CRYSTALLINE ROCK GNEISS /SCHIST
BORING DESCRIPTIONS:
(A) RESIDUAL, GREENISH GRAY & LIGHT BROWN TO LIGHT GRAY & TAN MEDIUM DENSE MOIST SILTY OR CLAYEY SAND (A-2-4)
(B) RESIDUAL, TAN, YELLOW, BROWN, WHITE, GRAY MEDIUM STIFF TO VERY STIFF WET TO SATURATED SILT, SAPROLITIC (A-4)
(C) RESIDUAL, BROWN, LIGHT GRAY, BEIGE, WHITE MEDIUM DENSE TO VERY DENSE MOIST TO WET SILTY OR CLAYEY SAND W/ROCK FRAGMENTS, SAPROLITIC (A-2-4)
(D) WEATHERED ROCK, SEVERELY WEATHERED GNEISS /SCHIST
(E) RESIDUAL, BROWN VERY SOFT SATURATED CLAY (A-6)
(F) RESIDUAL, BROWN, COPPER, TAN, YELLOW SOFT TO MEIDIUM STIFF WET TO SATURATED SILT (A-4)
(G) RESIDUAL, COPPER, TAN, BLACK, WHITE LOOSE TO VERY DENSE MOIST TO SATURATED SILTY OR CLAYEY SAND W/ROCK FRAGMENTS IN PART, SAPROLITIC (A-2-4)
SEE SHEETS 7 THRU 9 FOR -NBLDET- ALIGNMENT
-NBLDET- BEGIN BRIDGE STA. 24+74.34 ELEV. 738.42'
-NBLDET- END BRIDGE STA 26+89.34 ELEV. 743.76'
PI = 29+90.00 EL = 750.50' VC = 510' K = 265
-NBLDET- END GRADE STA. 32+47.59 ELEV. 761.54'
(+)2.3436%
(+)4.2677%
SS-1 EB1-A 24+72.05 -NBLDET- 9.9451 RT = 26+71.1 -L- 59.1 LT
SS-10 LL B1-D 25+45.05 -NBLDET- 20.4437 RT = 27+44.0 -L- 48.6 RT
SS-11 LL B2-A 26+29.05 -NBLDET- 13.02 LT = 28+28.0 -L- 82.0 LT
SS-14 SS-15 EB2-A 26+89.05 -NBLDET- 16.5067 RT = 28+88.0 -L- 52.5 LT
ROADWAY EMBANKMENT
ALLUVIAL
WEATHERED ROCK
CRYSTALLINE ROCK GRAY TO GRAY-BLACK (BIOTITE SCHIST)
CRYSTALLINE ROCK GREEN-GRAY CRYSTALLINE ROCK
BORING DESCRIPTIONS:
(A) ROADWAY EMBANKMENT, ORANGE-BROWN SOFT TO MEDIUM STIFF MICACEOUS MEDIUM TO FINE SANDY CLAYEY SILT (A-5)
(B) ROADWAY EMBANKMENT, ORANGE-BROWN STIFF MICACEOUS MEDIUM TO FINE SANDY SILT (A-4)
(C) ROADWAY EMBANKMENT, GRAY LOOSE TO VERY LOOSE MICACEOUS SILTY FINE SAND (A-2-4)
(D) ALLUVIAL, GRAY LOOSE SLIGHTLY MICACEOUS SILTY MEDIUM TO FINE SAND (A-2-4)
(E) WEATHERED ROCK, SEVERELY WEATHERED SCHIST
(F) ARTIFICIAL FILL (ENGINEERED), RIP-RAP
(G) ROADWAY EMBANKMENT, GRAY-BROWN LOOSE SLIGHTLY MICACEOUS SLIGHTLY CLAYEY SILTY MEDIUM TO FINE SAND (A-2-4)
(H) CRYSTALLINE ROCK, TAN-BROWN CRYSTALLINE ROCK (SCHIST)
(I) ROADWAY EMBANKMENT, BROWN MEDIUM STIFF MICACEOUS SLIGHTLY CLAYEY MEDIUM TO FINE SANDY SILT (A-4)
(J) ALLUVIAL, GRAY BROWN LOOSE SILTY MEDIUM TO FINE SAND (A-2-4)
(K) RESIDUAL, BLACK-GRAY DENSE SILTY MEDIUM TO FINE SAND (A-2-4)
(L) RESIDUAL, BLACK-GRAY VERY DENSE SILTY MEDIUM TO FINE SAND (A-2-4)
(M) ROADWAY EMBANKMENT, BROWN LOOSE SLIGHTLY MICACEOUS SILTY FINE SAND (A-2-4)
(N) ROADWAY EMBANKMENT, BROWN MEDIUM DENSE SLIGHTLY MICACEOUS SILTY FINE SAND (A-2-4)
(P) ROADWAY EMBANKMENT, BROWN STIFF SLIGHTLY MICACEOUS FINE SANDY CLAYEY SILT (A-5)
(R) BROWN MEDIUM STIFF SLIGHTLY MICACEOUS MEDIUM TO FINE SANDY SILT (A-4)
SEE SHEETS 7 THRU 9 FOR -NBLDET- ALIGNMENT

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2247CC	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SBLDET

B1-ASBL
11+76.0 -SBLDET- 45.4 RT
=
13+77 -L- 79.8 RT

B1-BSBL
12+41.7 -SBLDET- 62.9 RT
=
14+40 -L- 85.9 RT

B1-ANBL
13+13.0 -SBLDET- 43.4 RT
=
13+77.0 -L- 79.8 RT

B1-BNBL
13+76.4 -SBLDET- 40.7 RT
=
15+73.0 -L- 79.5 RT

BM#175
-BL- STA 437+42.99 OFF 58.71'
N 848682.9552
E 1595269.70189
ELEV. = 741.98'
-L- STA 15+35.84 (59.0550' RT)

-SBLDET- BEGIN GRADE
STA. 14+22.03
ELEV. 741.91'

PI = 19+57.00
EL = 724.84'
VC = 940'
K = 163

(-)3.3916%

(+)2.5721%

736.26

-SBLDET- END GRADE
STA. 33+12.73
ELEV. 764.72'

RESIDUAL

CRYSTALLINE ROCK
GNEISS /SCHIST

AR

BT

AR
NM
06/97

BORING DESCRIPTIONS:

- (A) RESIDUAL, TAN VERY STIFF MOIST TO WET CLAY (A-7)
- (B) RESIDUAL, TAN, COPPER, BEIGE & WHITE STIFF TO HARD MOIST TO WET SILT SAPROLITE (A-4)
- (C) WEATHERED ROCK, SEVERELY WEATHERED GNEISS /SCHIST
- (D) RESIDUAL, DARK GREENISH GRAY & OLIVE GRAY, DENSE, MOIST, SILTY OR CLAYEY SAND WITH TRACE OF ROCK FRAGMENTS (A-2-4)
- (E) RESIDUAL, WHITE BLACK & TAN VERY STIFF MOIST SILT (A-4)
- (F) RESIDUAL, OLIVE GRAY, BLACK, WHITE AND TAN, DENSE TO VERY DENSE, MOIST TO WET, SILTY OR CLAYEY SAND W/ROCK FRAGMENTS IN PART, SAPROLITIC (A-2-4)

BORING DESCRIPTIONS:

- (G) RESIDUAL, WHITE & BEIGE, MEDIUM DENSE TO VERY DENSE, MOIST, SILTY OR CLAYEY SAND WITH ROCK FRAGMENTS (A-2-4)
- (H) RESIDUAL, WHITE, COPPER, TAN & YELLOW, MEDIUM DENSE MOIST, SILTY OR CLAYEY SAND, TRACE ROCK FRAGMENTS IN PART, SAPROLITIC (A-2-4)
- (I) RESIDUAL, WHITE, COPPER, TAN, AND OLIVE GRAY, HARD, MOIST TO WET SILT W/DENSE WET SILTY OR CLAYEY SAND, SAPROLITIC (A-4)
- (J) RESIDUAL, BLACK, WHITE, & BEIGE VERY DENSE , MOIST SILTY OR CLAYEY SAND W/ROCK FRAGMENTS, SAPROLITIC (A-2-4)

-SBLDET- BEGIN BRIDGE
STA. 24+95.60
ELEV. 738.69'

-SBLDET- END BRIDGE
STA. 27+10.60
ELEV. 744.22'

PI = 30+42.00
EL = 752.75'
VC = 340'
K = 184

(+)4.4214%

SS-3
EB1-B
24+88.05 -SBLDET- 18.1471 LT
=
26+87.0 -L- 69.1 LT

SS-16
EB2-B
27+10.05 -SBLDET- 14.5382 LT
=
29+09.0 -L- 64.5 RT

SS-8
RL B1-B
25+51.05 -SBLDET- 1.5789 LT
=
27+50.0 -L- 64.0 RT

SS-12
RL B2-B
26+49.05 -SBLDET- 5.0238 LT
=
28+48.0 -L- 64.0 RT

ROADWAY EMBANKMENT

ALLUVIAL

CRYSTALLINE ROCK
GREEN-TAN AND GREEN-GRAY SCHIST

CRYSTALLINE ROCK
GRAY-BLACK TO GRAY-TAN, TO BROWN, TO GRAY SCHIST

BT

BORING DESCRIPTIONS:

- (A) ROADWAY EMBANKMENT, BROWN STIFF SLIGHTLY MICACEOUS MEDIUM TO FINE SANDY CLAYEY SILT (A-6)
- (B) ROADWAY EMBANKMENT, RED-BROWN MEDIUM STIFF SLIGHTLY CLAYEY SLIGHTLY MICACEOUS FINE SANDY SILT (A-4)
- (C) RED-BROWN TO BROWN VERY STIFF TO STIFF SLIGHTLY MICACEOUS SLIGHTLY CLAYEY FINE SANDY SILT (A-4)
- (D) ROADWAY EMBANKMENT, BROWN STIFF SLIGHTLY CLAYEY FINE SANDY SILT (A-4)
- (E) ALLUVIAL, TAN TO GRAY LOOSE TO MEDIUM DENSE SLIGHTLY MICACEOUS SLIGHTLY SILTY MEDIUM TO FINE SAND (A-2-4)
- (F) WEATHERED ROCK, SEVERELY WEATHERED SCHIST
- (G) ROADWAY EMBANKMENT, GRAY-BROWN LOOSE SLIGHTLY MICACEOUS SLIGHTLY CLAYEY SILTY MEDIUM TO FINE SAND (A-2-4)
- (H) ALLUVIAL, GRAY VERY LOOSE SILTY MEDIUM TO FINE SAND (A-2-4)
- (I) RESIDUAL, BLUE-GRAY VERY DENSE SILTY MEDIUM TO FINE SAND (A-2-4)
- (J) ALLUVIAL, BROWN LOOSE SILTY FINE SAND (A-2-4)
- (K) ALLUVIAL, GRAY MEDIUM DENSE SLIGHTLY SILTY MEDIUM TO FINE SAND (A-2-4)
- (L) ROADWAY EMBANKMENT, BROWN STIFF TO VERY STIFF SLIGHTLY MICACEOUS MEDIUM TO FINE SANDY SILT (A-4)
- (M) ALLUVIAL, BROWN AND GRAY MEDIUM DENSE SLIGHTLY SILTY MEDIUM TO FINE SAND (A-2-4)

SEE SHEETS 7 THRU 9 FOR -SBLDET- ALIGNMENT

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Line or Boring ID
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-1	59.1 LT	26+71	6.0-7.5	A-5(0)	51	NP	23	31	37	9	100	85	48	-	-	L
SS-3	50.9 RT	26+87.4	3.5-5.0	A-5(0)	45	8	36	26	37	1	98	76	38	-	-	L
SS-3A	73.5 LT	12+39.0	10.0-11.5	A-2-4(0)	37	NP	57.1	26.7	11.8	4.4	98.9	61.7	19.4	-	-	L
SS-4A	0.6 RT	14+48.0	2.5-4.0	A-7-5(12)	57	17	15.3	18.5	15.9	50.3	95.8	87.1	65.7	-	-	
SS-5	C/L	26+77.6	18.5-20.0	A-7-5(8)	51	17	23	22	37	18	99	84	54	-	-	L
SS-6A	0.3 RT	15+12.0	10.0-11.5	A-2-4(0)	32	NP	28.3	34.3	26.0	11.4	73.9	61.8	30.3	14.8	-	L
SS-7	14.8 RT	27+39.9	3.5-5.0	A-4(0)	25	NP	25	37	37	1	100	89	40	-	-	L
SS-7A	0.3 RT	15+12.0	15.0-16.5	A-2-4(0)	49	NP	29.1	50.0	15.8	5.1	99.8	89.7	24.9	24.9	-	L
SS-8	67.4 RT	27+49.8	8.5-10.0	A-2-4(0)	24	NP	30	42	27	1	100	84	29	-	-	L
SS-8A	75.5 LT	11+83.6	25.0-26.5	A-2-4(0)	36	NP	37.4	36.5	18.7	7.4	94.2	71.2	28.7	20.6	-	L
SS-9A	45.9 LT	14+70.0	25.0-26.5	A-2-4(0)	42	NP	54.6	32.2	9.3	3.9	89.3	64.0	13.8	14.6	-	L
SS-10	48.6 LT	27+43.5	4.0-5.5	A-2-4(0)	24	NP	55	26	19	0	93	52	20	-	-	L
SS-11	82.0 LT	28+28.5	28.5-30.0	A-2-4(0)	23	NP	58	24	18	0	100	57	19	-	-	L
SS-11A	0.6 LT	13+11.0	10.0-11.5	A-6(4)	40	11	21.3	24.8	16.8	37.1	92.5	82.0	52.1	23.1	-	L
SS-12	64.0 RT	28+48.2	13.5-15.0	A-2-4(0)	20	NP	74	19	7	0	85	19	8	-	-	L
SS-12A	74.4 LT	13+11.0	15.0-16.5	A-4(0)	45	NP	25.3	32.5	27.9	14.3	99.6	87.5	47.0	46.0	-	L
SS-13	4.9 RT	28+38.3	8.5-10.0	A-2-4(0)	24	NP	75	22	3	0	98	52	4	-	-	L
SS-14	52.5 LT	28+87.5	18.5-20.0	A-5(0)	46	NP	39	28	27	6	96	68	36	-	-	L
SS-15	52.5 LT	28+87.5	38.5-40.0	A-2-4(0)	20	NP	74	19	7	0	90	31	7	-	-	L
SS-16	54.5 RT	29+08.9	43.5-45.0	A-2-4(0)	23	NP	53	40	7	0	98	61	10	-	-	L
SS-17	C/L	28+97.4	13.5-15.0	A-5(0)	44	NP	51	29	19	1	96	58	23	-	-	L