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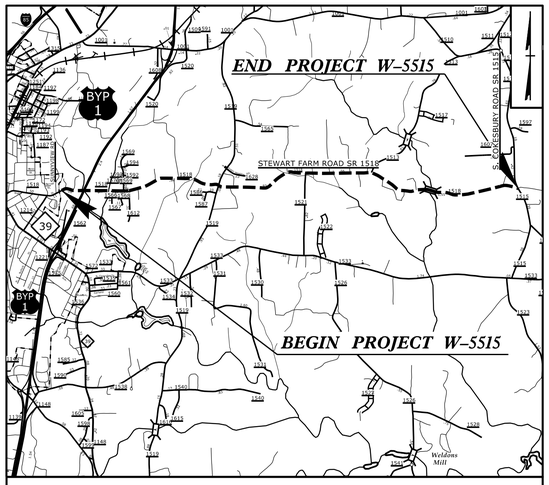
09/08/99

TIP PROJECT: W–5515

CONTRACT: DE00132

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

VANCE COUNTY

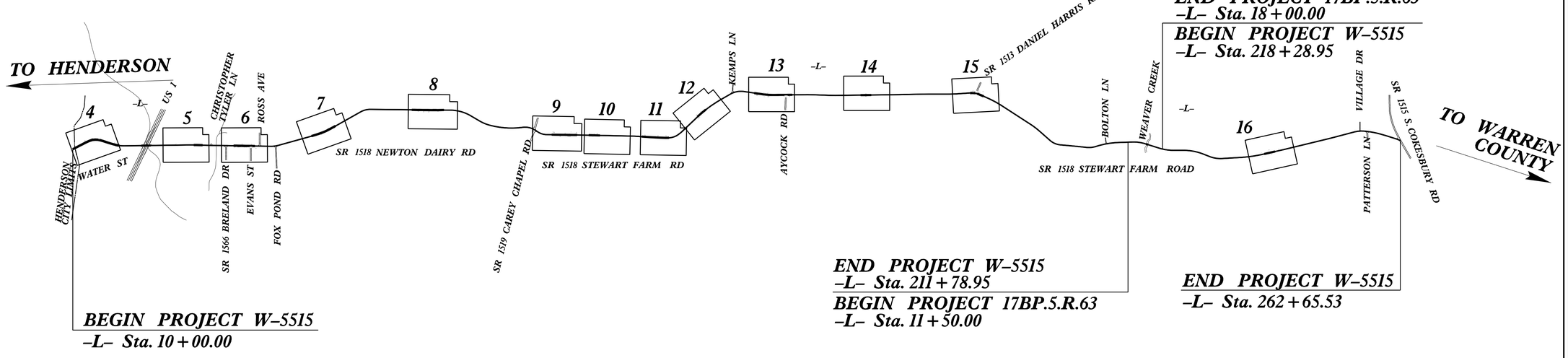
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W–5515	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
44101.1.FD1	HSIP–1518(5)	PE
44101.2.FD1	HSIP–1518(5)	R /W
44101.3.FD1	HSIP–1518(5)	CONST

LOCATION: SR 1518 (STEWART FARM ROAD AND NEWTON DAIRY ROAD)
FROM HENDERSON CITY LIMITS TO SR 1515 (S. COKESBURY ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, PAVEMENT MARKING

NAD 83/
NSRS 2007



BEGIN PROJECT W–5515
–L– Sta. 10 + 00.00

END PROJECT 17BP.5.R.63
–L– Sta. 18 + 00.00

BEGIN PROJECT W–5515
–L– Sta. 218 + 28.95

END PROJECT W–5515
–L– Sta. 211 + 78.95

BEGIN PROJECT 17BP.5.R.63
–L– Sta. 11 + 50.00

END PROJECT W–5515
–L– Sta. 262 + 65.53

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

30 15 0 30 60
PLANS

DESIGN DATA

ADT 2013 = 300–2300

V = 45–55 MPH

FUNC CLASS = MAJOR /MINOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY PROJECT W–5515	=	4.627 MILES
LENGTH EXIST. STRUCTURES PROJECT W–5515	=	0.035 MILES
TOTAL LENGTH PROJECT W–5515	=	4.662 MILES

NCDOT CONTACT: BEN UPSHAW, PE
DIVISION DESIGN ENGINEER – DIVISION 5

Prepared In the Office of:
RAMEY KEMP ASSOCIATES, INC.
Transportation Engineers
5808 Faringdon Place, Suite 100 - Raleigh, North Carolina 27609
919-872-5115 Tel. 919-878-5416 Fax. - www.rameykemp.com
NC License No. C-0910

2012 STANDARD SPECIFICATIONS

FEB 2015
RIGHT OF WAY DATE:

LETTING DATE:

CLAUDETTE M.K. ROQUE, P.E.
PROJECT ENGINEER

BRET PALIS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

DocuSigned by: Melanie Nguyen C9130B3C99674... NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN 2/22/2016
SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

DocuSigned by: Claudette Roque 4BB39272... NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M K ROQUE 2/22/2016
SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/22/2016
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User:jordan

PROJECT REFERENCE NO.	SHEET NO.
W-5515	1A

RAMEY KEMP & ASSOCIATES, INC.
Transportation Engineers
5808 Faringdon Place,
Suite 100,Raleigh, NC 27609
Ph: 919-872-5115
NC License No. C-0910

ROADWAY DESIGN ENGINEER

SEAL 17306 NORTH CAROLINA PROFESSIONAL ENGINEER CLAUDETTE M.K. ROGUE 2/22/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS, LIST OF STANDARD DRAWINGS & GENERAL NOTES

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C	SURVEY CONTROL SHEET
1D-1 THRU 1D-2	CENTERLINE COORDINATE LIST
2A	PAVEMENT SCHEDULE, TYPICAL SECTIONS AND MILLING DETAILS
3B	SUMMARY OF EARTHWORK, GUARDRAIL SUMMARY AND PARCEL INDEX
3D	DRAINAGE SUMMARY
4 THRU 16	PLAN SHEETS
TMP-1	TRAFFIC MANAGEMENT PLAN
EC-1 TO EC-16	EROSION CONTROL PLANS
X-1A	CROSS-SECTION SUMMARY
X-1 THRU X-24	CROSS-SECTIONS

2012 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-17-2012
REV. 10-30-2012

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH - N. C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N. C., DATED JANUARY, 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	METHOD OF CLEARING - METHOD II
225.02	GUIDE FOR GRADING SUBGRADE - SECONDARY AND LOCAL
225.04	METHOD OF OBTAINING SUPERELEVATION - TWO LANE PAVEMENT
225.06	METHOD OF GRADING SIGHT DISTANCE AT INTERSECTIONS
DIVISION 3 - PIPE CULVERTS	
300.01	METHOD OF PIPE INSTALLATION
310.10	DRIVEWAY PIPE CONSTRUCTION
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	METHOD OF SHOULDER CONSTRUCTION - HIGH SIDE OF SUPERELEVATED CURVE - METHOD I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	PAVEMENT REPAIRS
DIVISION 8 - INCIDENTALS	
815.03	PIPE UNDERDRAIN AND BLIND DRAIN
840.72	PIPE COLLAR
876.01	RIP RAP IN CHANNELS
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS
876.04	DRAINAGE DITCHES WITH CLASS 'B' RIP RAP

GENERAL NOTES: 2012 SPECIFICATIONS

EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY, CENTURYLINK, TIME WARNER CABLE, PSNC ENERGY, LEVEL 3 COMMUNICATIONS, MCNC, CITY OF HENDERSON, AND VANCE COUNTY

8/17/99
2/22/2016
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04/06/15

PROJECT REFERENCE NO.	SHEET NO.
W-5515	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Property Corner
- Property Monument (ECM)
- Parcel/Sequence Number (123)
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary (WLB)
- Proposed Wetland Boundary (WLB)
- Existing Endangered Animal Boundary (EAB)
- Existing Endangered Plant Boundary (EPB)
- Existing Historic Property Boundary (HPB)
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign (S)
- Well (W)
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream (JS)
- Buffer Zone 1 (BZ 1)
- Buffer Zone 2 (BZ 2)
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch (FLOW)
- False Sump

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line (RW)
- Proposed Right of Way Line with Iron Pin and Cap Marker (RW)
- Proposed Right of Way Line with Concrete or Granite R/W Marker (RW)
- Proposed Control of Access Line with Concrete C/A Marker (C/A)
- Existing Control of Access (C/A)
- Proposed Control of Access (C/A)
- Existing Easement Line (E)
- Proposed Temporary Construction Easement (E)
- Proposed Temporary Drainage Easement (TDE)
- Proposed Permanent Drainage Easement (PDE)
- Proposed Permanent Drainage / Utility Easement (DUE)
- Proposed Permanent Utility Easement (PUE)
- Proposed Temporary Utility Easement (TUE)
- Proposed Aerial Utility Easement (AUE)
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut (C)
- Proposed Slope Stakes Fill (F)
- Proposed Curb Ramp (CR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer (S)

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole (P)
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) (P)
- U/G Power Line LOS C (S.U.E.*) (P)
- U/G Power Line LOS D (S.U.E.*) (P)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole (T)
- Telephone Pedestal (T)
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole (HH)
- U/G Telephone Cable LOS B (S.U.E.*) (T)
- U/G Telephone Cable LOS C (S.U.E.*) (T)
- U/G Telephone Cable LOS D (S.U.E.*) (T)
- U/G Telephone Conduit LOS B (S.U.E.*) (TC)
- U/G Telephone Conduit LOS C (S.U.E.*) (TC)
- U/G Telephone Conduit LOS D (S.U.E.*) (TC)
- U/G Fiber Optics Cable LOS B (S.U.E.*) (T FO)
- U/G Fiber Optics Cable LOS C (S.U.E.*) (T FO)
- U/G Fiber Optics Cable LOS D (S.U.E.*) (T FO)

WATER:

- Water Manhole (W)
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E.*) (W)
- U/G Water Line LOS C (S.U.E.*) (W)
- U/G Water Line LOS D (S.U.E.*) (W)
- Above Ground Water Line (A/G Water)

TV:

- TV Pedestal (C)
- TV Tower
- U/G TV Cable Hand Hole (HH)
- U/G TV Cable LOS B (S.U.E.*) (TV)
- U/G TV Cable LOS C (S.U.E.*) (TV)
- U/G TV Cable LOS D (S.U.E.*) (TV)
- U/G Fiber Optic Cable LOS B (S.U.E.*) (TV FO)
- U/G Fiber Optic Cable LOS C (S.U.E.*) (TV FO)
- U/G Fiber Optic Cable LOS D (S.U.E.*) (TV FO)

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) (G)
- U/G Gas Line LOS C (S.U.E.*) (G)
- U/G Gas Line LOS D (S.U.E.*) (G)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line (SS)
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*) (FSS)
- SS Forced Main Line LOS C (S.U.E.*) (FSS)
- SS Forced Main Line LOS D (S.U.E.*) (FSS)

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (?UTL)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (UST)
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records (AATUR)
- End of Information (E.O.I.)

09/08/99

TIP PROJECT: W-5515

CONTRACT: DE00132

W-5515 SURVEY CONTROL SHEET

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5515	1C	

DATUM DESCRIPTION

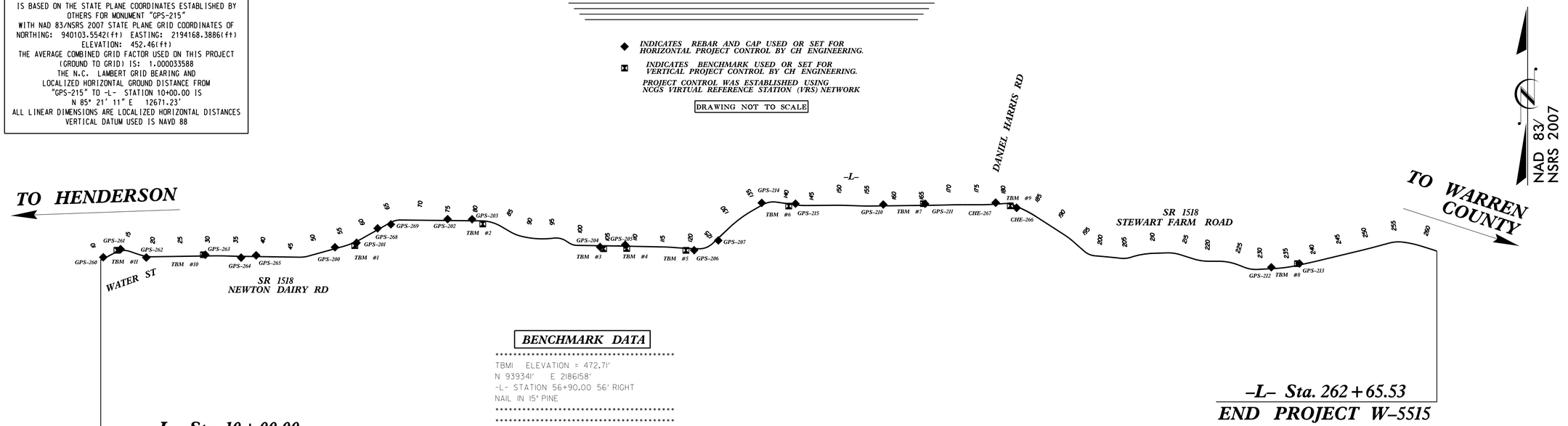
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "GPS-215"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 940103.5542(ft) EASTING: 2194168.3886(ft)
ELEVATION: 452.46(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000033588
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-215" TO -L- STATION 10+00.00 IS N 85° 21' 11" E 12671.23'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

◆ *INDICATES REBAR AND CAP USED OR SET FOR HORIZONTAL PROJECT CONTROL BY CH ENGINEERING.*

⊠ *INDICATES BENCHMARK USED OR SET FOR VERTICAL PROJECT CONTROL BY CH ENGINEERING.*

PROJECT CONTROL WAS ESTABLISHED USING NCGS VIRTUAL REFERENCE STATION (VRS) NETWORK

DRAWING NOT TO SCALE



BENCHMARK DATA

TBM1 ELEVATION = 472.71'
N 939341' E 2186158'
-L- STATION 56+90.00 56' RIGHT
NAIL IN 15" PINE

TBM2 ELEVATION = 466.94'
N 939734' E 2188484'
-L- STATION 81+44.00 57' RIGHT
NAIL IN 18" ELM

TBM3 ELEVATION = 487.40'
N 939284' E 2190681'
-L- STATION 104+34.00 54' RIGHT
NAIL IN 15" SWEETGUM

TBM4 ELEVATION = 484.07'
N 939288' E 2191101'
-L- STATION 108+55.00 43' RIGHT
NAIL IN POWER POLE

TBM5 ELEVATION = 488.34'
N 939255' E 2192178'
-L- STATION 119+33.00 37' RIGHT
NAIL IN POWER POLE

TBM6 ELEVATION = 452.08'
N 940060' E 2194046'
-L- STATION 140+88.00 39' RIGHT
NAIL IN 15" PINE

TBM7 ELEVATION = 444.57'
N 940105' E 2196495'
-L- STATION 165+35.00 32' LEFT
NAIL IN POWER POLE

TBM8 ELEVATION = 423.59'
N 939013' E 2203294'
-L- STATION 236+80.00 32' LEFT
NAIL IN POWER POLE

TBM9 ELEVATION = 442.05'
N 940066' E 2198074'
-L- STATION 181+23.00 32' RIGHT
FLANGE BOLT ON FIRE HYDRANT

TBM10 ELEVATION = 454.60'
N 939175' E 2183405'
-L- STATION 29+22.00 24' LEFT
FLANGE BOLT ON FIRE HYDRANT

TBM11 ELEVATION = 460.45'
N 939256' E 2181833'
-L- STATION 13+41.00 26' LEFT
FLANGE BOLT ON FIRE HYDRANT

BASELINE DATA

POINT 200	N 939311.17	E 2185797.00	EL 479.86	GPS-200
POINT 201	N 939392.50	E 2186188.96	EL 470.17	GPS-201
POINT 202	N 939822.30	E 2187844.61	EL 479.12	GPS-202
POINT 203	N 939819.72	E 2188289.49	EL 468.50	GPS-203
POINT 204	N 939316.56	E 2190616.21	EL 488.39	GPS-204
POINT 205	N 939355.17	E 2191071.62	EL 485.13	GPS-205
POINT 206	N 939257.36	E 2192325.96	EL 482.47	GPS-206
POINT 207	N 939434.74	E 2192765.13	EL 484.86	GPS-207
POINT 210	N 940088.42	E 2195764.59	EL 440.73	GPS-210
POINT 211	N 940101.20	E 2196523.46	EL 443.86	GPS-211
POINT 212	N 938947.16	E 2202818.43	EL 415.48	GPS-212
POINT 213	N 939014.97	E 2203329.81	EL 422.52	GPS-213
POINT 214	N 940111.99	E 2193554.69	EL 454.53	GPS-214
POINT 215	N 940103.55	E 2194168.39	EL 452.46	GPS-215
POINT 260	N 939128.93	E 2181584.58	EL 455.73	GPS-260
POINT 261	N 939275.87	E 2181899.30	EL 459.38	GPS-261
POINT 262	N 939123.68	E 2182366.73	EL 459.22	GPS-262
POINT 263	N 939174.73	E 2183438.96	EL 452.47	GPS-263
POINT 264	N 939122.64	E 2184090.36	EL 436.58	GPS-264
POINT 265	N 939164.18	E 2184363.09	EL 437.46	GPS-265
POINT 266	N 940028.78	E 2198188.45	EL 441.39	GPS-266
POINT 267	N 940121.68	E 2197807.68	EL 442.83	GPS-267
POINT 268	N 939655.18	E 2186571.40	EL 480.38	GPS-268
POINT 269	N 939727.98	E 2186813.64	EL 477.46	GPS-269

-L-

TYPE	STATION	NORTH	EAST	TYPE	STATION	NORTH	EAST
POT	10+00.00	939076.9604	2181538.8108	PT	151+80.73	940071.2284	2195142.0647
PC	13+04.34	939217.0814	2181808.9737	PC	154+25.33	940062.6034	2195386.5154
PT	15+65.11	939236.6765	2182062.0473	PT	155+68.34	940060.9685	2195529.5044
PC	17+51.00	939177.5103	2182238.2761	POT	166+94.18	940074.9310	2196655.2594
PT	20+04.60	939138.5847	2182487.6487	PC	170+22.05	940082.1882	2196983.0436
PC	31+30.17	939154.5908	2183613.0978	PT	172+43.59	940084.6383	2197204.5634
PT	33+47.89	939152.9466	2183830.8032	PC	175+81.81	940084.6325	2197542.7883
PC	35+52.51	939146.9471	2184035.3342	PT	177+87.77	940091.6962	2197748.5874
PT	35+66.99	939146.6274	2184049.8091	PC	180+12.65	940107.1187	2197972.9323
PC	46+72.08	939130.2215	2185154.7787	PT	181+71.29	940079.7051	2198127.5931
PT	48+29.07	939150.1738	2185309.9599	PC	183+28.12	940015.8296	2198270.8234
PC	54+98.72	939329.1721	2185955.2418	PT	186+35.53	939869.5788	2198540.8747
PT	58+46.29	939461.6230	2186275.6569	PC	192+41.97	939540.6945	2199050.3850
PC	64+55.67	939760.8988	2186806.4832	PT	194+66.47	939405.3068	2199229.2078
PT	66+38.69	939805.9999	2186981.7208	PC	197+15.84	939240.3383	2199416.2144
PC	81+03.82	939791.9892	2188446.7838	PRC	199+38.47	939155.0955	2199617.7075
PT	84+94.61	939688.8975	2188819.1563	PRC	204+02.42	939110.6892	2200079.5047
PC	86+88.55	939590.7517	2188986.4303	PRC	205+95.60	939129.9201	2200270.2343
PCC	88+82.11	939516.6109	2189164.5790	PT	210+07.70	939200.6303	2200674.8238
PRC	94+97.77	939477.2364	2189775.1318	PC	212+63.54	939208.5387	2200930.5403
PCC	97+00.87	939440.8514	2189971.5973	PT	214+99.75	939176.2458	2201163.3982
PT	97+46.10	939417.5768	2190010.3658	PC	217+58.03	939098.3108	2201409.6427
PC	97+91.51	939392.4718	2190048.2055	PT	220+36.02	939056.3639	2201683.3279
PT	99+54.42	939344.9862	2190201.7310	PC	222+12.70	939056.7795	2201860.0082
PC	106+68.43	939334.8757	2190915.6681	PT	225+79.34	938989.8325	2202218.3178
PT	107+45.73	939333.4823	2190992.9582	PC	227+05.05	938944.1646	2202335.4430
PC	115+31.82	939316.2755	2191778.8565	PT	229+39.26	938907.3939	2202564.9532
PRC	116+77.03	939308.8838	2191923.8575	PC	232+55.08	938924.4554	2202880.3190
PCC	121+77.98	939284.5184	2192424.1339	PT	236+89.36	938983.8145	2203310.0124
PCC	123+58.63	939331.1876	2192596.1707	PC	239+78.66	939047.0905	2203592.3117
PT	124+63.58	939394.7664	2192679.4386	PT	241+51.21	939086.2794	2203760.3430
PC	128+62.51	939668.7477	2192969.3989	PC	248+93.93	939261.2059	2204482.1707
PT	133+76.34	939975.0260	2193380.5115	PT	251+16.97	939316.1493	2204698.3321
PC	135+96.05	940084.8661	2193570.7976	PC	254+01.45	939389.3015	2204973.2528
PT	138+52.94	940132.4600	2193818.4153	PCC	256+19.23	939406.3027	2205189.1681
PC	141+72.67	940086.6633	2194134.8461	PCC	259+29.52	939346.5175	2205493.2004
PT	144+14.19	940070.2066	2194375.5774	PT	262+80.97	939240.8348	2205828.3692
PC	149+68.28	940074.2074	2194929.6566				

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TEL. (919) 788-0224 FAX (919) 788-0232
CORPORATE LICENSE # P-0189

RAMEY KEMP & ASSOCIATES, INC.
Transportation Engineers
5808 Faringdon Place, Suite 100
Raleigh, North Carolina 27609
919-872-5115 Tel. 919-878-5416 Fax.
www.rameykemp.com
NC License No. C-0910

2/22/2016
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User:djordan

PROJ. REFERENCE NO.	SHEET NO.
W-5515	1D-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	-L-	10+00.00	939076.9604	2181538.8108
2	-L-	10+50.00	939099.9810	2181583.1961
3	-L-	11+00.00	939123.0016	2181627.5814
4	-L-	11+50.00	939146.0222	2181671.9666
5	-L-	12+00.00	939169.0428	2181716.3519
6	-L-	12+50.00	939192.0634	2181760.7372
7	-L-	13+00.00	939215.0840	2181805.1224
8	-L-	13+50.00	939235.1927	2181850.8489
9	-L-	14+00.00	939248.0842	2181899.1074
10	-L-	14+50.00	939253.4283	2181948.7714
11	-L-	15+00.00	939251.0988	2181998.6678
12	-L-	15+50.00	939241.1506	2182047.6178
13	-L-	16+00.00	939225.5714	2182095.1243
14	-L-	16+50.00	939209.6576	2182142.5242
15	-L-	17+00.00	939193.7438	2182189.9241
16	-L-	17+50.00	939177.8300	2182237.3240
17	-L-	18+00.00	939163.4439	2182285.2001
18	-L-	18+50.00	939152.2785	2182333.9279
19	-L-	19+00.00	939144.3840	2182383.2914
20	-L-	19+50.00	939139.7955	2182433.0711
21	-L-	20+00.00	939138.5333	2182483.0459
22	-L-	20+50.00	939139.2302	2182533.0410
23	-L-	21+00.00	939139.9413	2182583.0360
24	-L-	21+50.00	939140.6523	2182633.0309
25	-L-	22+00.00	939141.3633	2182683.0259
26	-L-	22+50.00	939142.0743	2182733.0208
27	-L-	23+00.00	939142.7854	2182783.0158
28	-L-	23+50.00	939143.4964	2182833.0107
29	-L-	24+00.00	939144.2074	2182883.0057
30	-L-	24+50.00	939144.9184	2182933.0006
31	-L-	25+00.00	939145.6295	2182982.9955
32	-L-	25+50.00	939146.3405	2183032.9905
33	-L-	26+00.00	939147.0515	2183082.9854
34	-L-	26+50.00	939147.7625	2183132.9804
35	-L-	27+00.00	939148.4736	2183182.9753
36	-L-	27+50.00	939149.1846	2183232.9703
37	-L-	28+00.00	939149.8956	2183282.9652
38	-L-	28+50.00	939150.6067	2183332.9602
39	-L-	29+00.00	939151.3177	2183382.9551
40	-L-	29+50.00	939152.0287	2183432.9500
41	-L-	30+00.00	939152.7397	2183482.9450
42	-L-	30+50.00	939153.4508	2183532.9399
43	-L-	31+00.00	939154.1618	2183582.9349
44	-L-	31+50.00	939154.8335	2183632.9303
45	-L-	32+00.00	939155.0962	2183682.9294
46	-L-	32+50.00	939154.8589	2183732.9287
47	-L-	33+00.00	939154.1216	2183782.9230
48	-L-	33+50.00	939152.8849	2183832.9075
49	-L-	34+00.00	939151.4189	2183882.8860
50	-L-	34+50.00	939149.9529	2183932.8645
51	-L-	35+00.00	939148.4868	2183982.8430
52	-L-	35+50.00	939147.0208	2184032.8215
53	-L-	36+00.00	939146.1373	2184082.8131
54	-L-	36+50.00	939145.3951	2184132.8076
55	-L-	37+00.00	939144.6528	2184182.8021
56	-L-	37+50.00	939143.9105	2184232.7966
57	-L-	38+00.00	939143.1682	2184282.7911
58	-L-	38+50.00	939142.4259	2184332.7856
59	-L-	39+00.00	939141.6836	2184382.7801
60	-L-	39+50.00	939140.9413	2184432.7746
61	-L-	40+00.00	939140.1991	2184482.7691
62	-L-	40+50.00	939139.4568	2184532.7636
63	-L-	41+00.00	939138.7145	2184582.7580
64	-L-	41+50.00	939137.9722	2184632.7525
65	-L-	42+00.00	939137.2299	2184682.7470
66	-L-	42+50.00	939136.4876	2184732.7415
67	-L-	43+00.00	939135.7454	2184782.7360
68	-L-	43+50.00	939135.0031	2184832.7305
69	-L-	44+00.00	939134.2608	2184882.7250
70	-L-	44+50.00	939133.5185	2184932.7195
71	-L-	45+00.00	939132.7762	2184982.7140
72	-L-	45+50.00	939132.0339	2185032.7084
73	-L-	46+00.00	939131.2917	2185082.7029
74	-L-	46+50.00	939130.5494	2185132.6974
75	-L-	47+00.00	939130.5155	2185182.6905
76	-L-	47+50.00	939134.5779	2185232.5079
77	-L-	48+00.00	939143.1461	2185281.7508
78	-L-	48+50.00	939155.7672	2185330.1238
79	-L-	49+00.00	939169.1323	2185378.3044
80	-L-	49+50.00	939182.4974	2185426.4850
81	-L-	50+00.00	939195.8625	2185474.6657
82	-L-	50+50.00	939209.2276	2185522.8463
83	-L-	51+00.00	939222.5927	2185571.0270
84	-L-	51+50.00	939235.9578	2185619.2076
85	-L-	52+00.00	939249.3229	2185667.3883
86	-L-	52+50.00	939262.6880	2185715.5689
87	-L-	53+00.00	939276.0530	2185763.7495
88	-L-	53+50.00	939289.4181	2185811.9302
89	-L-	54+00.00	939302.7832	2185860.1108
90	-L-	54+50.00	939316.1483	2185908.2915
91	-L-	55+00.00	939329.5140	2185956.4720
92	-L-	55+50.00	939343.7604	2186004.3967
93	-L-	56+00.00	939359.6716	2186051.7948
94	-L-	56+50.00	939377.2281	2186098.6084
95	-L-	57+00.00	939396.4086	2186144.7804
96	-L-	57+50.00	939417.1897	2186190.2545
97	-L-	58+00.00	939439.5460	2186234.9752
98	-L-	58+50.00	939463.4461	2186278.8904
99	-L-	59+00.00	939488.0019	2186322.4451
100	-L-	59+50.00	939512.5577	2186365.9998
101	-L-	60+00.00	939537.1135	2186409.5545
102	-L-	60+50.00	939561.6693	2186453.1092
103	-L-	61+00.00	939586.2251	2186496.6639
104	-L-	61+50.00	939610.7809	2186540.2186
105	-L-	62+00.00	939635.3367	2186583.7733
106	-L-	62+50.00	939659.8925	2186627.3280
107	-L-	63+00.00	939684.4483	2186670.8827
108	-L-	63+50.00	939709.0042	2186714.4374
109	-L-	64+00.00	939733.5600	2186757.9921
110	-L-	64+50.00	939758.1158	2186801.5468
111	-L-	65+00.00	939780.1709	2186846.3755
112	-L-	65+50.00	939795.6616	2186893.8706
113	-L-	66+00.00	939804.2326	2186943.0874
114	-L-	66+50.00	939805.8918	2186993.0267
115	-L-	67+00.00	939805.4136	2187043.0244
116	-L-	67+50.00	939804.9355	2187093.0222
117	-L-	68+00.00	939804.4574	2187143.0199
118	-L-	68+50.00	939803.9792	2187193.0176
119	-L-	69+00.00	939803.5011	2187243.0153
120	-L-	69+50.00	939803.0229	2187293.0130
121	-L-	70+00.00	939802.5448	2187343.0107
122	-L-	70+50.00	939802.0667	2187393.0084
123	-L-	71+00.00	939801.5885	2187443.0062
124	-L-	71+50.00	939801.1104	2187493.0039
125	-L-	72+00.00	939800.6323	2187543.0016
126	-L-	72+50.00	939800.1541	2187592.9993
127	-L-	73+00.00	939799.6760	2187642.9970
128	-L-	73+50.00	939799.1978	2187692.9947
129	-L-	74+00.00	939798.7197	2187742.9924
130	-L-	74+50.00	939798.2416	2187792.9902
131	-L-	75+00.00	939797.7634	2187842.9879
132	-L-	75+50.00	939797.2853	2187892.9856
133	-L-	76+00.00	939796.8072	2187942.9833
134	-L-	76+50.00	939796.3290	2187992.9810
135	-L-	77+00.00	939795.8509	2188042.9787
136	-L-	77+50.00	939795.3727	2188092.9764
137	-L-	78+00.00	939794.8946	2188142.9742
138	-L-	78+50.00	939794.4165	2188192.9719
139	-L-	79+00.00	939793.9383	2188242.9696
140	-L-	79+50.00	939793.4602	2188292.9673
141	-L-	80+00.00	939792.9820	2188342.9650
142	-L-	80+50.00	939792.5039	2188392.9627
143	-L-	81+00.00	939792.0258	2188442.9604
144	-L-	81+50.00	939790.1269	2188492.9154
145	-L-	82+00.00	939784.9141	2188542.6336
146	-L-	82+50.00	939776.4008	2188591.8941
147	-L-	83+00.00	939764.6248	2188640.4781
148	-L-	83+50.00	939749.6385	2188688.1696
149	-L-	84+00.00	939731.5083	2188734.7569
150	-L-	84+50.00	939710.3149	2188780.0328
151	-L-	85+00.00	939686.1692	2188823.8062
152	-L-	85+50.00	939660.8662	2188866.9312
153	-L-	86+00.00	939635.5632	2188910.0561
154	-L-	86+50.00	939610.2602	2188953.1810
155	-L-	87+00.00	939585.0371	2188996.3522
156	-L-	87+50.00	939561.9840	2189040.7090
157	-L-	88+00.00	939542.1076	2189086.5773
158	-L-	88+50.00	939525.5062	2189133.7298
159	-L-	89+00.00	939512.1412	2189181.9028
160	-L-	89+50.00	939500.6874	2189230.5711
161	-L-	90+00.00	939490.7704	2189279.5756
162	-L-	90+50.00	939482.4001	2189328.8679
163	-L-	91+00.00	939475.5847	2189378.3992
164	-L-	91+50.00	939470.3311	2189428.1203
165	-L-	92+00.00	939466.6444	2189477.9822
166	-L-	92+50.00	939464.5283	2189527.9353
167	-L-	93+00.00	939463.9848	2189577.9303
168	-L-	93+50.00	939465.0146	2189627.9176
169	-L-	94+00.00	939467.6165	2189677.8478
170	-L-	94+50.00	939471.7880	2189727.6714
171	-L-	95+00.00	939477.5159	2189777.3403
172	-L-	95+50.00	939479.7908	2189827.2392
173	-L-	96+00.00	939474.3923	2189876.8973
174	-L-	96+50.00	939461.4479	2189925.1416
175	-L-	97+00.00	939441.2635	2189970.8326
176	-L-	97+50.00	939415.4220	2190013.6136
177	-L-	98+00.00	939387.8857	2190055.3466
178	-L-	98+50.00	939365.3472	2190099.9067
179	-L-	99+00.00	939350.9321	2190147.7168
180	-L-	99+50.00	939345.0831	2190197.3090
181	-L-	100+00.00	939344.3408	2190247.3033
182	-L-	100+50.00	939343.6328	2190297.2983
183	-L-	101+00.00	939342.9248	2190347.2932
184	-L-	101+50.00	939342.2168	2190397.2882
185	-L-	102+00.00	939341.5088	2190447.2832
186	-L-	102+50.00	939340.8007	2190497.2782
187	-L-	103+00.00	939340.0927	2190547.2732
188	-L-	103+50.00	939339.3847	2190597.2682
189	-L-	104+00.00	939338.6767	2190647.2632
190	-L-	104+50.00	939337.9687	2190697.2582
191	-L-	105+00.00	939337.2607	2190747.2531
192	-L-	105+50.00	939336.5527	2190797.2481
193	-L-	106+00.00	939335.8447	2190847.2431
194	-L-	106+50.00	939335.1367	2190897.2381
195	-L-	107+00.00	939334.3788	2190947.2323
196	-L-	107+50.00	939333.3889	2190997.2225
197	-L-	108+00.00	939332.2945	2191047.2105
198	-L-	108+50.00	939331.2000	2191097.1985
199	-L-	109+00.00	939330.1056	2191147.1865
200	-L-	109+50.00	939329.0111	2191197.1746
201	-L-	110+00.00	939327.9166	2191247.1626
202	-L-	110+50.00	939326.8222	2191297.1506
203	-L-	111+00.00	939325.7277	2191347.1386
204	-L-	111+50.00	939324.6333	2191397.1266
205	-L-	112+00.00	939323.5388	2191447.1147
206	-L-	112+50.00	939322.4443	2191497.1027
207	-L-	113+00.00	939321.3499	2191547.0907
208	-L-	113+50.00	939320.2554	2191597.0787
209	-L-	114+00.00	939319.1610	2191647.0667
210	-L-	114+50.00	939318.0665	2191697.0548
211	-L-	115+00.00	939316.9720	2191747.0428
212	-L-	115+50.00	939315.8115	2191797.0292
213	-L-	116+00.00	939313.8539	2191846.9900
214	-L-	116+50.00	939310.8976	2191896.9017
215	-L-	117+00.00	939307.0817	2191946.7557
216	-L-	117+50.00	939303.3861	2191996.6188
217	-L-	118+00.00	939300.0023	2192046.5041
218	-L-	118+50.00	939296.9303	2192096.4096
219	-L-	119+00.00	939294.1702	2192146.3332
220	-L-	119+50.00	939291.7223	2192196.2732
221	-L-	120+00.00	939289.5865	2192246.2275
222	-L-	120+50.00	939287.7630	2192296.1941
223	-L-	121+00.00	939286.2518	2192346.1712
224	-L-	121+50.00	939285.0530	2192396.1568
225	-L-	122+00.00	939284.8936	2192446.1441
226	-L-	122+50.00	939291.3477	2192495.6745
227	-L-	123+00.00	939305.4308	2192543.5972
228	-L-	123+50.00	939326.7998	2192588.7446
229	-L-	124+00.00	939354.1495	2192630.5742
230	-L-	124+50.00	939385.5723	2192669.4396
231	-L-	125+00.00	939419.7768	2192705.9077
232	-L-	125+50.00	939454.1166	2192742.2502
233	-L-	126+00.00	939488.4564	2192778.5927
234	-L-	126+50.00	939522.7961	2192814.9352
235	-L-	127+00.00	939557.1359	2192851.2778
236	-L-	127+50.00	939591.4757	2192887.6203
237	-L-	128+00.00	939625.8155	2192923.9628
238	-L-	128+50.00	939660.1553	2192960.3053
239	-L-	129+00.00	939694.2617	2192996.8659
240	-L-	129+50.00	939727.5547	2193034.1682
241	-L-	130+00.00	939759.9915	2193072.2175
242	-L-	130+50.00	939791.5552	2193110.9941
243	-L-	131+00.00	939822.2296	2193150.4780
244	-L-	131+50.00	939851.9987	2193190.6488
245	-L-	132+00.00	939880.8473	2193231.4857
246	-L-	132+50.00	939908.7604	2193272.9676
247	-L-	133+00.00	939935.7235	2193315.0732
248	-L-	133+50.00	939961.7229	2193357.7807
249	-L-	134+00.00	939986.8554	2193401.0047
250	-L-	134+50.00	940011.8517	2193444.3081
251	-L-	135+00.00	940036.8481	2193487.6115
252	-L-	135+50.00	940061.8444	2193530.9149
253	-L-	136+00.00	940086.8231	2193574.2283
254	-L-	136+50.00	940108.4805	2193619.2555
255	-L-	137+00.00	940124.1242	2193666.7083
256	-L-	137+50.00	940133.4908	2193715.7873
257	-L-	138+00.00	940136.4225	2193765.6661
258	-L-	138+50.00	940132.8700	2193815.5045
259	-L-	139+00.00	940125.7193	2193864.9905
260	-L-	139+50.00	940118.5574	2193914.4750
261	-L-	140+00.00	940111.3956	2193963.9594
262	-L-	140+50.00	940104.2338	2194013.4438
263	-L-	141+00.00	940097.0719	2194062.9282
264	-L-	141+50.00	940089.9101	2194112.4126
265	-L-	142+00.00	940082.9795	2194161.9292
266	-L-	142+50.00	940077.4400	2194211.6193
267	-L-	143+00.00	940073.4557	2194261.4583
268	-L-	143+50.00	940071.0306	2194311.3974
269	-L-	144+00.00	940070.1671	2194361.3879
270	-L-	144+50.00	940070.4652	2194411.3869
271	-L-	145+00.00	940070.8262	2194461.3856
272	-L-	145+50.00	940071.1872	2194511.3843
273	-L-	146+00.00	940071.5482	2194561.3830
274	-L-	146+50.00	940071.9092	2194611.3817
275	-L-	147+00.00	940072.2703	2194661.3804
276	-L-	147+50.00	940072.6313	2194711.3791
277	-L-	148+00.00	940072.9923	2194761.3778
278	-L-	148+50.00	940073.3533	2194811.3765
279	-L-	149+00.00	940073.7144	2194861.3752
280	-L-	149+50.00	940074.0754	2194911.3739
281	-L-	150+00.00	940074.3358	2194961.3731
282	-L-	150+50.00	940074.1297	2195011.3724
283	-L-	151+00.00	940073.4235	2195061.3672
284	-L-	151+50.00	940072.2175	2195111.3525
285	-L-	152+00.00	940070.5488	2195161.3245
286	-L-	152+50.00	940068.7858	2195211.2934
287	-L-	153+00.00	940067.0227	2195261.2623
288	-L-	153+50.00	940065.2597	2195311.2312
289	-L-	154+00.00	940063.4966	2195361.2002
290	-L-	154+50.00	940061.8349	2195411.1724
291	-L-	155+00.00	940060.8994	2195461.1630
292	-L-	155+50.00	940060.7971	2195511.1623
293	-L-	156+00.00	940061.3611	2195561.1591
294	-L-	156+50.00	940061.9812	2195611.1552
295	-L-	157+00.00	940062.6013	2195661.1514
296	-L-	157+50.00	940063.2214	2195711.1475
297	-L-	158+00.00	940063.8415	2195761.1437
298	-L-	158+50.00	940064.4616	2195811.1399
299	-L-	159+00.00	940065.0816	2195861.1360
300	-L-	159+50.00	940065.7017	2195911.1322
301	-L-	160+00.00	940066.3218	2195961.1283
302	-L-	160+50.00	940066.9419	2196011.1245
303	-L-	161+00.00	940067.5620	2196061.1206
304	-L-	161+50.00	940068.1821	2196111.1168
305	-L-	162+00.00	940068.8022	2196161.1129
306	-L-	162+50.00	940069.4223	2196211.1091
307	-L-	163+00.00	940070.0424	2196261.1052
308	-L-	163+50.00	940070.6625	2196311.1014
309	-L-	164+00.00	940071.2826	2196361.0976
310	-L-	164+50.00	940071.9026	2196411.0937
311	-L-	165+00.00	940072.5227	2196461.0899
312	-L-	165+50.00	940073.1428	2196511.0860
313	-L-	166+00.00	940073.7629	2196561.0822
314	-L-	166+50.00	940074.3830	2196611.0783
315	-L-	167+00.00	940075.0597	2196661.0735
316	-L-	167+50.00	940076.1664	2196711.0613
317	-L-	168+00.00	940077.2732	2196761.0490
318	-L-	168+50.00	940078.3799	2196811.0368
319	-L-	169+00.00	940079.4867	2196861.0245
320	-L-	169+50.00	940080.5934	2196911.0123
321	-L-	170+00.00	940081.7002	2196961.0000
322	-L-	170+50.00	940082.7679	2197010.9886
323	-L-	171+00.00	940083.6099	2197060.9814
324	-L-	171+50.00	940084.2020	2197110.9779
325	-L-	172+00.00	940084.5441	2197160.9767
326	-L-	172+50.00	940084.6382	2197210.9765
327	-L-	173+00.00	940084.6373	2197260.9765
328	-L-	173+50.00	940084.6365	2197310.9765
329	-L-	174+00.00	940084.6356	2197360.9765
330	-L-	174+50.00	940084.6348	2197410.9765
331	-L-	175+00.00	940084.6339	2197460.9765
332	-L-	175+50.00	940084.6331	2197510.9765
333	-L-	176+00.00	940084.6874	2197560.9764
334	-L-	176+50.00	940085.4063	2197610.9707
335	-L-	177+00.00	940086.9583	2197660.9460
336	-L-	177+50.00	940089.3430	2197710.8885
337	-L-	178+00.00	940092.5348	2197760.7861
338	-L-	178+50.00	940095.9639	2197810.6684
339	-L-	179+00.00	940099.3931	2197860.5506
340	-L-	179+50.00	940102.8222	2197910.4329
341	-L-	180+00.00	940106.2513	2197960.3152
342	-L-	180+50.00	940107.5357	2198010.2625
343	-L-	181+00.00	940101.3964	2198059.8345
344	-L-	181+50.00	940087.7331	2198107.8802
345	-L-	182+00.00	940068.0111	2198153.8150
346	-L-	182+50.00	940047.6462	2198199.4798
347	-L-	183+00.00	940027.2814	2198245.1446
348	-L-	183+50.00	940006.8074	2198290.7602
349	-L-	184+00.00	939985.3784	2198335.9339
350	-L-	184+50.00	939962.8268	2198380.5579
351	-L-	185+00.00	939939.1668	2198424.6041
352	-L-	185+50.00	939914.4131	2198468.0452
353	-L-	186+00.00	939888.5813	2198510.8539
354	-L-	186+50.00	939861.7313	2198553.0320
355	-L-	187+00.00	939834.6152	2198595.0406
356	-L-	187+50.00	939807.4991	2198637.0491
357	-L-	188+00.00	939780.3830	2198679.0576
358	-L-	188+50.00	939753.2668	2198721.0661
359	-L-	189+00.00	939726.1507	2198763.0747
360	-L-	189+50.00	939699.0346	2198805.0832
361	-L-	190+00.00	939671.9185	2198847.0917
362	-L-	190+50.00	939644.8024	2198889.1002
363	-L-	191+00.00	939617.6862	2198931.1087
364	-L-	191+50.00	939590.5701	2198973.1173
365	-L-	192+00.00	939563.4540	2199015.1258
366	-L-	192+50.00	939536.3198	2199057.1226
367	-L-	193+00.00	939508.2865	2199098.5219
368	-L-	193+50.00	939478.8891	2199138.9640
369	-L-	194+00.00	939448.1602	2199178.4038
370	-L-	194+50.00	939416.1339	2199216.7977
371	-L-	195+00.00	939383.1250	2199254.3528
372	-L-	195+50.00	939350.0482	2199291.8484
373	-L-	196+00.00	939316.9713	2199329.3440
374	-L-	196+50.00	939283.8944	2199366.8396
375	-L-	197+00.00	939250.8175	2199404.3352
376	-L-	197+50.00	939219.0447	2199442.9068
377	-L-	198+00.00	939192.8740	2199485.4593
378	-L-	198+50.00	939173.1231	2199531.3454
379	-L-	199+00.00	939160.2061	2199579.6028
380	-L-	199+50.00	939154.1964	2199629.2066
381	-L-	200+00.00	939150.1778	2199679.0448
382	-L-	200+50.00	939145.9629	2199728.8668
383	-L-	201+00.00	939141.5516	2199778.6718
384	-L-	201+50.00	939136.9440	2199828.4590
385	-L-	202+00.00	939132.1402	2199878.2277
386	-L-	202+50.00	939127.1403	2199927.9771
387	-L-	203+00.00	939121.9443	2199977.7063
388	-L-	203+50.00	939116.5524	2200027.4147
389	-L-	204+00.00	939110.9645	2200077.1014
390	-L-	204+50.00	939107.7764	2200126.9743
391	-L-	205+00.00	939110.1313	2200176.8931
392	-L-	205+50.00	939118.0067	2200226.2429
393	-L-	206+00.00	939131.2788	2200274.4240
394	-L-	206+50.00	939145.8079	2200322.2639
395	-L-	207+00.00	939158.6790	2200370.5763
396	-L-	207+50.00	939169.8769	2200419.3037
397	-L-	208+00.00	939179.3882	2200468.3882
398	-L-	208+50.00	939187.2016	2200517.7714
399	-L-	209+00.00	939193.3078	2200567.3946
400	-L-	209+50.00	939197.6996	2200617.1989
401	-L-	210+00.00	939200.3717	2200667.1250
402	-L-	210+50.00	939201.9377	2200717.1004
403	-L-	211+00.00	939203.4833	2200767.0765
404	-L-	211+50.00	939205.0289	2200817.0526
405	-L-	212+00.00	939206.5745	2200867.0287
406	-L-	212+50.00	939208.1201	2200917.0048
407	-L-	213+00.00	939208.7164	2200966.9938
408	-L-	213+50.00	939205.8745	2201016.9023
409	-L-	214+00.00	939199.4780	2201066.4808
410	-L-	214+50.00	939189.5595	2201115.4763

PROJ. REFERENCE NO.	SHEET NO.
W-5515	1D-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
411	-L-	215+00.00	939176.1696	2201163.6390
412	-L-	215+50.00	939161.0825	2201211.3085
413	-L-	216+00.00	939145.9954	2201258.9780
414	-L-	216+50.00	939130.9082	2201306.6475
415	-L-	217+00.00	939115.8211	2201354.3169
416	-L-	217+50.00	939100.7340	2201401.9864
417	-L-	218+00.00	939086.5843	2201449.9366
418	-L-	218+50.00	939075.0842	2201498.5895
419	-L-	219+00.00	939066.3034	2201547.8059
420	-L-	219+50.00	939060.2691	2201597.4340
421	-L-	220+00.00	939056.9997	2201647.3205
422	-L-	220+50.00	939056.3968	2201697.3125
423	-L-	221+00.00	939056.5144	2201747.3123
424	-L-	221+50.00	939056.6320	2201797.3122
425	-L-	222+00.00	939056.7496	2201847.3121
426	-L-	222+50.00	939056.1573	2201897.3046
427	-L-	223+00.00	939053.0984	2201947.2055
428	-L-	223+50.00	939047.4986	2201996.8855
429	-L-	224+00.00	939039.3725	2202046.2152
430	-L-	224+50.00	939028.7413	2202095.0664
431	-L-	225+00.00	939015.6325	2202143.3118
432	-L-	225+50.00	939000.0804	2202190.8259
433	-L-	226+00.00	938982.3277	2202237.5655
434	-L-	226+50.00	938964.1642	2202284.1497
435	-L-	227+00.00	938946.0007	2202330.7339
436	-L-	227+50.00	938929.5654	2202377.9383
437	-L-	228+00.00	938917.4611	2202426.4333
438	-L-	228+50.00	938909.8094	2202475.8269
439	-L-	229+00.00	938906.6734	2202525.7112
440	-L-	229+50.00	938907.9743	2202575.6806
441	-L-	230+00.00	938910.6754	2202625.6076
442	-L-	230+50.00	938913.3765	2202675.5346
443	-L-	231+00.00	938916.0775	2202725.4615
444	-L-	231+50.00	938918.7786	2202775.3885
445	-L-	232+00.00	938921.4797	2202825.3155
446	-L-	232+50.00	938924.1807	2202875.2425
447	-L-	233+00.00	938927.2678	2202925.1464
448	-L-	233+50.00	938931.3056	2202974.9823
449	-L-	234+00.00	938936.2977	2203024.7317
450	-L-	234+50.00	938942.2422	2203074.3763
451	-L-	235+00.00	938949.1371	2203123.8979
452	-L-	235+50.00	938956.9796	2203173.2782
453	-L-	236+00.00	938965.7670	2203222.4992
454	-L-	236+50.00	938975.4960	2203271.5428
455	-L-	237+00.00	938986.1419	2203320.3956
456	-L-	237+50.00	938997.0778	2203369.1850
457	-L-	238+00.00	939008.0137	2203417.9744
458	-L-	238+50.00	939018.9496	2203466.7638
459	-L-	239+00.00	939029.8855	2203515.5533
460	-L-	239+50.00	939040.8214	2203564.3427
461	-L-	240+00.00	939051.7795	2203613.1271
462	-L-	240+50.00	939062.9414	2203661.8652
463	-L-	241+00.00	939074.3468	2203710.5470
464	-L-	241+50.00	939085.9954	2203759.1711
465	-L-	242+00.00	939097.7714	2203807.7645
466	-L-	242+50.00	939109.5475	2203856.3580
467	-L-	243+00.00	939121.3235	2203904.9515
468	-L-	243+50.00	939133.0996	2203953.5449
469	-L-	244+00.00	939144.8757	2204002.1384
470	-L-	244+50.00	939156.6517	2204050.7318
471	-L-	245+00.00	939168.4278	2204099.3253
472	-L-	245+50.00	939180.2038	2204147.9188
473	-L-	246+00.00	939191.9799	2204196.5122
474	-L-	246+50.00	939203.7560	2204245.1057
475	-L-	247+00.00	939215.5320	2204293.6991
476	-L-	247+50.00	939227.3081	2204342.2926
477	-L-	248+00.00	939239.0842	2204390.8861
478	-L-	248+50.00	939250.8602	2204439.4795
479	-L-	249+00.00	939262.6381	2204488.0725
480	-L-	249+50.00	939274.5651	2204536.6291
481	-L-	250+00.00	939286.7347	2204585.1255
482	-L-	250+50.00	939299.1466	2204633.5604
483	-L-	251+00.00	939311.8006	2204681.9326
484	-L-	251+50.00	939324.6435	2204730.2550
485	-L-	252+00.00	939337.5004	2204778.5738
486	-L-	252+50.00	939350.3573	2204826.8925
487	-L-	253+00.00	939363.2141	2204875.2113
488	-L-	253+50.00	939376.0710	2204923.5300
489	-L-	254+00.00	939388.9279	2204971.8487
490	-L-	254+50.00	939399.8742	2205020.6211
491	-L-	255+00.00	939406.7246	2205070.1349
492	-L-	255+50.00	939409.4298	2205120.0472

Point #	Chain	Station	Northing (Y)	Easting (X)
493	-L-	256+00.00	939407.9711	2205170.0115
494	-L-	256+50.00	939402.8651	2205219.7451
495	-L-	257+00.00	939396.1007	2205269.2836
496	-L-	257+50.00	939387.8824	2205318.6017
497	-L-	258+00.00	939378.2174	2205367.6569
498	-L-	258+50.00	939367.1139	2205416.4066
499	-L-	259+00.00	939354.5817	2205464.8087
500	-L-	259+50.00	939340.7268	2205512.8497
501	-L-	260+00.00	939326.4002	2205560.7532
502	-L-	260+50.00	939311.8009	2205608.5743
503	-L-	261+00.00	939296.9295	2205656.3114
504	-L-	261+50.00	939281.7864	2205703.9630
505	-L-	262+00.00	939266.3720	2205751.5276
506	-L-	262+50.00	939250.6870	2205799.0037
507	-L-	262+80.97	939240.8348	2205828.3692

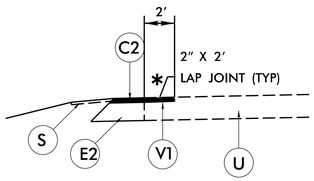
Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

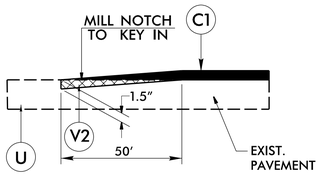
Point #	Chain	Station	Northing (Y)	Easting (X)

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 8" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E2	PROP. APPROX. 9" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
S	SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT
V1	2" DEPTH MILLING
V2	VAR. DEPTH MILLING (0" TO 1.5")

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



LAP JOINT DETAIL

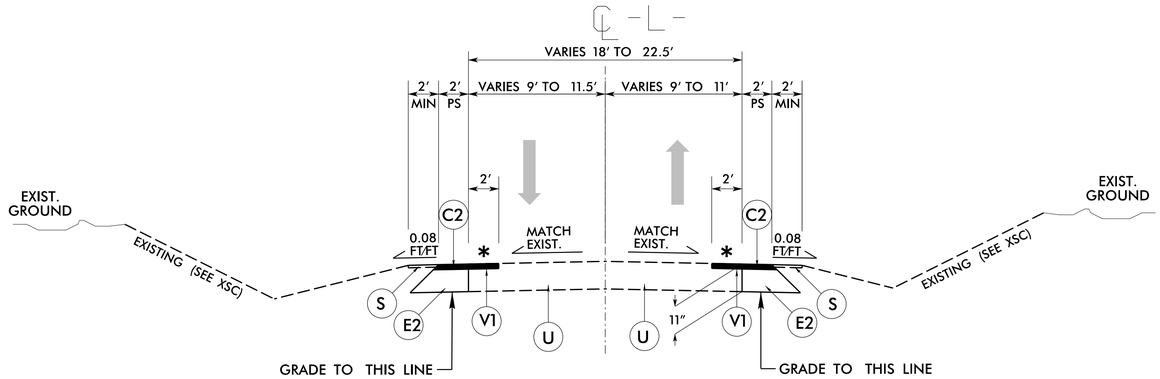


BUTT MILLING DETAIL

NOTE: MILL AT ALL TIE POINTS

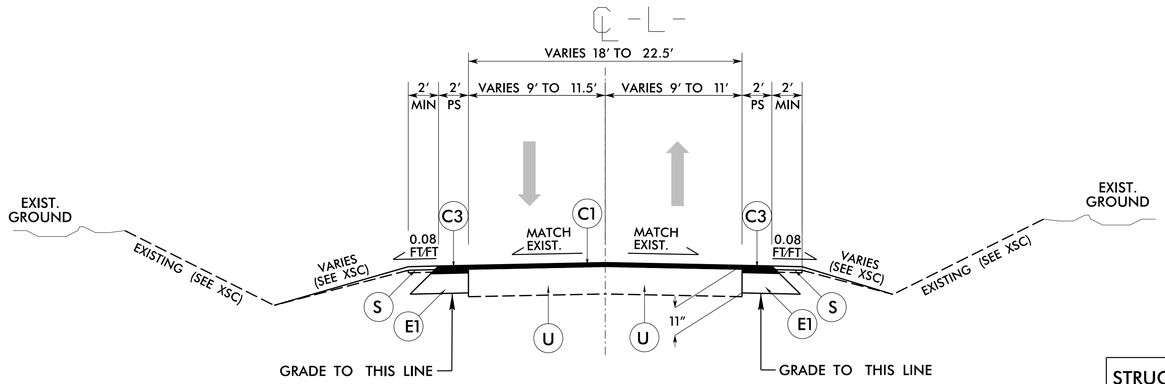
DITCH & SLOPE CUTS /RELOCATIONS (SEE XSC)

LT			RT		
–L– STA. 10+00	TO	19+05	–L– STA. 10+00	TO	17+50
–L– STA. 39+75	TO	44+00	–L– STA. 32+70	TO	34+30
–L– STA. 54+46	TO	59+35	–L– STA. 43+00	TO	44+00
–L– STA. 73+97	TO	79+88	–L– STA. 54+46	TO	58+50
–L– STA. 100+52	TO	105+25	–L– STA. 73+97	TO	79+00
–L– STA. 107+25	TO	109+45	–L– STA. 103+00	TO	105+25
–L– STA. 116+97	TO	121+90	–L– STA. 107+25	TO	109+45
–L– STA. 128+64	TO	130+75	–L– STA. 116+97	TO	122+02
–L– STA. 140+43	TO	147+43	–L– STA. 128+64	TO	130+75
–L– STA. 159+90	TO	161+88	–L– STA. 140+43	TO	143+00
–L– STA. 179+97	TO	182+75	–L– STA. 159+90	TO	161+50
–L– STA. 237+18	TO	239+24	–L– STA. 179+97	TO	182+75
			–L– STA. 237+18	TO	239+24



TYPICAL SECTION 1

–L– STA. 10+00.00 TO STA. 180+00.00



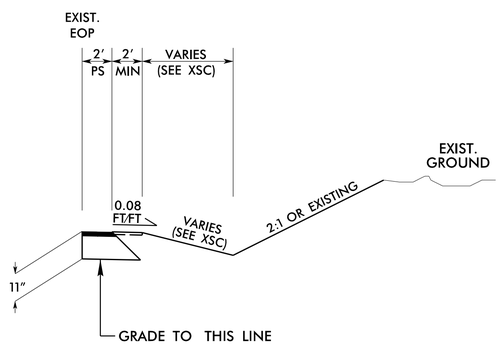
TYPICAL SECTION 2

–L– STA. 180+00.00 TO STA. 211+78.95

–L– STA. 218+28.95 TO STA. 262+65.53

(FROM SR 1513 TO SR 1515)

NOTE: REFER TO PROJECT 17BP.5.R.63 FOR CONSTRUCTION FROM –L– STA. 211+78.95 TO STA. 218+29.95



PARTIAL TYPICAL SECTION

USE IN CONJUNCTION WITH TYPICAL SECTIONS 1 & 2

USE FOR DITCH & SLOPE CUTS/RELOCATIONS

PROJECT REFERENCE NO.	SHEET NO.
W-5515	2A

ROADWAY DESIGN ENGINEER

Designed by DocuSigned by: Claudia Reed 3392725B0CC4...

NORTH CAROLINA PROFESSIONAL ENGINEER CLAUDIA M. REED SEAL 47306

2/22/2016

PAVEMENT DESIGN ENGINEER

RAMEY KEMP & ASSOCIATES, INC.
Transportation Engineers
5808 Faringdon Place, Suite 100
Raleigh, North Carolina 27609
919-872-5115 Tel. 919-878-5416 Fax.
www.rameykemp.com
NC License No. C-0910

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

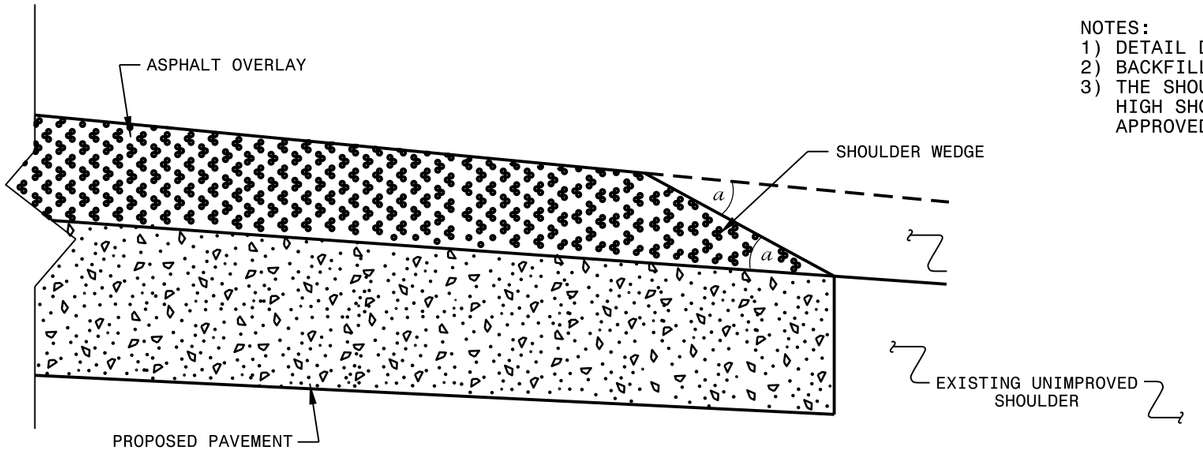
NOTE:

1. THE LOCATIONS AND QUANTITIES OF THE SIDE DRAINS ARE APPROXIMATE, ADJUST ACCORDINGLY, AS DIRECTED BY THE ENGINEER.
2. SHOULD IT BE DEEMED THAT ADDITIONAL LOCATIONS ARE REQUIRED, THE CONTRACTOR WILL BE PAID AS PER THE STANDARD PAY ITEM PRICE.
3. SHOULD IT BE DEEMED THAT ANY LOCATION IS NOT REQUIRED, NO ADDITIONAL COMPENSATION WILL BE PROVIDED.

STRUCTURE NO.	REMARKS
0401	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 12+70 –L– LT
0402	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 14+00 –L– LT
0601	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 41+60 –L– LT
0602	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 43+20 –L– RT
0603	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCHLINE STA. 43+25 –L– LT
0703	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 57+85 –L– LT
0805	REMOVE 12″/REPLACE w/15″ RCP DRIVE PIPE TO DITCH LINE STA. 76+15 –L– RT
0904	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 105+00 –L– LT
0907	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 103+00 –L– LT
1009	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 108+85 –L– LT
1010	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 108+10 –L– RT
1101	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 120+00 –L– LT
1104	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 121+50 –L– LT
1105	REMOVE/REPLACE 15″ RCP DRIVE PIPE TO DITCH LINE STA. 117+50 –L– LT

2/22/2016
W-5515_Rdy_Typ.dgn
User: djordan

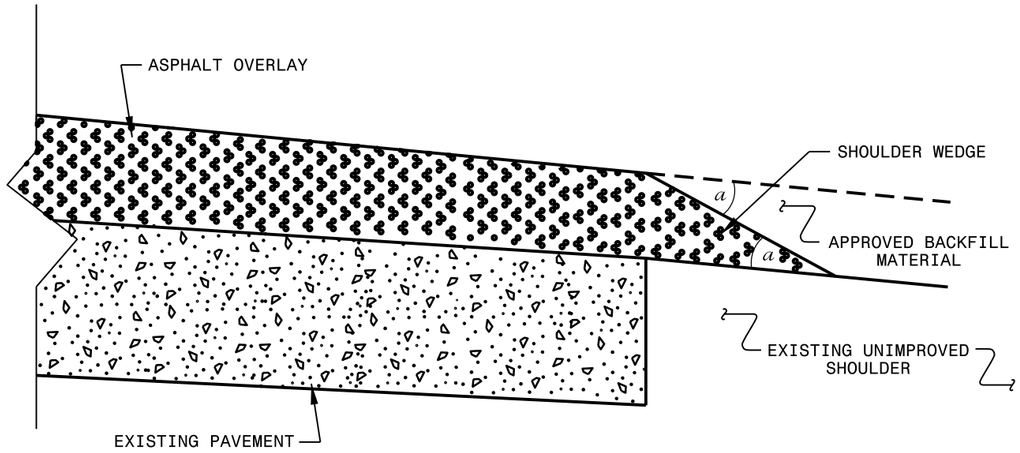
PROJECT REFERENCE NO.	SHEET NO.



NOTES:
1) DETAIL DOES NOT APPLY TO OGAFC AND ULTRA-THIN BONDED WEARING COURSE.
2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.

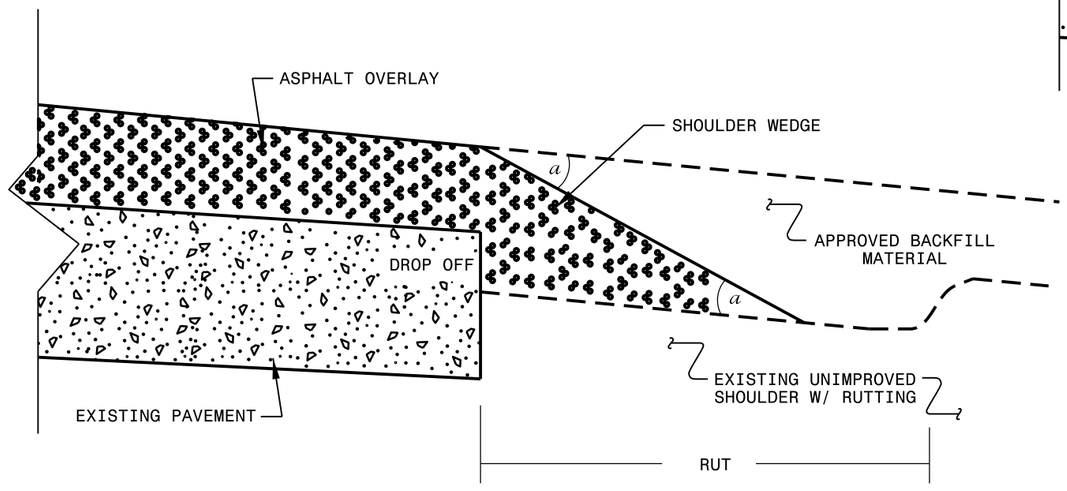
SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ Widening or with Existing Paved Shoulder having no dropoffs)



SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ NO Widening)



SHOULDER WEDGE DETAIL

(Resurfacing Adjacent to Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SHOULDER WEDGE DETAILS

ORIGINAL BY:	T.SPELL	DATE:	7-19-11
MODIFIED BY:		DATE:	2/2/16
CHECKED BY:		DATE:	
FILE SPEC.:	s:usr/details/stand/shoulderwedgedetail.dgn		

$$$$$$SYSTIME$$$$$
$$$$$$USERNAME$$$$$

COMPUTED BY:	DAJ	DATE:	11/6/2014
CHECKED BY:	CMKR	DATE:	11/19/2015

PROJECT NO.	SHEET NO.
W-5515	3B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RAMEY KEMP & ASSOCIATES
5808 Faringdon Place, Suite 100 • Raleigh • North Carolina • 27609
Phone (919) 872-5115 • Fax (919) 878-5416

SUMMARY OF EARTHWORK

LINE	Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
L	10+00.00	23+05.00	383	96	0	287
L	24+90.00	96+85.00	2333	74	0	2259
L	97+50.00	211+78.95	3777	219	0	3559
L	218+28.95	262+65.00	1294	45	0	1249
SUBTOTAL			**7787**	**434**	**0**	**7354**
ADJUSTMENTS DUE TO						
Est. Loss Due To Clearing And Grubbing			0			0
Rock Waste To Replace Borrow						
Adjust For Rock Swell That Replaces Borrow						
Eliminate Shrinkage For Mat'l That Is Now Rock						
Earth Waste to Replace Borrow					0	0
PROJECT TOTAL			**7787**	**434**	**0**	**7354**
Est. 5% to Replace Topsoil in Borrow Pits					0	
GRAND TOTAL			**7787**		**0**	
SAY			**7900**		**0**	
Est. Shoulder Reconstruction		**3700 CY**				
Est. Drainage Ditch Excav.		**40 CY**				
Select Granular Material		**0 CY**				
Geotextile For Soil Stab.		**0 SY**				
Estimate Undercut		**0 CY**				
Estimate Shallow Undercut		**100 CY**				
Class IV Subgrade Stab.		**200 TONS**				

RESET GUARDRAIL SUMMARY

LINE	LOCATION	APPROX. LENGTH (FT)
L AT US 1	RIGHT APPROACH	405
	RIGHT TRAILING	435
	LEFT APPROACH	420
	LEFT TRAILING	320
	TOTAL	1580

Approximate lengths only. No field surveys provided.

Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, and shoulder reconstruction will be paid for at the lump sum price for "Grading".

PARCEL INDEX

PARCEL NO.	PLAN SHEET NO.	PROPERTY OWNER NAME	TEMP. CONSTRUCTION EASEMENT (SQ. FT)	PERM. DRAINAGE EASEMENT (SQ.FT)	TEMP. DRAINAGE EASEMENT (SQ.FT)
1	4	SHARON S. LONG	1961.11		
2 (Combined with 1)	4	SHARON S. LONG	1947.25		
3	4	JACKIE JACKSON TERREL	2239.00		
4 (Combined with 3)	4	JACKIE JACKSON TERREL	1176.09		
5 (Combined with 3)	5	JACKIE JACKSON TERREL	1146.93		
6	5	FRANKIE D. AND DONNA E. PEGRAM		ELIMINATED CLAIM	
7	7	CURRIN ENTERPRISE INC		ELIMINATED CLAIM	
8	7	GEORGE M. HOOD			2298.70
9 (Combined with 8)	7	GEORGE M. HOOD			3068.85
10	8	ABBOTT PROPERTIES, LLC	380.67		
11	8	ANTHONY C. AND DAVID H. ABBOTT	666.30		
12	8	ANDREW H. & MARY F. ABBOTT	175.46		
13	9	BARBARA A. BOYD		527.06	
14	10, 11	WALLACE GREENWAY		ELIMINATED CLAIM	
15	11	MARY NASH & PATRICK PROCTOR	283.64		
16	12	LARRY VAN AND CINDA HAMLEN SMILEY	1199.07		
17	13	MYRTLE A. RILEY		ELIMINATED CLAIM	
18	13	JENNY L MCCRARY		ELIMINATED CLAIM	
19	13	MYRTLE A. RILEY	606.04		
20 (Combined with 19)	13	MYRTLE A. RILEY	1395.10		
21	13	STEVE E. WILSON	536.28		
22 (Combined with 19)	13	MYRTLE A. RILEY	416.74		
23	13	FAIR HOME LIMITED PARTNERSHIP	5170.46		
24	14	JAMES T. ELLINGTON JR.	347.67		
25	14	WALLACE GREENWAY		ELIMINATED CLAIM	
26	15	JAMES T. AND PATRICIA A. ELLINGTON	549.73	354.83	
27	16	KAREN E. WATSON	698.32		
28	16	LAWRENCE E. STEVENSON, WALTER M STEVENSON, AND HAZEL S. WILLIAMS	195.39		

COMPUTED BY: MN & CMKR DATE: 1/29/2015

CHECKED BY: CMKR DATE: 2/20/2016

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
W-5515	3D

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

RAMEY KEMP & ASSOCIATES
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Phone (919) 872-5115 • Fax (919) 878-5416

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
12+70	LT	0401																	
14+00	LT	0402																	
41+60	LT	0601																	
43+20	RT	0602																	
43+25	LT	0603																	
55+41	LT	0701	EX		470.97	470.89	0.016												
55+65	RT	EX	0702		470.22	470.15	0.014												
57+85	LT	0703																	
58+30	LT	0704	EX		465.05	465.04	0.002												
58+21	RT	EX	0705		465.01	465.00	0.002												
78+76	LT	0801																	
78+76	LT	0802	EX		465.60	465.51	0.015												
76+15	RT	0805																	
104+10	LT	0903	EX		483.88	483.88	0.000												
105+00	LT	0904																	
103+00	LT	0907																	
108+36	LT	1007	EX		482.51	482.46	0.013												
108+85	LT	1009																	
108+10	RT	1010																	
108+31	RT	EX	1011		482.00	481.93	0.014												
120+00	LT	1101																	
120+75	LT	1102	EX		482.19	482.12	0.010												
120+91	RT	EX	1103		481.73	481.67	0.012												
121+50	LT	1104																	
117+50	LT	1105																	
141+50	LT	1301	EX		449.35	449.24	0.016												
141+54	RT	EX	1302		448.72	448.66	0.015												
160+87	RT	EX	1402		426.74	426.71	0.008												
180+37	LT	1501	EX		439.10	439.01	0.023												
180+54	RT	EX	1502		438.19	438.10	0.006												
180+96	RT	EX	1503		438.17	438.10	0.005												
180+37	LT	1504																	
238+19	RT	EX	1602		416.66	416.33	0.037												
SHEET TOTALS																			
SAY																			

STATION	C.S. PIPE SIZE 12"	15"	18"	24"	30"	36"	42"	48"	THICKNESS OR GAUGE .064	.064	.064	.064	.079	.079	.109	.109
12+70																
14+00																
41+60																
43+20																
43+25																
55+41																
55+65																
57+85																
58+30																
58+21																
78+76																
78+76																
76+15																
104+10																
105+00																
103+00																
108+36																
108+85																
108+10																
108+31																
120+00																
120+75																
120+91																
121+50																
117+50																
141+50																
141+54																
160+87																
180+37																
180+54																
180+96																
180+37																
238+19																
SHEET TOTALS																
SAY																

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"
12+70								
14+00								
41+60								
43+20								
43+25								
55+41				8				
55+65				8				
57+85								
58+30				8				
58+21				8				
78+76								
78+76				4				
76+15								
104+10				4				
105+00								
103+00								
108+36				4				
108+85								
108+10								
108+31				8				
120+00								
120+75				8				
120+91				8				
121+50								
117+50								
141+50				8				
141+54				4				
160+87				4				
180+37				4				
180+54				8				
180+96	8							
180+37								
238+19				12				
SHEET TOTALS	8			68	40			
SAY								

STATION	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
12+70								
14+00								
41+60								
43+20								
43+25								
55+41								
55+65								
57+85								
58+30								
58+21								
78+76								
78+76								
76+15								
104+10								
105+00								
103+00								
108+36								
108+85								
108+10								
108+31								
120+00								
120+75								
120+91								
121+50								
117+50								
141+50								
141+54								
160+87								
180+37								
180+54								
180+96								
180+37								
238+19								
SHEET TOTALS								
SAY								

STATION	"**" R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	****" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	12" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
12+70				20			
14+00				36			
41+60				32			
43+20				48			
43+25				24			
55+41							
55+65							
57+85				28			
58+30							
58+21							
78+76							
78+76							
76+15				44			
104+10							
105+00				24			
103+00				24			
108+36							
108+85				24			
108+10				24			
108+31							
120+00				24			
120+75							
120+91							
121+50				24			
117+50				28			
141+50							
141+54							
160+87							
180+37							
180+54							
180+96							
180+37							
238+19							
SHEET TOTALS				404	0		
SAY							

STATION	QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.-'B') PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G
12+70							
14+00							
41+60							
43+20							
43+25							
55+41							
55+65							
57+85							
58+30							
58+21							
78+76							
78+76							
76+15							
104+10							
105+00							
103+00							
108+36							
108+85							
108+10							
108+31							
120+00							
120+75							
120+91							
121+50							
117+50							
141+50							
141+54							
160+87							
180+37							
180+54							
180+96							
180+37							
238+19							
SHEET TOTALS							
SAY							

STATION	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32						
12+70																			
14+00																			
41+60																			
43+20																			
43+25																			
55+41																			
55+65																			
57+85																			
58+30																			
58+21																			
78+76																			
78+76																			
76+15																			
104+10																			
105+00																			
103+00																			
108+36																			
108+85																			
108+10																			
108+31																			
120+00																			
120+75																			
120+91																			
121+50																			
117+50																			
141+50																			
141+54																			
160+87																			
180+37																			
180+54																			
180+96																			
180+37																			
238+19																			
SHEET TOTALS																			
SAY																			

STATION	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
12+70				19.9	REMOVE 15" RCP
14+00				33.9	REMOVE 15" RCP
41+60				29.4	REMOVE 15" RCP
43+20				41.8	REMOVE 15" RCP
43+25					REMOVE 15" RCP
55+41			0.4465		
55+65			0.4465		
57+85				36.6	REMOVE 15" RCP
58+30			0.5526		
58+21			0.5526		
78+76				3	REMOVE PART OF 4" PVC
78+76			0.5526		
76+15				40.2	REMOVE 12" RCP
104+10			0.5526		
105+00				21	REMOVE 15" RCP
103+00				21.4	REMOVE 15" RCP
108+36			0.5526		
108+85				21.7	REMOVE 15" RCP
108+10				26	REMOVE 15" RCP
108+31			0.5526		
120+00				20.9	REMOVE 15" RCP
120+75			0.4465		
120+91			0.4465		
121+50				24.7	REMOVE 15" RCP
117+50				24.3	REMOVE 15" RCP
141+50			0.4465		
141+54			0.4465		
160+87			0.5526		
180+37			0.4465		
180+54			0.4465		
180+96			0.3990		
180+37				2	REMOVE PART OF 4" PLASTIC; REALIGN AS NEEDED
238+19			0.4465		
SHEET TOTALS			8.2857	366.8	
SAY			9	370	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

2/22/2016
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jbaird.jordan

PROJECT REFERENCE NO.	SHEET NO.
W-5515	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE
2/22/2016

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 036683 ENGINEER MELANIE QUE CHI NGUYEN
2/22/2016

RAMEY KEMP & ASSOCIATES, INC.
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919-872-5115 Tel. 919-878-5416 Fax.
www.rameykemp.com
NC License No. C-0910

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REVISIONS 8/17/99

BEGIN PROJECT W-5515
-L- POT STA.10+00.00

PLUMMER C. BAILEY
AND WIFE
BRIDGET GRAY-BAILEY
DB 694 PG 391

SHARON S LONG
DB 705 PG 578
SHOWN PER GIS
1

-L-

PI Sta 14+42.20
△ = 45° 58' 20.6" (RT)
D = 17° 37' 46.1"
L = 260.77'
T = 137.86'
R = 325.00'
e = EXIST

PI Sta 18+79.03
△ = 19° 22' 24.7" (LT)
D = 7° 38' 22.0"
L = 253.60'
T = 128.02'
R = 750.00'
e = EXIST

NAD 83/NSRS 2007

TBM #11 EL=460.45'
TOP OF FLANGE BOLT
ON FIRE HYDRANT

0401 0402

+00.00 29.92'
+00.00 35.00'
+04.34 35.00'
2' FDPS
EXISTING R/W
15" REMOVE
15" REMOVE
N 62° 35' 10.7" E
-L-
+65.11 35.00'

JACKIE JACKSON TERREL
DB 260 PG 312
3

PC Sta. 17+51.00

+00.00 30.31'
+04.34 40.00'
2' FDPS
EXISTING R/W

SHARON S LONG
DB 705 PG 578
SHOWN PER GIS
1

PC Sta. 13+04.34

HENDERSON CITY LIMITS

+65.11 40.00'
2' FDPS
EXISTING R/W
S 71° 26' 28.6" E
+00.00 35.00'
+50.00 31.82'

PT Sta. 15+65.11

+00.00 38.00'
2' FDPS
+51.00 28.17'

JACKIE JACKSON TERREL
DB 260 PG 312
3

+05.44

NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

2/22/2016
w-5515_Rdy_psh_S04.dgn
User:Standard

PROJECT REFERENCE NO.	SHEET NO.
W-5515	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 017306 CLAUDETTE M.K. ROQUE — 2/22/2016

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038683 MELANIE QUE CHI NGUYEN — 2/22/2016

RAMEY KEMP & ASSOCIATES, INC.
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NC License No. C-0910

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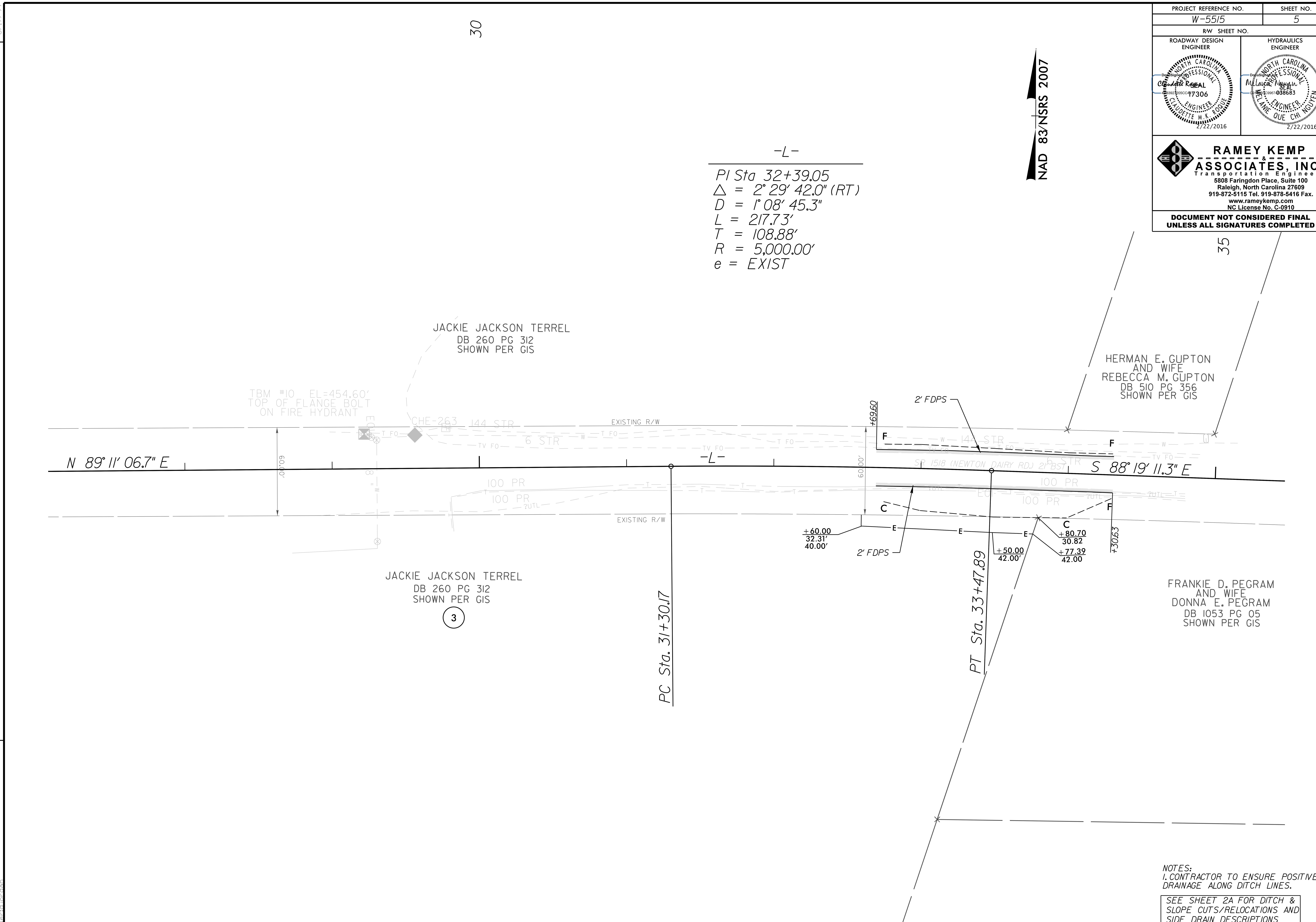

NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

2/22/2016 ...\Proj\W-5515_Rdy_psh_S05.dgn

PROJECT REFERENCE NO.	SHEET NO.
W-5515	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE 2/22/2016	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN 2/22/2016

RAMEY KEMP & ASSOCIATES, INC.
Transportation Engineers
5808 Faringdon Place, Suite 100
Raleigh, North Carolina 27609
919-872-5115 Tel. 919-878-5416 Fax.
www.rameykemp.com
NC License No. C-0910

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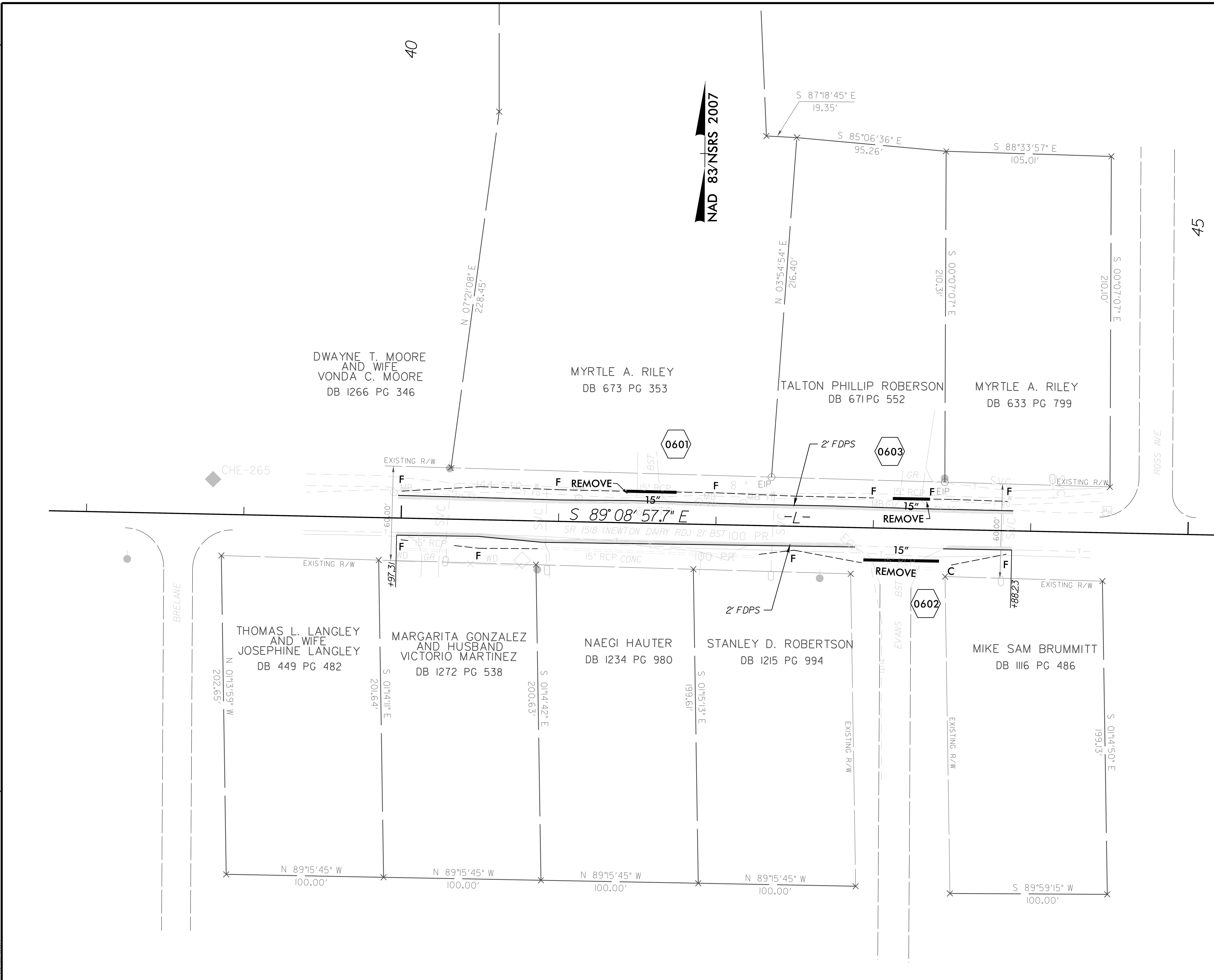
REVISIONS

8/17/99



NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

2/22/2016
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PROJECT REFERENCE NO.	SHEET NO.
W-5515	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17306 CLAUDETTE M.K. ROQUE 2/22/2016

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038683 MELANIE QUE CHI NGUYEN 2/22/2016

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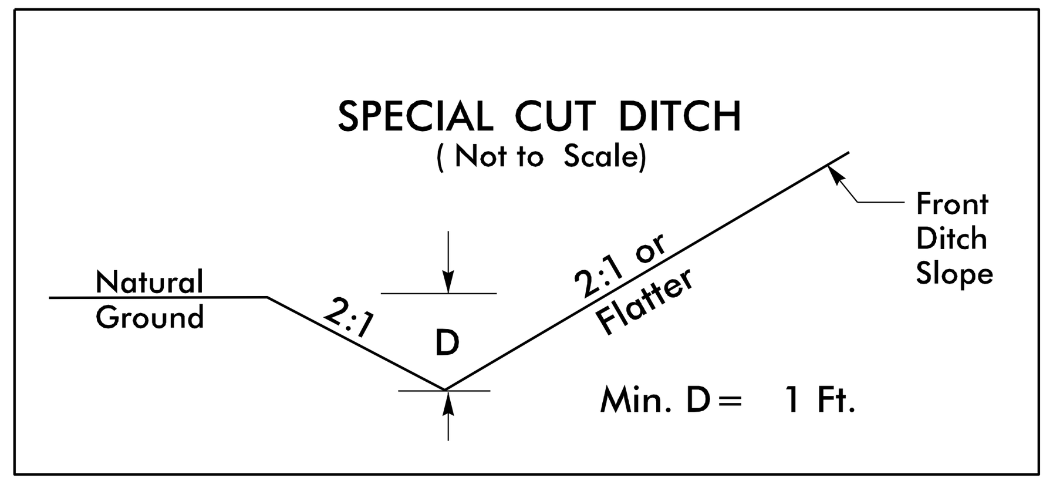
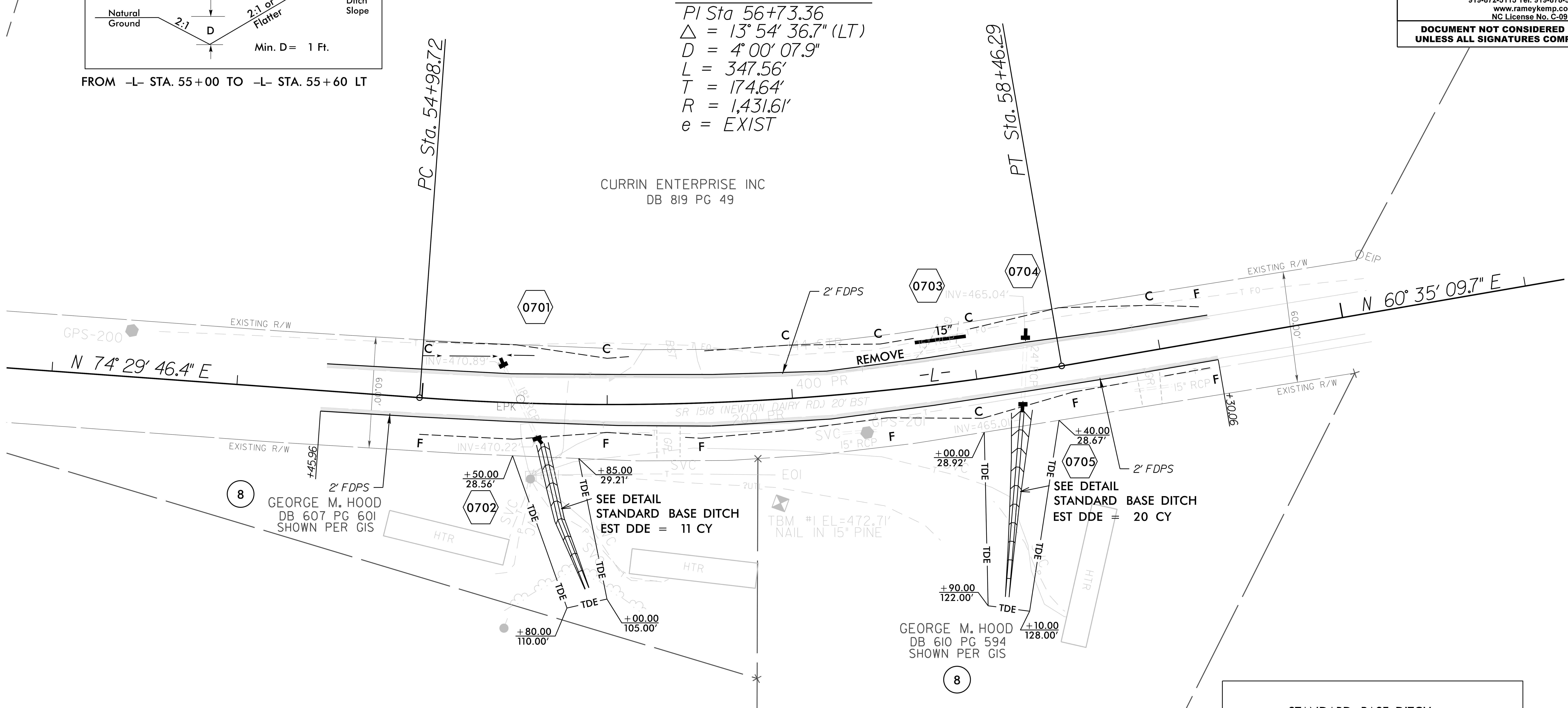
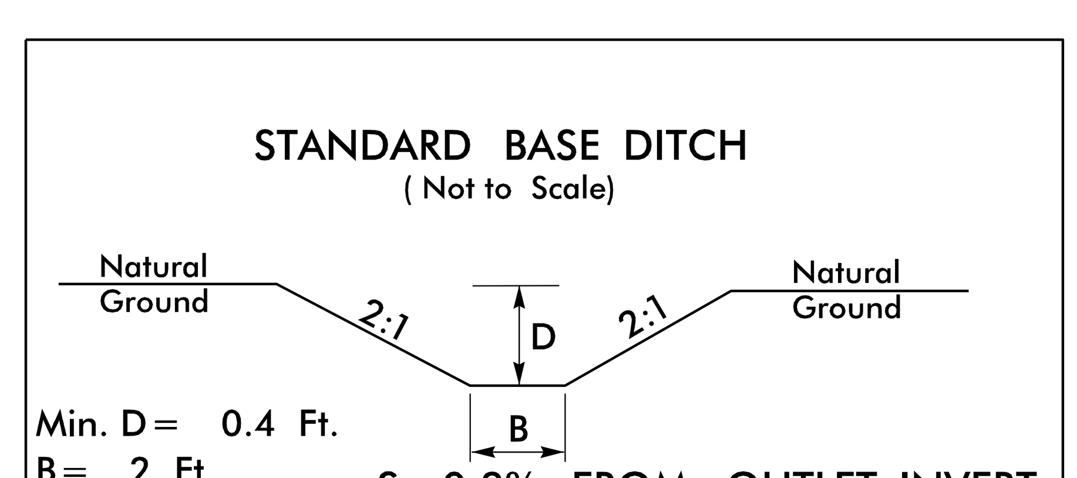


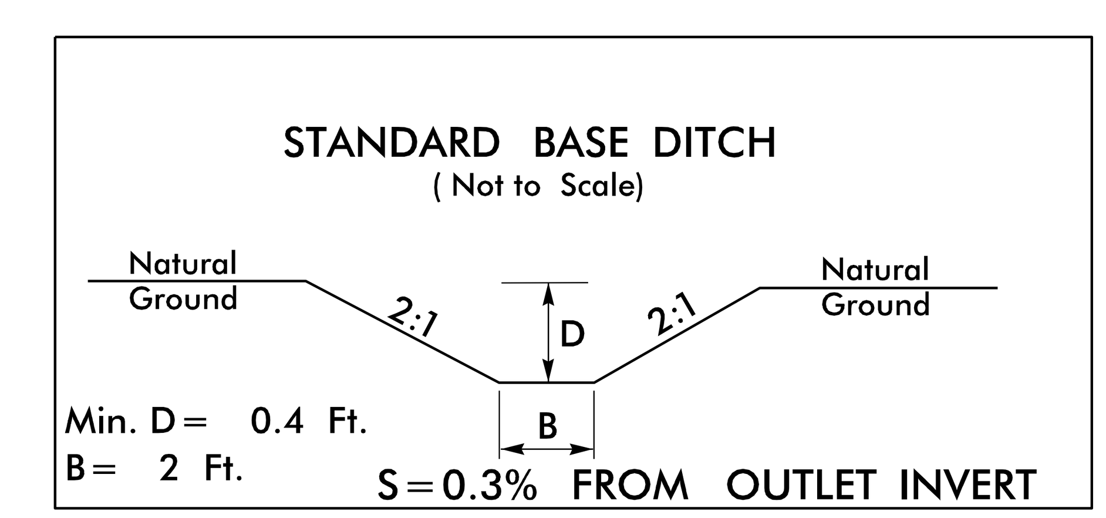
FROM -L- STA. 55+00 TO -L- STA. 55+60 LT



STRUCTURE NO.	REMARKS	PROP INV ELEV
0701	COLLAR/EXTEND 5 LF 18" RCP STA. 55+41 -L- LT	470.97'
0702	COLLAR/EXTEND 5 LF 18" RCP STA. 55+65 -L- RT	470.15'
0704	COLLAR/EXTEND 6 LF 24" RCP STA. 58+30 -L- LT	465.05'
0705	COLLAR/EXTEND 5 LF 24" RCP STA. 58+21 -L- RT	465.00'



STA. 55+65 -L-RT



STA. 58+21 -L-RT

NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

8/17/99

2/22/2016
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PROJECT REFERENCE NO.	SHEET NO.
W-5515	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17306 CLAUDETTE M. K. ROQUE — 2/22/2016

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038683 MELANIE QUE CHI NGUYEN — 2/22/2016

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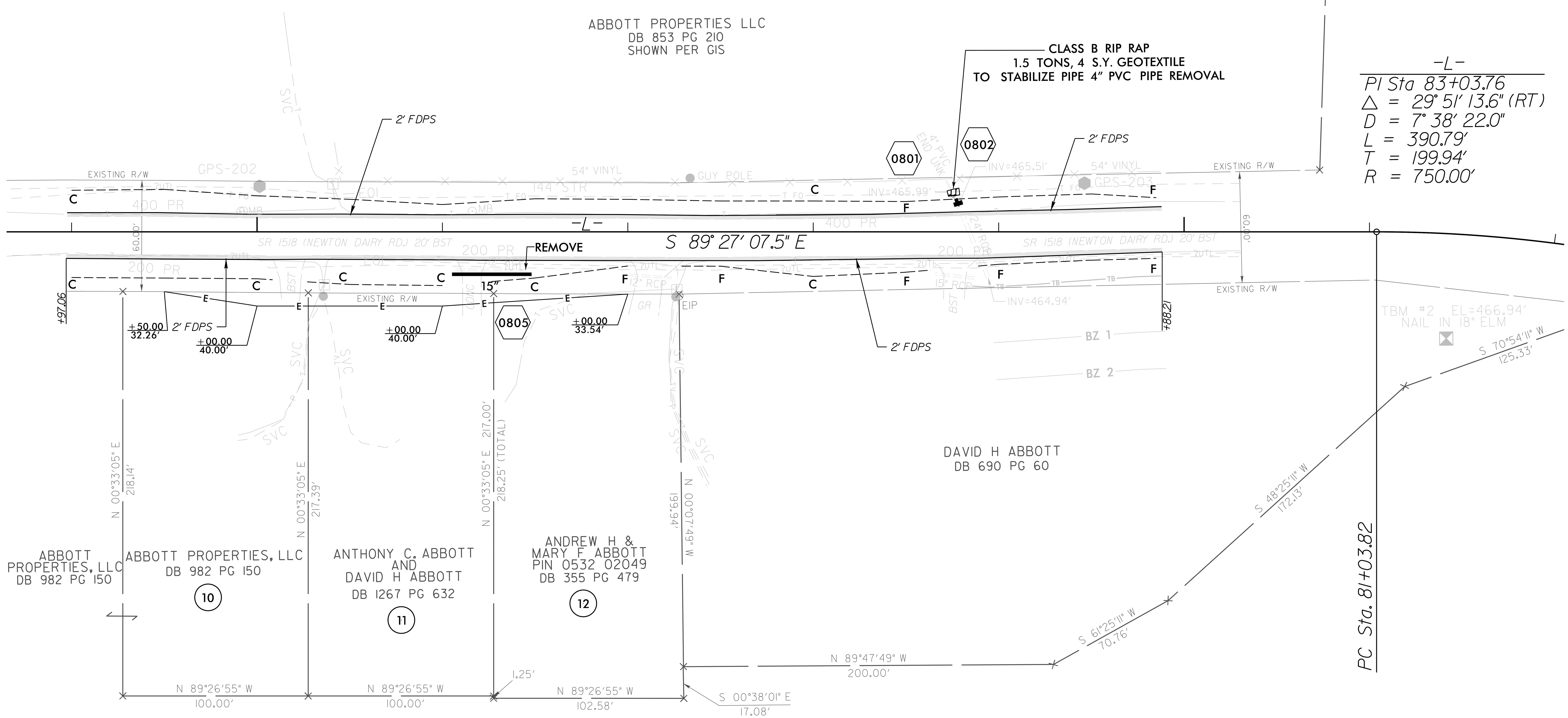
NAD 83/NSRS 2007

75

80

STRUCTURE NO.	REMARKS	PROP INV ELEV
0801	REMOVE 3 LF 4" PVC STA. 78+76 -L- LT	
0802	COLLAR/EXTEND 4 LF 24" RCP STA. 78+76 -L- LT	465.60'



NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

2/22/2016
...\Proj\W-5515_Rdy_psh_S08.dgn

PROJECT REFERENCE NO.	SHEET NO.
W-5515	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE — 2/22/2016

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN — 2/22/2016

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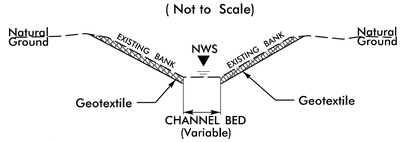
PIPE OUTLET CHANNEL
(Not to Scale)



Length = 10 Ft.
Liner = Class I Rip Rap

–L– STA. 104+18 RT

100

PC Sta. 97+91.51

PT Sta. 99+54.42

–L–
PI Sta 98+75.26
△ = 32° 45′ 04.1″ (LT)
D = 20° 06′ 13.6″
L = 162.91′
T = 83.75′
R = 285.00′

S 56° 26′ 15.0″ E

NAD 83/NSRS 2007

N 06°49′40″ W 379.28′

S 08°50′16″ E 321.09′

105

S 01°32′52″ W 254.70′

TONY G & TAMMY SANFORD
DB 845 PG 352

TONY G. SANFORD
AND WIFE
TAMMY A. SANFORD
DB 845 PG 352
SHOWN PER GIS

LATISKA T BARNES
DB 1139 PG 74

2′ FDPS

0907 0905 0903 0904

EXISTING R/W

INV=483.88′

15″ REMOVE

15″ REMOVE

S 89° 11′ 19.2″ E

–L–

SR 1518 (STEWART FARM RD.) 20′ BST

0908

+52.07

+16.65

2′ FDPS

2′ FDPS

PDE

+35.00
29.93′
45.00′

0906

+00.00
29.95′
45.00′

RESET EXISTING DISCONNECTED PIPE AT HOLE IN SHOULDER

CLASS I RIP RAP AT OUTLET (SEE PIPE OUTLET CHANNEL)

WALLACE GREENWAY
DB 436 PG 68

JAMES B. BOYD
AND WIFE
BARBARA A. BOYD
DB 441 PG 635
SHOWN PER GIS

BARBARA A. BOYD
DB 441 PG 635
SHOWN PER GIS

JAMES C & TRACY R BOYD
DB 1236 PG 899

BARBARA A. BOYD
DB 441 PG 635
SHOWN PER GIS

N 00°05′20″ W 142.47′

N 00°35′24″ E 82.63′

N 88°56′46″ W 248.59′

N 30°39′29″ W 234.59′

S 30°46′31″ E 265.53′

13

STRUCTURE NO.	REMARKS	PROP INV ELEV	QTY
0903	COLLAR/EXTEND 3 LF 24″ RCP STA. 104+10 –L– LT	483.88′	
0905	LINE DITCH WITH CL. B RIP RAP 10′ ON EACH SIDE OF OPENING		7 TONS RIP RAP 16 SY GF
0906	CL. I RIP RAP AT OUTLET STA. 104+18 –L– RT		32 TONS RIP RAP 30 SY GF
0908	LINE DITCH WITH CL. B RIP RAP FROM DRIVE PIPE OUTLET STA. 104+18 –L– RT		3 TONS RIP RAP 10 SY GF

NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

2/22/2016
W-5515_Rdy_psh_S09.dgn
lisaridgeway

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE
2/22/2016

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN
2/22/2016

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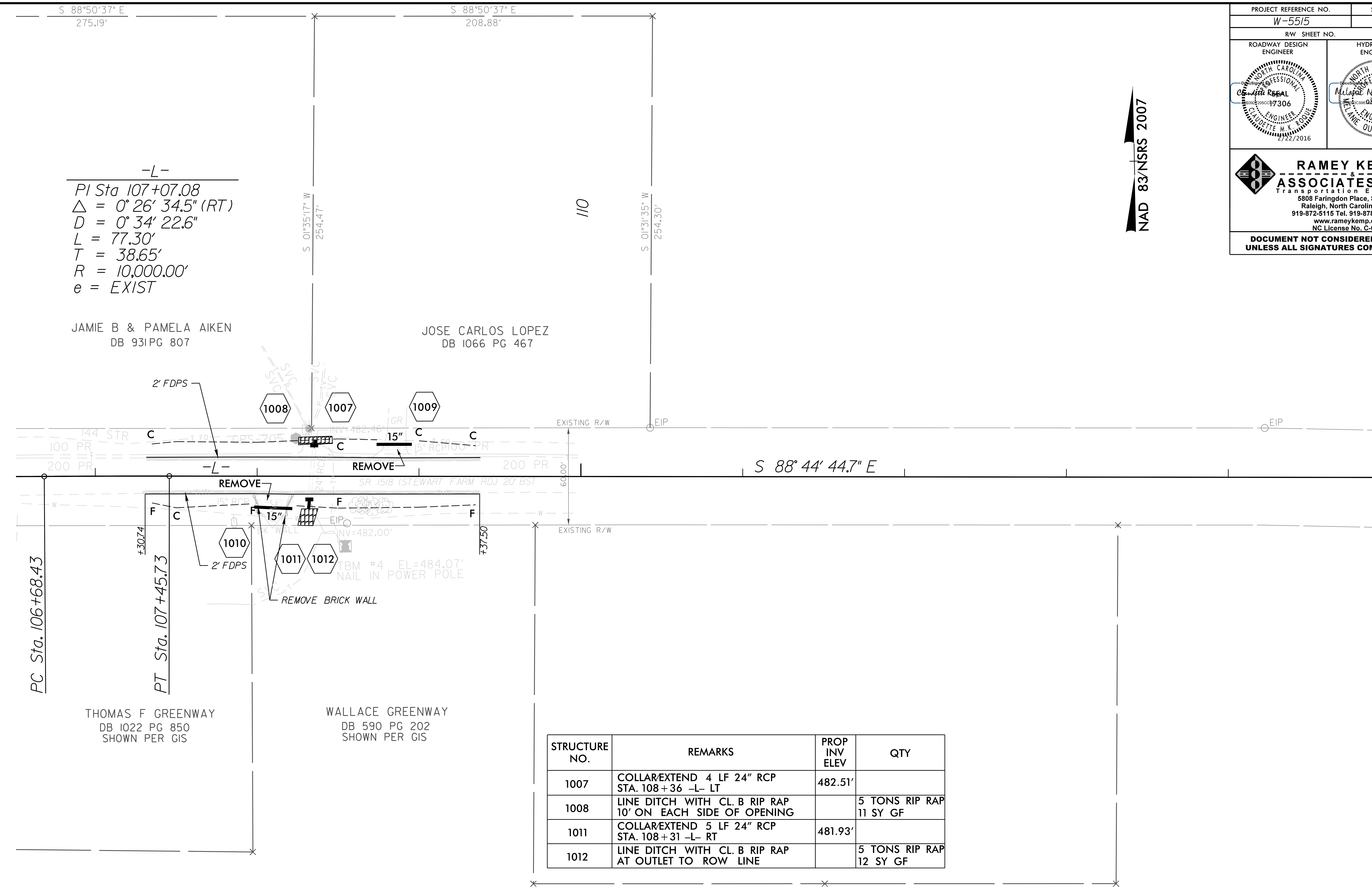

STRUCTURE NO.	REMARKS	PROP INV ELEV	QTY
1007	COLLAR/EXTEND 4 LF 24" RCP STA. 108+36 -L- LT	482.51'	
1008	LINE DITCH WITH CL. B RIP RAP 10' ON EACH SIDE OF OPENING		5 TONS RIP RAP 11 SY GF
1011	COLLAR/EXTEND 5 LF 24" RCP STA. 108+31 -L- RT	481.93'	
1012	LINE DITCH WITH CL. B RIP RAP AT OUTLET TO ROW LINE		5 TONS RIP RAP 12 SY GF

NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

PROJECT REFERENCE NO.	SHEET NO.
W-5515	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17306 CLAUDETTE M.K. ROQUE — DocuSigned by: Claudette Roque — 2/22/2016

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038683 MELANIE QUE CHI NGUYEN — DocuSigned by: Melanie Nguyen — 2/22/2016

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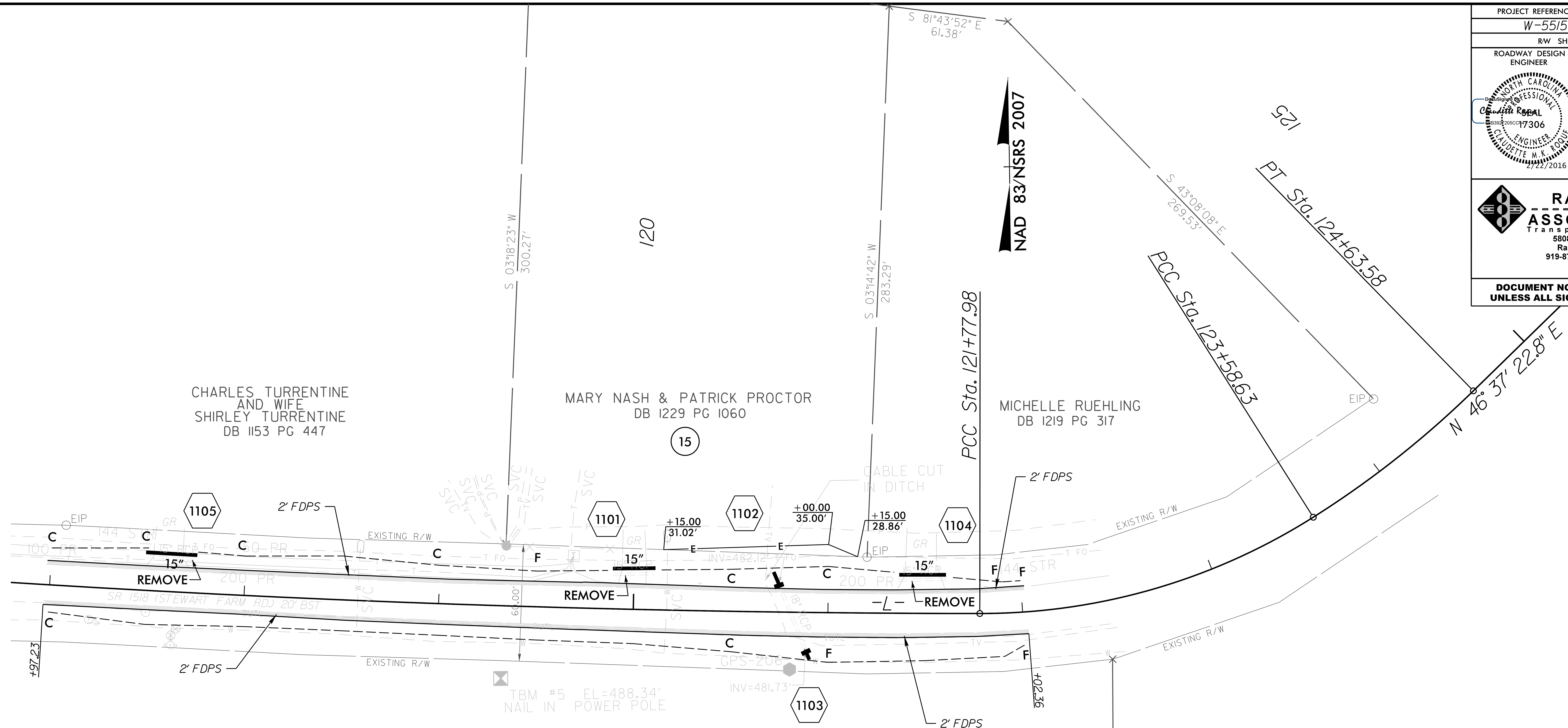

WALLACE GREENWAY
DB 590 PG 202
SHOWN PER GIS

-L-

PI Sta 119+27.59	PI Sta 122+70.78	PI Sta 124+11.30
△ = 3° 35' 16.1" (LT)	△ = 32° 20' 38.8" (LT)	△ = 12° 01' 38.3" (LT)
D = 0° 42' 58.3"	D = 17° 54' 17.8"	D = 11° 27' 33.0"
L = 500.95'	L = 180.64'	L = 104.96'
T = 250.56'	T = 92.80'	T = 52.67'
R = 8,000.00'	R = 320.00'	R = 500.00'
e = EXIST	e = EXIST	

STRUCTURE NO.	REMARKS	PROP INV ELEV
1102	COLLAR/EXTEND 7 LF 18" RCP STA. 120+75 -L- LT	482.19'
1103	COLLAR/EXTEND 5 LF 18" RCP STA. 120+91 -L- RT	481.67'

NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

2/22/2016
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PROJECT REFERENCE NO.	SHEET NO.
W-5515	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE

2/22/2016

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN

2/22/2016

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REVISIONS

8/17/15

N 46°51'52" E
179.89'

N 46°51'52" E
162.67'

S 89°23'52" E
50.92'

130

NAD 83/NSRS 2007

S 43°08'22" E
270.35'

S 43°08'04" E
271.90'

S 34°58'26" E
252.08'

BAYVIEW LOAN SERVICING LLC
DB 1270 PG 233

MELVIN K. ROBINSON, JR
AND WIFE
TERESA W. ROBINSON
DB 1163 PG 464

2' FDPS

EXISTING R/W

-L-

N 46° 37' 22.8" E

+50.00
28.39'
36.00'

+64.82

2' FDPS

+50.00
33.00'

+66.06

+75.00
30.42'
36.00'

60.00'

PC Sta. 128+62.51

LARRY VAN SMILEY
AND WIFE
CINDA HAMLEN SMILEY
DB 617 PG 781

16

-L-
PI Sta 131+20.60
△ = 13° 22' 54.7" (RT)
D = 2° 36' 15.7"
L = 513.83'
T = 258.09'
R = 2,200.00'
e = EXIST

PT Sta. 133+76.34

NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

2/22/2016
W-5515_Rdy_psh_S12.dgn
jlberard.jordan

PROJECT REFERENCE NO.	SHEET NO.
W-5515	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 047306 ENGINEER CLAUDETTE M.K. ROQUE
2/22/2016

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036683 ENGINEER MELANIE QUE CHI NGUYEN
2/22/2016

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REVISIONS 8/17/99

MYRTLE A. RILEY
PIN 0528 01106
DB 177 PG 696
SHOWN PER GIS
19

MYRTLE A. RILEY
PIN 0528 01107
DB 177 PG 696
SHOWN PER GIS
19

NAD 83/NSRS 2007

140

PC Sta. 141+72.67

-L-
PI Sta 142+93.66
△ = 8° 38' 56.0" (LT)
D = 3° 34' 51.6"
L = 241.52'
T = 120.99'
R = 1,600.00'
e = EXIST

PT Sta. 144+14.19

145

FAIR HOME LIMITED PARTNERSHIP,
A NORTH CAROLINA LIMITED PARTNERSHIP
DB 7311 PG 593
SHOWN PER GIS
23

MYRTLE A. RILEY
PIN 0528 01019
DB 177 PG 696
SHOWN PER GIS
19

2' FDPS
+25.00
28.86'
38.00'
EXISTING R/W
1301
+00.00
38.00'
+00.00
42.00'
2' FDPS
+00.00
38.00'
+50.00
32.07'
S 18° 45' 53.4" E
N 89° 35' 10.7" E
-L-
1303
60.00'
+43.32
MYRTLE A RILEY
PIN 0528 04002
DB 1177 PG 698
TBM #6 EL=452.08'
NAIL IN 15" PINE
1302
+82.51
30.07
+81.72
39.95
+00.00
40.00'
+75.00
30.49'
2' FDPS
+43.11
2' FDPS

JENNY L MCCRARY
DB 1213 PG 379
SHOWN PER GIS

STEVE E WILSON
DB 611 PG 440
SHOWN PER GIS
21

STRUCTURE NO.	REMARKS	PROP INV ELEV	QTY
1301	COLLAR/EXTEND 7 LF 18" RCP STA. 141+50 -L- LT	449.35'	
1302	COLLAR/EXTEND 4 LF 18" RCP AND CL. B RIP RAP AT OUTLET TO ROW LINE STA. 141+54 -L- RT	448.66'	2 TONS RIP RAP 5 SY GF
1303	RETAIN EXISTING 18" RCP		

NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

2/22/2016
W-5515_Rdy_psh_S13.dgn
jlarid.jordan

PROJECT REFERENCE NO.	SHEET NO.
W-5515	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17306 CLAUDETTE M.K. ROQUE 2/22/2016

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038683 MELANIE QUE CHI NGUYEN 2/22/2016

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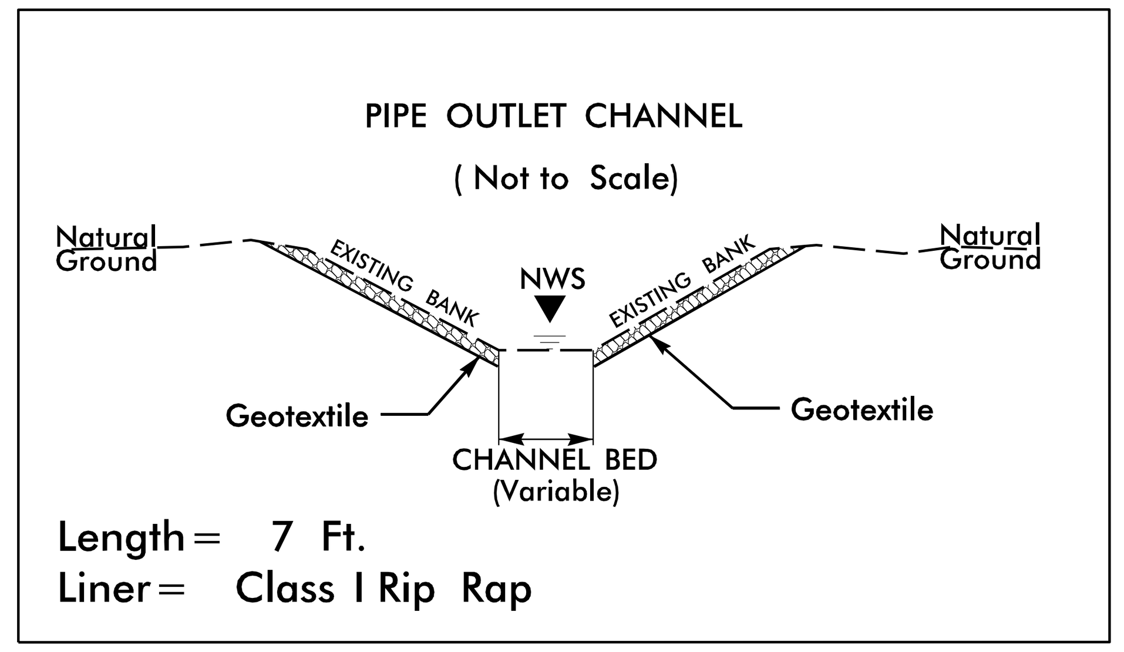
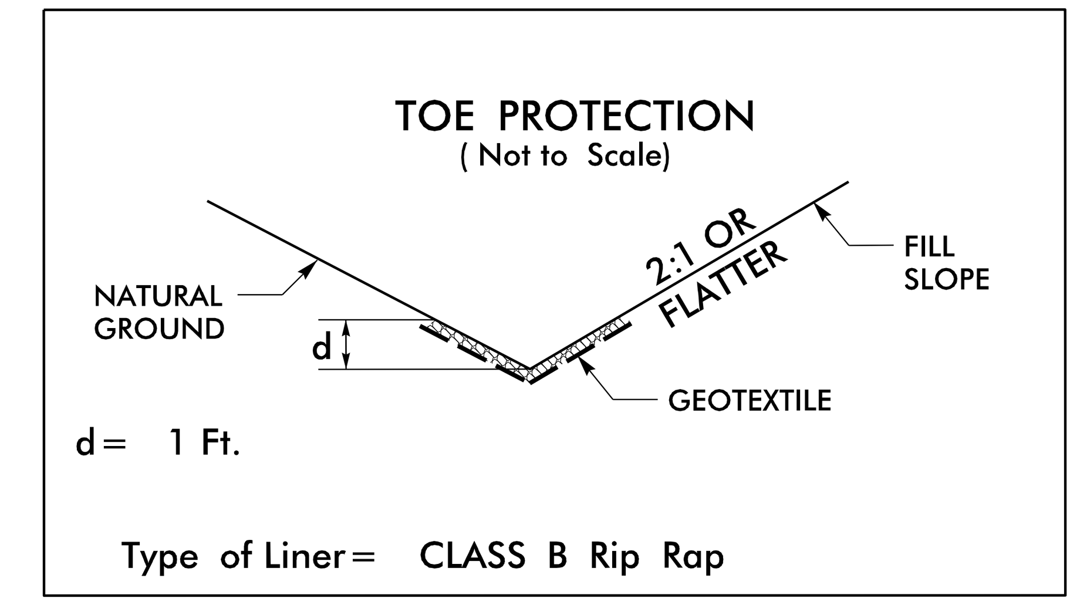
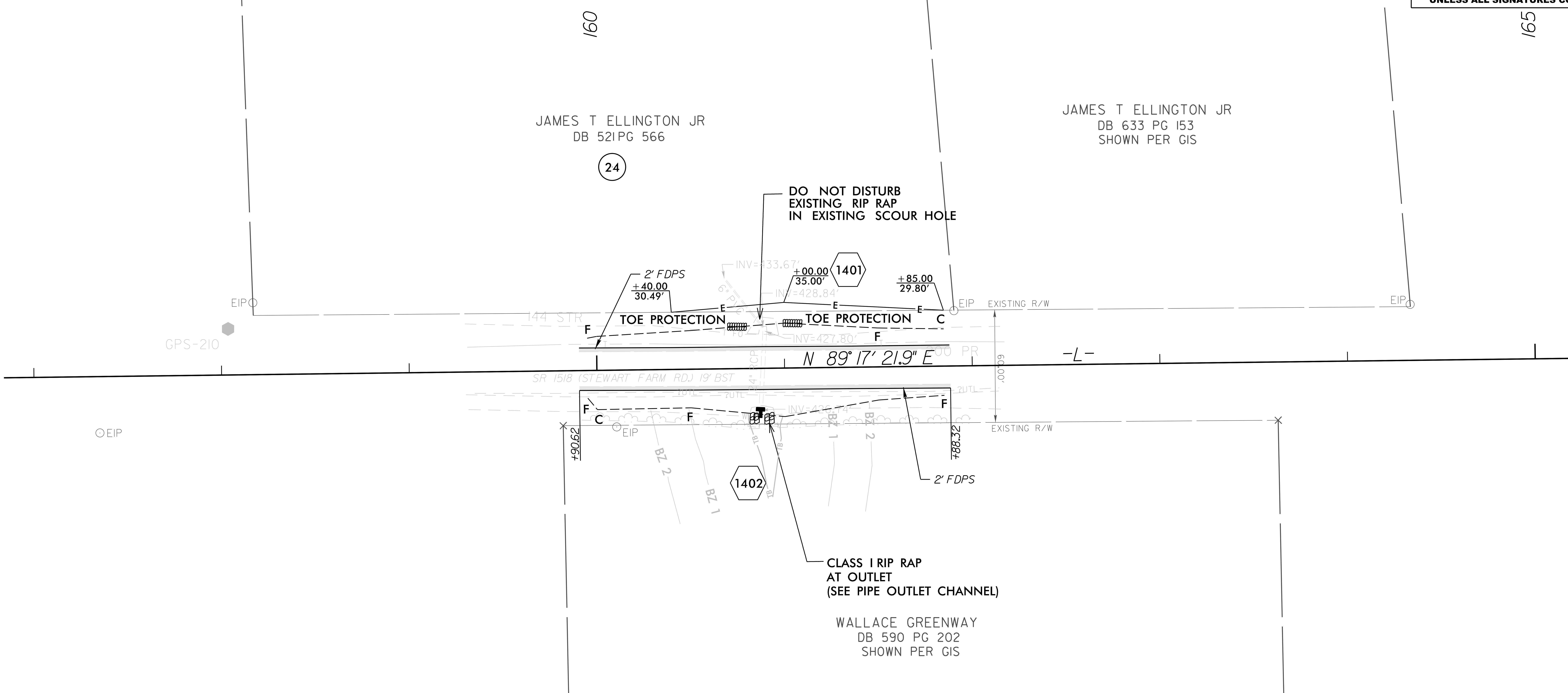


–L– STA. 160+87 RT



FROM –L– STA. 160+70 TO –L– STA. 160+80 LT
FROM –L– STA. 161+00 TO –L– STA. 161+10 LT

NAD 83/NSRS 2007



STRUCTURE NO.	REMARKS	PROP INV ELEV	QTY
1401	CL. B RIP RAP TOE PROTECTION STA. 160+00 AND 160+70 –L– LT		5 TONS RIP RAP 12 SY GF
1402	COLLAR/EXTEND 4 LF 24" RCP STA. 160+87 –L– RT	426.71'	
1402	CL. I RIP RAP AT OUTLET STA. 160+87 –L– RT		21 TONS RIP RAP 20 SY GF

NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

REVISIONS

8/17/99

2/22/2016 ...\Proj\W-5515_Rdy_psh_S14.dgn

PROJECT REFERENCE NO.	SHEET NO.
W-5515	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 17306, Claudette M.K. Roque, 2/22/2016

HYDRAULICS ENGINEER — SEAL 038683, Melanie Que Chi Nguyen, 2/22/2016

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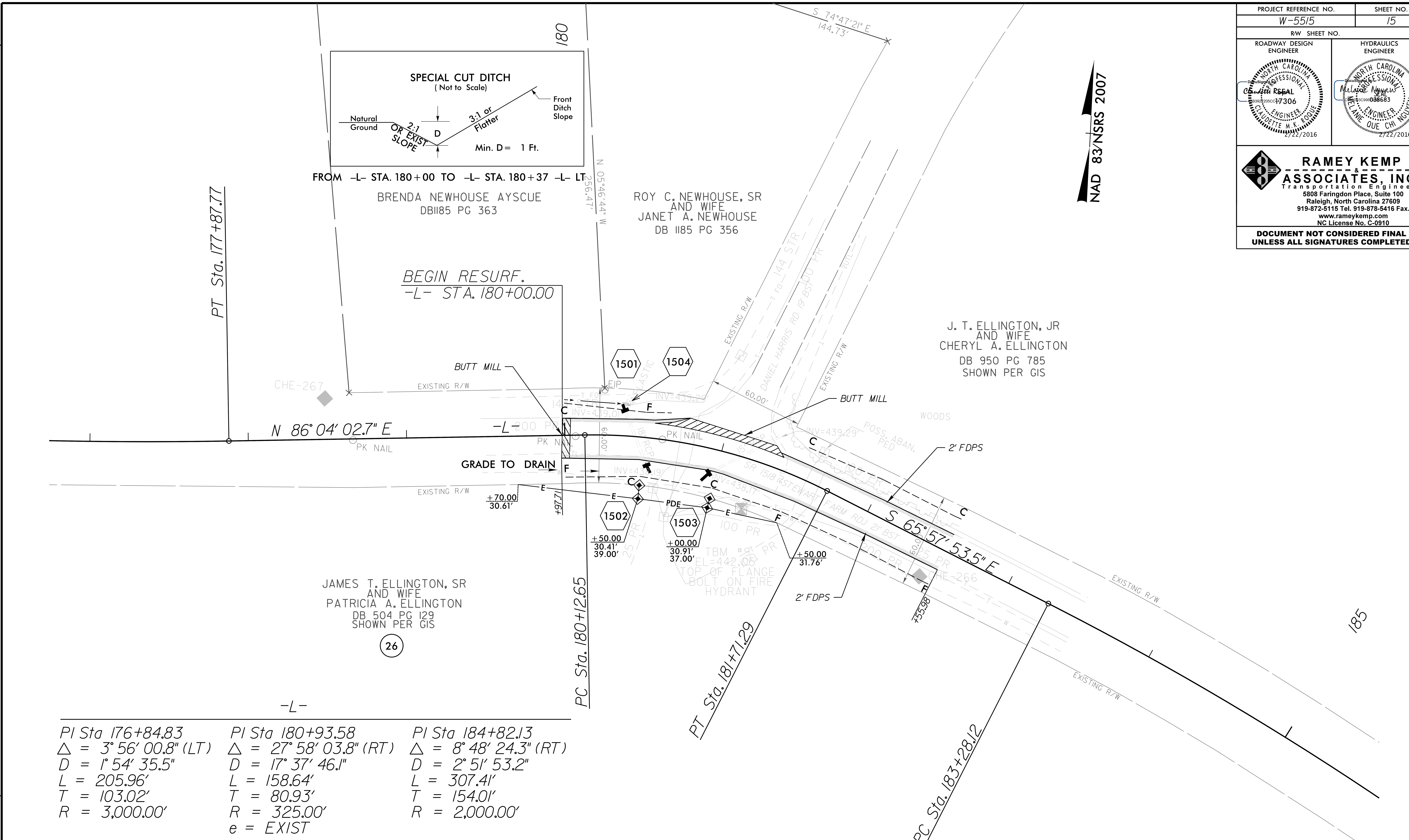

-L-

PI Sta 176+84.83	PI Sta 180+93.58	PI Sta 184+82.13
Δ = 3° 56' 00.8" (LT)	Δ = 27° 58' 03.8" (RT)	Δ = 8° 48' 24.3" (RT)
D = 1° 54' 35.5"	D = 17° 37' 46.1"	D = 2° 51' 53.2"
L = 205.96'	L = 158.64'	L = 307.41'
T = 103.02'	T = 80.93'	T = 154.01'
R = 3,000.00'	R = 325.00'	R = 2,000.00'
	e = EXIST	

STRUCTURE NO.	REMARKS	PROP INV ELEV
1501	COLLAR/EXTEND 4 LF 18" RCP STA. 180+37 -L- LT	439.10'
1502	COLLAR/EXTEND 6 LF 18" RCP STA. 180+54 -L- RT	438.10'
1503	COLLAR/EXTEND 8 LF 15" RCP STA. 180+96 -L- RT	438.10'
1504	REMOVE 2 LF 4" PLASTIC PIPE, REALIGN AS NEEDED	

NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

2/22/2016 ...\Proj\W-5515_Rdy_psh_S15.dgn

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17306 CLAUDETTE M.K. ROQUE 2/22/2016	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038683 MELANIE QUE CHI NGUYEN 2/22/2016

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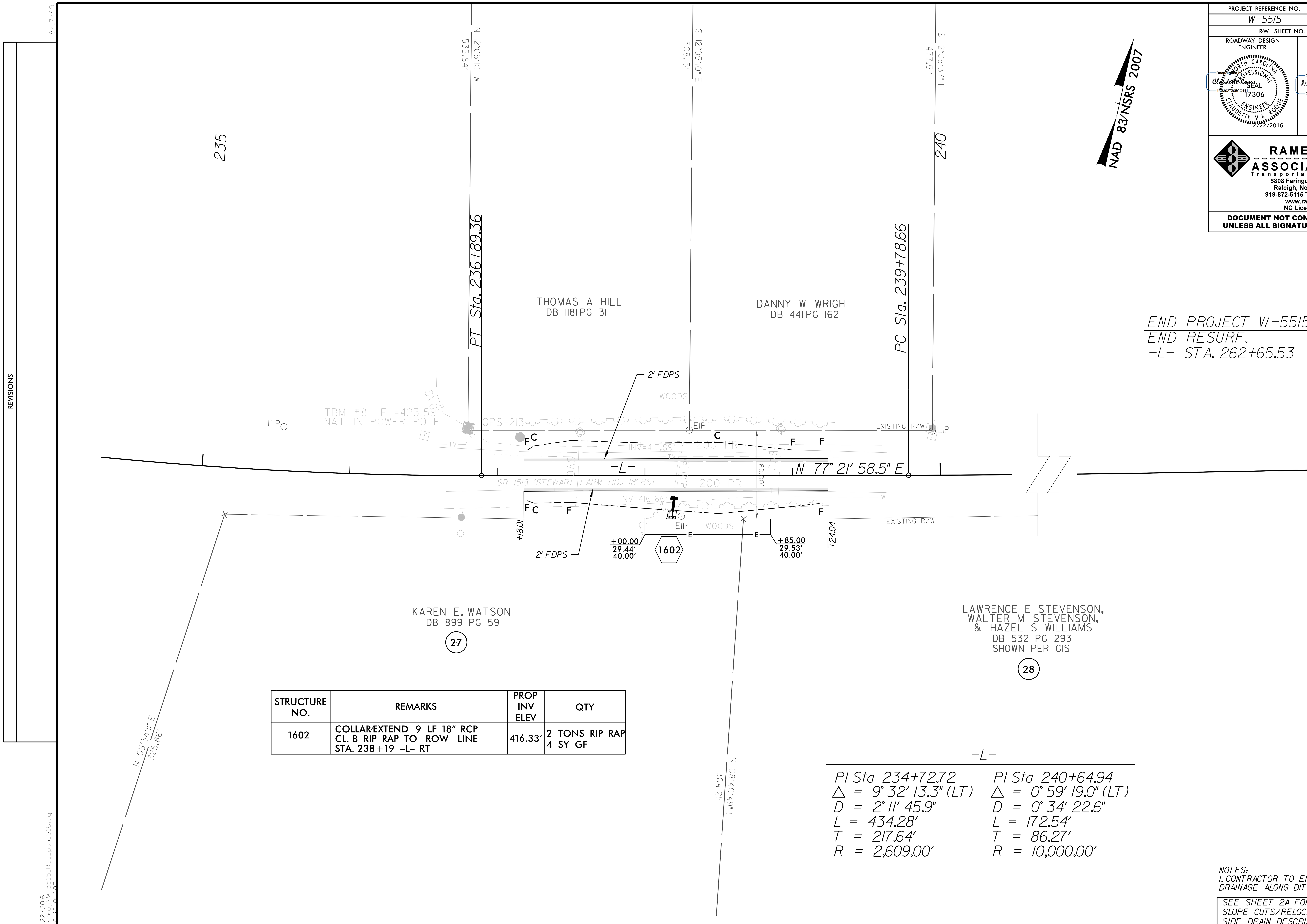


STRUCTURE NO.	REMARKS	PROP INV ELEV	QTY
1602	COLLAR/EXTEND 9 LF 18" RCP CL. B RIP RAP TO ROW LINE STA. 238+19 -L- RT	416.33'	2 TONS RIP RAP 4 SY GF

-L-

PI Sta 234+72.72	PI Sta 240+64.94
△ = 9° 32' 13.3" (LT)	△ = 0° 59' 19.0" (LT)
D = 2° 11' 45.9"	D = 0° 34' 22.6"
L = 434.28'	L = 172.54'
T = 217.64'	T = 86.27'
R = 2,609.00'	R = 10,000.00'

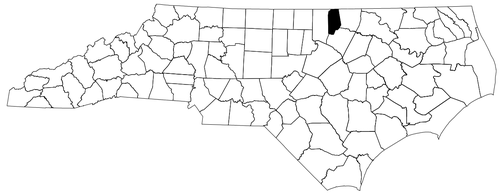
NOTES:
1. CONTRACTOR TO ENSURE POSITIVE DRAINAGE ALONG DITCH LINES.

SEE SHEET 2A FOR DITCH & SLOPE CUTS/RELOCATIONS AND SIDE DRAIN DESCRIPTIONS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

VANCE COUNTY



GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
-L-STEWART FARM ROAD/ NEWTON DAIRY ROAD	MONDAY- FRIDAY 6:00 AM - 9:00 AM 4:00 PM - 7:00 PM

LANE AND SHOULDER CLOSURE REQUIREMENTS

B) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

F) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

G) DO NOT INSTALL MORE THAN 1 MILE OF LANE CLOSURE ON STEWART FARM/ NEWTON DAIRY RD MEASURED FROM THE BEGINNING OF THE MERGE TAPER TO THE END OF THE LANE CLOSURE.

H) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON STEWART FARM/NEWTON DAIRY ROAD.

I) PROVIDE A MINIMUM OF 500 FT BETWEEN LANE CLOSURES, MEASURED FROM THE END OF ONE CLOSURE TO THE FIRST SIGN OF THE NEXT LANE CLOSURE.

J) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

PAVEMENT EDGE DROP OFF REQUIREMENTS

K) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

L) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES.INSTALL ADVANCE WARNING"UNEVEN LANES" SIGNS (W8-11) 350 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

M) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

N) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

O) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

P) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 350 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

Q) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

R) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES DRUMS PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

PAVEMENT MARKINGS AND MARKERS

S) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
-L- STEWART FARM ROAD/ NEWTON DAIRY ROAD	PAINT	NONE

T) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

U) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

V) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MISCELLANEOUS

W) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1150.01	FLAGGING DEVICES
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

PHASING NOTES

THE CONTRACTOR SHALL MAINTAIN ACCESS TO THE EXISTING DRIVEWAYS AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR MUST RETURN TRAFFIC TO THE EXISTING PATTERN AT THE END OF EACH WORK DAY UNLESS OTHERWISE NOTED IN THE PHASING BELOW OR DIRECTED BY THE ENGINEER.

STEP 1: INSTALL WORK ZONE ADVANCE WARNING SIGNS (SEE RSD 1101.01)

STEP 2: USING RSD 1101.02 (SHEET 1 OF 15), CONSTRUCT ROADWAY IMPROVEMENTS INCLUDING 2' EDGE MILLING, OUTSIDE WIDENING, AND PIPE EXTENSIONS (IF APPLICABLE) UP TO AND INCLUDING FINAL SURFACE COURSE. APPLY TEMPORARY EDGE LINE PAVEMENT MARKINGS.

- FROM -L- STA. 10+00 +/- TO 180+00 +/-

NOTE: CONDUCT STEPS 3 AND 4
- FROM -L- STA. 180+00 +/- TO 211+79 +/-
- FROM -L- STA. 218+29 +/- TO 262+65 +/-

STEP 3: USING RSD 1101.02 (SHEET 1 OF 15), CONSTRUCT ROADWAY IMPROVEMENTS INCLUDING OUTSIDE WIDENING AND PIPE EXTENSIONS (IF APPLICABLE) UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE. APPLY TEMPORARY EDGE LINE PAVEMENT MARKINGS.

STEP 4: USING RSD 1101.02 (SHEET 1 OF 15), PLACE FINAL LAYER OF SURFACE COURSE INCLUDING RESURFACING OF EXISTING ROADWAY. APPLY TEMPORARY PAVEMENT MARKINGS.

STEP 5: USING RSD 1101.02 (SHEET 1 OF 15), INSTALL FINAL PAVEMENT MARKINGS AND MARKERS.

- FROM -L- STA. 10+00 +/- TO STA. 262+65 +/-

STEP 6: REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES AND WORK ZONE SIGNS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CLAUDETTE M.K. ROQUE, P.E.
PROJECT ENGINEER
DAVID A. JORDAN, EI
PROJECT DESIGN ENGINEER

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. — *STATE TRAFFIC MANAGEMENT ENGINEER*
D. W. BISSETTE, P.E. — *TRAFFIC CONTROL PROJECT ENGINEER*
M. STEELMAN — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
_____ — *TRAFFIC CONTROL DESIGN ENGINEER*

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

Prepared in the Office of:
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APPROVED: DocuSigned by: Claudette Roque 4BB3927205CC441...
DATE: 2/22/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE

SHEET NO.
TMP-1

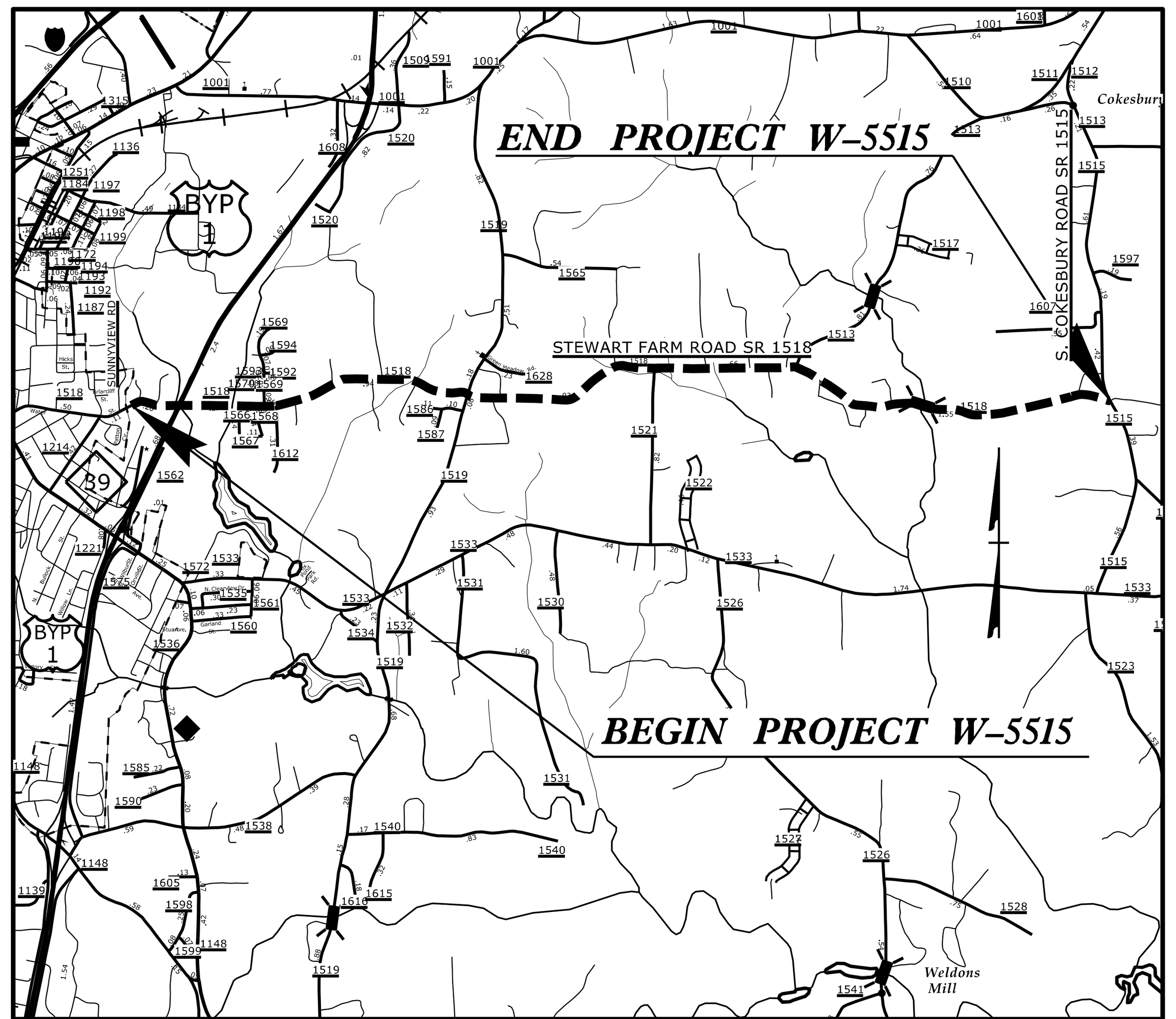
TIP PROJECT: W-5515

2/22/2016
...\TCP\W-5515_TC_TMP-TSH.dgn
User:djordan

TIP PROJECT: W-5515

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5515	EC-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
44101.1.FD1	HSIP-1518(5)	PE
44101.2.FD1	HSIP-1518(5)	R/W



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

VANCE COUNTY

LOCATION: SR 1518 (STEWART FARM ROAD AND NEWTON DAIRY ROAD) FROM HENDERSON CITY LIMITS TO SR 1515 (S. COKESBURY ROAD)

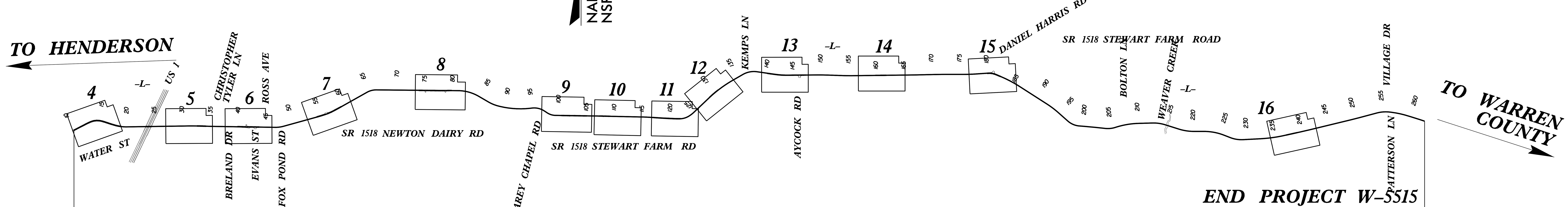
TYPE OF WORK: GRADING, DRAINAGE, PAVING, PAVEMENT MARKING

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

NAD 83/
NSRS 2007



BEGIN PROJECT W-5515
-L- Sta. 10+00.00

END PROJECT W-5515
-L- Sta. 262+65.53

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle/ Coir Fiber Wattle	FW / CFW
	Wattle/ Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

GRAPHIC SCALE

15 0 30

PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER RESOURCES.

Prepared In the Office of:

CH Engineering
3220 Glen Royal Road
Raleigh, NC 27617

2012 STANDARD SPECIFICATIONS

Designed by:

Brian Wiles — 3759
NAME — LEVEL III CERTIFICATION NO.

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

2012 STANDARD SPECIFICATIONS

Reviewed by:

XXXX XXXX

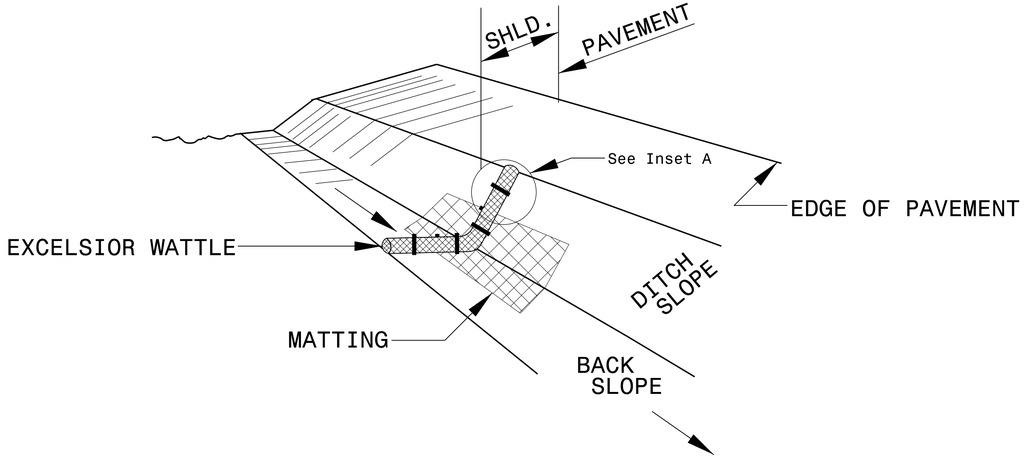
Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

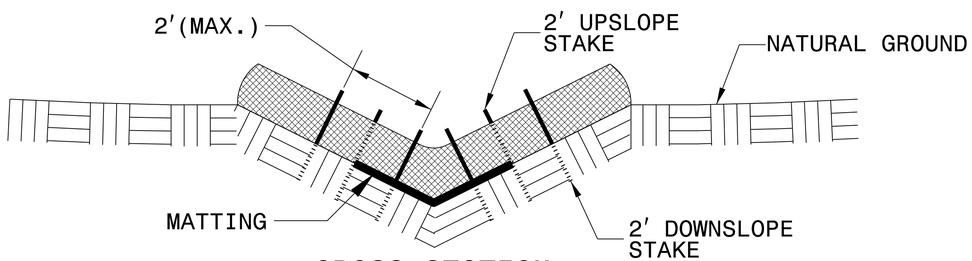
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

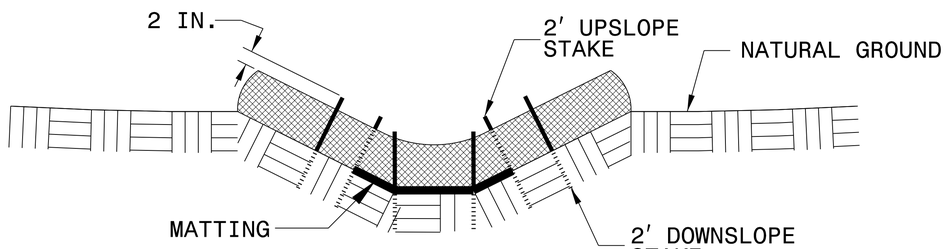
WATTLE DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

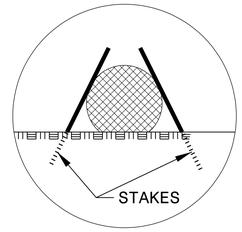
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

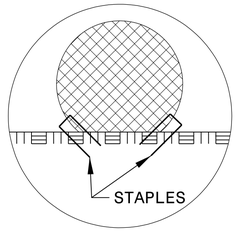
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

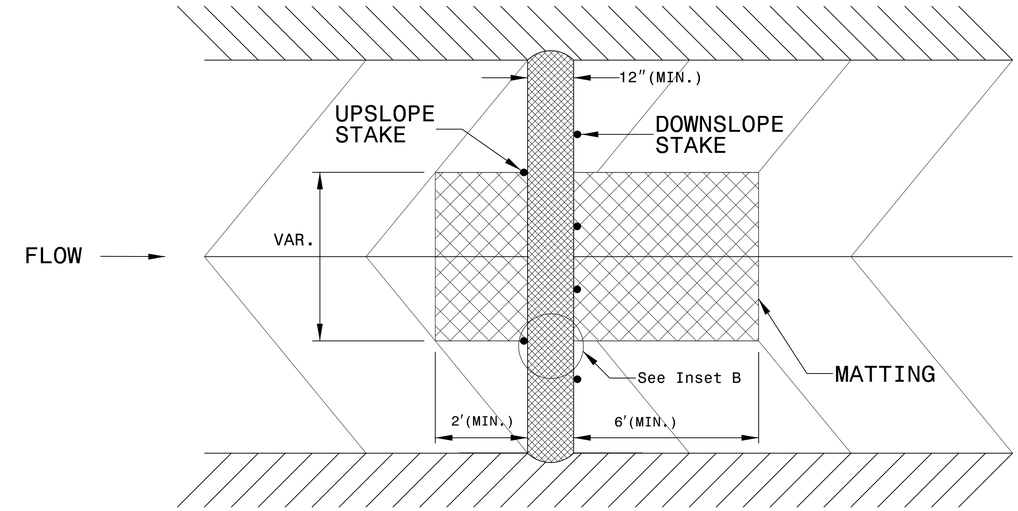
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



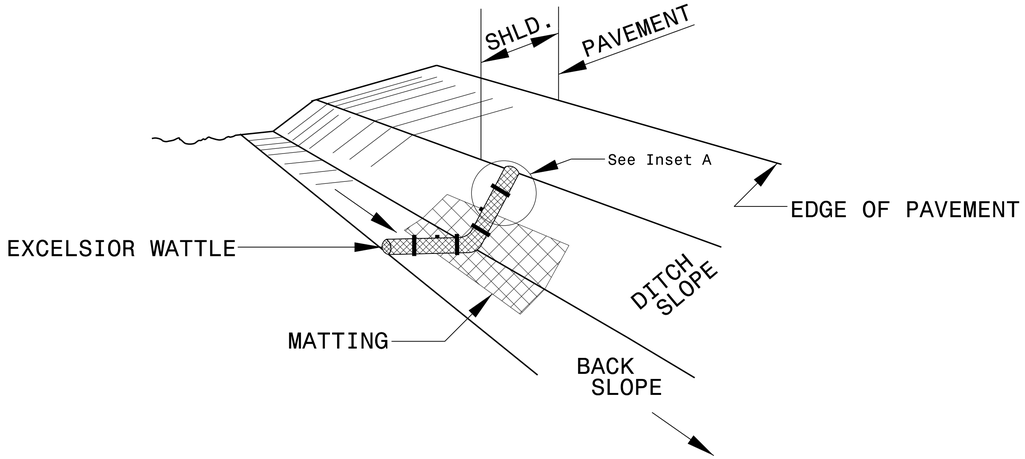
INSET B



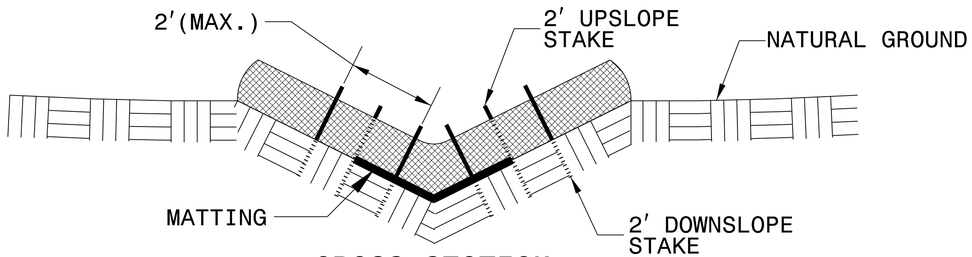
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

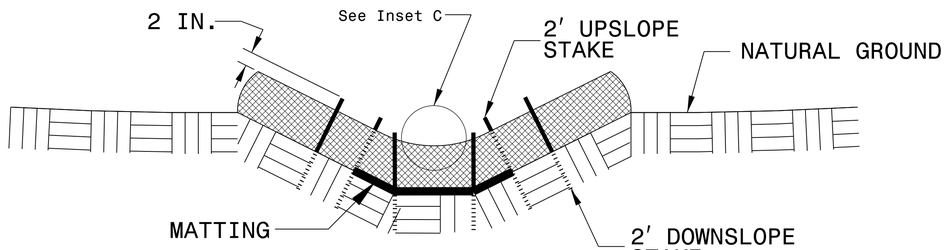
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

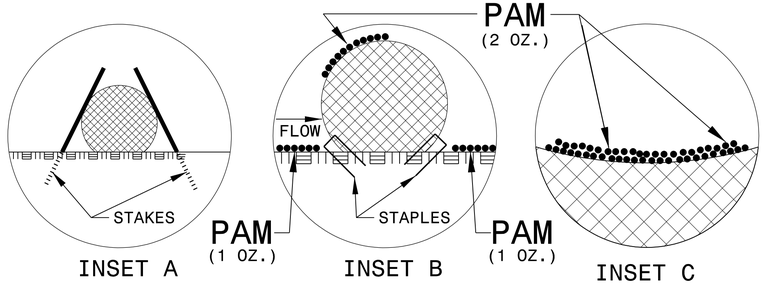
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

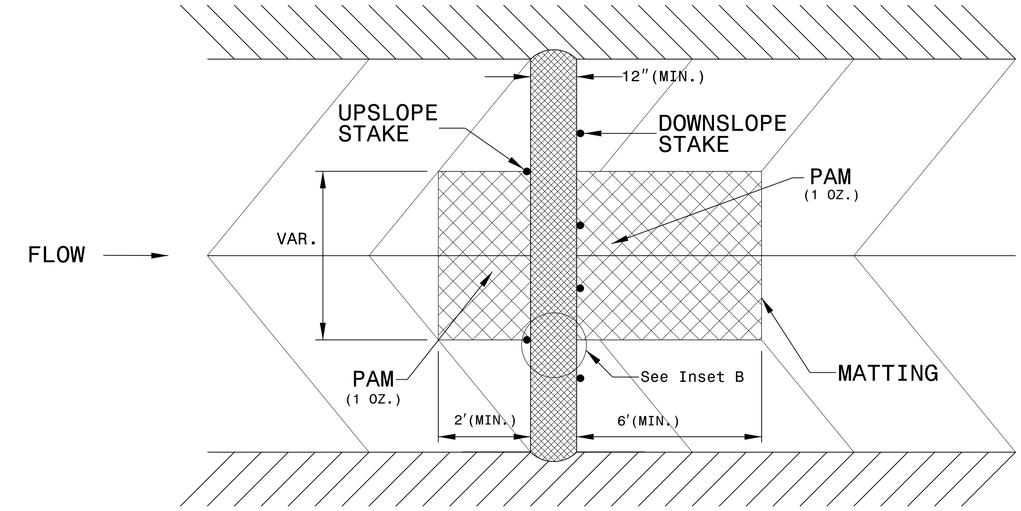
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.

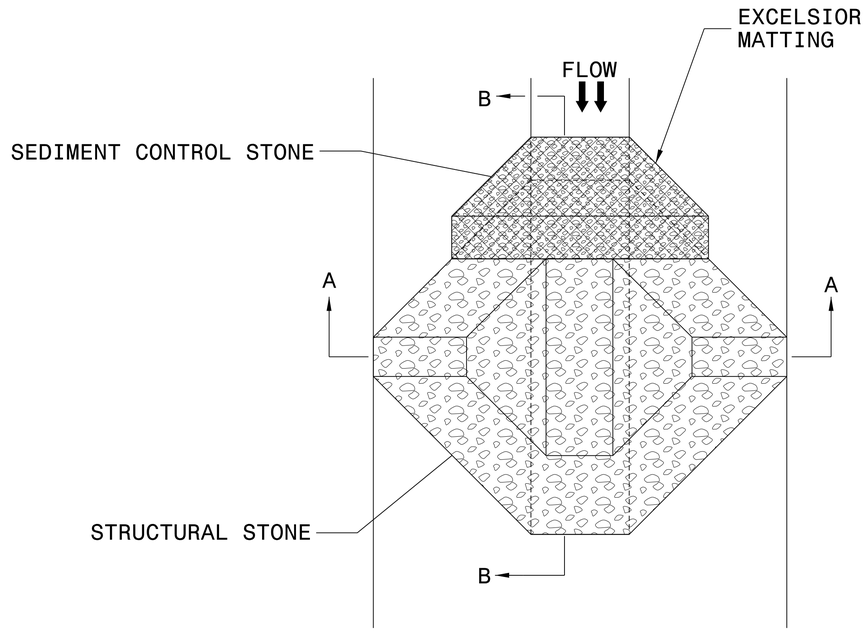




TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN

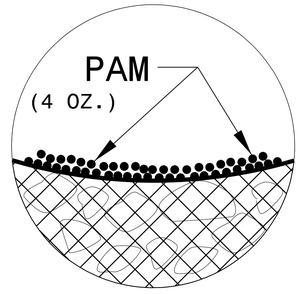
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

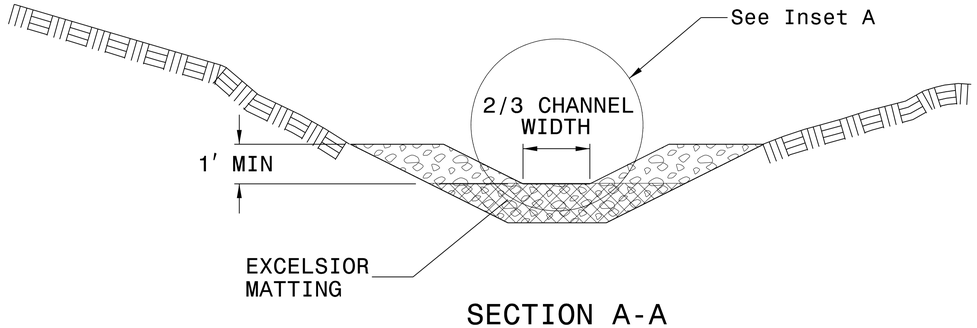
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

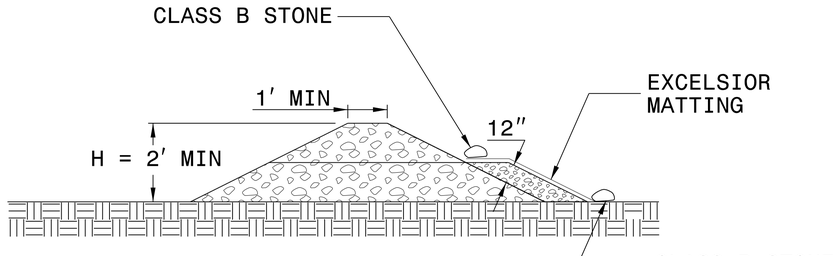
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE

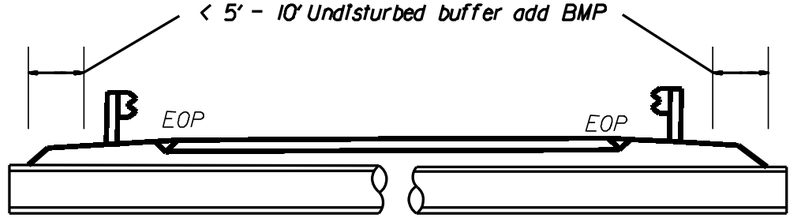
PROJECT REFERENCE NO.	SHEET NO.
R-2111	[illegible]
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle, Silt Fence, or Hardened Aggregate.

EROSION CONTROL DETAIL

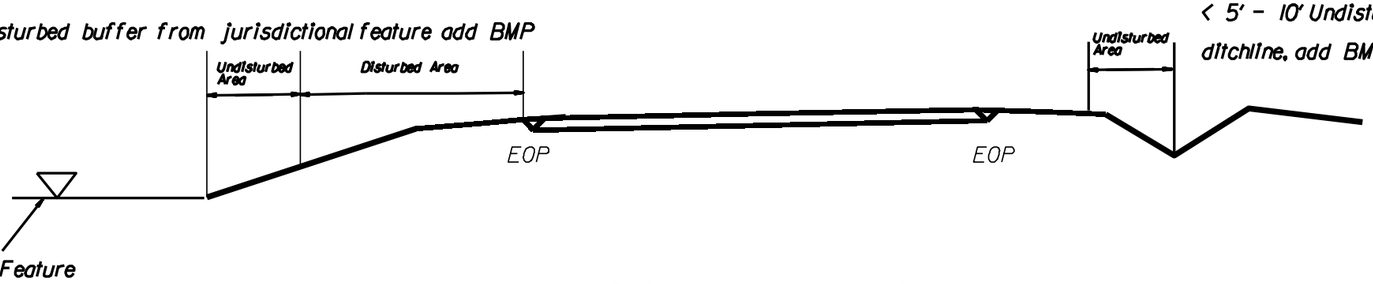
< 5' - 10' Undisturbed buffer add BMP



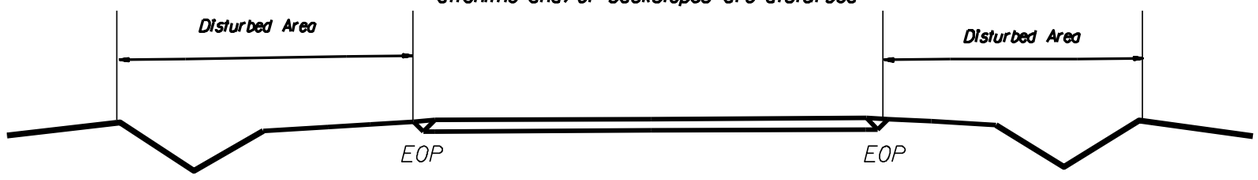
Pipe/Culvert

< 5' - 10' Undisturbed buffer from jurisdictional feature add BMP

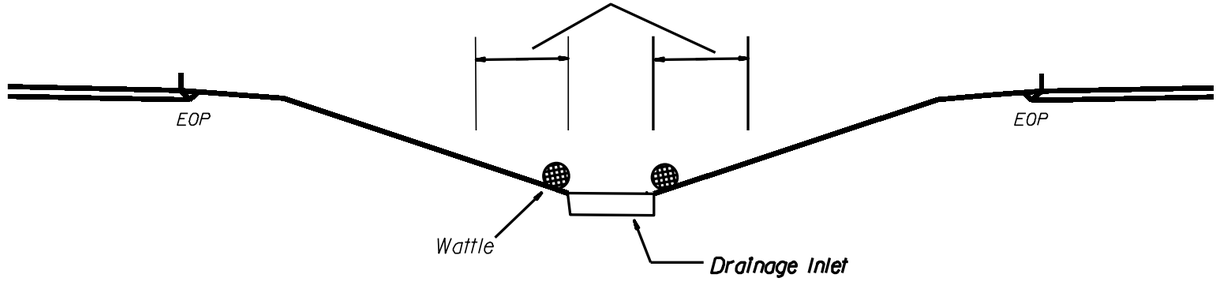
< 5' - 10' Undisturbed buffer from ditchline, add BMP



Use BMP's if shoulders and/or frontslopes and/or ditchline and/or backslopes are disturbed



< 5' - 10' Undisturbed buffer from inlet, add wattle



NOT TO SCALE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	10+50	16+00	LT	135
4	-L-	10+00	17+50	RT	160
4	-L-	16+00	17+50	LT	40
5	-L-	32+75	34+00	RT	30
6	-L-	40+00	43+85	LT	155
7	-L-	55+00	55+40	LT	25
7	-L-	56+75	58+50	LT	80
7	-L-	58+50	59+25	LT	35
7	-L-	57+00	58+25	RT	40
7	-L-	58+25	59+25	RT	35
7	-L-	55+65		RT	35
7	-L-	58+21		RT	40
8	-L-	74+00	75+50	LT	40
8	-L-	74+00	75+00	RT	30
8	-L-	75+50	78+50	LT	105
8	-L-	75+50	78+50	RT	105
9	-L-	100+55	102+75	LT	155
9	-L-	103+25	104+00	LT	45
9	-L-	104+25	105+00	LT	45
10	-L-	107+25	108+25	LT	25
10	-L-	108+25	109+35	LT	20
11	-L-	117+00	120+50	LT	125
11	-L-	117+00	120+75	RT	135
12	-L-	129+00	130+60	RT	220
13	-L-	140+50	141+50	LT	60
13	-L-	141+50	142+00	LT	15
13	-L-	142+50	146+85	LT	260
15	-L-	181+50	182+55	LT	125
16	-L-	237+50	238+25	LT	25
16	-L-	238+25	239+20	LT	25

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
				SUBTOTAL	2370
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					200
				TOTAL	2570
				SAY	2570

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

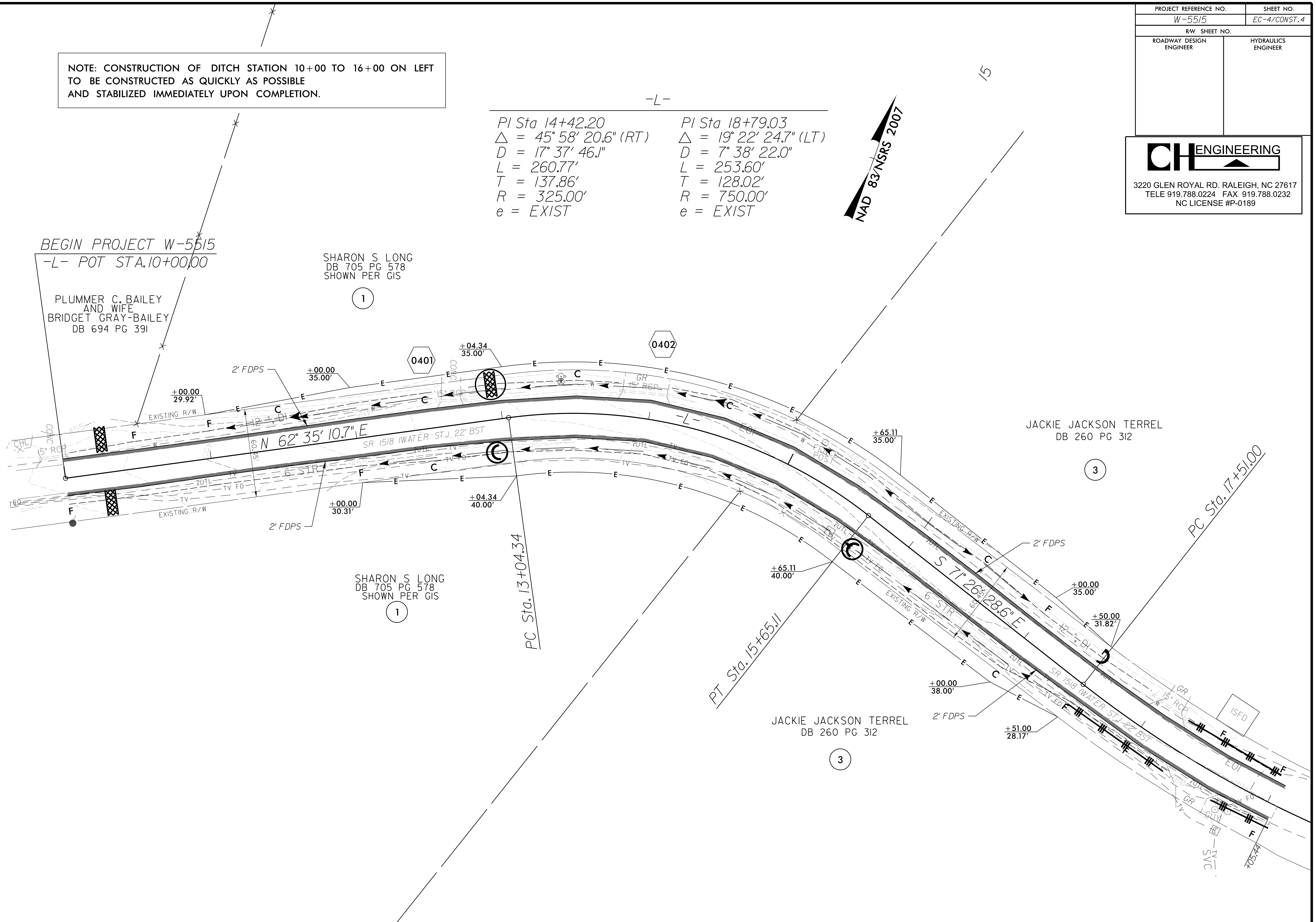
PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

NOTE: CONSTRUCTION OF DITCH STATION 10+00 TO 16+00 ON LEFT TO BE CONSTRUCTED AS QUICKLY AS POSSIBLE AND STABILIZED IMMEDIATELY UPON COMPLETION.

-L-

PI Sta 14+42.20	PI Sta 18+79.03
Δ = 45° 58′ 20.6″ (RT)	Δ = 19° 22′ 24.7″ (LT)
D = 17° 37′ 46.1″	D = 7° 38′ 22.0″
L = 260.77′	L = 253.60′
T = 137.86′	T = 128.02′
R = 325.00′	R = 750.00′
e = EXIST	e = EXIST



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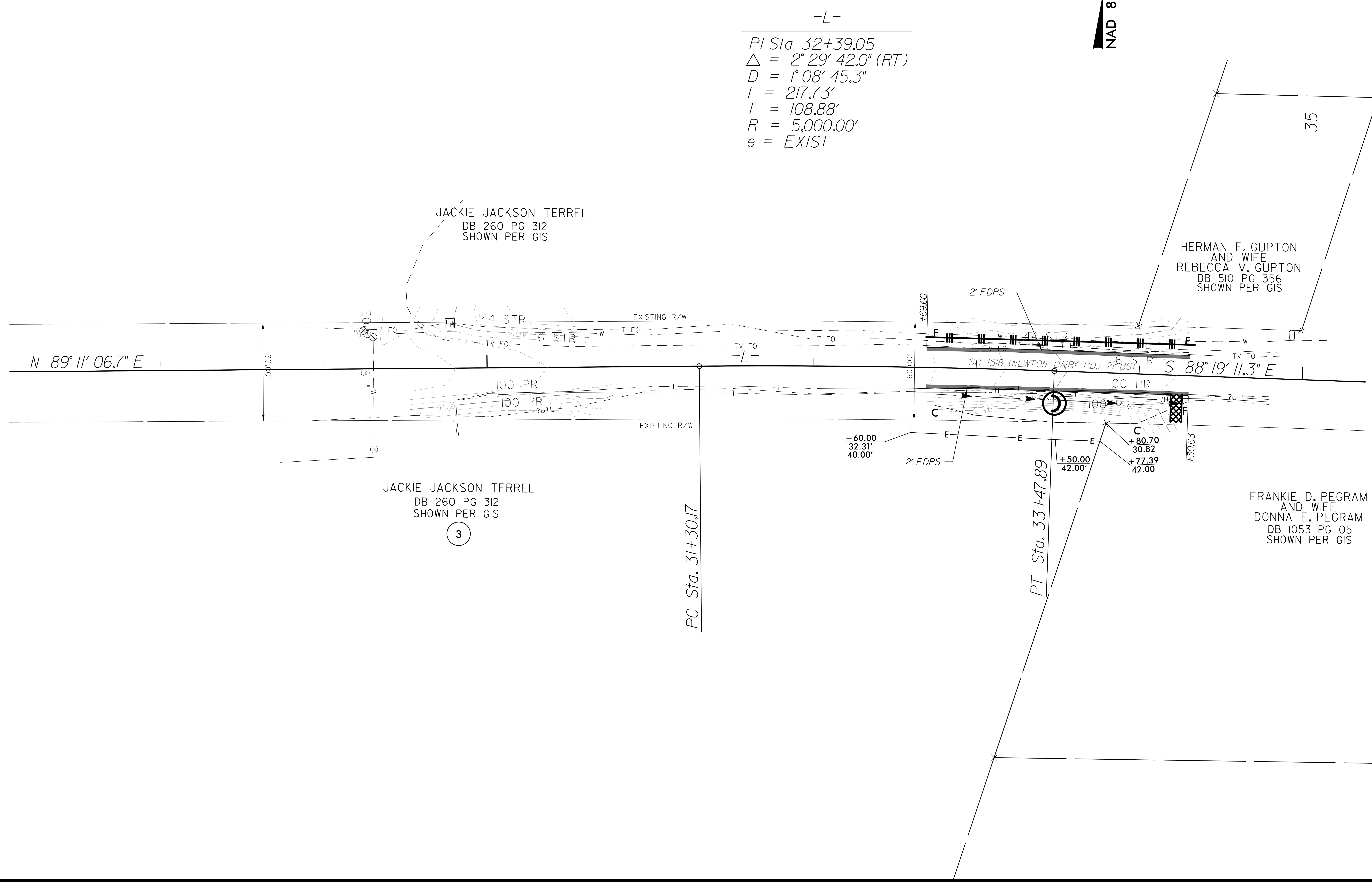
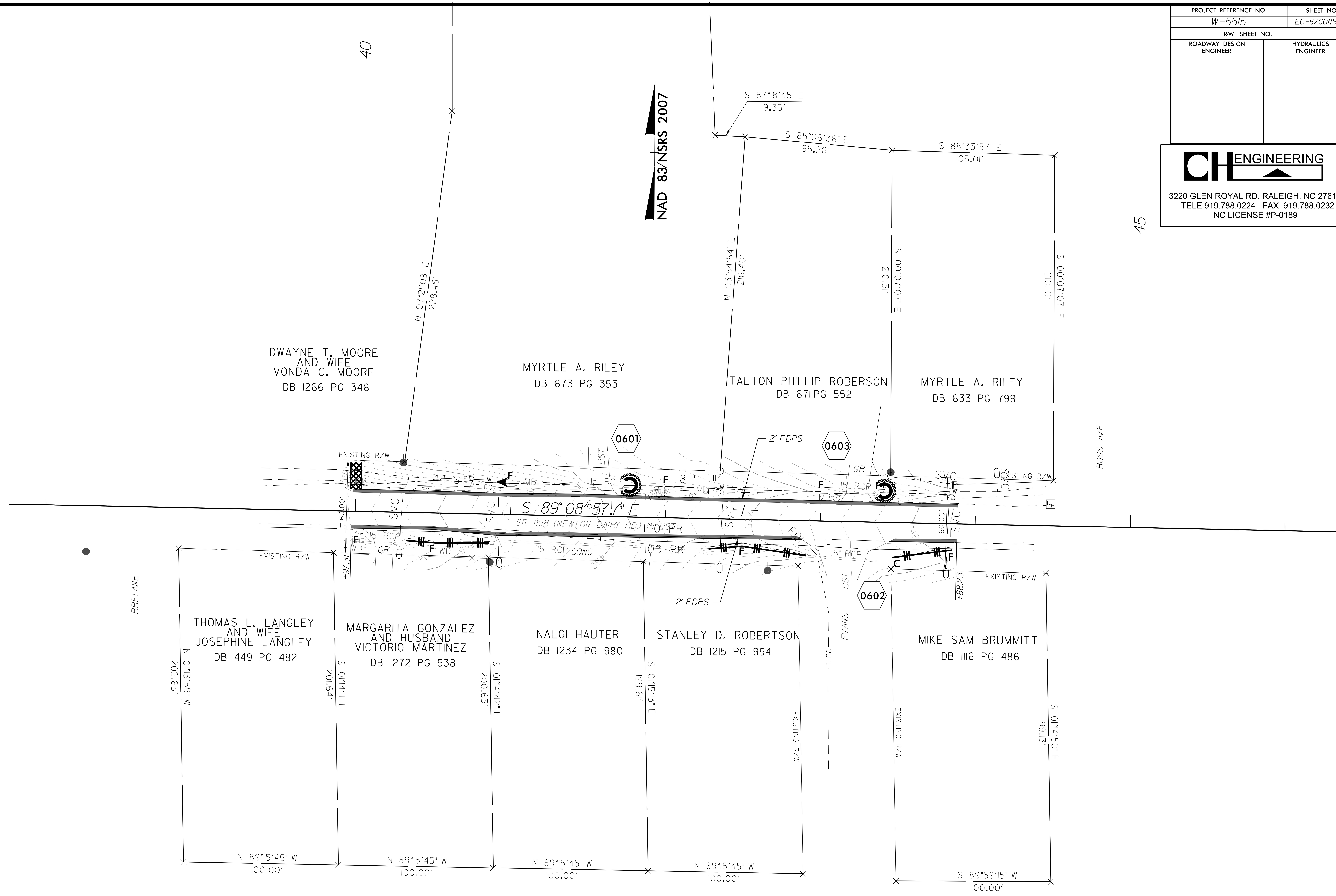
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-5/CONST.5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189





PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-6/CONST.6

RW SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

CH ENGINEERING

3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

8/17/99

1/5/2016
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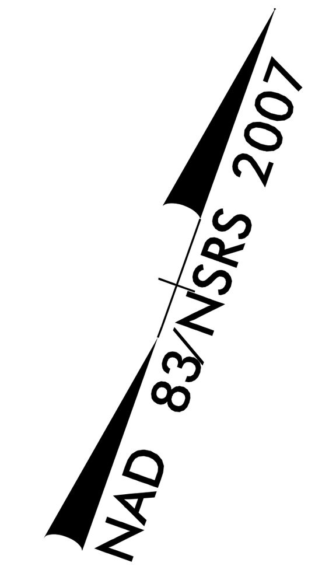
USERNAME

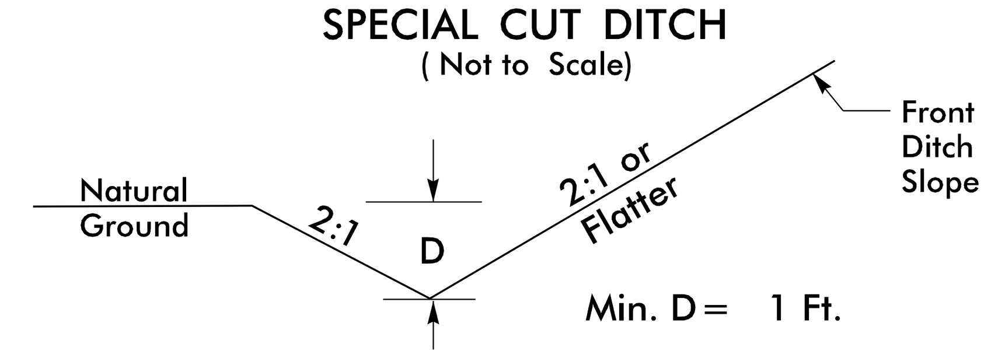
PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-7/CONST.7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

NOTE: ALL PIPE CONSTRUCTION TO BE COMPLETED IN DRY CONDITIONS, INCLUDES EXTENSION, REPAIRS AND REMOVAL.



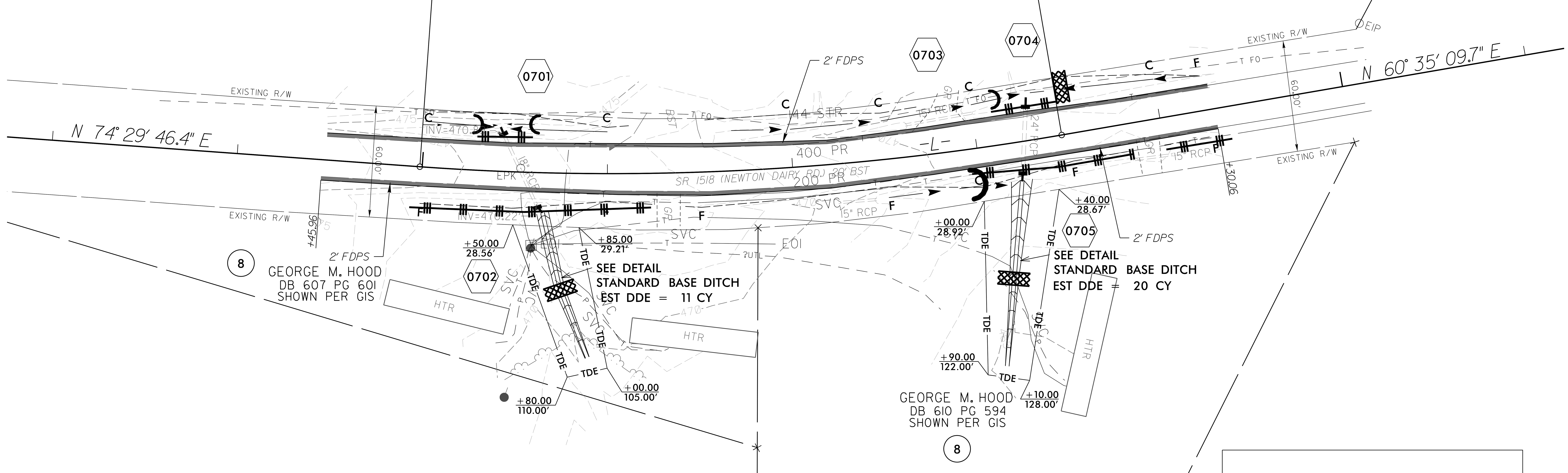
SPECIAL CUT DITCH
(Not to Scale)



FROM –L– STA. 55+00 TO –L– STA. 55+60 LT

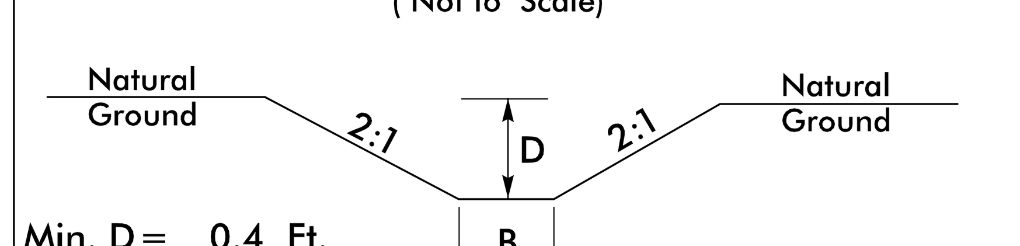
–L–
PI Sta 56+73.36
△ = 13° 54′ 36.7″ (LT)
D = 4° 00′ 07.9″
L = 347.56′
T = 174.64′
R = 1,431.61′
e = EXIST

CURRIN ENTERPRISE INC
DB 819 PG 49



STRUCTURE NO.	REMARKS	PROP INV ELEV
0701	COLLAR/EXTEND 5 LF 18″ RCP STA. 55+41 –L– LT	470.97′
0702	COLLAR/EXTEND 5 LF 18″ RCP STA. 55+65 –L– RT	470.15′
0704	COLLAR/EXTEND 6 LF 24″ RCP STA. 58+30 –L– LT	465.05′
0705	COLLAR/EXTEND 5 LF 24″ RCP STA. 58+21 –L– RT	465.00′

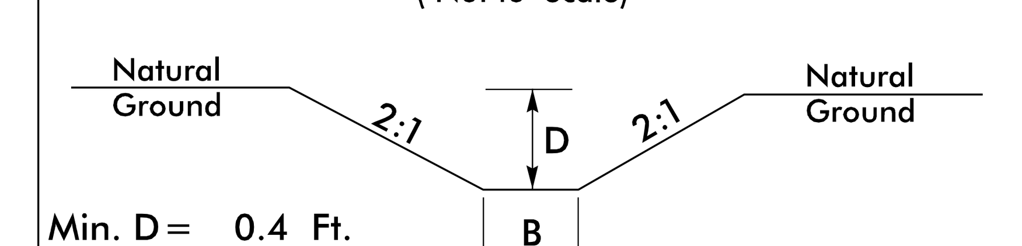
STANDARD BASE DITCH
(Not to Scale)



Min. D = 0.4 Ft.
B = 2 Ft.
S = 0.8% FROM OUTLET INVERT

STA. 55+65 –L–RT

STANDARD BASE DITCH
(Not to Scale)



Min. D = 0.4 Ft.
B = 2 Ft.
S = 0.3% FROM OUTLET INVERT

STA. 58+21 –L–RT

8/17/99
1/5/2016
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USERNAME

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-8/CONST.8

RW SHEET NO.

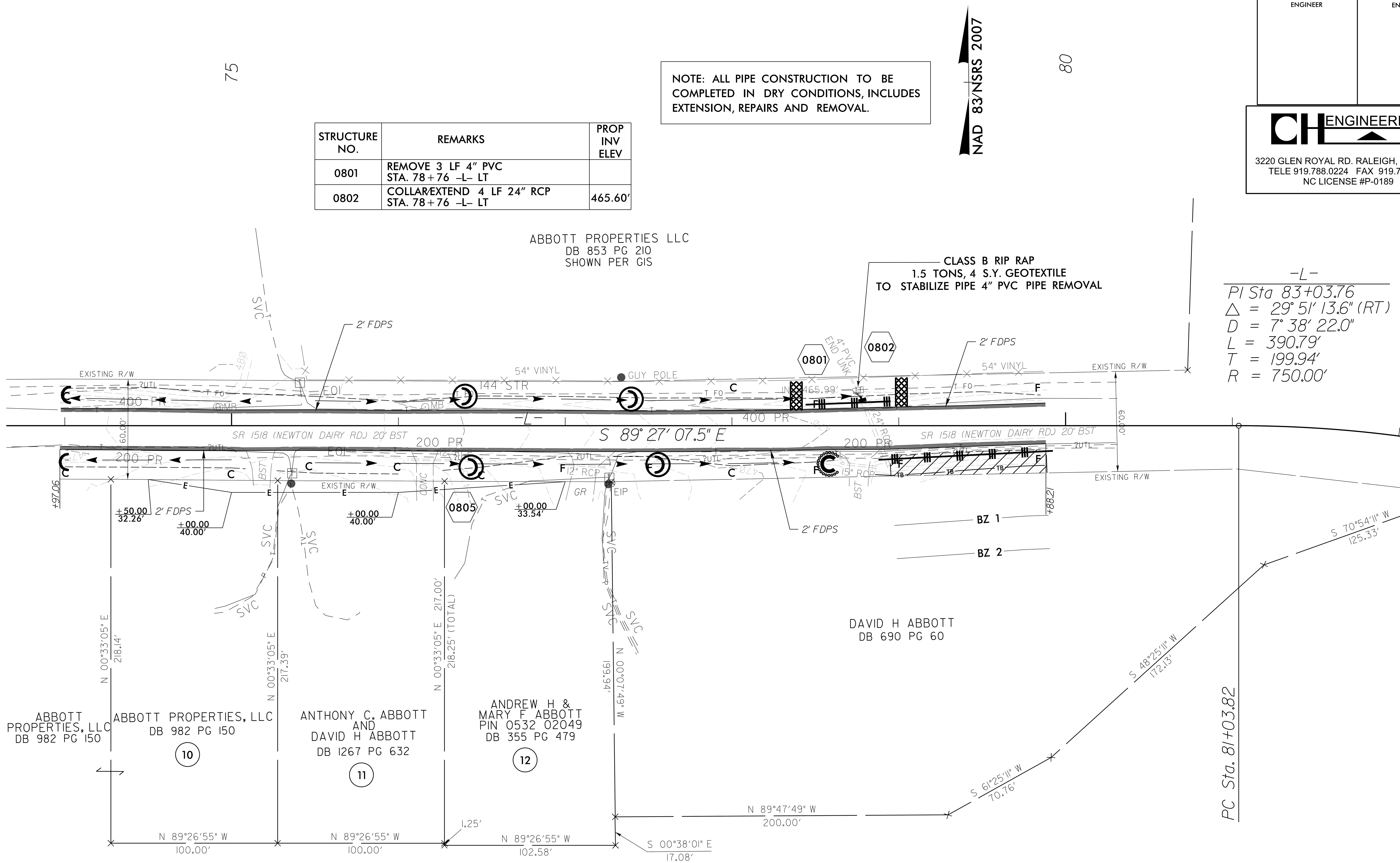
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

NOTE: ALL PIPE CONSTRUCTION TO BE COMPLETED IN DRY CONDITIONS, INCLUDES EXTENSION, REPAIRS AND REMOVAL.

STRUCTURE NO.	REMARKS	PROP INV ELEV
0801	REMOVE 3 LF 4" PVC STA. 78+76 -L- LT	
0802	COLLAR/EXTEND 4 LF 24" RCP STA. 78+76 -L- LT	465.60'

-L-
PI Sta 83+03.76
Δ = 29° 51' 13.6" (RT)
D = 7° 38' 22.0"
L = 390.79'
T = 199.94'
R = 750.00'



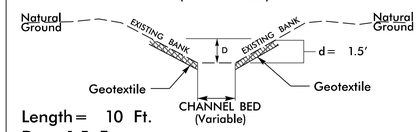
ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-9/CONST.9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PIPE OUTLET CHANNEL
(Not to Scale)



Length= 10 Ft.
D= 1.5 Ft.
Liner= Class I Rip Rap

–L– STA. 104+18 RT

NOTE: ALL PIPE CONSTRUCTION TO BE COMPLETED IN DRY CONDITIONS, INCLUDES EXTENSION, REPAIRS AND REMOVAL.

NAD 83/NSRS 2007

100

105

PC Sta. 97+91.51

PT Sta. 99+54.42

–L–
PI Sta 98+75.26
△ = 32° 45' 04.1" (LT)
D = 20° 06' 13.6"
L = 162.91'
T = 83.75'
R = 285.00'

S 56° 26' 15.0" E

N 06°49'40" W 379.28'

S 08°50'16" E 327.09'

S 01°32'52" W 254.70'

TONY G. SANFORD AND WIFE TAMMY A. SANFORD DB 845 PG 352 SHOWN PER GIS

TONY G & TAMMY SANFORD DB 845 PG 352

LATISKA T BARNES DB 1139 PG 74

JAMES B. BOYD AND WIFE BARBARA A. BOYD DB 441 PG 635 SHOWN PER GIS

BARBARA A. BOYD DB 441 PG 635 SHOWN PER GIS

JAMES C & TRACY R BOYD DB 1236 PG 899

BARBARA A. BOYD DB 441 PG 635 SHOWN PER GIS

WALLACE GREENWAY DB 436 PG 68

SR 1518 (STEWART FARM RD.) 20' BST

S 89°11'19.2" E

N 00°50'20" W 142.47'

N 00°35'24" E 82.63'

N 88°56'46" W 248.59'

S 30°46'31" E 265.53'

N 30°39'29" W 234.59'

RESET EXISTING DISCONNECTED PIPE AT HOLE IN SHOULDER

CLASS I RIP RAP AT OUTLET (SEE PIPE OUTLET CHANNEL)

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS

STRUCTURE NO.	REMARKS	PROP INV ELEV	QTY
0903	COLLAR/EXTEND 3 LF 24" RCP STA. 104+10 –L– LT	483.88'	
0905	LINE DITCH WITH CL. B RIP RAP 10' ON EACH SIDE OF OPENING		7 TONS RIP RAP 16 SY GF
0906	LINE DITCH WITH CL. I RIP RAP AT OUTLET TO ROW LINE STA. 104+18 –L– RT		8 TONS RIP RAP 24 SY GF
0908	LINE DITCH WITH CL. B RIP RAP FROM DRIVE PIPE OUTLET STA. 104+18 –L– RT		3 TONS RIP RAP 40 SY GF

5/5/2016
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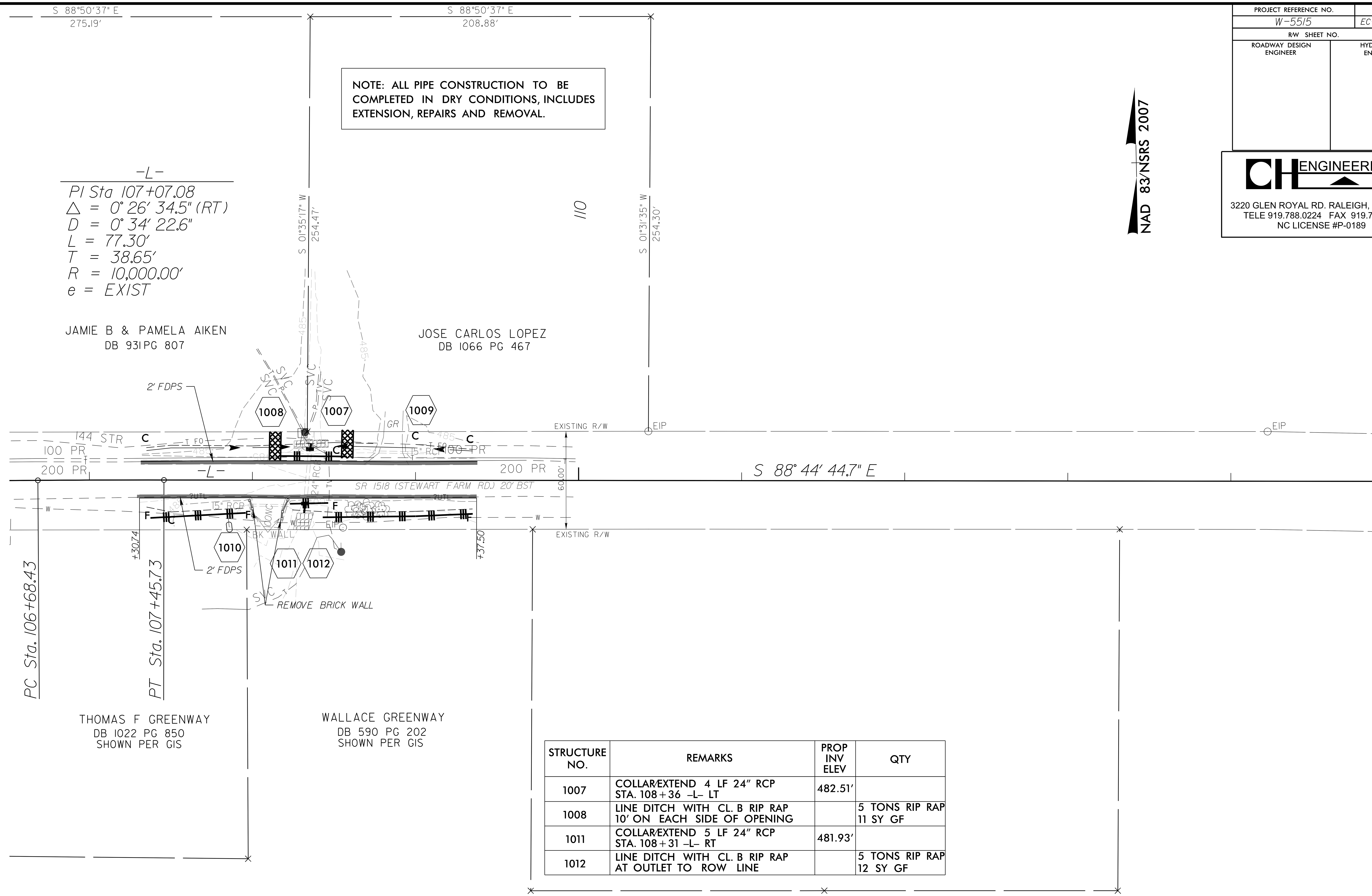
PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-10/CONST.10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

NOTE: ALL PIPE CONSTRUCTION TO BE COMPLETED IN DRY CONDITIONS, INCLUDES EXTENSION, REPAIRS AND REMOVAL.

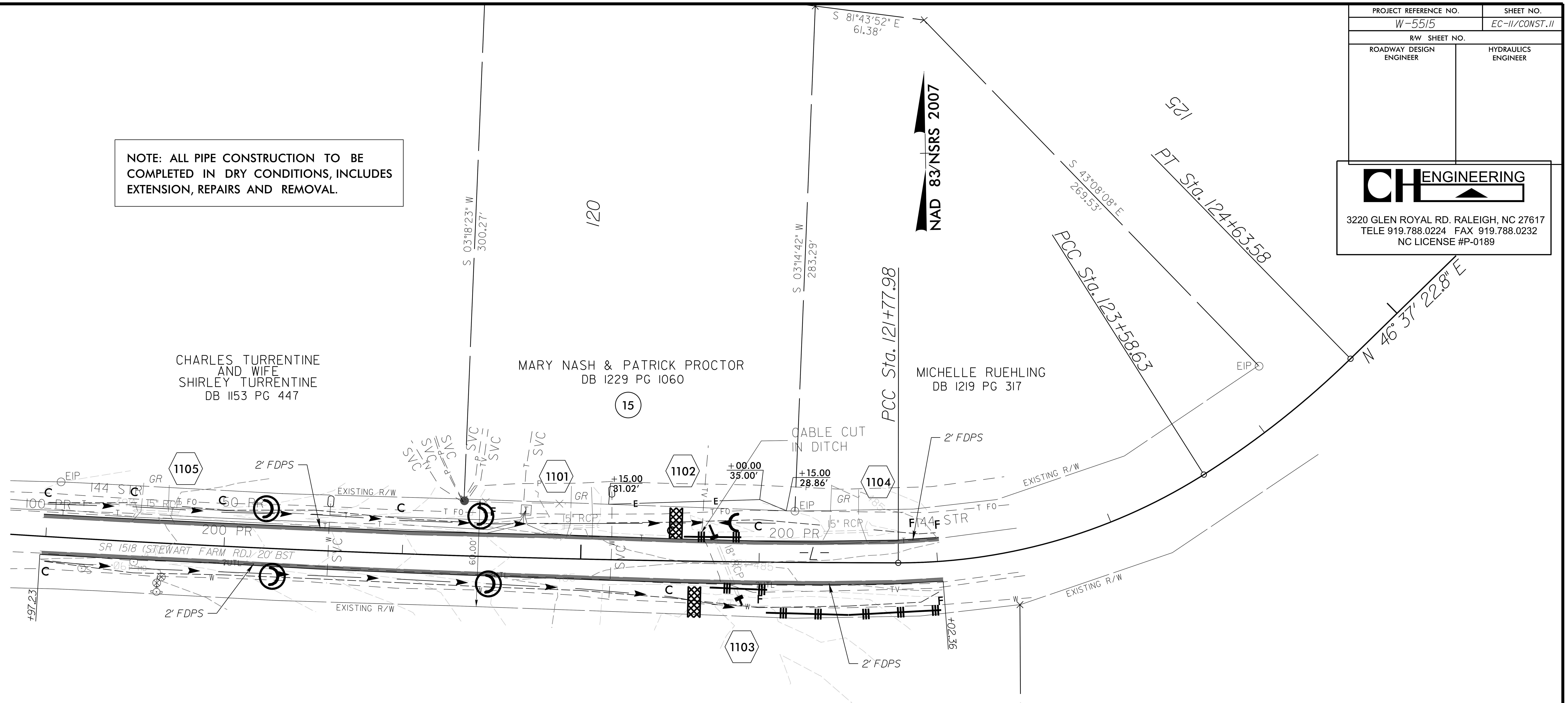


STRUCTURE NO.	REMARKS	PROP INV ELEV	QTY
1007	COLLAR/EXTEND 4 LF 24" RCP STA. 108+36 -L- LT	482.51'	
1008	LINE DITCH WITH CL. B RIP RAP 10' ON EACH SIDE OF OPENING		5 TONS RIP RAP 11 SY GF
1011	COLLAR/EXTEND 5 LF 24" RCP STA. 108+31 -L- RT	481.93'	
1012	LINE DITCH WITH CL. B RIP RAP AT OUTLET TO ROW LINE		5 TONS RIP RAP 12 SY GF

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-11/CONST.11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

NOTE: ALL PIPE CONSTRUCTION TO BE COMPLETED IN DRY CONDITIONS, INCLUDES EXTENSION, REPAIRS AND REMOVAL.



-L-

PI Sta 119+27.59	PI Sta 122+70.78	PI Sta 124+11.30
△ = 3° 35' 16.1" (LT)	△ = 32° 20' 38.8" (LT)	△ = 12° 01' 38.3" (LT)
D = 0° 42' 58.3"	D = 17° 54' 17.8"	D = 11° 27' 33.0"
L = 500.95'	L = 180.64'	L = 104.96'
T = 250.56'	T = 92.80'	T = 52.67'
R = 8,000.00'	R = 320.00'	R = 500.00'
e = EXIST	e = EXIST	

STRUCTURE NO.	REMARKS	PROP INV ELEV
1102	COLLAR/EXTEND 7 LF 18" RCP STA. 120+75 -L- LT	482.19'
1103	COLLAR/EXTEND 5 LF 18" RCP STA. 120+91 -L- RT	481.67'

8/17/99
1/5/2016
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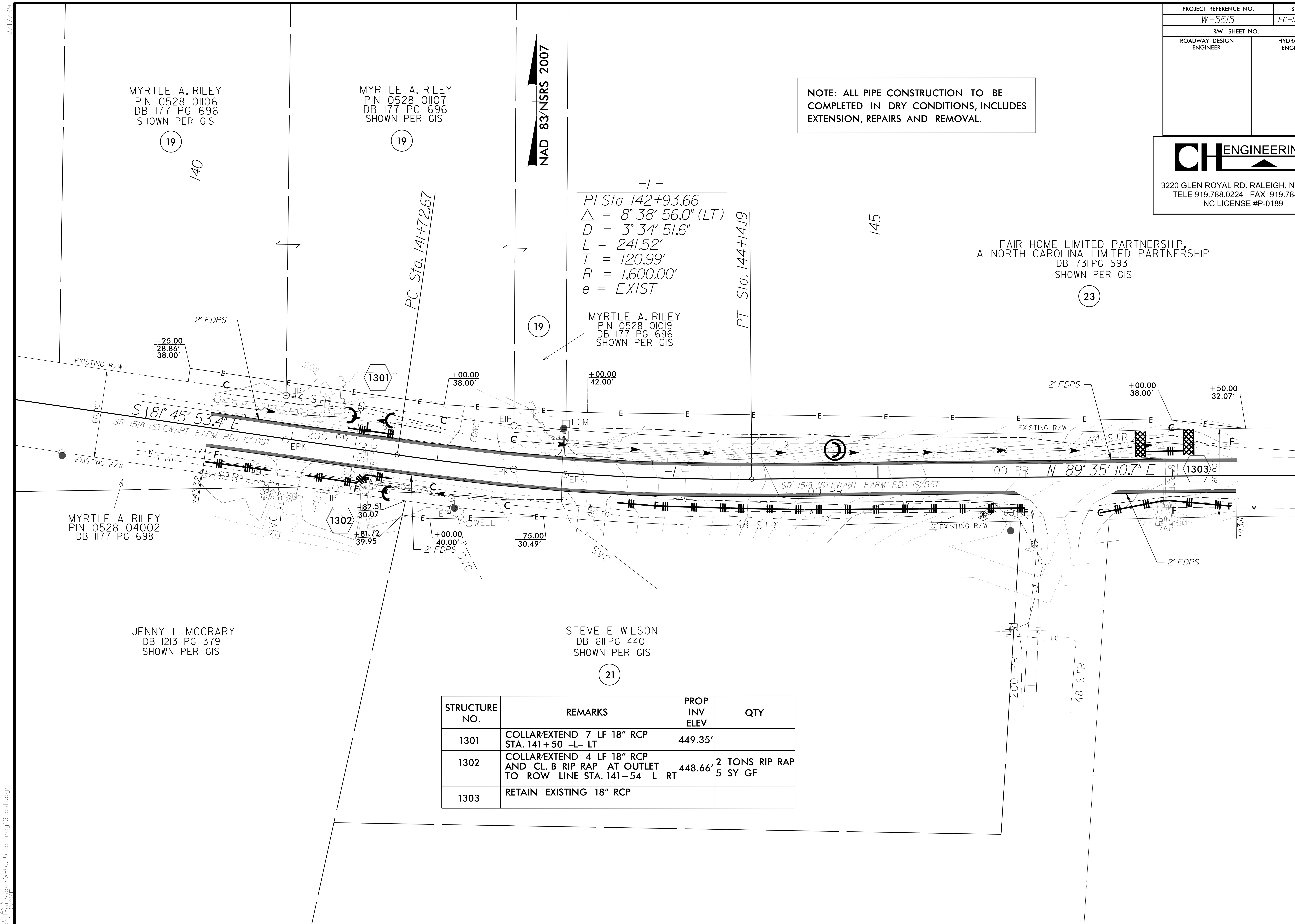
USERNAME

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-13/CONST.13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CH ENGINEERING

3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

NOTE: ALL PIPE CONSTRUCTION TO BE COMPLETED IN DRY CONDITIONS, INCLUDES EXTENSION, REPAIRS AND REMOVAL.



STRUCTURE NO.	REMARKS	PROP INV ELEV	QTY
1301	COLLAR/EXTEND 7 LF 18" RCP STA. 141+50 -L- LT	449.35'	
1302	COLLAR/EXTEND 4 LF 18" RCP AND CL. B RIP RAP AT OUTLET TO ROW LINE STA. 141+54 -L- RT	448.66'	2 TONS RIP RAP 5 SY GF
1303	RETAIN EXISTING 18" RCP		

8/17/99

1/5/2016
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USERNAME

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-14/CONST.14

RW SHEET NO.

ROADWAY DESIGN ENGINEER

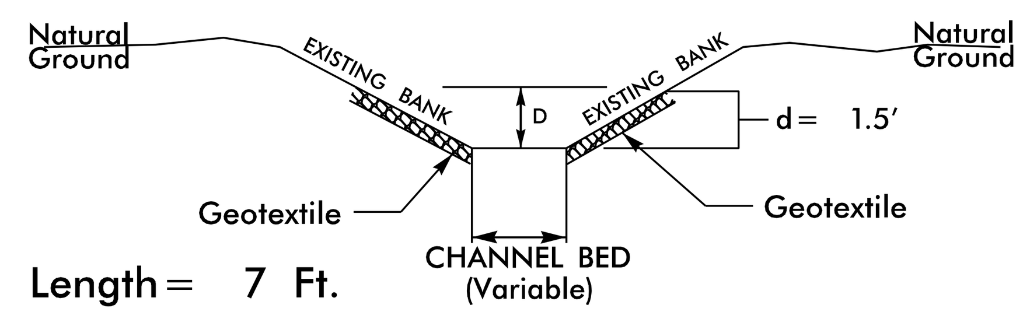
HYDRAULICS ENGINEER

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

NAD 83/NSRS 2007

PIPE OUTLET CHANNEL

(Not to Scale)

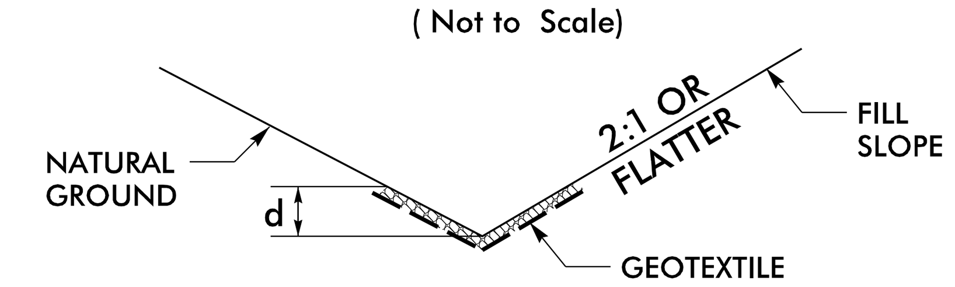


Length = 7 Ft.
D = 1.5 Ft.
Liner = Class I Rip Rap

–L– STA. 160+87 RT

TOE PROTECTION

(Not to Scale)

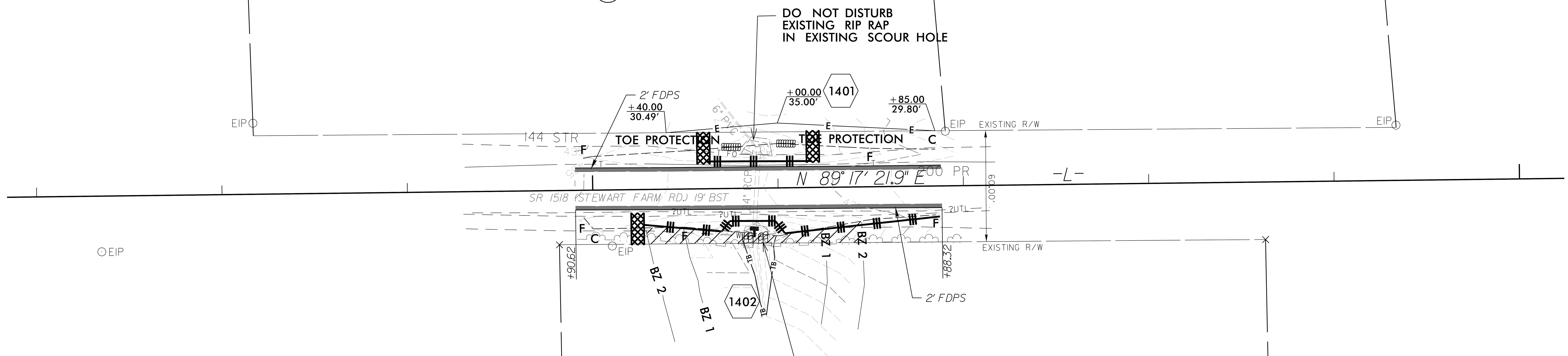


d = 1 Ft.

Type of Liner = CLASS B Rip Rap

FROM –L– STA. 160+70 TO –L– STA. 160+80 LT
FROM –L– STA. 161+00 TO –L– STA. 161+10 LT

NOTE: ALL PIPE CONSTRUCTION TO BE COMPLETED IN DRY CONDITIONS, INCLUDES EXTENSION, REPAIRS AND REMOVAL.



STRUCTURE NO.	REMARKS	PROP INV ELEV	QTY
1401	CL. B RIP RAP TOE PROTECTION STA. 160+00 AND 160+70 –L– LT		5 TONS RIP RAP 12 SY GF
1402	COLLAR/EXTEND 4 LF 24" RCP STA. 160+87 –L– RT	426.71'	
1402	CL. I RIP RAP AT OUTLET STA. 160+87 –L– RT		6 TONS RIP RAP 17 SY GF

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

8/17/99

1/5/2016
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USERNAME

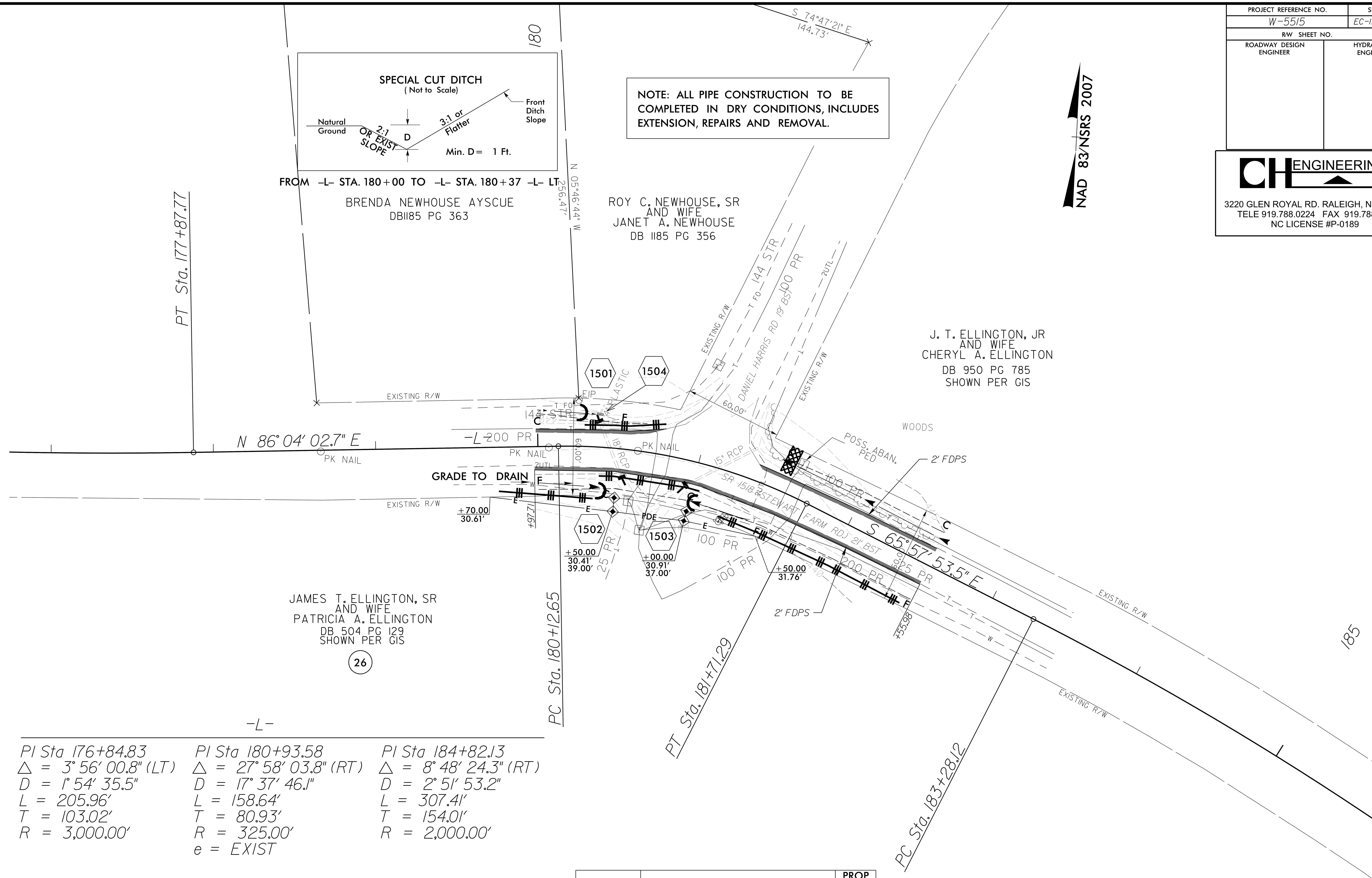
PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-15/CONST.15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

NOTE: ALL PIPE CONSTRUCTION TO BE COMPLETED IN DRY CONDITIONS, INCLUDES EXTENSION, REPAIRS AND REMOVAL.

SPECIAL CUT DITCH
(Not to Scale)

FROM -L- STA. 180+00 TO -L- STA. 180+37 -L- LT



-L-

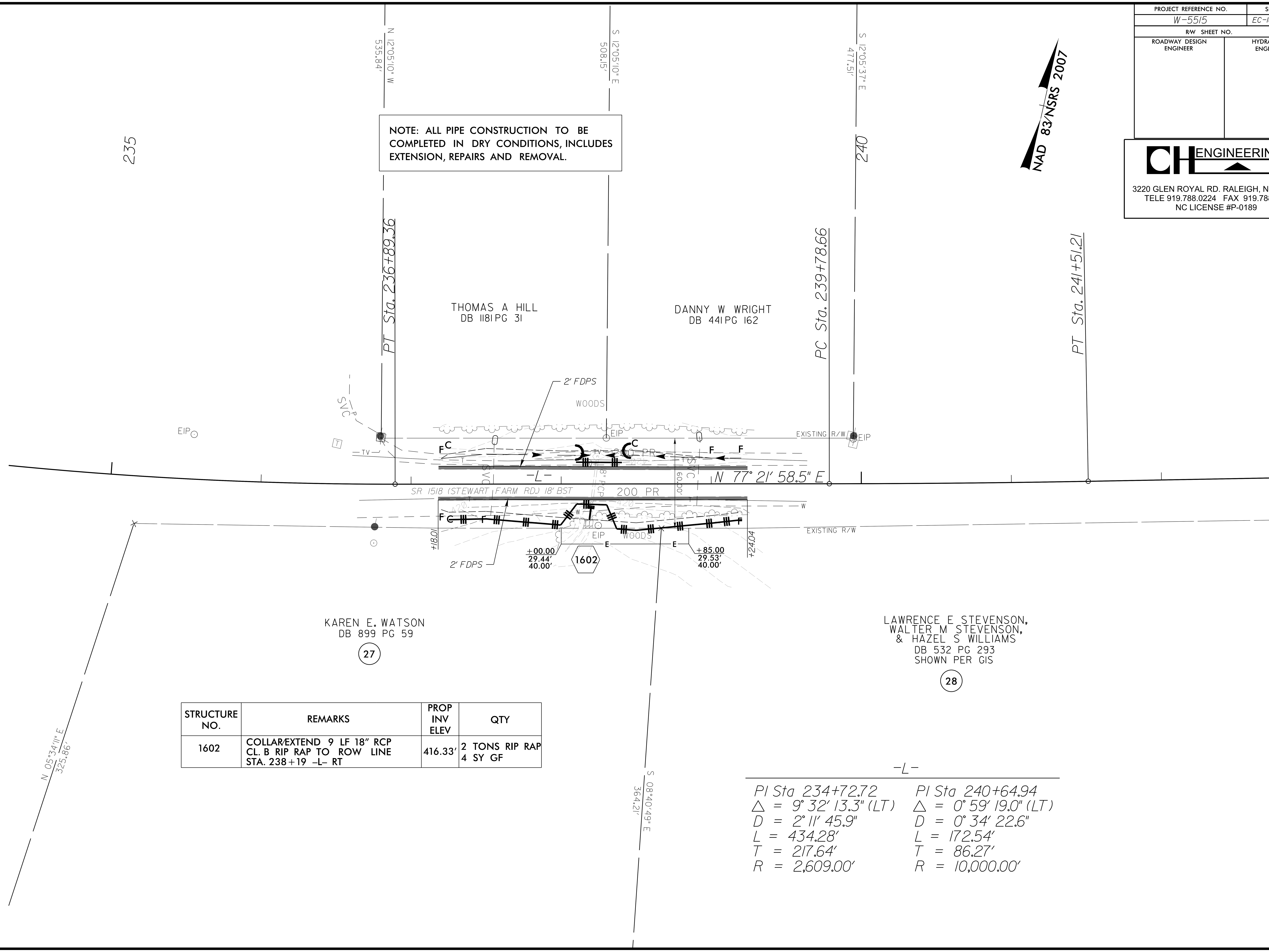
PI Sta 176+84.83	PI Sta 180+93.58	PI Sta 184+82.13
Δ = 3° 56' 00.8" (LT)	Δ = 27° 58' 03.8" (RT)	Δ = 8° 48' 24.3" (RT)
D = 1° 54' 35.5"	D = 17° 37' 46.1"	D = 2° 51' 53.2"
L = 205.96'	L = 158.64'	L = 307.41'
T = 103.02'	T = 80.93'	T = 154.01'
R = 3,000.00'	R = 325.00'	R = 2,000.00'
	e = EXIST	

STRUCTURE NO.	REMARKS	PROP INV ELEV
1501	COLLAR/EXTEND 4 LF 18" RCP STA. 180+37 -L- LT	439.10'
1502	COLLAR/EXTEND 6 LF 18" RCP STA. 180+54 -L- RT	438.10'
1503	COLLAR/EXTEND 8 LF 15" RCP STA. 180+96 -L- RT	438.10'
1504	REMOVE 2 LF 4" PLASTIC PIPE, REALIGN AS NEEDED	

PROJECT REFERENCE NO.	SHEET NO.
W-5515	EC-16/CONST.16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

NOTE: ALL PIPE CONSTRUCTION TO BE COMPLETED IN DRY CONDITIONS, INCLUDES EXTENSION, REPAIRS AND REMOVAL.



STRUCTURE NO.	REMARKS	PROP INV ELEV	QTY
1602	COLLAR/EXTEND 9 LF 18" RCP CL. B RIP RAP TO ROW LINE STA. 238+19 -L- RT	416.33'	2 TONS RIP RAP 4 SY GF

-L-

PI Sta 234+72.72	PI Sta 240+64.94
Δ = 9° 32' 13.3" (LT)	Δ = 0° 59' 19.0" (LT)
D = 2° 11' 45.9"	D = 0° 34' 22.6"
L = 434.28'	L = 172.54'
T = 217.64'	T = 86.27'
R = 2,609.00'	R = 10,000.00'

8/17/99
1/5/2016
R:\Drainage\W-5515_ec_rdy16_psh.dgn
USERNAME

PROJ. REFERENCE NO.	SHEET NO.
W-5515	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L (SR 1166)	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+00.00	-----	-----	73+50.00	415		128+50.00	178		PROJ 17BP.5.R.63 (NOT INCLUDED)		
10+50.00	7	3	74+00.00	20		129+00.00	23		218+28.95	-----	-----
11+00.00	7	4	74+50.00	28	2	129+50.00	29	3	237+00.00	554	
11+50.00	8	3	75+00.00	37	0	130+00.00	26	3	237+20.00	5	
12+00.00	9	4	75+50.00	48	0	130+50.00	26	2	237+25.00	1	0
12+50.00	12	6	76+00.00	45	0	130+60.00	5	0	237+50.00	7	1
13+00.00	14	7	76+50.00	24	1	131+00.00	16		238+00.00	14	7
13+50.00	15	7	77+00.00	11	2	140+00.00	267		238+50.00	9	15
14+00.00	13	3	77+50.00	10	1	140+50.00	20		239+00.00	8	13
14+50.00	14	5	78+00.00	12	1	141+00.00	23	3	239+20.00	3	2
15+00.00	18	11	78+50.00	12	2	141+50.00	30	7	239+50.00	7	
15+50.00	23	10	79+00.00	9	5	142+00.00	31	11	262+65.00	686	
16+00.00	25	6	79+50.00	10	3	142+50.00	31	5	**SUBTOTAL**	**1294**	**38**
16+50.00	28	4	79+85.00	7	0	143+00.00	71	1			
17+00.00	27	4	80+00.00	4		143+50.00	112	0	**PROJ. TOTAL**	**7787**	**362**
17+50.00	16	2	96+85.00	499		144+00.00	99	0			
18+00.00	8	1	**SUBTOTAL**	**2333**	**62**	144+50.00	69	0			
18+50.00	9	0	97+50.00	-----	-----	145+00.00	52	0			
19+00.00	11	0	100+00.00	74		145+50.00	41	0			
19+50.00	13		100+55.00	15		146+00.00	40	1			
23+05.00	105		101+00.00	11	1	146+50.00	24	1			
SUBTOTAL	**383**	**80**	101+50.00	11	2	147+00.00	17	6			
24+90.00	-----	-----	102+00.00	9	2	147+40.00	14	4			
32+50.00	225		102+50.00	13	1	147+50.00	3				
32+75.00	7		103+00.00	14	0	159+50.00	356				
33+00.00	8	0	103+50.00	10	2	159+95.00	12				
33+50.00	39	0	104+00.00	10	6	160+00.00	1	0			
34+00.00	51	0	104+50.00	10	7	160+50.00	13	2			
34+30.00	17	0	105+00.00	10	3	161+00.00	9	12			
34+50.00	5		105+15.00	3	0	161+50.00	9	13			
39+50.00	148		105+50.00	9		161+85.00	7	3			
40+00.00	12		107+00.00	44		162+00.00	4				
40+50.00	10	4	107+35.00	9		179+50.00	519				
41+00.00	9	6	107+50.00	3	1	180+00.00	13				
41+50.00	8	2	108+00.00	11	5	180+50.00	9	11			
42+00.00	9	2	108+50.00	12	7	181+00.00	10	4			
42+50.00	11	2	109+00.00	11	9	181+50.00	10	4			
43+00.00	11	0	109+35.00	7	3	182+00.00	12	7			
43+50.00	15	2	109+50.00	4		182+50.00	14	8			
43+85.00	10	2	116+50.00	207		182+55.00	2	1			
44+00.00	4		117+00.00	13		183+00.00	14				
54+50.00	311		117+50.00	19	0	211+78.95	853				
55+00.00	21		118+00.00	20	0	**SUBTOTAL**	**3777**	**182**			
55+50.00	25	10	118+50.00	14	1						
56+00.00	24	5	119+00.00	14	1						
56+50.00	17	0	119+50.00	13	0						
57+00.00	23	0	120+00.00	12	0						
57+50.00	30	0	120+50.00	10	2						
58+00.00	23	3	121+00.00	11	5						
58+50.00	30	4	121+50.00	10	8						
59+00.00	25	1	121+90.00	7	5						
59+25.00	6	0	122+00.00	2	0						
59+50.00	6		122+50.00	12							

Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, and shoulder reconstruction will be paid for at the lump sum price for "Grading".

PROJ. REFERENCE NO.	SHEET NO.
W-5515	X-1

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-2

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

465 460 455

460.05

2:1 4:1 3:1 2:1

458.37 22.65

456.77 23.48

15+00.00

460 455 450

459.60

2:1 4:1 3:1 2:1

458.15 23.28

456.53 22.43

14+50.00

DRIVEWAY

460 455

458.97

3:1 2:1

456.15 22.07

14+00.00

460 455

458.37

2:1 4:1 3:1 2:1

457.04 19.85

455.67 23.07

13+50.00

460 455 450

457.84

2:1 4:1 3:1 2:1

456.33 20.44

455.43 21.72

13+00.00

3/4/2016
\\Roadway\XSC\W-5515_Rdy_xp1.dgn
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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-3

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

465 460 455

DRIVEWAY

2.5:1

459.92

458.49
16.13

18+00.00

460 455

2.9:1

2.6:1

459.80

457.15
22.37

458.16
16.75

17+50.00

460 455

3.2:1

3:1

2:1

459.94

457.76
21.30

457.77
20.90

17+00.00

460 455

2:1

4:1

3:1

2:1

460.16

458.26
22.67

457.53
22.28

16+50.00

460 455

2:1

4:1

3:1

2:1

460.33

458.86
20.96

457.28
23.18

16+00.00

460 455 450

2:1

4:1

3:1

2:1

460.29

458.57
21.53

457.03
24.37

15+50.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3/4/2016
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User:djordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-4

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

455 450 445 440

4:1 3:1 2:1

445.52
17.75

446.42

445.21
17.15

33+00.00

4:1 0.07 0.01 0.01 0.07 3:1 2:1

447.01

445.60
19.21

32+75.00

460 455 450

4:1 4:1

457.34
26.65

460.01

19+00.00

DRIVEWAY

3.3:1

457.55
21.35

460.02

18+50.00

3/4/2016
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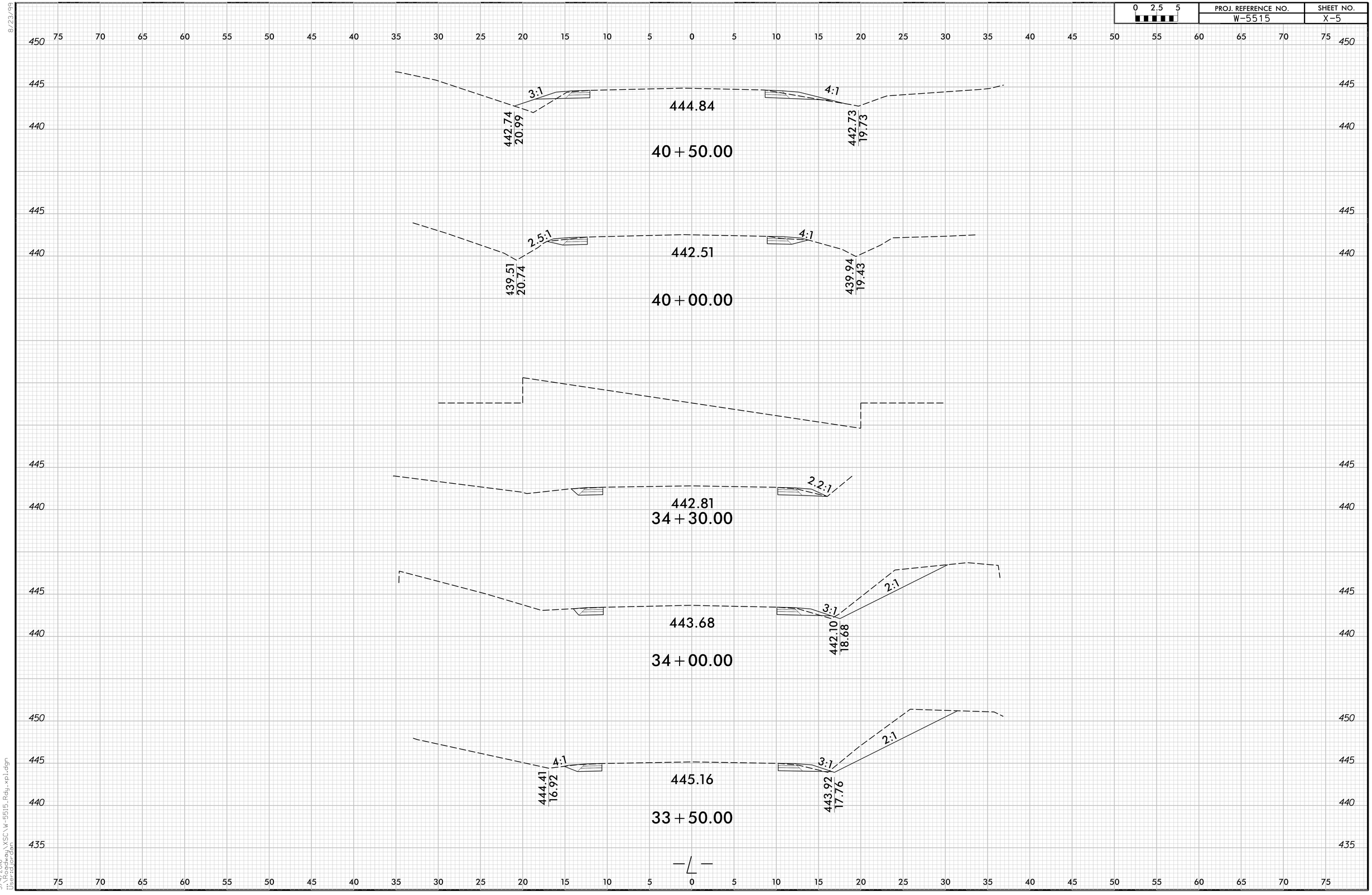
User:id jordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-5



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User:djordan

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-6

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

460
455

DRIVEWAY

2.7:1

457.34

455.30
19.05

43+00.00

455
450

3:1

454.82

452.93
19.16

3:1

452.10
20.05

42+50.00

455
450
445

3:1

DRIVEWAY

452.25

450.17
20.22

42+00.00

450
445

DRIVEWAY

DRIVEWAY

449.72

41+50.00

450
445

3:1

DRIVEWAY

447.23

445.27
20.10

41+00.00

℄

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

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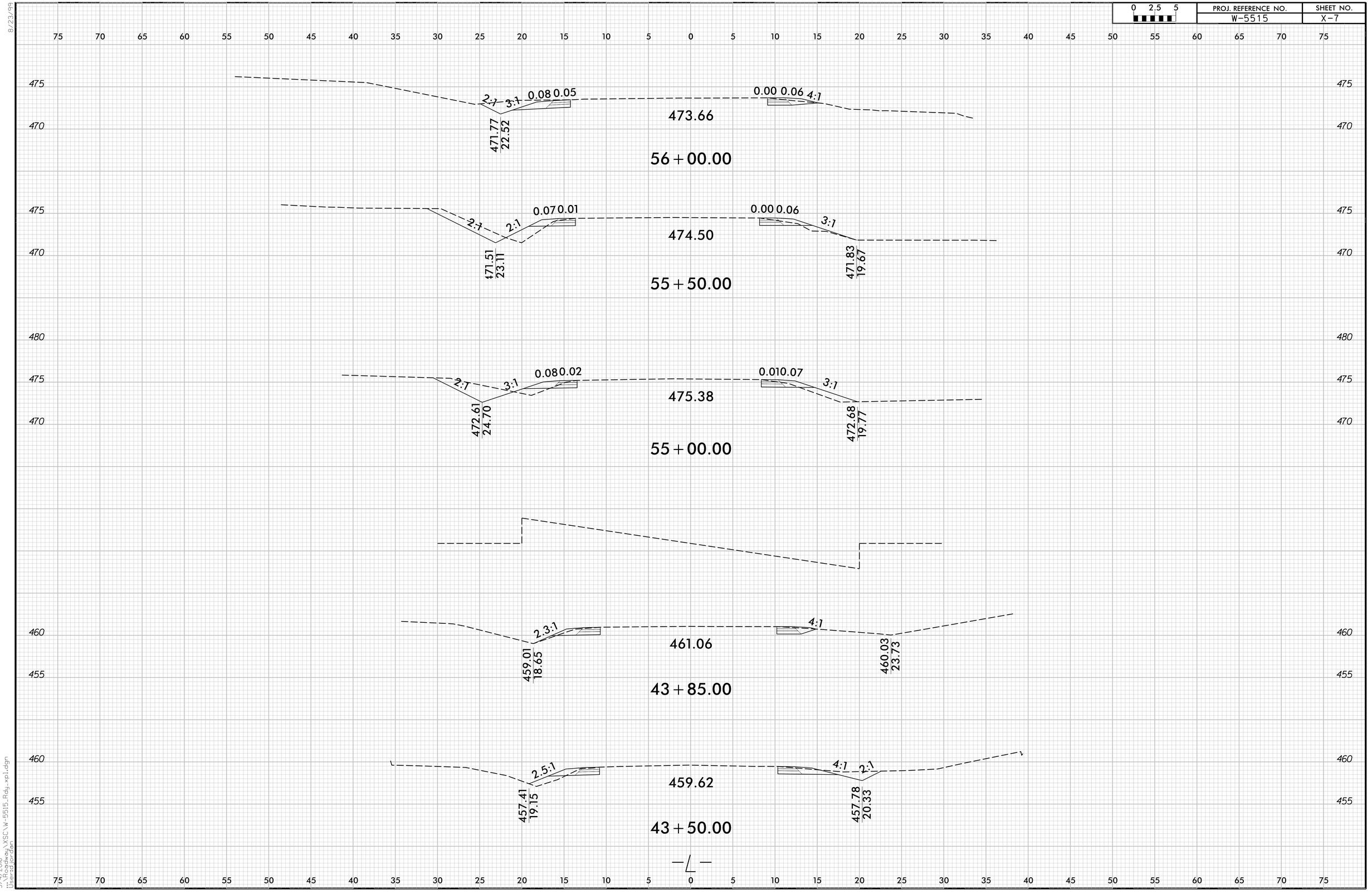
User:tdjordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-7



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User:RJordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-8

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

475 / 470 / 465

0.08 0.02 0.01 0.07 2:1 2:1 3:1 469.16 165.63 25.62 466.30 19.44

58 + 50.00

0.08 0.03 0.00 0.06 2:1 3:1 3:1 2:1 469.63 467.03 23.64 466.86 20.47

58 + 00.00

0.08 0.05 0.01 0.05 2:1 3:1 3:1 470.52 468.22 20.88 468.04 20.69

57 + 50.00

0.08 0.05 0.03 0.03 2:1 2.8:1 3.6:1 471.64 469.26 20.36 469.94 20.02

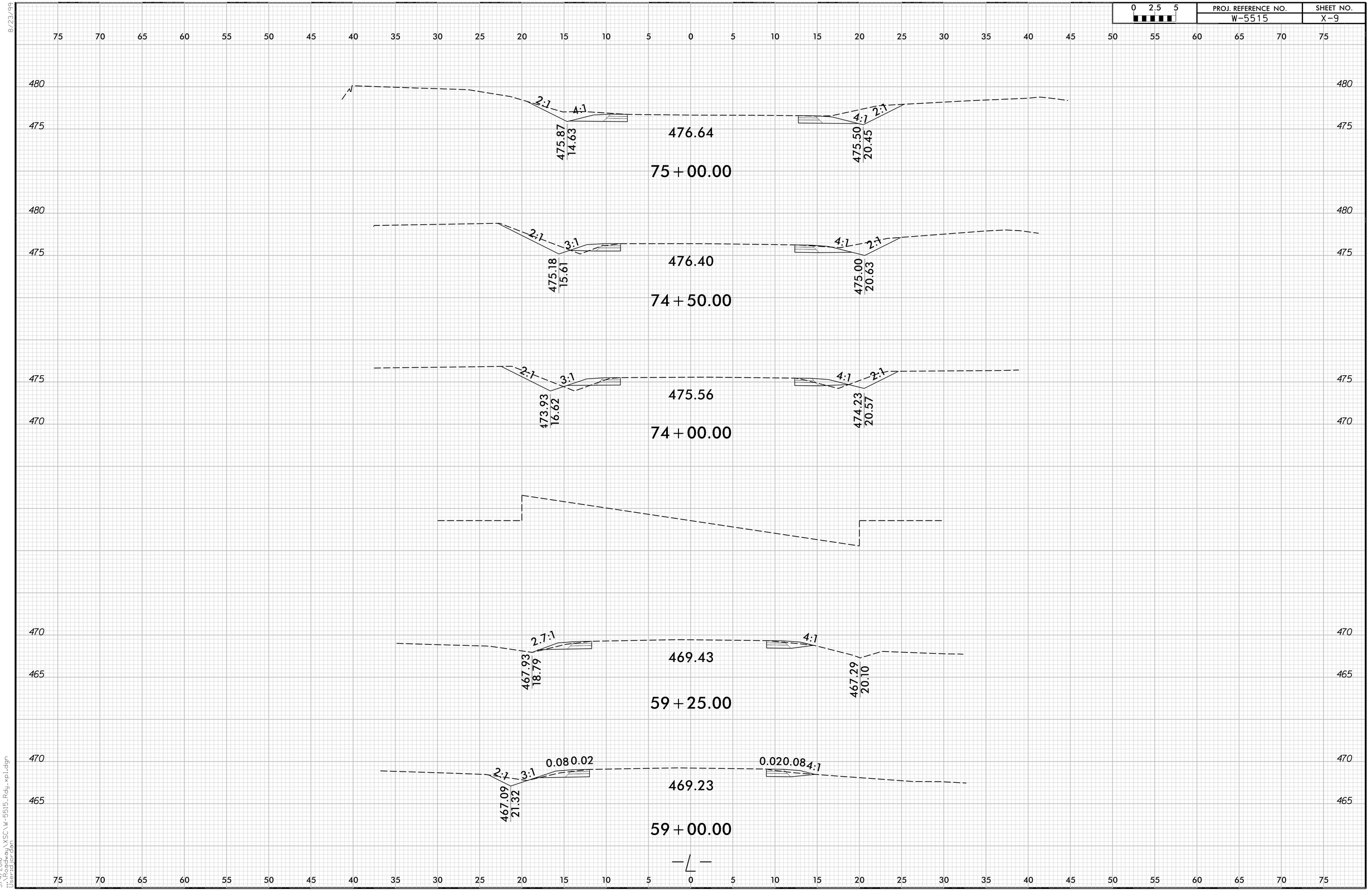
57 + 00.00

DRIVEWAY 0.03 0.03 4:1 472.74 471.83 19.05

56 + 50.00

3/4/2016
\\Roadway\XSC\W-5515_Rdy_xp1.dgn
User:id jordan

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-9



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User:djordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-10

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

475
470

2:1 4:1 0.08 0.03 4:1 0.02 0.08 4:1 2:1

469.38
15.55

470.83

469.13
22.76

78+00.00

475
470

2:1 4:1 4:1

470.56
15.09

472.04

470.98
22.86

77+50.00

475
470

2:1 4:1 4:1

471.94
15.96

473.39

471.80
23.23

77+00.00

475
470

2:1 4:1 4:1 2:1

473.32
16.25

474.73

473.05
22.89

76+50.00

480
475

2:1 4:1 4:1 2:1

475.00
14.19

475.86

474.30
22.54

76+00.00

480
475

2:1 4:1 4:1 2:1

475.49
15.00

476.52

474.98
22.21

75+50.00

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-11

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

470
465

4:1 2.5:1

469.24

467.51
22.91

465.11
20.38

79+85.00

470
465

0.05 0.01 0.040.08

2.8:1 2.4:1

469.35

467.45
20.41

465.33
22.03

79+50.00

470
465

0.07 0.01 0.03 0.08

2:1 3:1

469.60

466.80
18.81

465.57
24.65

79+00.00

470
465

0.08 0.03 0.02 0.08

3:1 3.1:1

470.03

468.26
16.34

468.07
21.78

78+50.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3/4/2016
...\Roadway\XSC\W-5515_Rdy_xp1.dgn
User:rjordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-12

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

490
485

DRIVEWAY

4:1

490.21

489.41
16.14

103 + 00.00

490
485

2:1
3:1

491.10

489.03
17.90

490.16
18.25

102 + 50.00

495
490

4:1

DRIVEWAY

492.04

490.79
16.18

102 + 00.00

495
490

4:1
4:1

493.51

492.10
16.60

492.28
19.25

101 + 50.00

495
490

4:1
4:1

495.28

493.78
17.26

494.08
20.15

101 + 00.00

495
490

2.5:1
4:1

496.92

495.21
16.33

495.63
20.87

100 + 55.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3/4/2016
...\Roadway\XSC\W-5515_Rdy_xpl.dgn
User:djordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-13

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

490 / 485

2:1 3:1 4:1

487.96

486.66 15.94

486.64 17.24

105+15.00

490 / 485

DRIVEWAY 0.01 0.02 0.08 4:1

488.00

486.53 17.92

105+00.00

490 / 485

2:1 3:1 0.08 0.03 0.02 0.08 3:1

488.16

485.99 18.08

486.04 18.93

104+50.00

490 / 485

2:1 2:1 0.08 0.02 0.02 0.08 2.5:1

488.56

485.84 17.61

485.73 20.18

104+00.00

490 / 485

2:1 3:1 0.08 0.03 0.01 DRIVEWAY

489.39

487.42 17.38

103+50.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3/4/2016
\\...\Roadway\XSC\W-5515_Rdy_xp1.dgn
User:jordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-14

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

490 485 480

2:1 3:1 4:1

484.21 17.99 — 485.95 — 484.39 17.54

109 + 35.00

0.07 0.01 0.02 0.08

483.51 19.82 — 485.93 — 484.01 19.05

109 + 00.00

0.08 0.02 0.02 0.08

483.36 21.03 — 485.97 — 483.89 19.70

108 + 50.00

0.08 0.02 0.04 0.08

484.34 19.88 — 486.19

108 + 00.00

0.08 0.02 0.01 0.07

484.70 19.67 — 486.60 — 484.81 19.04

107 + 50.00

484.85 18.02 — 486.73 — 485.59 16.59

107 + 35.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-15

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

485
480

4:1 4:1 2:1

484.91
18.36

486.20

485.17
15.32

119 + 50.00

2:1 4:1 4:1 2:1

485.87
18.68

487.15

486.29
14.32

119 + 00.00

490
485

2:1 4:1 4:1 2:1

486.82
20.00

488.32

487.41
14.13

118 + 50.00

490
485

2:1 4:1 4:1 2:1

488.11
19.00

489.50

488.46
14.40

118 + 00.00

490
485

2:1 4:1 4:1 2:1

488.94
19.50

490.37

489.06
14.99

117 + 50.00

490
485

2:1 4:1 4:1 2:1

489.77
18.24

490.87

489.96
13.77

117 + 00.00

3/4/2016
...\Roadway\XSC\W-5515_Rdy_xp1.dgn
User:td_jordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-16

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

490 / 485 / 480

4:1 0.08 0.06 — 0.04 0.02 3:3:1

485.61

483.93
19.93

122+00.00

485 / 480

4:1 0.08 0.06 — 0.04 0.02 4:1

485.48

484.22
17.71

483.58
22.27

121+90.00

485 / 480

DRIVEWAY — 0.03 0.03 4:1

485.12

482.77
24.28

121+50.00

485 / 480

2:1 4:1 0.08 0.04 — 0.00 0.06 4:1

484.98

482.50
21.85

481.92
25.55

121+00.00

485 / 480

2:1 4:1 0.08 0.02 — 0.04 0.08 4:1 2:1

485.02

482.90
21.06

482.93
20.02

120+50.00

485 / 480

DRIVEWAY — 0.03 0.08 4:1 2:1

485.39

484.05
16.69

120+00.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-17

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

470
465

3.2:1 3:1 2:1

466.79
18.60

467.70

465.20
17.60

130+60.00

470
465

3.2:1 3:1 2:1

467.05
18.82

468.00

465.45
17.79

130+50.00

470
465

3.8:1 3:1 2:1

468.43
20.41

469.49

466.99
17.53

130+00.00

475
470

4:1 3:1 2:1

470.02
20.23

470.97

468.84
16.22

129+50.00

475
470
465

4:1 3:1 2:1

471.68
18.54

472.49

469.80
18.18

129+00.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3/4/2016
...\Roadway\XSC\W-5515_Rdy_xp1.dgn
User:sd.jordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-18

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

455 / 450

2:1 4:1 0.08 0.02 0.01 0.05 4:1 2:1

450.16 19.04 452.02 450.46 20.36

142+50.00

455 / 450

2:1 4:1 0.08 0.02 0.00 0.06 4:1 2:1

450.50 19.03 452.38 450.02 22.62

142+00.00

455 / 450

2:1 3:1 0.07 0.01 0.03 0.08 4:1

449.32 21.76 452.64 450.36 21.45

141+50.00

455 / 450

2:1 3:1 0.07 0.01 0.03 DRIVEWAY

450.94 17.08 452.67

141+00.00

455 / 450

2:1 3:1 0.07 0.01 0.03 0.08 4:1

451.04 16.62 452.64 450.32 22.40

140+50.00

3/4/2016
I:\Roadway\XSC\W-5515_Rdy_xs1.dgn
User:Jordan

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-19

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

450 445 440

2:1 3:1 4:1

441.39

439.76
17.15

145+00.00

450 445 440

2:1 4:1 4:1

443.68

442.10
18.22

144+50.00

450 445

2:1 4:1 4:1

446.32

445.01
16.87

144+00.00

455 450 445

2:1 4:1 4:1

449.02

447.18
18.37

143+50.00

455 450 445

2:1 4:1 DRIVEWAY

451.03

449.01
18.91

143+00.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3/4/2016
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User:rjordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-20

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

440 435 430

4:1 4:1

434.22

433.18
17.32

147+40.00

435 430

2:1 3:1 4:1

435.07

431.87
22.66

147+00.00

440 435 430

2:1 3:1

436.36

434.88
17.35

146+50.00

440 435 430

2:1 3:1 4:1

437.87

436.39
18.67

146+00.00

440 435 430

2:1 3:1 4:1

439.46

437.85
17.40

145+50.00

—℄—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

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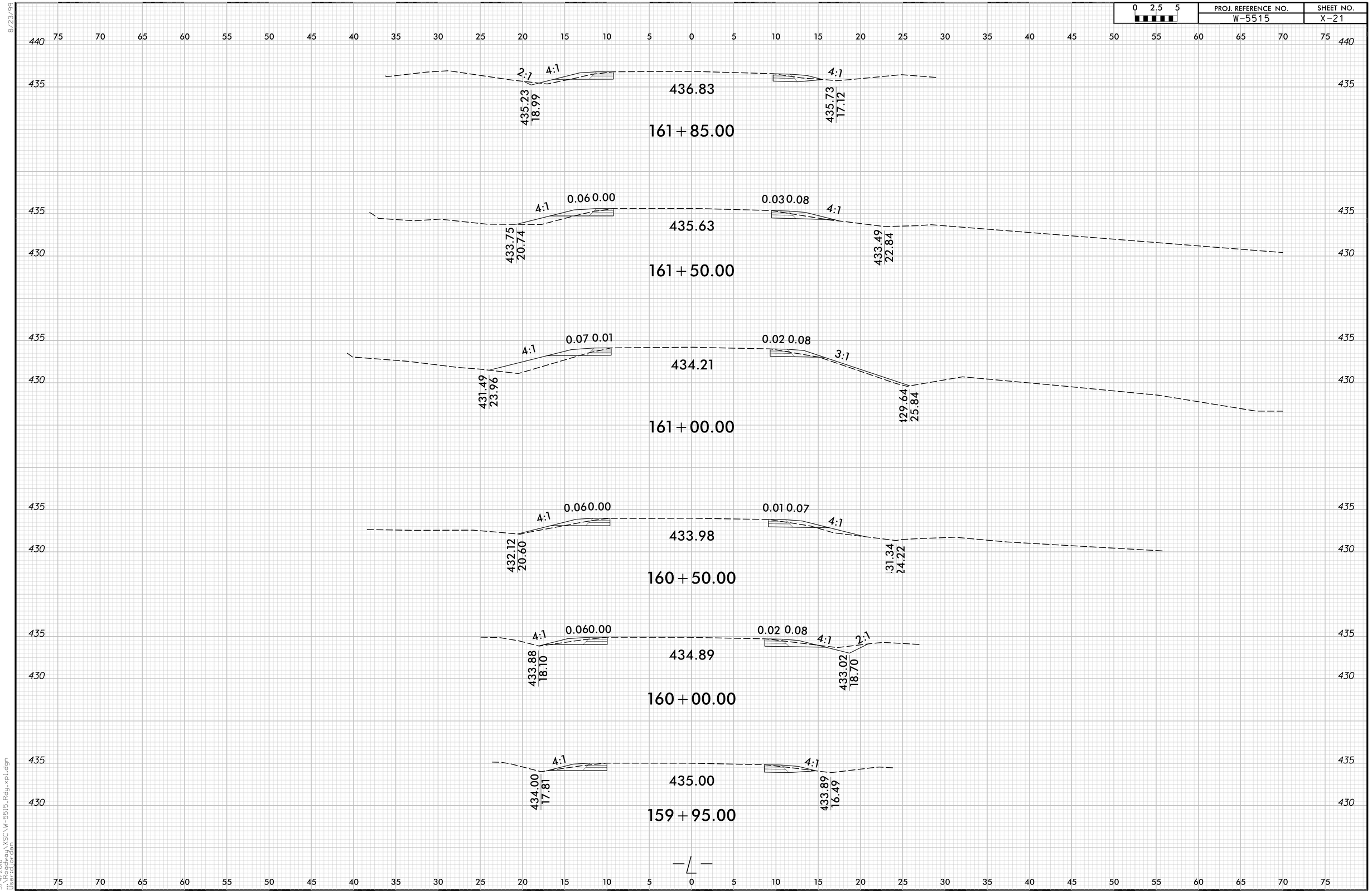
User:tgjordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-21



3/4/2016
I:\Roadway\XSC\W-5515_Rdy_xp1.dgn
User:djordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-22

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

445
440

2:1 4:1 4:1

441.05
18.38

442.38

439.71
24.22

181+50.00

445
440
435

DANIEL HARRIS ROAD

442.10

2:1 2:1

38.22
21.29

181+00.00

440
435

2.4:1 2:1 2:1

440.13
18.14

442.01

438.19
21.89

180+50.00

440
435

2:1 3:1 2:1 5:1

439.90
19.76

442.11

439.73
19.58

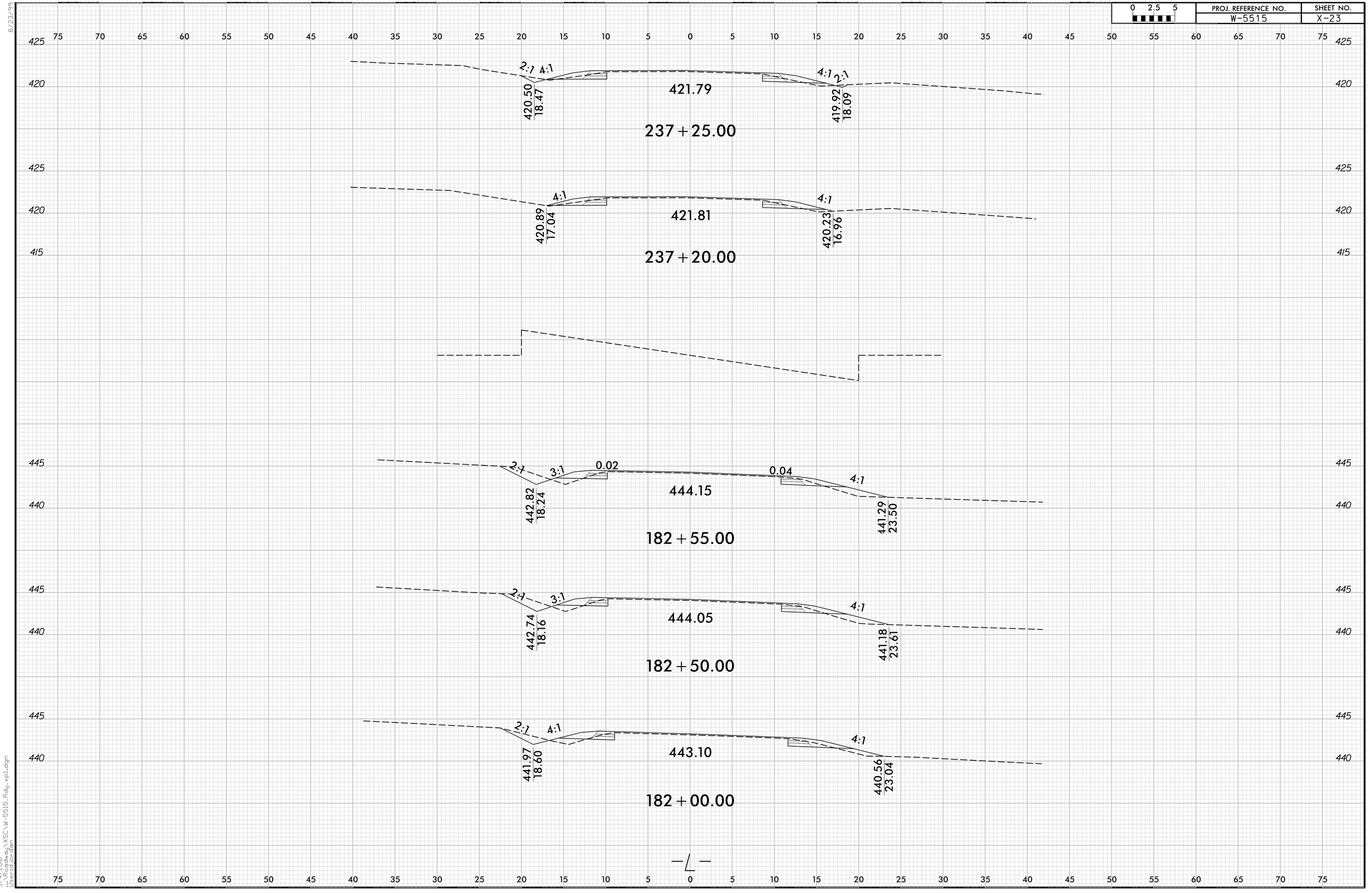
180+00.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3/4/2016
I:\Roadway\XSC\W-5515_Rdy_xp1.dgn
User:tjordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-23



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User:tdjordan

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5515	X-24

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

425 / 420

3.5:1 4:1

421.86

420.54 17.20

419.85 18.93

239+20.00

425 / 420

0.07 0.01 0.03 0.08

2.9:1 4:1

421.70

420.19 17.17

19.12 21.14

239+00.00

425 / 420 / 415

2:1 3:1 0.06 0.00 0.04 0.08 4:1

421.44

419.44 18.98

417.58 25.87

238+50.00

425 / 420 / 415

2:1 3:1 0.07 0.01 0.05 0.08 4:1

421.49

419.43 19.15

418.45 22.34

238+00.00

425 / 420 / 415

2:1 4:1 0.07 0.01 0.03 0.08 4:1

421.68

419.95 19.99

419.76 18.19

237+50.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3/4/2016
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User:djordan