STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5743	1	24

REFERENCE: U-5743

PROJECT: 50165

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	15+00.00 - 55+00.00	4-7	8,9
-Y1-	10+00.00 - 16+50.00	4,5	10
-Y2-	10+00.00 - 17+85.67	5	10
-Y5-	10+00.00 - 13+00.00	6	11
-Y6-	11+50.00 - 14+66.38	6	11

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	22+50.00 - 25+50.00	12,13
-L-	44+50.00 - 47+50.00	14,15
-L-	50+50.00 - 53+50.00	16,17
-Y5-	11+00.00 - 13+00.00	18,19

APPENDICES

APPENDIX	TITLE	SHEETS
A	LABORATORY RESULTS	20,21

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *RANDOLPH*

PROJECT DESCRIPTION *NC 42 FROM SR 2237 (EAST SALISBURY STREET) TO NORTH OF US 64 /NC 49 (DIXIE DRIVE) IN ASHEBORO*

INVENTORY

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) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT 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 THE 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.

NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
2. 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.

PERSONNEL

TRIGON

WEIS, J.M.

INVESTIGATED BY *FALCON ENG.*

DRAWN BY *HILL, M.J.*

CHECKED BY *HUNSBERGER, W.S.*

SUBMITTED BY *FALCON ENG.*

DATE *APRIL 2019*

NORTH CAROLINA PROFESSIONAL SEAL 36283 ENGINEER W. SCOTT HUNSBERGER

DocuSigned by:
W. Scott Hunsberger 4/17/2019
5A469AC80ECD49E...
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5743	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 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 THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR 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	50 MX 25 MX	51 MN 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
MATERIAL PASSING #40 LL PI	— 6 MX		— NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 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 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 LOOSE MEDIUM DENSE DENSE VERY DENSE	< 4 4 TO 10 10 TO 30 30 TO 50 > 50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 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
NON PLASTIC	0-5	VERY LOW
SLIGHTLY PLASTIC	6-15	SLIGHT
MODERATELY PLASTIC	16-25	MEDIUM
HIGHLY PLASTIC	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.
UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES 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 WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LL < 31
MODERATELY COMPRESSIBLE	LL = 31 - 50
HIGHLY COMPRESSIBLE	LL > 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
- SPT, DPT, DMT, VST, PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

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

SAMPLE ABBREVIATIONS

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

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] CME-45C
- [X] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [ ] -N _____

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. 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, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD 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 FOOT
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 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, SUCH 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:
BORING ELEVATIONS TAKEN FROM u5743_ls_tin.tin
DATED 12/17/2018 ELEVATION: FEET

NOTES:
FIAD - FILLED IMMEDIATELY AFTER DRILLING

DATE: 1-XX-17

CONTRACT:

TIP PROJECT: U-5743

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

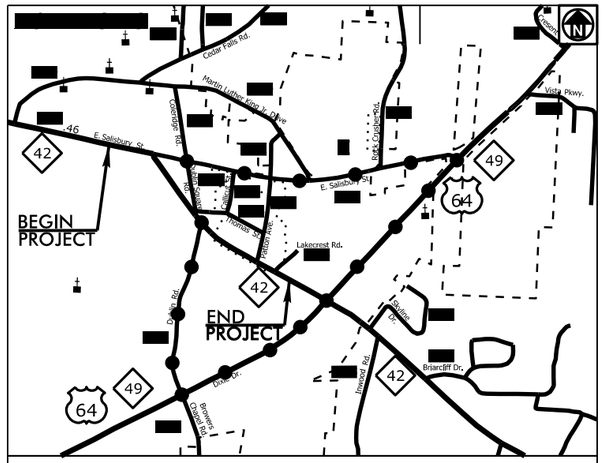
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5743	3	24

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50165.1.1		P.E.

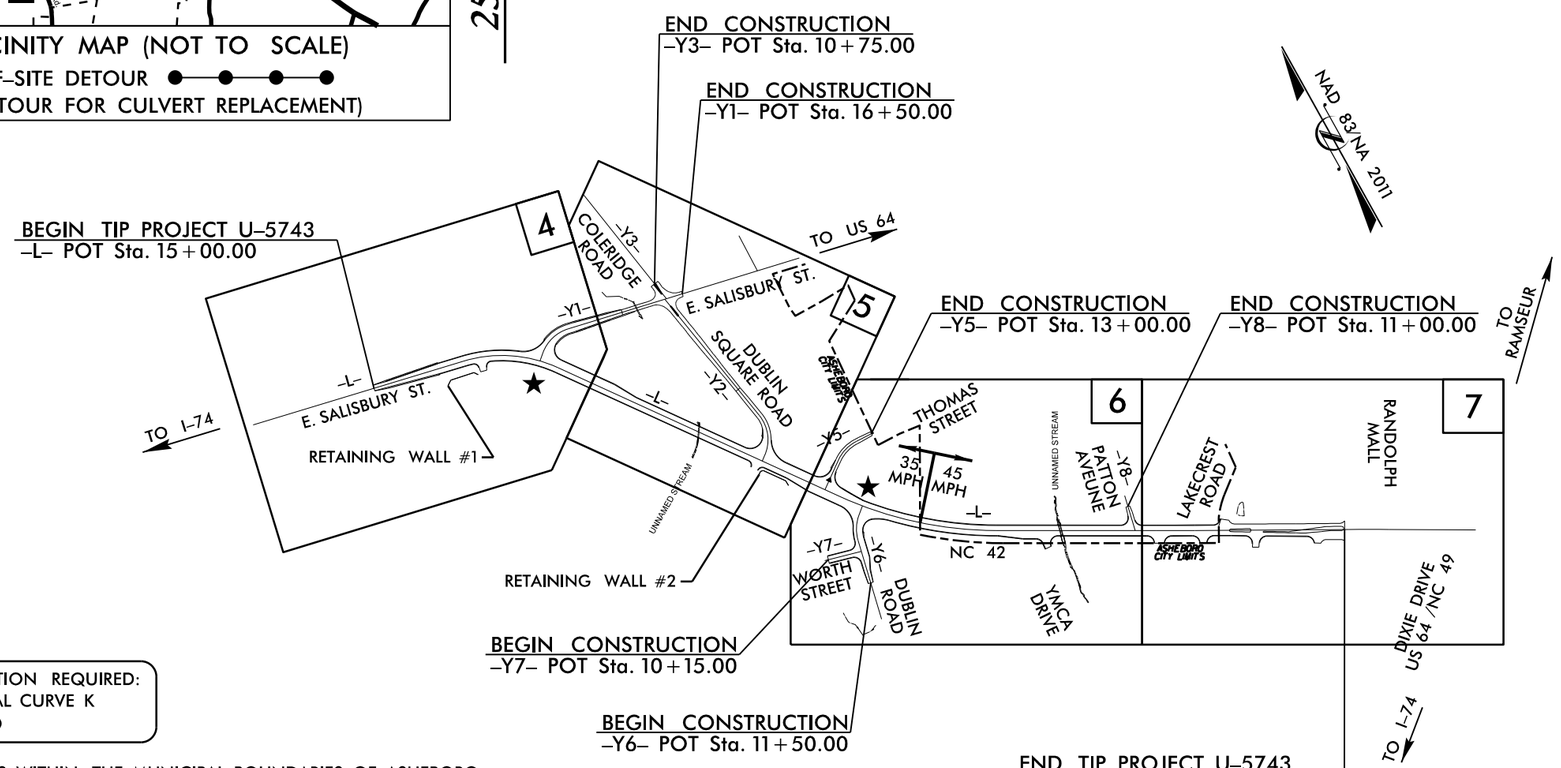
LOCATION: NC 42 FROM SR 2237 (EAST SALISBURY STREET) TO NORTH OF US 64 /NC 49 (DIXIE DRIVE) IN ASHEBORO

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS AND CULVERTS

25% PLANS



VICINITY MAP (NOT TO SCALE)
OFF–SITE DETOUR
(DETOUR FOR CULVERT REPLACEMENT)



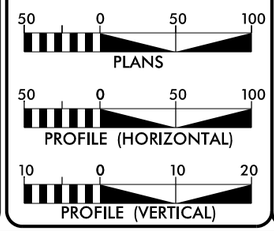
DESIGN EXCEPTION REQUIRED:
SAG VERTICAL CURVE K
VERTICAL SSD

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ASHEBORO
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

★ SIGNALIZED INTERSECTION

GRAPHIC SCALES



DESIGN DATA

ADT 2020 = 15,960
ADT 2040 = 18,600
K = 9 %
D = 60 %
T = 3 % *
V = 40 / 50 MPH
* TTST =1% DUAL =2%
FUNC CLASS =
URBAN PRINCIPAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5743 = 0.777 MI

TOTAL LENGTH TIP PROJECT U-5743 = 0.777 MI

PLANS PREPARED FOR THE NCDOT BY:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
(919) 552-2254 (Fax)
www.mottmac.com/americas
LICENSE NO. F-0669

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 21, 2019

LETTING DATE: FEBRUARY 18, 2020

TIM JORDAN, PE
PROJECT ENGINEER

JAMES RICE, PE
HYDRAULICS PROJECT ENGINEER

JEFFREY L. TEAGUE, PE
NCDOT CONTACT

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

HYDRAULICS ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

Roadway Subsurface Investigation Report - Inventory

NC 42 From SR 2237 (East Salisbury Street) to
North of US 64 / NC 49 (Dixie Drive) in Asheboro
Randolph County, North Carolina
WBS: 50165.1.1 TIP: U-5743
Falcon Project No.: G18083.00

Prepared for:
NCDOT Geotechnical Engineering Unit
1020 Birch Ridge Drive
Raleigh, NC 27610

Submitted by:
Falcon Engineering, Inc.
1210 Trinity Road, Suite 110
Cary, North Carolina 27513
(919) 871-0800
www.falconengineers.com

April 16, 2019

WBS:	50165.1.1
TIP:	U-5743
COUNTY:	Randolph
DESCRIPTION:	NC 42 From SR 2237 (East Salisbury Street) to North of US 64 / NC 49 (Dixie Drive) in Asheboro
SUBJECT:	Roadway Subsurface Investigation – Inventory

PROJECT DESCRIPTION

This project consists of widening existing NC 42 from SR 2237 (East Salisbury Street) to north of US 64 / NC 69 (Dixie Drive) in Randolph County. The overall corridor is approximately 0.75 miles long and consists of existing two lane highway. The widened corridor will consist of a three lane highway with a center turn lane. Some reconfiguration/improvement of intersections and adjustments to varying lengths of numerous Y-lines is also planned. Two reinforced concrete box culverts are included in this project.

The investigation was conducted between February 4th and 19th, 2019 in general accordance with our Proposal to Provide Geotechnical Roadway Investigation and Design Services, dated December 21st, 2018.

A total of twenty-five (25) Standard Penetration Test (SPT) borings and twelve (12) hand auger borings were performed for the proposed roadway alignments. All mechanical borings were drilled using a CME 55 ATV mounted drill rig equipped with 2 ¼-inch inside diameter hollow-stem augers, and SPT testing was performed with a recently calibrated and NCDOT approved automatic hammer. Representative soil samples, collected with a split-barrel sampler or hand auger, were selected for laboratory testing to verify visual field classifications. In addition, one (1) bulk sample was collected for standard Proctor compaction and California Bearing Ratio (CBR) testing.

Portions of the following alignments, totaling approximately 1.15 miles were investigated. Other minor driveways are included on the project but proposed improvements are not significant enough to warrant investigation.

Alignment	Station (ft)
-L- (NC 42)	15+00 to 55+00
-Y1- (E. Salisbury Street)	10+00 to 16+50
-Y2- (Dublin Square Road)	10+00 to 17+85.67
-Y5- (Thomas Street)	10+00 to 13+00
-Y6- (Leslieshire Drive)	11+50 to 14+66.38

AREAS OF SPECIAL GEOTECHNICAL INTEREST

A. The following locations contain highly plastic soils with plasticity indices (PI) greater than 25 within 3 feet of proposed subgrade elevations:

Alignment	Station (ft)
-L-	24+00
-L-	46+00
-L-	52+00
-Y5-	12+49

B. The following location contains very soft to soft/very loose soils with an N-value less than 4 near the ground surface:

Alignment	Station (ft)
-Y2-	13+00

C. Alluvial soils were encountered at the following location:

Alignment	Station (ft)
-L-	44+38

Isolated alluvial soils may exist elsewhere on the site between borings in proximity to natural waterways and/or constructed drainage features.

D. Shallow groundwater was encountered in the following areas:

Alignment	Station (ft)
-L-	16+00
-L-	18+00
-L-	44+50

PHYSIOGRAPHY AND GEOLOGY

According to the ***Geologic Map of North Carolina*** (1985), the site is in the Carolina Slate Belt Physiographic Province of North Carolina. Specifically, rocks at the site are noted as Metamudstone and Meta-Argillite (**CZmd**) bedding plane and axial-planar cleavage common; interbedded with metamudstone, meta-conglomerate, and metavolcanic rock.

Existing site topography is typical of North Carolina's Piedmont Region. Existing roadway embankments on the site vary generally from 3 to 5 feet. Low areas and drainage ditches are present adjacent to the existing roadway that will require fill for the proposed widening. The site lies in east Asheboro and is currently a two lane highway. The existing corridor is populated with residential and commercial properties on either side of the corridor. A small stream flows southward across the mainline near station 43+75.

SOIL PROPERTIES

A variety of soils were encountered along the project, including artificial fill, roadway embankments, alluvial soils, residual soils, weathered rock, and crystalline rock.

Topsoil and rootmat were encountered in grassy, brushy, and wooded areas ranging in thickness from 0.2 to 0.5 feet, typically on the order of 0.3 feet, and consisting of sandy clay.

Artificial Fill soils were encountered at the ground surface beneath thin layers of topsoil associated with prior grading of private properties adjacent to the roadway. These consist of up to 9.5 feet of moist to wet, soft to very stiff, silty clay (A-7).

Roadway Embankment soils were encountered at the ground surface adjacent to existing roadways. These consist of up to 2 feet of moist, clayey silt (A-5).

Alluvial soils were encountered at the ground surface near the historic floodplains of natural waterways. These soils extended to depths of up to approximately 4.0 feet and consist of moist to saturated, silty clays (A-7).

Residual soils were encountered at the ground surface, or beneath artificial fill, roadway embankments or alluvial deposits. These soils consist of dry to moist, clean sands (A-1-b) and soft to very stiff, sandy clay and silt, clayey silt, and silty clays (A-4, A-5, A-6, A-7) and extend to depths of 3.0 feet to greater than 13.0 feet where borings were terminated in residual soils.

Weathered Rock (WR) is a very hard material with properties intermediate of soil and rock. WR is classified as having an N-value of greater than 100 blows per one foot. WR was encountered at depths of 3.0 feet to 19.8 feet and generally consists of tan and white metamudstone.

Crystalline Rock, in the form of metamudstone, was encountered beneath weathered rock or residual soils at various locations throughout the site at depths of 2.7 to 11.9. Crystalline Rock is classified as material that yields auger refusal or SPT refusal (blow count of 60/0.0 or 60/0.1 feet.)

GROUNDWATER PROPERTIES

Groundwater levels were measured at the time of boring completion, and in many cases after a waiting period of at least 24 hours. Borings drilled within and in close proximity to existing roadways were backfilled immediately after completion due to safety considerations. Where encountered, groundwater was measured in borings at depths of 0.5 feet to 5.6 feet, corresponding to elevations ranging from 836.2 ft to 753.3 ft.

Detailed groundwater measurements are included in the attached subsurface profiles and cross sections.

ADDITIONAL LABORATORY TESTING

The following bulk sample was obtained:

Sample	Location	Location	Test
BS-1	33+81, 21' LT, -L-	1.0 – 6.0	California Bearing Ratio, Standard Proctor

Classification test results for these samples are included in the subsurface profiles. Standard Proctor and California Bearing Ratio (CBR) data is attached in Appendix A.

CLOSING

Falcon appreciates the opportunity to have provided our geotechnical engineering services for the above referenced project. If you have any questions concerning the contents of this report or need additional information, please do not hesitate to contact our office.

FALCON ENGINEERING, INC.

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES COMPLETED

Report Prepared By:

DocuSigned by:
W. Scott Hunsberger
5A469AC80FCD49E...

W. Scott Hunsberger, PE
Geotechnical Engineer

Report Reviewed By:

DocuSigned by:
Jeremy R Hamm
ED7938089E22487...

Jeremy R. Hamm, PE
Geotechnical Engineering Manager

PROJECT REFERENCE NO.	SHEET NO.
U-5743	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
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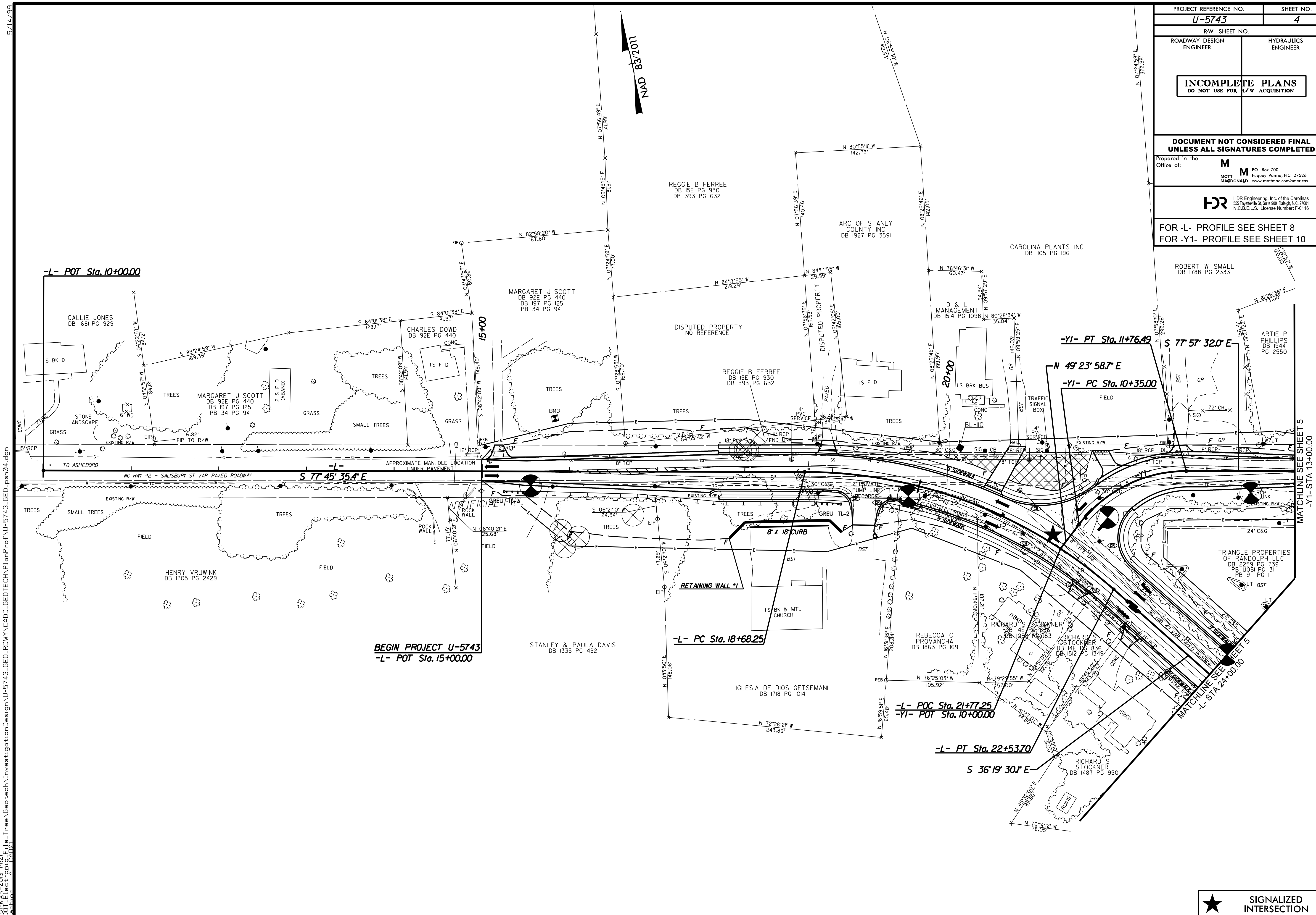
Fuquay-Varina, NC 27526
www.mottmac.com/americas

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

FOR -L- PROFILE SEE SHEET 8
FOR -Y1- PROFILE SEE SHEET 10


NAD 83/2011
-L- POT Sta. 10+00.00
CALLIE JONES
DB 1681 PG 929
MARGARET J SCOTT
DB 92E PG 440
DB 197 PG 125
PB 34 PG 94
CHARLES DOWD
DB 92E PG 440
REGGIE B FERREE
DB 15E PG 930
DB 393 PG 632
DISPUTED PROPERTY
NO REFERENCE
ARC OF STANLY COUNTY INC
DB 1927 PG 3591
D & L MANAGEMENT
DB 1514 PG 1098
CAROLINA PLANTS INC
DB 1105 PG 196
ROBERT W SMALL
DB 1788 PG 2333
ARTIE P PHILLIPS
DB 1944
PG 2550
-Y1- PT Sta. 11+76.49
S 77° 57' 32.0" E
N 49° 23' 58.7" E
-Y1- PC Sta. 10+35.00
NC HWY 42 - SALISBURY ST VAR PAVED ROADWAY
TO ASHEBORO
-L-
S 77° 45' 35.4" E
APPROXIMATE MANHOLE LOCATION UNDER PAVEMENT
ARTIFICIAL FILL
GREU TL-1
GREU TL-2
8' X 18" CURB
RETAINING WALL #1
HENRY VRUWINK
DB 1705 PG 2429
BEGIN PROJECT U-5743
-L- POT Sta. 15+00.00
STANLEY & PAULA DAVIS
DB 1335 PG 492
-L- PC Sta. 18+68.25
IGLESIA DE DIOS GETSEMANI
DB 1718 PG 1014
REBECCA C PROVANCHA
DB 1863 PG 169
RICHARD S STOCKNER
DB 14E PG 836
DB 1512 PG 1349
RICHARD S STOCKNER
DB 1487 PG 950
TRIANGLE PROPERTIES OF RANDOLPH LLC
DB 2259 PG 739
PB UOBI PG 31
PB 9 PG 1
-L- POC Sta. 21+77.25
-Y1- POT Sta. 10+00.00
-L- PT Sta. 22+53.70
S 36° 19' 30.1" E
15+00
20+00
MATCHLINE SEE SHEET 5
-Y1- STA 13+00.00
MATCHLINE SEE SHEET 5
-L- STA 24+00.00

★ SIGNALIZED INTERSECTION

PROJECT REFERENCE NO.	SHEET NO.
U-5743	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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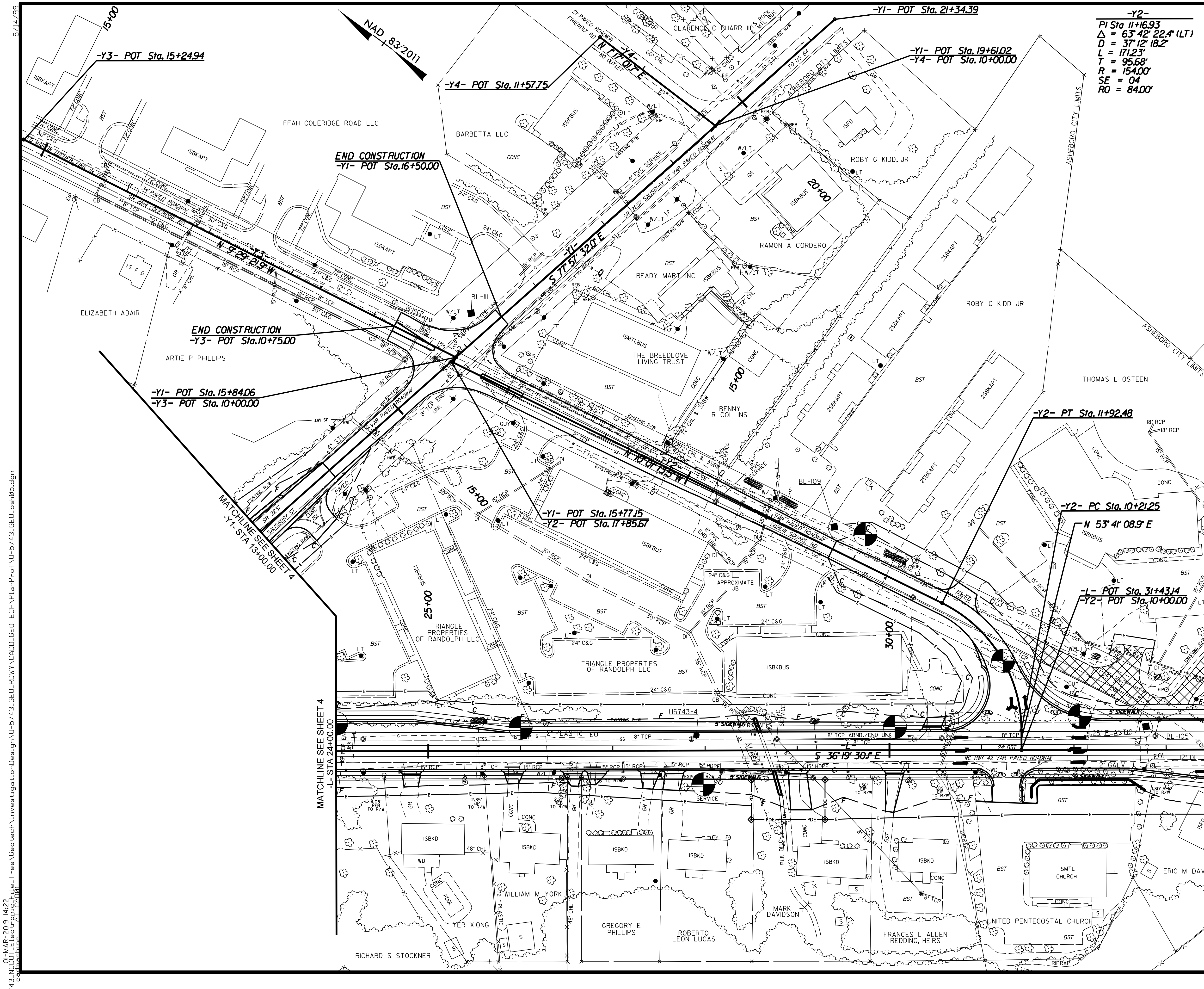
FOR -L- PROFILE SEE SHEETS 8 & 9
FOR -Y2- PROFILE SEE SHEET 10



5/14/99
NAD 83/2011
-Y2-
PI Sta 11+16.93
Δ = 63° 42' 22.4" (LT)
D = 37° 12' 18.2"
L = 171.23'
T = 95.68'
R = 154.00'
SE = .04
RO = 84.00'
-Y1- POT Sta. 21+34.39
-Y1- POT Sta. 19+61.02
-Y4- POT Sta. 10+00.00
-Y3- POT Sta. 15+24.94
-Y4- POT Sta. 11+57.75
N 1° 17' 01.7" E
END CONSTRUCTION
-Y1- POT Sta. 16+50.00
END CONSTRUCTION
-Y3- POT Sta. 10+75.00
-Y1- POT Sta. 15+84.06
-Y3- POT Sta. 10+00.00
N 9° 29' 21.9" W
S 77° 57' 32.0" E
N 10° 01' 53.5" W
-Y1- POT Sta. 15+77.15
-Y2- POT Sta. 17+85.67
-Y2- PT Sta. 11+92.48
-Y2- PC Sta. 10+21.25
N 53° 41' 08.9" E
-L- POT Sta. 31+43.14
-Y2- POT Sta. 10+00.00
S 36° 19' 30.1" E
NC HWY 42 VAR PAVED ROADWAY
MATCHLINE SEE SHEET 4 -Y1- STA 13+00.00
MATCHLINE SEE SHEET 4 -L- STA 24+00.00
MATCHLINE SEE SHEET 6 -L- STA 33+50.00
FFAH COLERIDGE ROAD LLC
BARBETTA LLC
CLARENCE C PHARR III
ROBY G KIDD, JR
RAMON A CORDERO
READY MART INC
ROBY G KIDD JR
ELIZABETH ADAIR
ARTIE P PHILLIPS
THE BREEDLOVE LIVING TRUST
BENNY R COLLINS
THOMAS L OSTEEN
TRIANGLE PROPERTIES OF RANDOLPH LLC
TRIANGLE PROPERTIES OF RANDOLPH LLC
ASHEBORO CITY LIMITS
WILLIAM M YORK
YER XIONG
RICHARD S STOCKNER
GREGORY E PHILLIPS
ROBERTO LEON LUCAS
MARK DAVIDSON
FRANCES L ALLEN REDDING, HEIRS
UNITED PENTECOSTAL CHURCH
ERIC M DAVIS
BL-111
BL-109
BL-105
U5743-4
APPROXIMATE JB
ISMTL CHURCH
01-MAR-2019 14:22

PROJECT REFERENCE NO.	SHEET NO.
U-5743	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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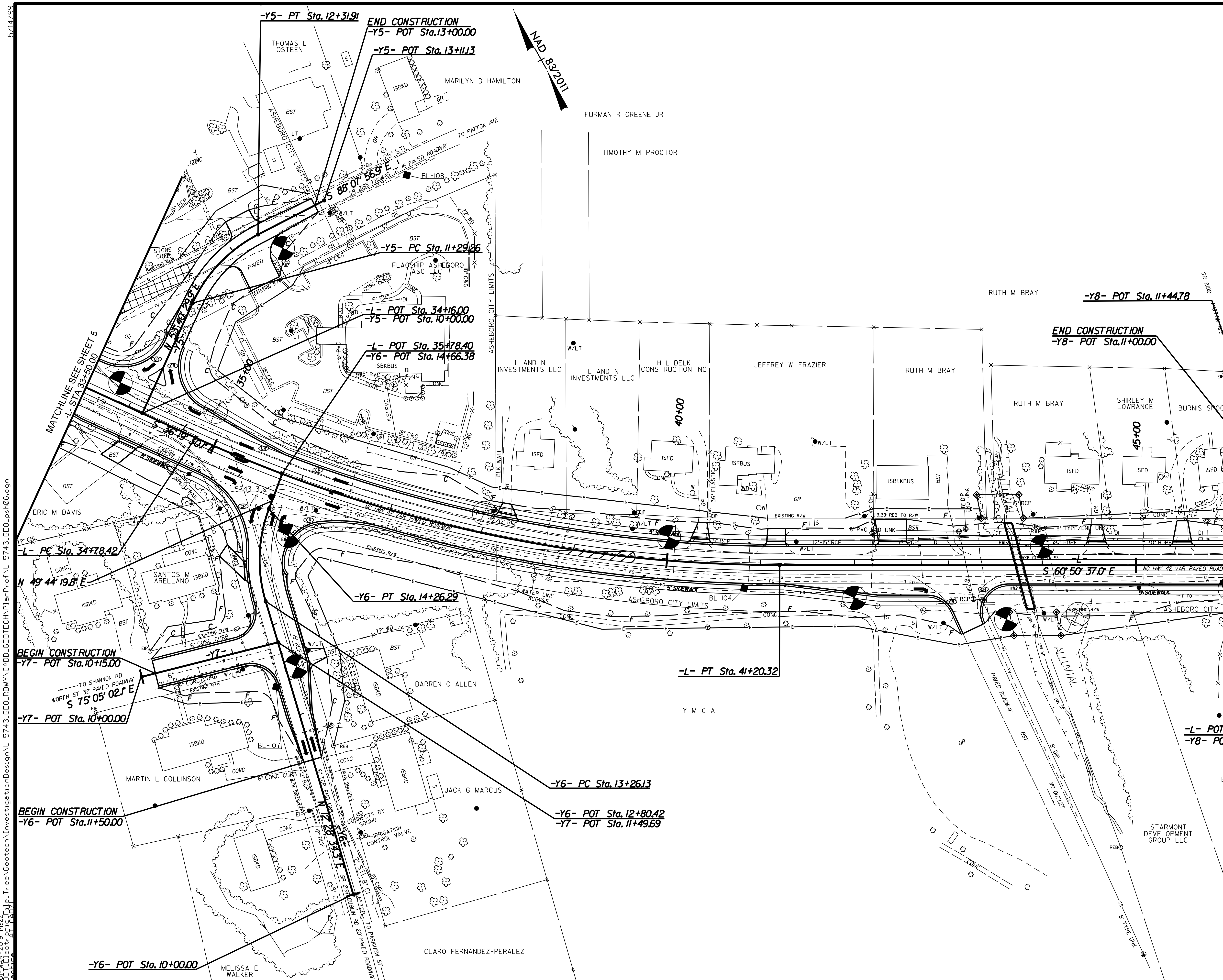
FOR -L- PROFILE SEE SHEETS 8 & 9
FOR -Y2- PROFILE SEE SHEET 10



NAD 83/2011
-Y5- PT Sta. 12+31.91
END CONSTRUCTION
-Y5- POT Sta. 13+00.00
-Y5- POT Sta. 13+11.13
-Y5- PC Sta. 11+29.26
-L- POT Sta. 34+16.00
-Y5- POT Sta. 10+00.00
-L- POT Sta. 35+78.40
-Y6- POT Sta. 14+66.38
MATCHLINE SEE SHEET 5
-L- STA 33+50.00
-L- PC Sta. 34+78.42
N 49° 44' 19.8" E
S 36° 19' 30.7" E
S 88° 07' 56.9" E
-Y6- PT Sta. 14+26.29
BEGIN CONSTRUCTION
-Y7- POT Sta. 10+15.00
S 75° 05' 02.1" E
-Y7- POT Sta. 10+00.00
BEGIN CONSTRUCTION
-Y6- POT Sta. 11+50.00
-Y6- POT Sta. 10+00.00
-Y6- PC Sta. 13+26.13
-Y6- POT Sta. 12+80.42
-Y7- POT Sta. 11+49.69
-L- PT Sta. 41+20.32
S 60° 50' 37.0" E
NC HWY 42 VAR PAVED ROADWAY
ASHEBORO CITY LIMITS
END CONSTRUCTION
-Y8- POT Sta. 11+00.00
-Y8- POT Sta. 11+44.78
-L- POT Sta. 46+70.18
-Y8- POT Sta. 10+00.00
MATCHLINE SEE SHEET 7
-L- STA 47+00.00
THOMAS L OSTEEN
MARILYN D HAMILTON
FURMAN R GREENE JR
TIMOTHY M PROCTOR
FLAGSHIP ASHEBORO ASC LLC
L AND N INVESTMENTS LLC
H L DELK CONSTRUCTION INC
JEFFREY W FRAZIER
RUTH M BRAY
SHIRLEY M LOWRANCE
BURNIS SPOON
RANDOLPH ELECTRIC MEMBERSHIP CORP
ERIC M DAVIS
SANTOS M ARELLANO
DARREN C ALLEN
MARTIN L COLLINSON
JACK G MARCUS
CLARO FERNANDEZ-PERALEZ
MELISSA E WALKER
YMCA
STARMONT DEVELOPMENT GROUP LLC
BOWLING CENTER INC
ALLUVIAL

SIGNALIZED INTERSECTION

PROJECT REFERENCE NO.	SHEET NO.
U-5743	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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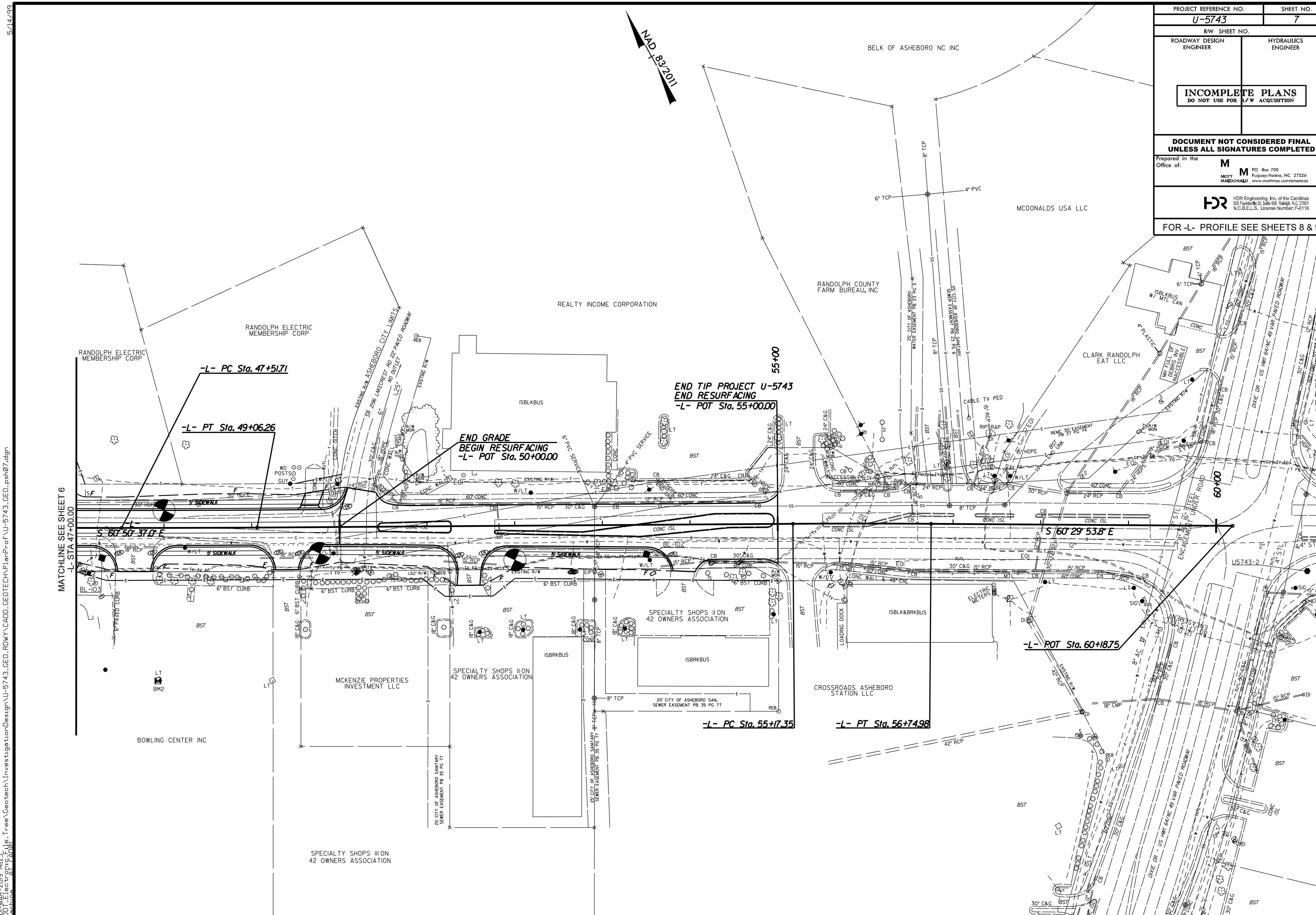
FOR -L- PROFILE SEE SHEETS 8 & 9



NAD 83/2011
BELK OF ASHEBORO NC INC
MCDONALDS USA LLC
RANDOLPH COUNTY FARM BUREAU, INC
REALTY INCOME CORPORATION
RANDOLPH ELECTRIC MEMBERSHIP CORP
RANDOLPH ELECTRIC MEMBERSHIP CORP
CLARK RANDOLPH EAT LLC
-L- PC Sta. 47+51.71
-L- PT Sta. 49+06.26
END GRADE
BEGIN RESURFACING
-L- POT Sta. 50+00.00
END TIP PROJECT U-5743
END RESURFACING
-L- POT Sta. 55+00.00
55+00
60+00
MATCHLINE SEE SHEET 6
-L- STA 47+00.00
S 60°50' 37.0" E
S 60°29' 53.8" E
-L-
5' SIDEWALK
CONC ISL
EXISTING R/W
BL-103
BL-102
BM2
-L- POT Sta. 60+18.75
-L- PC Sta. 55+17.35
-L- PT Sta. 56+74.98
BOWLING CENTER INC
MCKENZIE PROPERTIES INVESTMENT LLC
SPECIALTY SHOPS II ON 42 OWNERS ASSOCIATION
SPECIALTY SHOPS II ON 42 OWNERS ASSOCIATION
SPECIALTY SHOPS III ON 42 OWNERS ASSOCIATION
CROSSROADS ASHEBORO STATION LLC
20' CITY OF ASHEBORO SAN. SEWER EASEMENT PB 35 PG 77
SR 2196 LAKECREST RD 22' PAVED ROADWAY NO OUTLET
EXISTING ASHEBORO CITY LIMITS
DIXIE DR - US HWY 64/NC 49 VAR PAVED ROADWAY
ISBLKBUS
ISBRKBUS
ISBLK&BRKBUS
LOADING DOCK
U5743-2

PROJECT REFERENCE NO.	SHEET NO.
U-5743	8

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
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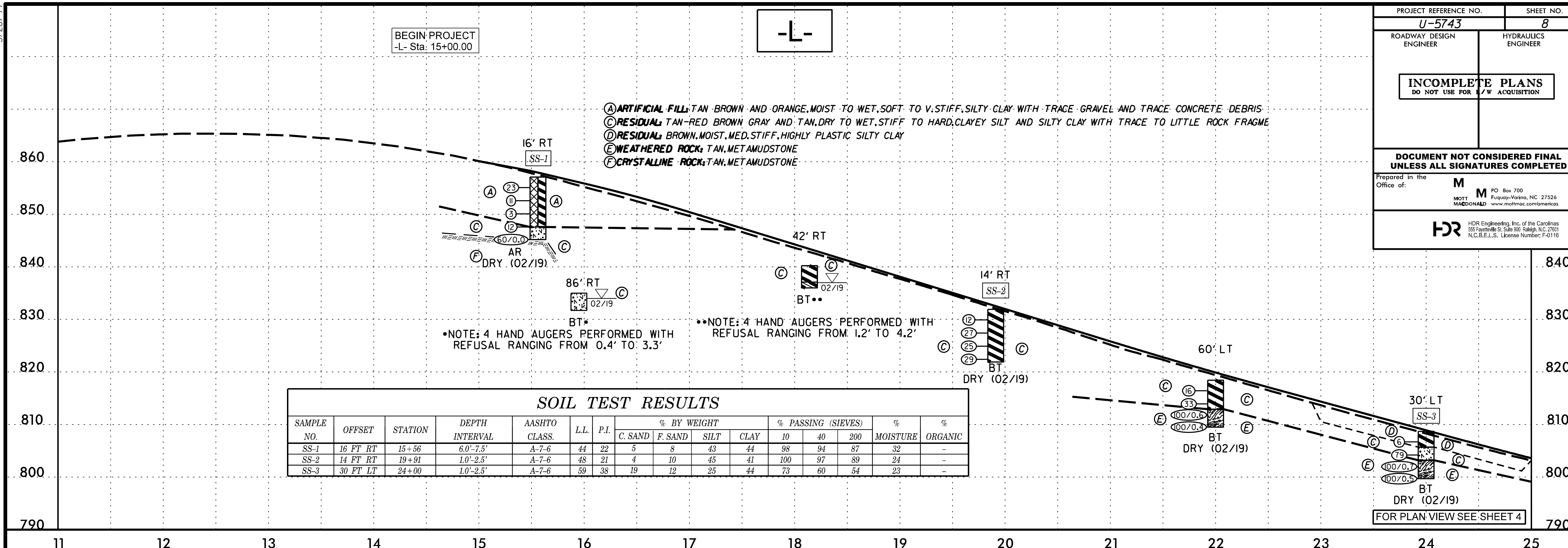
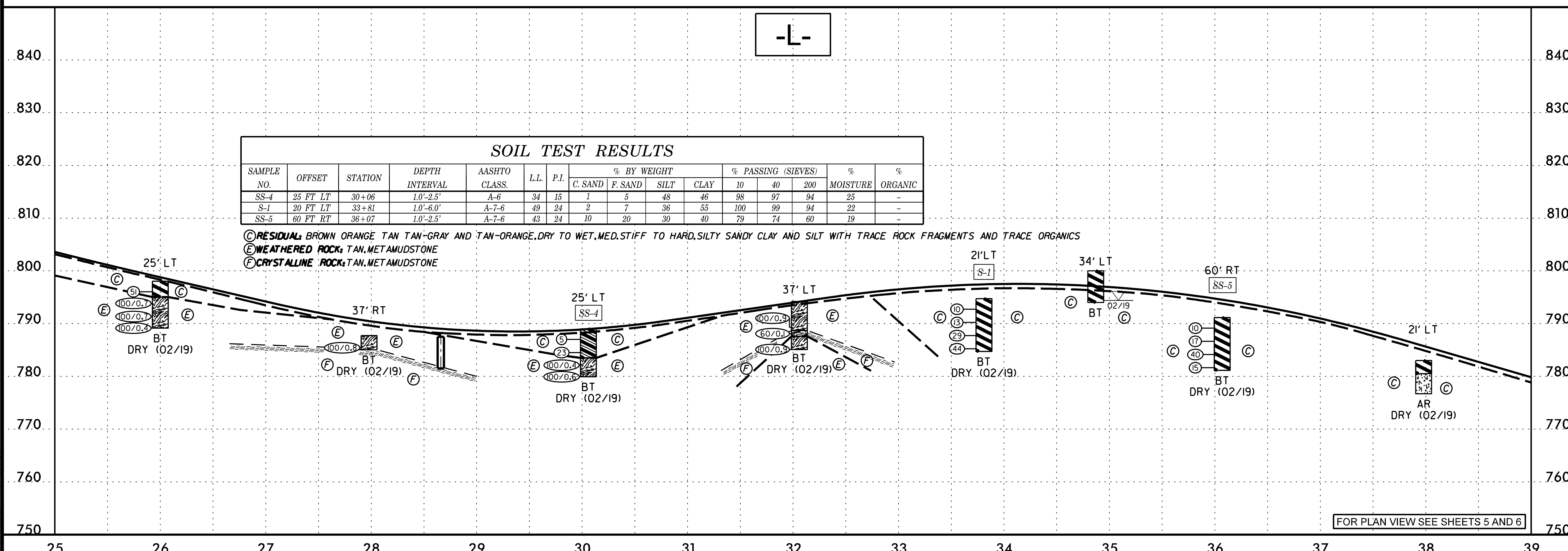


Ⓐ **ARTIFICIAL FILL:** TAN BROWN AND ORANGE, MOIST TO WET, SOFT TO V. STIFF, SILTY CLAY WITH TRACE GRAVEL AND TRACE CONCRETE DEBRIS
Ⓒ **RESIDUAL:** TAN-RED BROWN GRAY AND TAN, DRY TO WET, STIFF TO HARD, CLAYEY SILT AND SILTY CLAY WITH TRACE TO LITTLE ROCK FRAGME
Ⓓ **RESIDUAL:** BROWN, MOIST, MED. STIFF, HIGHLY PLASTIC SILTY CLAY
Ⓔ **WEATHERED ROCK:** TAN, METAMUDSTONE
Ⓕ **CRYSTALLINE ROCK:** TAN, METAMUDSTONE

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-1	16 FT RT	15+56	6.0'-7.5'	A-7-6	44	22	5	8	43	44	98	94	87	32	-
SS-2	14 FT RT	19+91	1.0'-2.5'	A-7-6	48	21	4	10	45	41	100	97	89	24	-
SS-3	30 FT LT	24+00	1.0'-2.5'	A-7-6	59	38	19	12	25	44	73	60	54	23	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-4	25 FT LT	30+06	1.0'-2.5'	A-6	34	15	1	5	48	46	98	97	94	25	-
S-1	20 FT LT	33+81	1.0'-6.0'	A-7-6	49	24	2	7	36	55	100	99	94	22	-
SS-5	60 FT RT	36+07	1.0'-2.5'	A-7-6	43	24	10	20	30	40	79	74	60	19	-

Ⓒ **RESIDUAL:** BROWN ORANGE TAN TAN-GRAY AND TAN-ORANGE, DRY TO WET, MED. STIFF TO HARD, SILTY SANDY CLAY AND SILT WITH TRACE ROCK FRAGMENTS AND TRACE ORGANICS
Ⓔ **WEATHERED ROCK:** TAN, METAMUDSTONE
Ⓕ **CRYSTALLINE ROCK:** TAN, METAMUDSTONE

PROJECT REFERENCE NO.	SHEET NO.
U-5743	9

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: MOTT MACDONALD PO Box 700 Fuquay-Varina, NC 27526 www.mottmac.com/americas

HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116

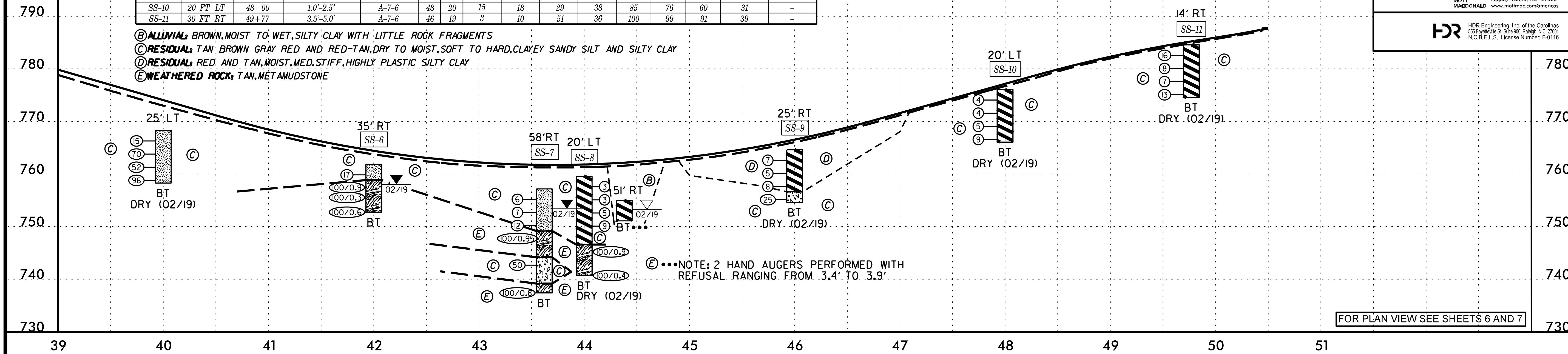
DESIGN EXCEPTION REQUIRED:
SAG VERTICAL CURVE K
VERTICAL SSD

-L-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-6	35 FT RT	42+00	1.0'-2.5'	A-4	34	9	22	25	38	15	100	86	60	16	-
SS-7	58 FT RT	43+62	1.0'-2.5'	A-4	31	10	7	10	57	26	96	92	84	23	-
SS-8	20 FT LT	44+00	3.5'-5.0'	A-7-6	49	20	4	9	47	40	94	91	85	39	-
SS-9	25 FT RT	46+00	6.0'-7.5'	A-7-6	51	33	4	8	39	49	90	87	82	22	-
SS-10	20 FT LT	48+00	1.0'-2.5'	A-7-6	48	20	15	18	29	38	85	76	60	31	-
SS-11	30 FT RT	49+77	3.5'-5.0'	A-7-6	46	19	3	10	51	36	100	99	91	39	-

(B) **ALLUVIAL:** BROWN, MOIST TO WET, SILTY CLAY WITH LITTLE ROCK FRAGMENTS
(C) **RESIDUAL:** TAN BROWN GRAY RED AND RED-TAN, DRY TO MOIST, SOFT TO HARD, CLAYEY SANDY SILT AND SILTY CLAY
(D) **RESIDUAL:** RED AND TAN, MOIST, MED. STIFF, HIGHLY PLASTIC SILTY CLAY
(E) **WEATHERED ROCK:** TAN, METAMUDSTONE

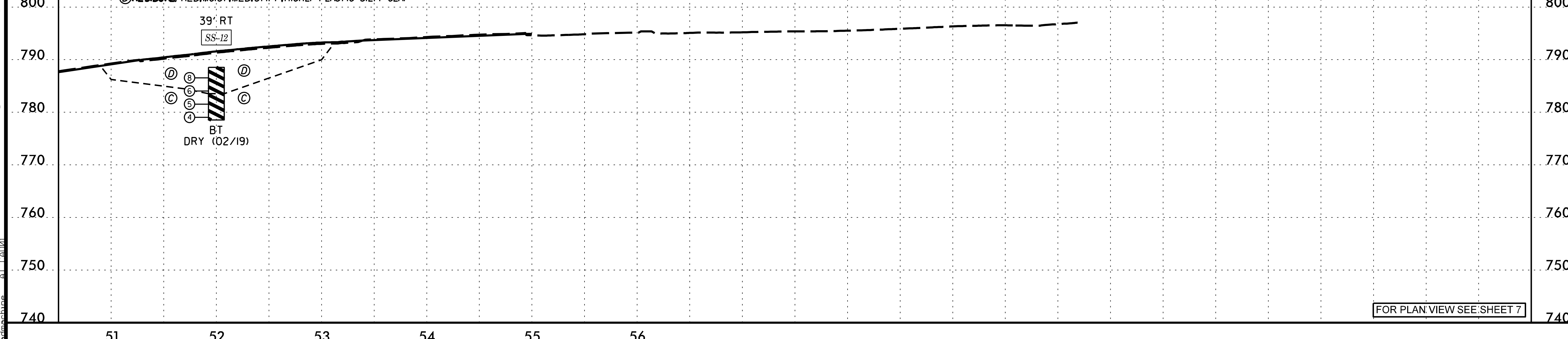


-L-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-12	39 FT RT	52+00	1.0'-2.5'	A-7-5	71	40	3	10	27	60	97	95	88	39	-

(C) **RESIDUAL:** RED, MOIST, MED. STIFF, SILTY CLAY
(D) **RESIDUAL:** RED, MOIST, MED. STIFF, HIGHLY PLASTIC SILTY CLAY



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PROJECT REFERENCE NO.	SHEET NO.
U-5743	10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.I.S. License Number: F-0116

-Y1-

BEGIN GRADE
-Y1- Sta. 10+20.05
EL = 821.92'

Ⓒ **RESIDUAL:** TAN, DRY TO MOIST, V. STIFF TO HARD, SILT AND SILTY CLAY
Ⓔ **WEATHERED ROCK:** TAN, METAMUDSTONE

19' RT
Ⓒ 16 33 100/0.6 100/0.4 Ⓔ
BT
DRY (02/19)

25' RT
Ⓒ 53 97 100/1.0 100/0.8 Ⓔ
BT
DRY (02/19)

FOR PLAN VIEW SEE SHEETS 4 AND 5

-Y2-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-13	30 FT RT	13+00	1.0'-2.5'	A-6	39	23	2	3	52	43	96	95	93	23	–

Ⓒ **RESIDUAL:** TAN, DRY TO MOIST, SOFT TO HARD, SANDY CLAY AND SANDY SILT
Ⓔ **WEATHERED ROCK:** TAN, METAMUDSTONE

30' RT
SS-13
Ⓔ 100/0.9 100/0.6 Ⓒ 62 100/0.7 Ⓔ
BT
DRY (02/19)

Ⓒ 2 30 100/0.3 100/0.5 Ⓔ
BT
DRY (02/19)

FOR PLAN VIEW SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
U-5743	11

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

-Y3-

NO BORINGS ON THIS ALIGNMENT

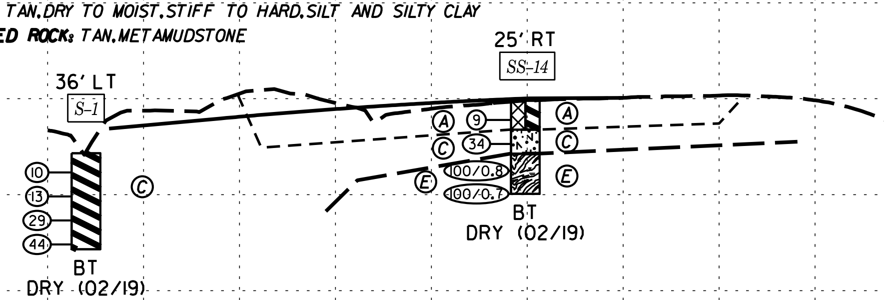
FOR PLAN VIEW SEE SHEET 5

-Y5-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-1	36 FT LT	10+20	1.0'-6.0'	A-7-6	49	24	2	7	36	55	100	99	94	22	-
SS-14	25 FT RT	12+49	1.0'-2.5'	A-7-6	68	42	0	8	31	61	100	100	96	30	-

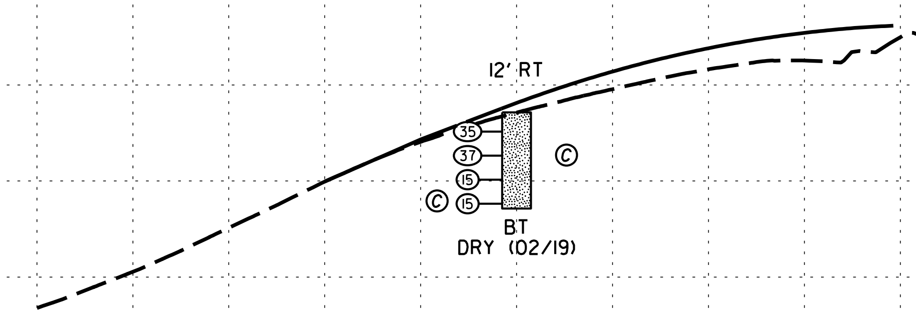
Ⓐ **ARTIFICIAL FILL:** TAN,MOIST,STIFF,HIGHLY PLASTIC SILTY CLAY
Ⓒ **RESIDUAL:** TAN,DRY TO MOIST,STIFF TO HARD,SILT AND SILTY CLAY
Ⓔ **WEATHERED ROCK:** TAN,METAMUDSTONE



Elevations: 850, 840, 830, 820, 810, 800, 790, 780, 770, 760

FOR PLAN VIEW SEE SHEET 6

-Y6-

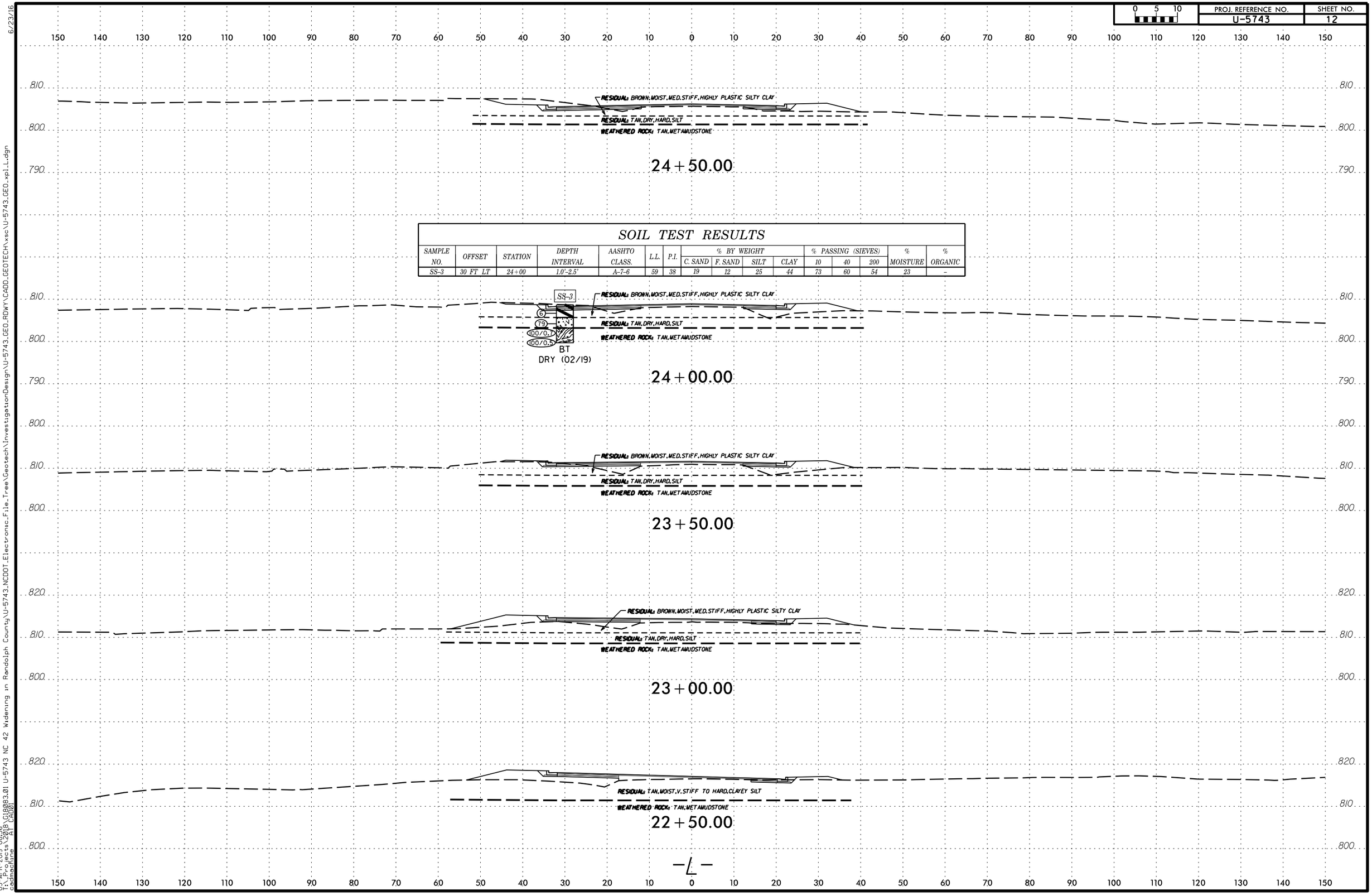


Ⓒ **RESIDUAL:** TAN,DRY TO MOIST,V.STIFF TO HARD,SILT AND CLAYEY SILT

Elevations: 830, 820, 810, 800, 790, 780, 770, 760, 750, 740

FOR PLAN VIEW SEE SHEET 6

Stations: 10, 11, 12, 13, 14 | 10, 11, 12, 13, 14



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-3	30 FT LT	24+00	1.0'-2.5'	A-7-6	59	38	19	12	25	44	73	60	54	23	-

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cadmachine
AT CAD01

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5743	13

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

810
800
790

RESIDUAL: TAN,DRY,HARD,SILT
WEATHERED ROCK: TAN,WET MUDSTONE

25+50.00

810
800
790

RESIDUAL: BROWN,MOIST,MED.STIFF,HIGHLY PLASTIC SILTY CLAY
RESIDUAL: TAN,DRY,HARD,SILT
WEATHERED ROCK: TAN,WET MUDSTONE

25+00.00

-L-

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

6/23/16

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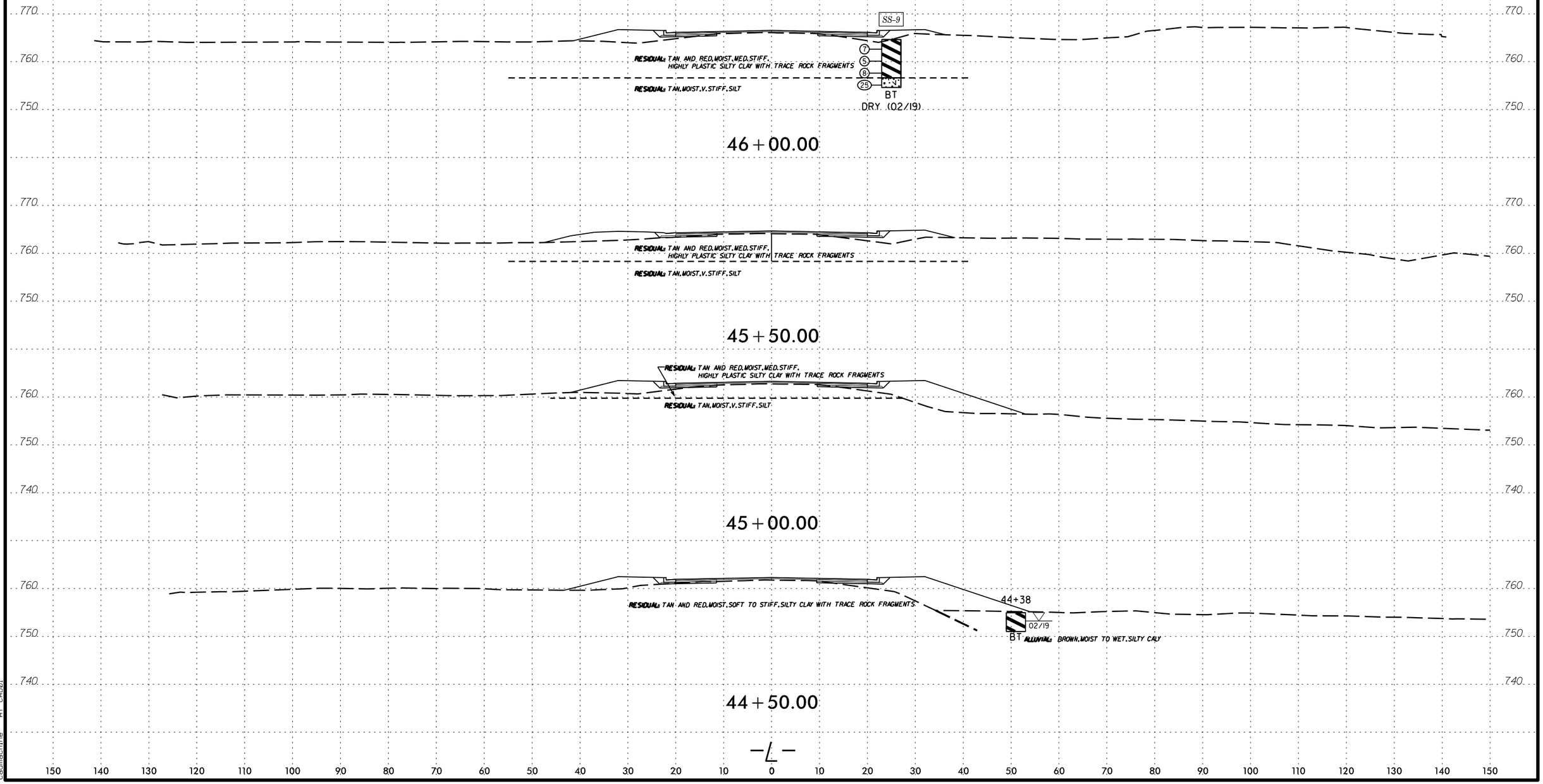
cadmachine
AT CAD01

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-9	25 FT RT	46+00	6.0'-7.5'	A-7-6	51	33	4	8	39	49	90	87	82	22	–



6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5743	15

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

780
770
760

RESIDUAL: TAN AND RED,MOIST,MED.STIFF TO STIFF,SILTY CLAY

47 + 50.00

780
770
760

RESIDUAL: TAN AND RED,MOIST,MED.STIFF,HIGHLY PLASTIC SILTY CLAY WITH TRACE ROCK FRAGMENTS

RESIDUAL: TAN,MOIST,V.STIFF,SILT

47 + 00.00

770
760

RESIDUAL: TAN AND RED,MOIST,MED.STIFF,
HIGHLY PLASTIC SILTY CLAY WITH TRACE ROCK FRAGMENTS

RESIDUAL: TAN,MOIST,V.STIFF,SILT

46 + 50.00

750

$-L-$

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

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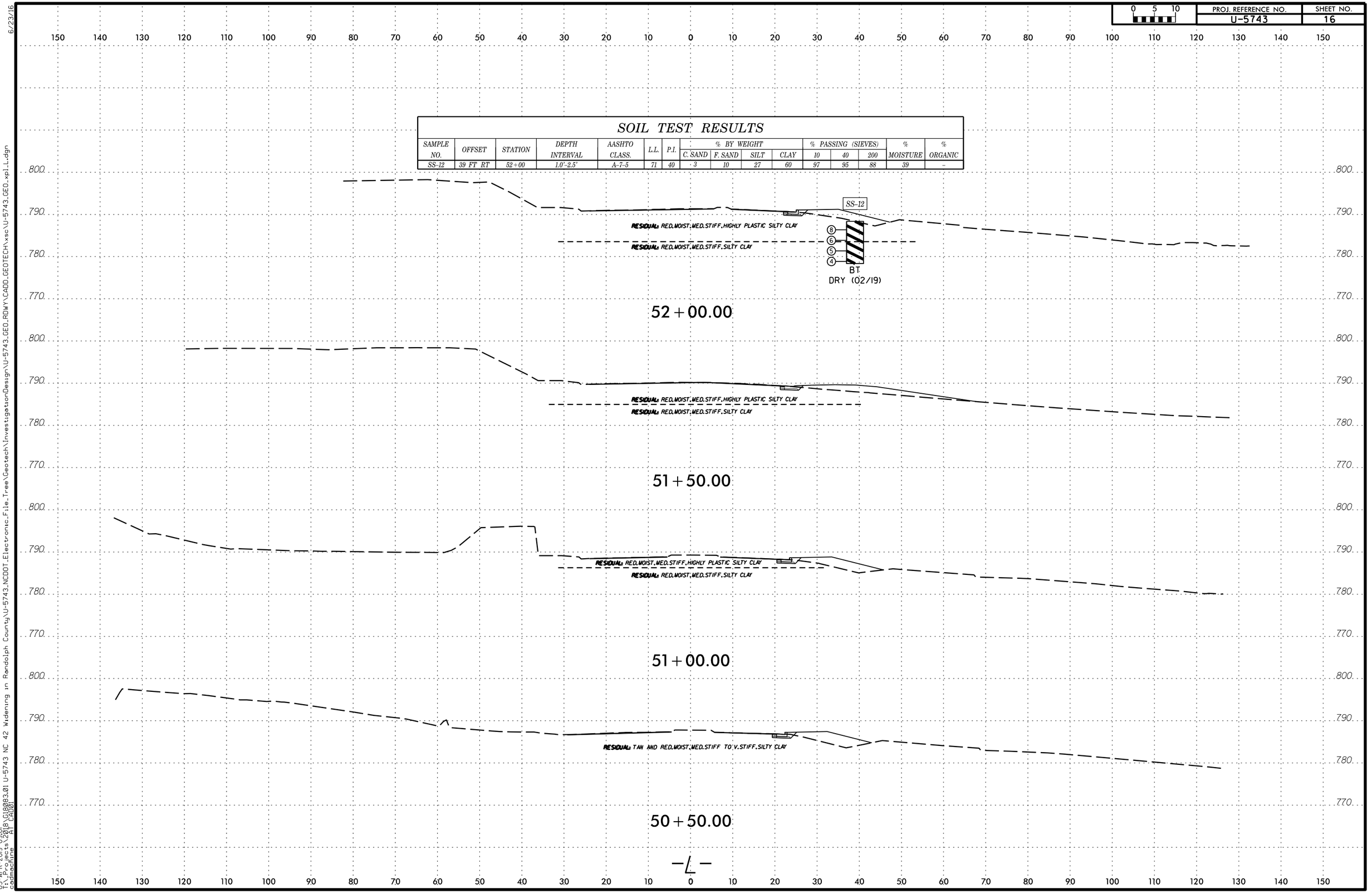
cadmachine
AT CA001

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-12	39 FT RT	52+00	1.0'-2.5'	A-7-5	71	40	3	10	27	60	97	95	88	39	-



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5743	17

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

800
790
780

RESIDUAL: RED,MOIST,MED,STIFF,SILTY CLAY

800
790
780

53 + 50.00

RESIDUAL: RED,MOIST,MED,STIFF,HIGHLY PLASTIC SILTY CLAY

RESIDUAL: RED,MOIST,MED,STIFF,SILTY CLAY

800
790
780

53 + 00.00

RESIDUAL: RED,MOIST,MED,STIFF,HIGHLY PLASTIC SILTY CLAY

RESIDUAL: RED,MOIST,MED,STIFF,SILTY CLAY

800
790
780
770

52 + 50.00

-L-

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

6/23/16

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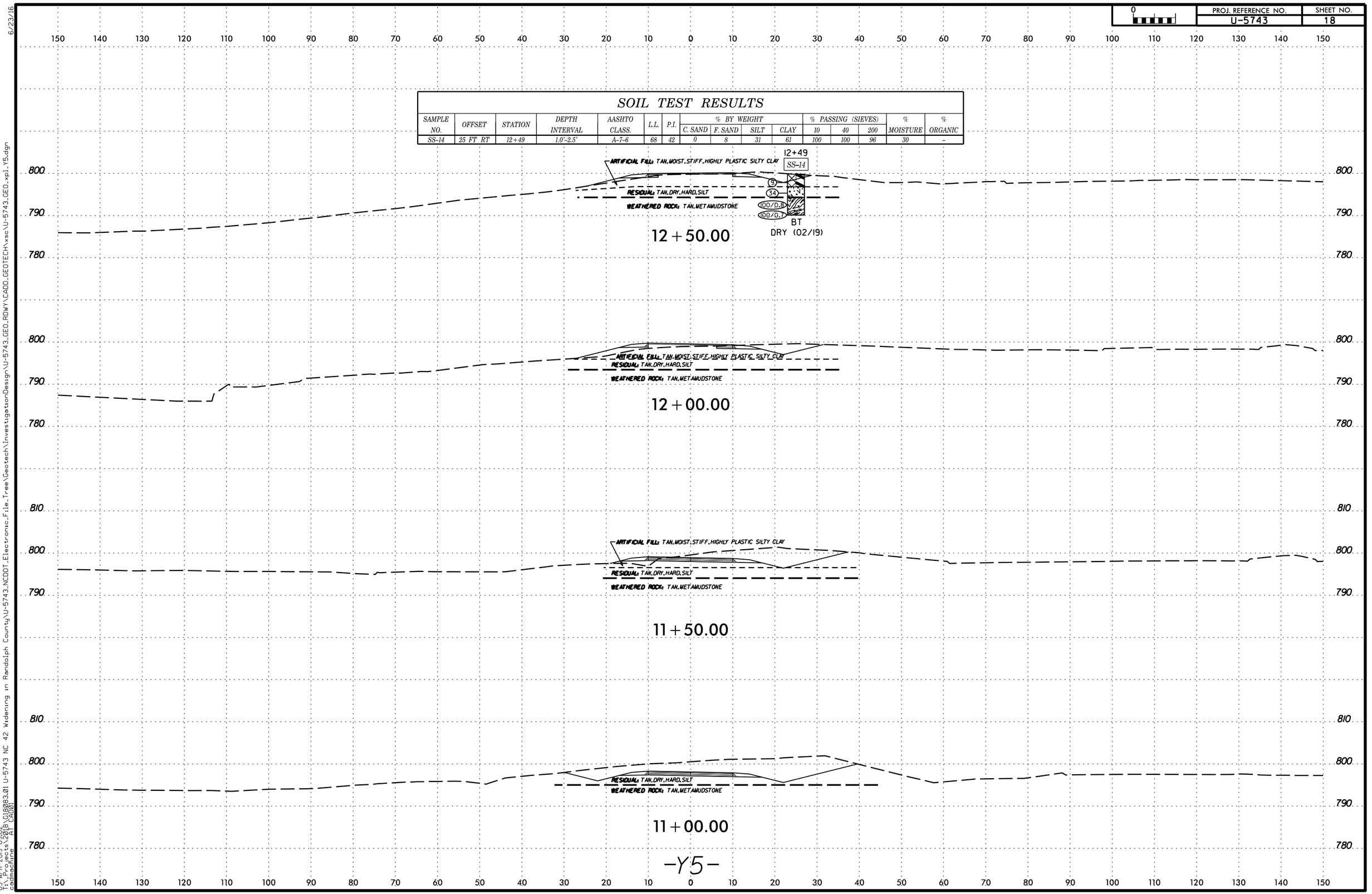
cadmachine
AT CAD01

PROJ. REFERENCE NO.	SHEET NO.
U-5743	18

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-14	25 FT RT	12+49	1.0'-2.5'	A-7-6	68	42	0	8	31	61	100	100	96	30	-



6/23/16

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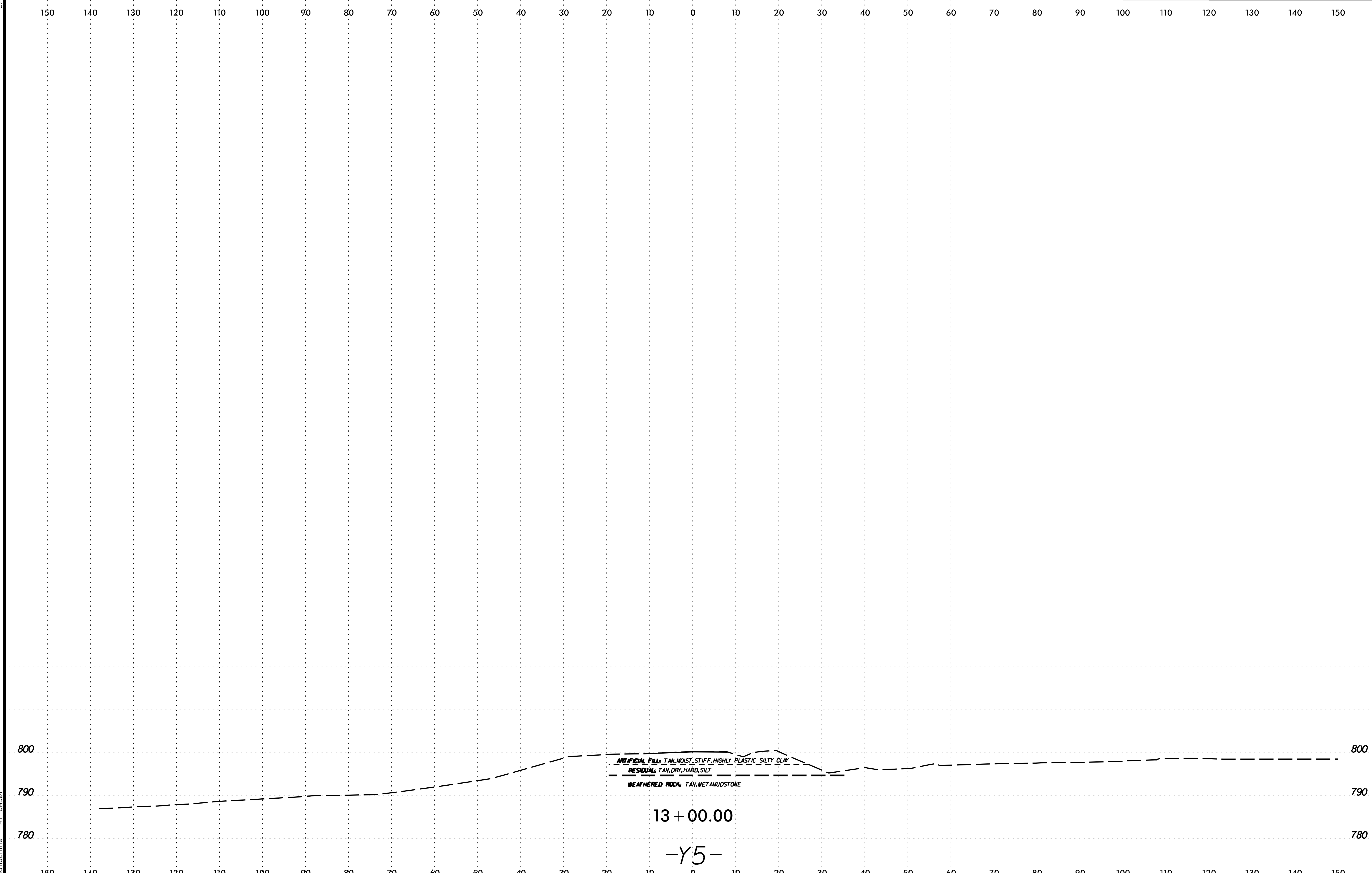
cadmachine
AT CAD01

PROJ. REFERENCE NO.	SHEET NO.
U-5743	19



6/23/16

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cadmachine AT CA001

PROJECT REFERENCE NO.	SHEET NO.
U–5743	20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
LABORATORY RESULTS

REFERENCE: U–5743

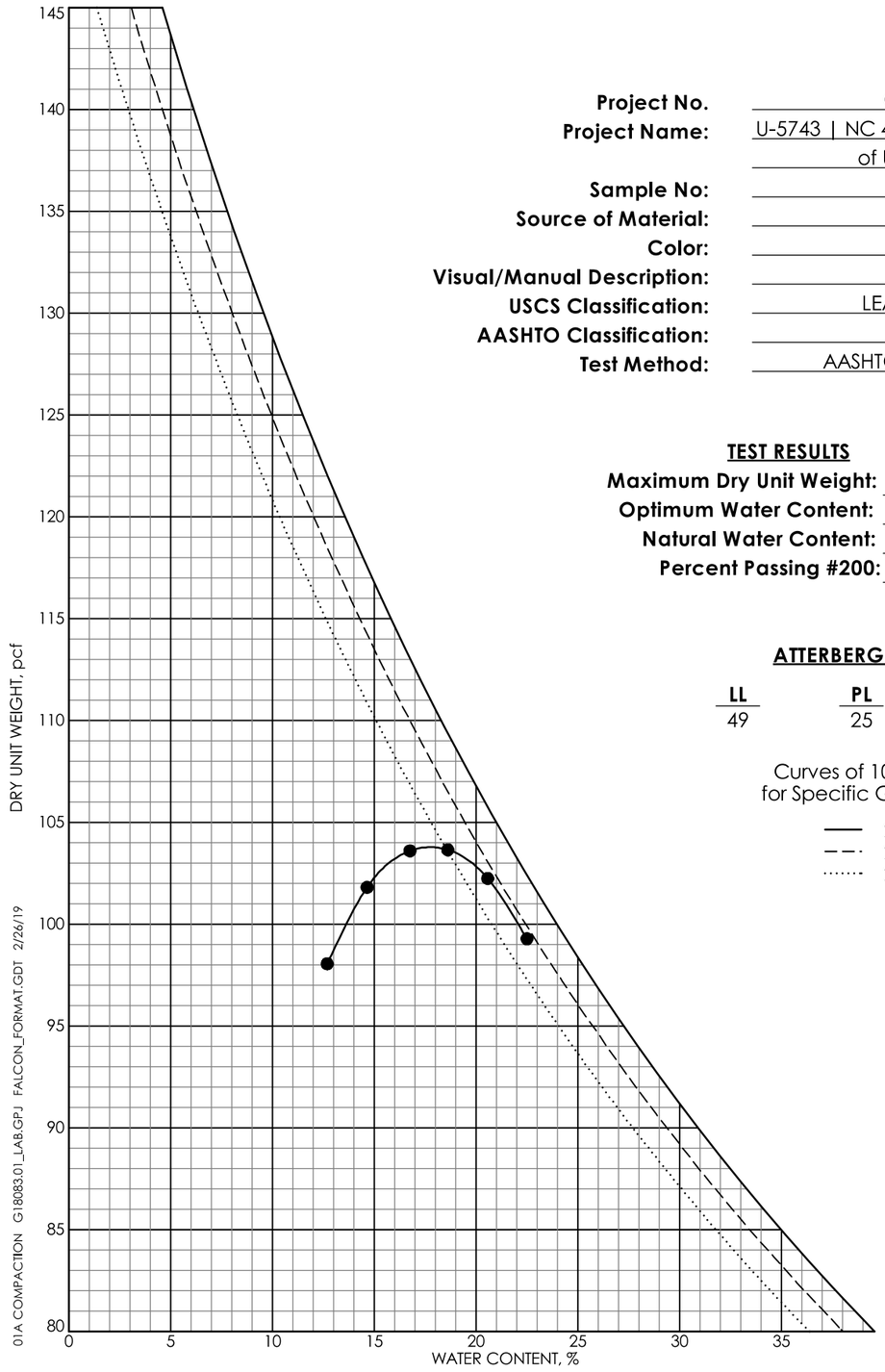
PROJECT: 50165

DS
WSH 4/17/2019
INITIALS DATE

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

PHONE: 919.871.0800
www.falconengineers.com

LABORATORY COMPACTION TEST RESULTS



Project No.	G18083.01
Project Name:	U-5743 | NC 42 from SR 2237 to North of US 64 / NC 49
Sample No:	BS-01
Source of Material:	L_3400
Color:	Tan
Visual/Manual Description:	Silty Clay
USCS Classification:	LEAN CLAY(CL)
AASHTO Classification:	A-7-6
Test Method:	AASHTO T-99 Method A

TEST RESULTS

Maximum Dry Unit Weight:	103.8 PCF
Optimum Water Content:	17.7 %
Natural Water Content:	22.0 %
Percent Passing #200:	93.6 %

ATTERBERG LIMITS

LL	PL	PI
49	25	24

Curves of 100% Saturation for Specific Gravity Equal to:

- 2.6
- 2.5
- 2.4

01A COMPACTION G18083.01_LAB.GPJ FALCON_FORMAT.GDT 2/26/19

FALCON ENGINEERING

1210 TRINITY RD., SUITE 110, Cary, NC 27513

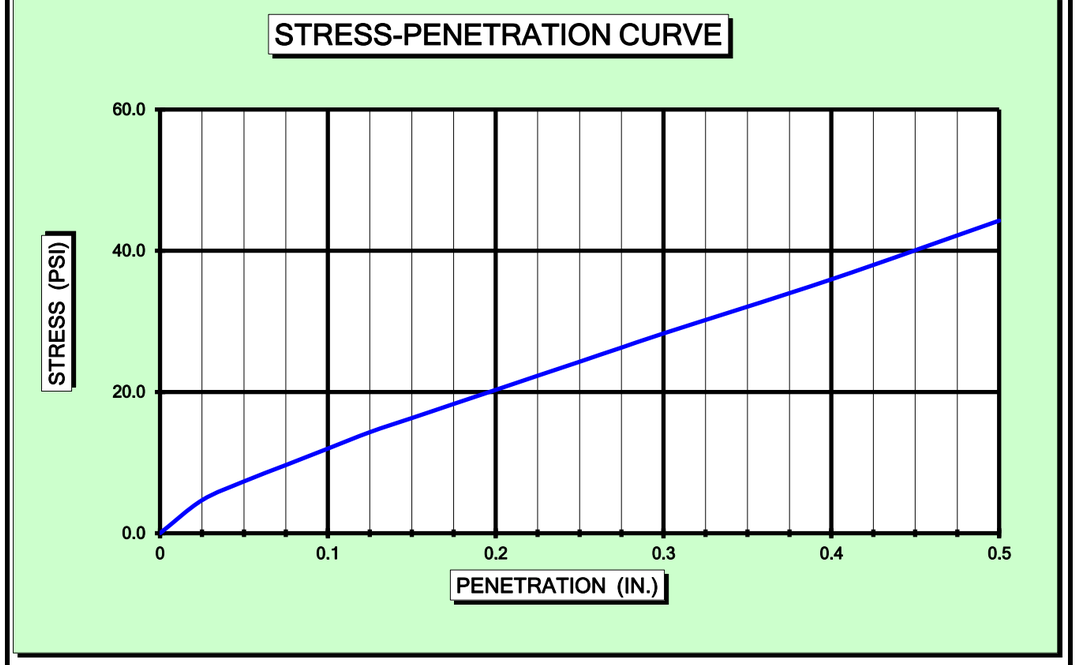
CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL

AASHTO T-193 \ ASTM D-1883

PROJECT #:	G18083.01			**DATE:**	2/25/2019
PROJECT NAME:	U-5743 | NC42 from SR 2237 to North of US 64 / NC 49				
BORING:	L_3400	**SAMPLE:**	BS-01	**DEPTH:**	1.0-6.0'
SOIL DESCRIPTION:	Tan Silty Clay (A-7-6)				

COMPACTION METHOD	AASHTO T99 A	SOAK	96 HRS.
MAXIMUM DRY DENSITY	103.8 PCF	STRAIN RATE	.05 IN / MIN.
OPTIMUM MOISTURE CONTENT	17.7%	LOAD CELL	6000
TEST DATA		SURCHARGE WEIGHT	10 lb.
DRY DENSITY	102.4 PCF	SURCHARGE PER SQUARE FOOT	51 lbs/sq.ft.
MOISTURE CONTENT	17.6%	FINAL MOISTURE CONTENT	N/A
PERCENT COMPACTION	98.6%	SWELL	5.56%

CBR VALUE AT .1"	1.2	1.2
CBR VALUE AT .2"	1.4	1.4



LIQUID LIMIT	49	**PLASTIC LIMIT**	25	**PLASTIC INDEX**	24