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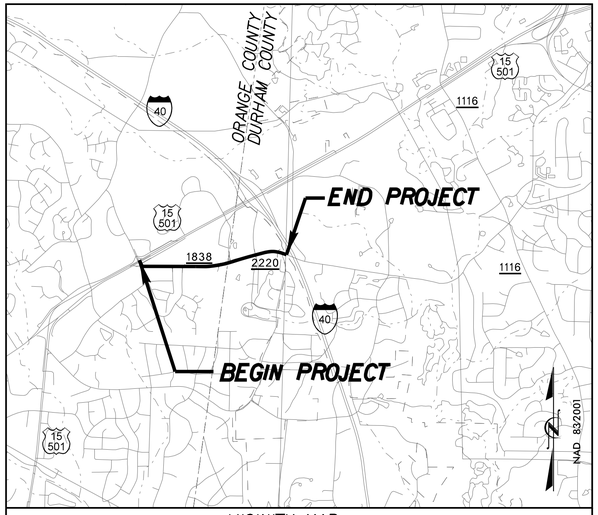
TIP PROJECT: EB-4707A

CONTRACT: C202581

K:\RAL_Roadway\OI\0336290 - EB-4707 Part A\Plan\Plan Sheets\EB-4707_rdy_TSH.dgn

2/5/2019

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



VICINITY MAP
ORANGE AND DURHAM COUNTY

FINAL CONSTRUCTION PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	EB–4707A	1	

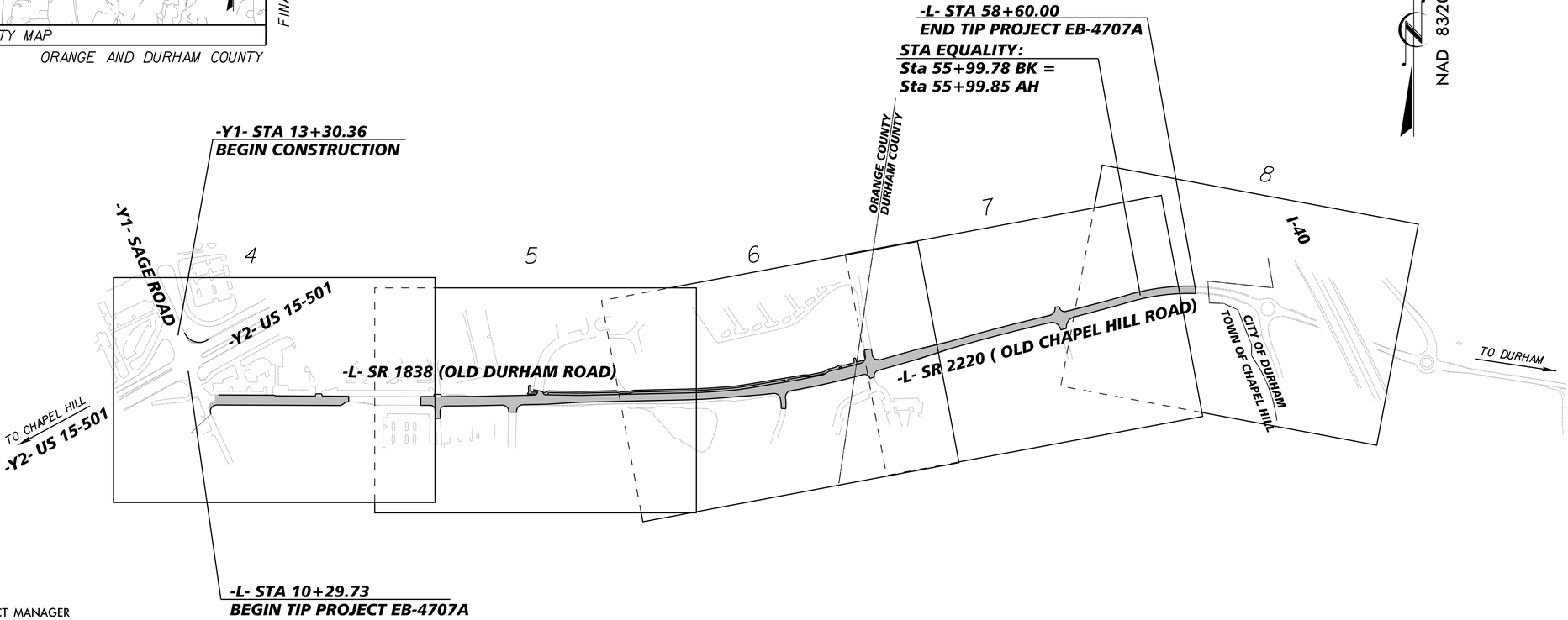
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38664.1.1	STPDA–0505(29)	PE
38664.2.FD1	STPDA–0537(2)	R/W & UTIL
38664.3.3	STPDA–0537(2)	CONST

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ORANGE / DURHAM COUNTY

LOCATION: SR 1838 (OLD DURHAM ROAD)/SR 2220 (OLD CHAPEL HILL ROAD) FROM US 15–501 IN ORANGE COUNTY TO SR 1113 (POPE ROAD) IN DURHAM COUNTY

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



NCDOT CONTACT: BEN UPSHAW, P.E.
DIVISION 5, PROJECT MANAGER
(919) 220–4600

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2018 = 22,000 VPD
ADT 2040 = 36,500 VPD
DHV = %
D = 50%
T = 5% *
V = 40 mph

* (TTST 2% + DUAL 3%)

FUNCTIONAL CLASSIFICATION:
URBAN COLLECTOR
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT EB–4707A = 0.96 MILES

TOTAL LENGTH TIP PROJECT EB–4707A = 0.96 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn
© 2019
Post Office Box 33068
Raleigh, North Carolina 27636
NC License #F-0102

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 2012

LETTING DATE: APRIL 16, 2019

MATTHEW WEST, P.E.
PROJECT ENGINEER

ERIN THOMPSON, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.

DocuSigned by: Larry D. Robinson 2/5/2019 P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

DocuSigned by: Erin Thompson 2/5/2019 P.E.
SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIC W. THOMPSON

DocuSigned by:

31E0486C94E44F2...

3/26/2019

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1 THRU 2A-7	TYPICAL SECTIONS, PAVEMENT SCHEDULE, AND MISCELLANEOUS DETAILS
2B-1 THRU 2B-2	INTERSECTION DETAILS
2B-3	BUS PULL-OFF DETAIL
2C-1 THRU 2C-7	CURB RAMP, STEEL COVER, BDO 12" PIPE, CONVERT CB TO JB W/ MH, AND SPLIT RAIL FENCE DETAILS
2D-1	DRAINAGE DETAILS
3B-1 THRU 3B-2	ROADWAY SUMMARY SHEETS
3D-1 THRU 3D-3	DRAINAGE SUMMARY SHEETS
3G-1	GEOTECHNICAL SUMMARY SHEET
3P-1	PARCEL INDEX SHEET
4 THRU 8	PLAN SHEETS
9 THRU 11	-L- PROFILE SHEETS
12 THRU 15	-Y- & -S- PROFILE SHEETS
TMP-1 THRU TMP-9 TMP-17 THRU TMP-22	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-6	PAVEMENT MARKING PLANS
EC-1 THRU EC-7 EC-13 THRU EC-19	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-12	SIGNING PLANS
SIG-1 THRU SIG-4	SIGNAL PLANS
UC-1 THRU UC-10	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITIES BY OTHERS PLANS
X-0	CROSS SECTION INDEX
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-27	CROSS SECTIONS

GENERAL NOTES

GENERAL NOTES: SPECIFICATIONS
EFFECTIVE: 01-16-2018

GRADE LINE:
GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSE RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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.

GENERAL NOTES CONT.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

UNDERDRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

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
(A) POWER: DUKE ENERGY: DON DANIELS 919-687-3136
(B) WATER/SEWER: OWASA: NICK PARKER 919-537-4201
(C) WATER/SEWER: CITY OF DURHAM: JEFF LECKY 919-560-4326
(D) TELEPHONE: AT&T: BRENDA PENDERGRAFT 919-942-6631
(E) FIBER: CHARTER CABLE: GEORGE STOTLER 919-427-5506
(F) GAS: PSNC: DUNCAN WARREN 919-367-2715

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

CURB RAMPS:

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 AND/OR 848.06.

ROCK

ROCK IS ANTICIPATED BETWEEN PROJECT LIMITS. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

LIST OF ROADWAY STANDARD DRAWINGS

EFF. 01-16-2018

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N.C. Department of Transportation - Raleigh, N.C., Dated January, 2018 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
815.02	Subsurface Drain
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.25	Anchorage for Frames - Brick, Concrete or Precast
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
848.06	Curb Ramp - Existing Curb & Gutter
852.01	Concrete Islands
866.01	Chain Link Fence - 4', 5' and 6' High Fence
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap In Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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3/26/2019

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	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
- Computed 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 — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- 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 & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — C/A
- Existing Control of Access — C/A
- New Control of Access — C/A
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

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 — TH
- 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 — TH
- 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.

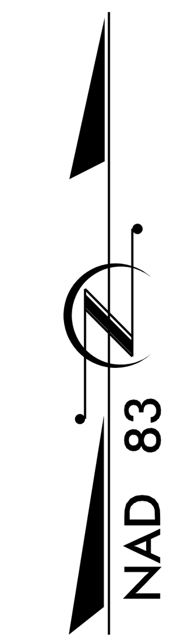
SURVEY CONTROL SHEET EB–4707A

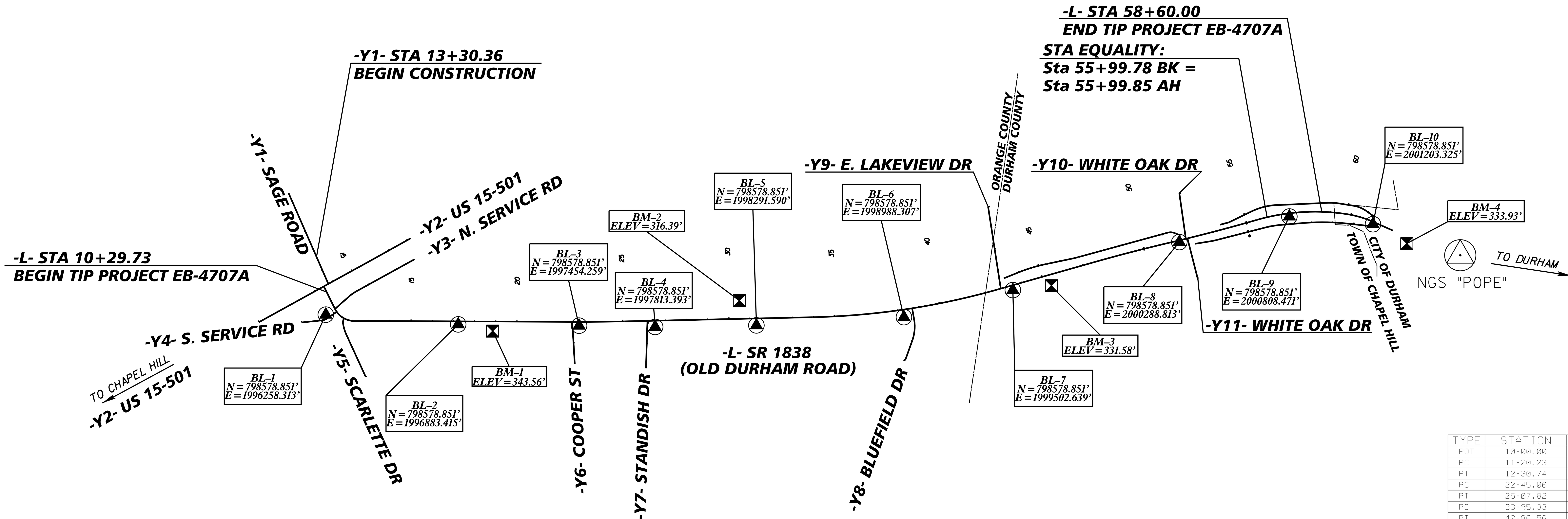
PROJECT REFERENCE NO.	SHEET NO.
EB–4707A	1C–1

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "POPE"
WITH NAD 83/2001 STATE PLANE GRID COORDINATES OF
NORTHING: 798911.6400(ft) EASTING: 2001615.6100(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999934987
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "POPE" TO -L- STATION 10+00.00 IS
N 88°25'43" 5368.68'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88





TYPE	STATION	NORTH	EAST
L			
POT	10+00.00	798764.4229	1996248.9515
PC	11+20.23	798656.7643	1996302.4769
PT	12+30.74	798601.2843	1996391.5879
PC	22+45.06	798596.8963	1997405.9003
PT	25+07.82	798599.2117	1997668.6440
PC	33+95.33	798618.6910	1998555.9340
PT	42+86.56	798750.8744	1999434.8815
PC	47+51.39	798877.8067	1999882.0384
PRC	51+29.83	798972.5021	2000248.4039
PRC	55+49.40	799078.5306	2000654.3062
EQB	55+99.78	799091.3001	2000703.0358
EQA	55+99.85	799091.3001	2000703.0358
PCC	59+77.04	799106.4197	2001077.6488
PT	61+10.34	799069.2490	2001205.2486
POT	62+12.32	799027.9672	2001298.5004
PC	62+87.14	799012.1267	2001371.6189
PT	63+63.45	798990.3497	2001444.6856
PC	67+82.19	798840.4985	2001835.6937
PT	69+42.32	798791.2758	2001987.9933
POT	69+96.94	798777.2759	2002040.7853
PC	70+83.63	798758.7024	2002125.4657
PT	71+70.55	798742.5508	2002210.8536
PC	75+73.76	798679.1183	2002609.0444
PT	77+37.42	798655.5791	2002770.9961
PC	80+29.09	798617.5662	2003060.1830
PT	81+95.46	798593.6008	2003224.8063
PC	87+39.30	798507.8017	2003761.8418
PT	88+60.18	798487.8313	2003881.0528
PC	94+30.72	798389.3191	2004443.0233
PT	95+63.36	798367.5004	2004573.8587
PC	102+83.59	798254.9213	2005285.2330
PT	104+25.52	798233.9798	2005425.6151
PC	108+05.13	798181.3052	2005801.5444
PT	109+16.93	798164.7606	2005912.1140
POT	113+14.05	798102.3367	2006304.2987
PC	117+34.31	798028.9673	2006718.1048
PCC	120+10.26	798028.1404	2006992.6875
PT	127+88.03	798460.1817	2007609.0437
PC	130+06.42	798649.9765	2007717.0871
PT	133+00.71	798868.1031	2007911.3974
PC	136+07.02	799049.2799	2008158.3909
PRC	139+15.33	799276.9192	2008363.0887
PT	142+19.09	799512.4538	2008553.0625
PC	145+36.42	799726.4673	2008787.3605
PT	145+87.54	799760.7835	2008825.2521
PC	147+74.93	799885.9793	2008964.6815
PT	148+64.55	799946.3493	2009030.9132
PC	150+65.09	800082.5438	2009178.1086
PT	152+30.37	800206.4834	2009287.0091
PC	153+13.18	800273.9954	2009334.9622
PT	154+69.67	800399.7720	2009428.0542

BASELINE DATA

1	(BL-1)	N 798630.816	E 1996258.313	ELEV	335.99'	STA	5+00.00
	COURSE FROM 1 TO 2	S 85° 47' 33.3" E		DIST	626.79'		
2	(BL-2)	N 798584.830	E 1996883.415	ELEV	342.32'	STA	11+26.79
	COURSE FROM 2 TO 3	S 89° 23' 59.7" E		DIST	570.88'		
3	(BL-3)	N 798578.851	E 1997454.259	ELEV	345.11'	STA	16+97.67
	COURSE FROM 3 TO 4	S 89° 02' 23.4" E		DIST	359.18'		
4	(BL-4)	N 798572.832	E 1997813.393	ELEV	334.08'	STA	20+56.85
	COURSE FROM 4 TO 5	N 89° 07' 03.0" E		DIST	478.25'		
5	(BL-5)	N 798580.198	E 1998291.590	ELEV	314.09'	STA	25+35.10
	COURSE FROM 5 TO 6	N 86° 48' 19.0" E		DIST	697.80'		
6	(BL-6)	N 798619.086	E 1998988.307	ELEV	316.62'	STA	32+32.91
	COURSE FROM 6 TO 7	N 76° 01' 30.0" E		DIST	530.02'		
7	(BL-7)	N 798747.085	E 1999502.639	ELEV	326.96'	STA	37+62.93
	COURSE FROM 7 TO 8	N 73° 54' 50.7" E		DIST	818.21'		
8	(BL-8)	N 798973.793	E 2000288.813	ELEV	322.91'	STA	45+81.14
	COURSE FROM 8 TO 9	N 76° 54' 11.4" E		DIST	533.54'		
9	(BL-9)	N 799094.691	E 2000808.471	ELEV	322.32'	STA	51+14.67
	COURSE FROM 9 TO 10	S 84° 45' 06.7" E		DIST	396.52'		
10	(BL-10)	N 799058.422	E 2001203.325	ELEV	327.26'	STA	55+11.19

BENCHMARK DATA

BM#1 ELEVATION = 343.56'
N = 798553 E = 1997046
-BL- STATION 12+90 30' RIGHT
R/R SPIKE SET IN 7" QUAD MAPLE

BM#2 ELEVATION = 316.39'
N = 798697 E = 1998211
-BL- STATION 24+57 118' LEFT
R/R SPIKE SET IN 13" PINE

BM#3 ELEVATION = 331.58'
N = 798768 E = 1999685
-BL- STATION 39+44 31' RIGHT
R/R SPIKE SET IN 34" OAK

BM#4 ELEVATION = 333.93'
N = 798967 E = 2001363
-BL- STATION 56+93 29' RIGHT
R/R SPIKE SET IN 13" PINE

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	799207.1046	1996081.6199
POT	14+70.41	798776.2342	1996270.3973

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	798595.8295	1995942.8358
PC	15+24.56	798848.8912	1996402.3209
PT	15+81.69	798876.5908	1996452.2770
POT	18+17.96	798991.7552	1996658.5840

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	798658.2507	1996301.7379
PC	10+87.15	798715.9235	1996367.0730
PT	11+30.93	798741.0901	1996402.7971
POT	14+44.67	798892.6758	1996677.4874

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	798593.9991	1996143.3910
PC	10+96.88	798603.7016	1996239.7865
PT	11+21.73	798612.1088	1996262.9019
POT	11+78.66	798644.1246	1996309.9664

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	798614.0487	1996343.1317
PC	10+08.16	798606.1533	1996341.0598
PCC	10+29.57	798584.9237	1996340.1568
PT	10+81.36	798535.6067	1996355.4702
POT	13+00.00	798336.9180	1996446.7209

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	798596.8393	1997422.1314
POT	10+97.77	798499.2401	1997427.8714
POT	11+99.83	798397.3519	1997433.8636

Y7

TYPE	STATION	NORTH	EAST
POT	10+00.00	798595.9968	1997777.0908
POT	11+22.88	798473.1793	1997773.1846
POT	12+18.91	798377.1942	1997770.1318

Y8

TYPE	STATION	NORTH	EAST
POT	10+00.00	798414.5818	1998994.3411
PC	10+99.73	798508.5620	1999027.7089
PT	12+03.99	798611.3166	1999035.9991
POT	12+54.48	798660.9888	1999026.9522

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	799141.0722	1999385.7431
POT	13+91.76	798753.9001	1999445.5404

Y10

TYPE	STATION	NORTH	EAST
POT	10+00.00	799205.5191	2000288.6787
POT	12+18.27	798989.4343	2000319.4850

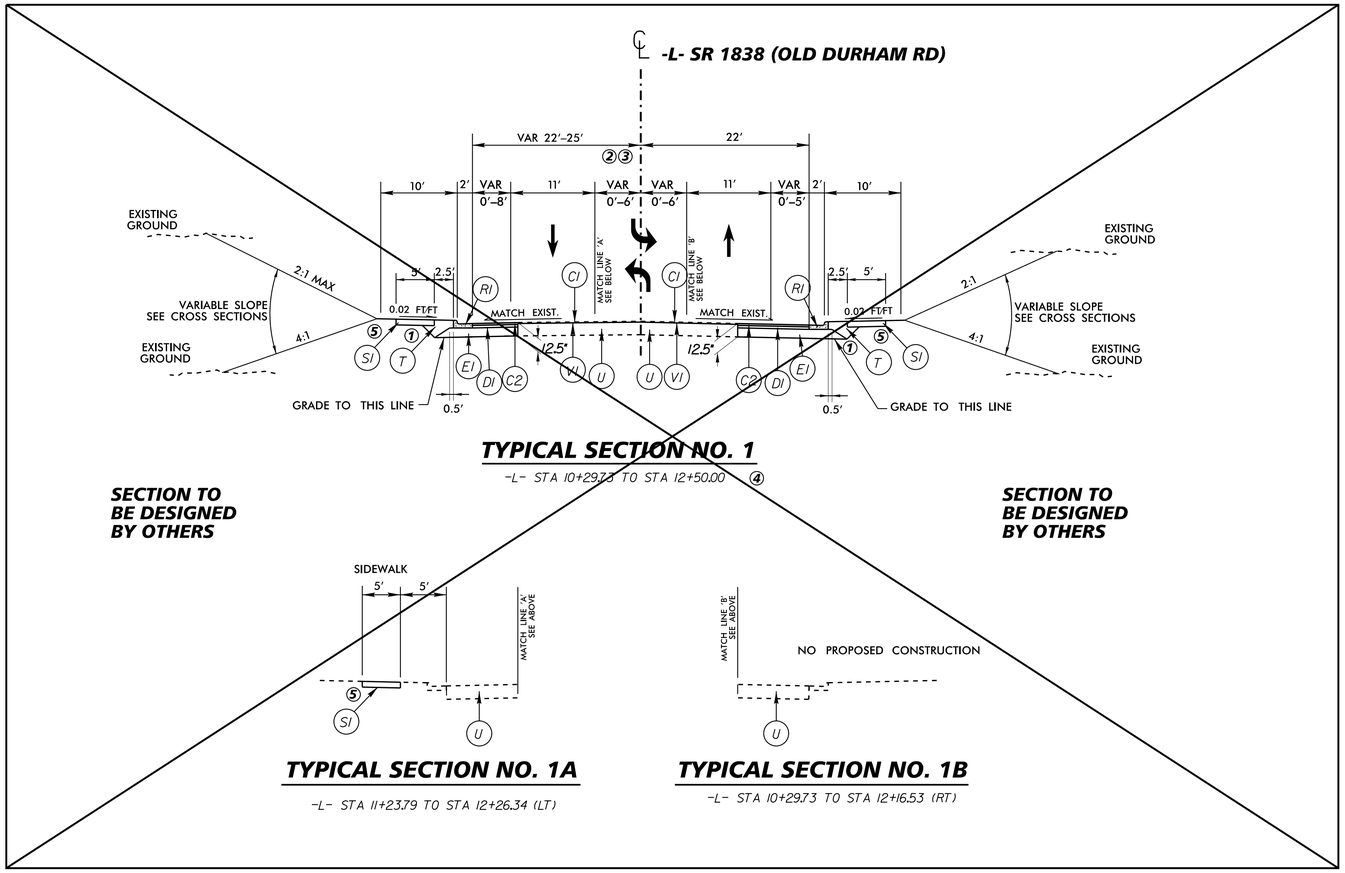
Y11

TYPE	STATION	NORTH	EAST
POT	10+00.00	799000.7658	2000324.8664
POT	12+10.63	798796.6643	2000376.9117

▼ *INDICATES CONTROL REBAR WITH CAP USED OR SET FOR HORIZONTAL PROJECT BY CH ENGINEERING.*

PROJECT CONTROL ESTABLISHED USING NGS ONLINE USER POSITIONING SYSTEM (OPUS)

DRAWING NOT TO SCALE



TYPICAL SECTION NO. 1

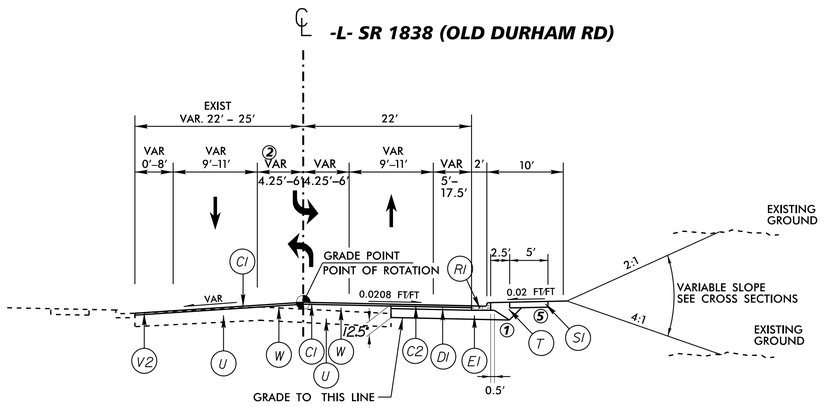
-L- STA 10+29.73 TO STA 12+50.00 ④

TYPICAL SECTION NO. 1A

-L- STA 11+23.79 TO STA 12+26.34 (LT)

TYPICAL SECTION NO. 1B

-L- STA 10+29.73 TO STA 12+16.53 (RT)



TYPICAL SECTION NO. 2

-L- STA 12+50.00 TO STA 18+50.00

Kimley»Horn

P.O. BOX 33068
RALEIGH, N.C. 27636–3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2A-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

DocuSigned by: Erin Thompson 2/1/2019

PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

1. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED
2. SEE PLANS FOR SPECIFIC TURN LANE AND TAPER LOCATION
3. SEE PLANS FOR SPECIFIC ISLAND LOCATIONS AND TYPE
4. SEE MATCH LINE SECTIONS FOR EXCEPTIONS TO STATION LIMITS
5. SIDEWALK AND MULTI-USE PATH LOCATIONS WILL VARY. STANDARD SIDEWALK OFFSET SHALL BE 2.5' FROM BACK OF CURB UNLESS OTHERWISE SHOWN IN THE PLAN SHEETS.

PAVEMENT SCHEDULE

CI	PROPOSED APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROPOSED VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
DI	PROPOSED APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROPOSED VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
EI	PROPOSED APPROX. 5.5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROPOSED VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
JI	10" AGGREGATE BASE COURSE
J2	4" AGGREGATE BASE COURSE
J3	8" AGGREGATE BASE COURSE
P	PRIME COAT (AT A RATE OF 0.35 GAL/SY)
RI	PROPOSED 2'-6" CONCRETE CURB & GUTTER
R2	PROPOSED 5" MONOLITHIC CONCRETE ISLAND
SI	PROPOSED 4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
VI	MILLING ASPHALT PAVEMENT, 1.5" DEPTH
V2	MILLING ASPHALT PAVEMENT, 0" TO 1.5" DEPTH (SEE DETAIL W4, SHEET 2A-7)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL W2, SHEET 2A-6)

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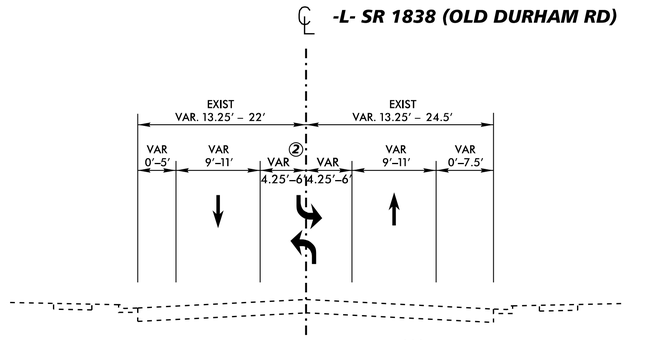
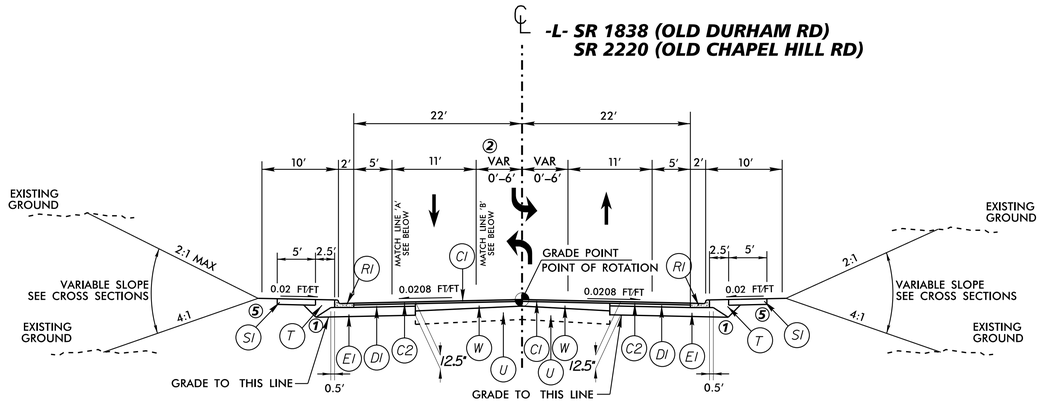
2/1/2019



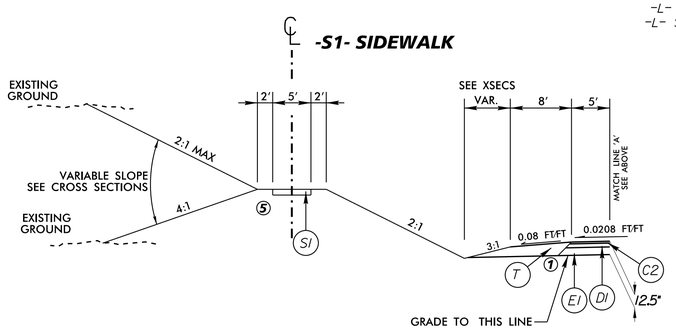
TYPICAL SECTION NO. 3

-L- STA 18+50.00 TO STA 21+86.00



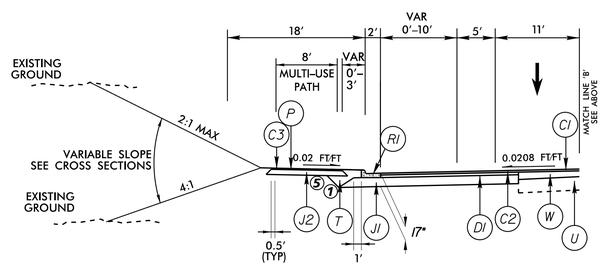
TYPICAL SECTION NO. 4

-L- STA 21+86.00 TO STA 26+16.17
-L- STA 40+50.00 TO STA 46+00.00 ④



TYPICAL SECTION NO. 4A

-L- STA 42+97.64 (LT) TO STA 46+00.00 (LT)



TYPICAL SECTION NO. 4B

-L- STA 40+50.00 (LT) TO STA 42+86.56 (LT)

NOTES:

1. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED
2. SEE PLANS FOR SPECIFIC TURN LANE AND TAPER LOCATION
3. SEE PLANS FOR SPECIFIC ISLAND LOCATIONS AND TYPE
4. SEE MATCH LINE SECTIONS FOR EXCEPTIONS TO STATION LIMITS
5. SIDEWALK AND MULTI-USE PATH LOCATIONS WILL VARY. STANDARD SIDEWALK OFFSET SHALL BE 2.5' FROM BACK OF CURB UNLESS OTHERWISE SHOWN IN THE PLAN SHEETS.

PAVEMENT SCHEDULE

C1	PROPOSED APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.
C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.IN EACH OF TWO LAYERS.
C3	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ.YD.IN EACH OF TWO LAYERS.
C4	PROPOSED VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ.YD.PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROPOSED APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ.YD.
D2	PROPOSED VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ.YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
E1	PROPOSED APPROX. 5.5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ.YD.
E2	PROPOSED VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ.YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
J1	10" AGGREGATE BASE COURSE
J2	4" AGGREGATE BASE COURSE
J3	8" AGGREGATE BASE COURSE
P	PRIME COAT (AT A RATE OF 0.35 GAL/SY)
R1	PROPOSED 2'-6" CONCRETE CURB & GUTTER
R2	PROPOSED 5" MONOLITHIC CONCRETE ISLAND
S1	PROPOSED 4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING ASPHALT PAVEMENT, 1.5" DEPTH
V2	MILLING ASPHALT PAVEMENT, 0" TO 1.5" DEPTH (SEE DETAIL W4, SHEET 2A-7)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL W2, SHEET 2A-6)

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636–3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2A-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

DocuSigned by: Erin Thompson 2/4/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT DESIGN ENGINEER

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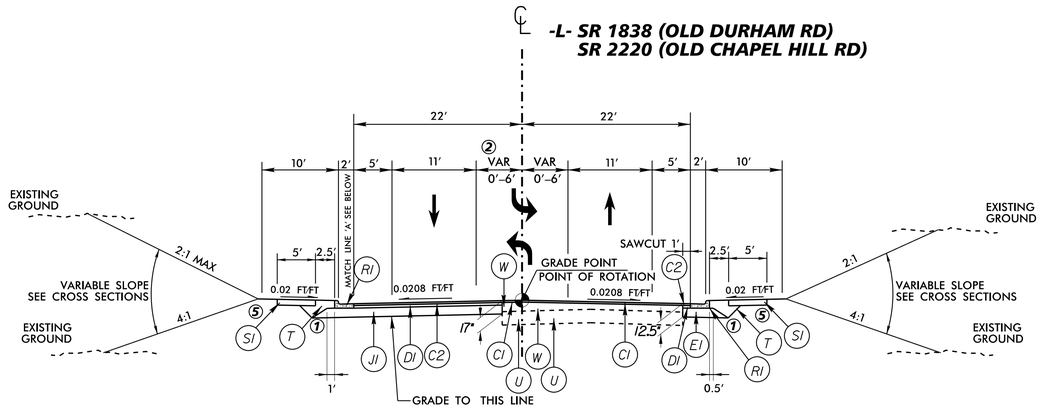
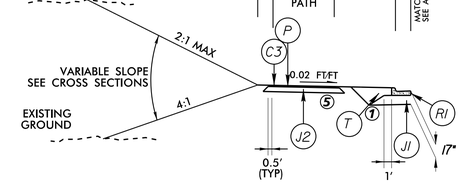
2/1/2019



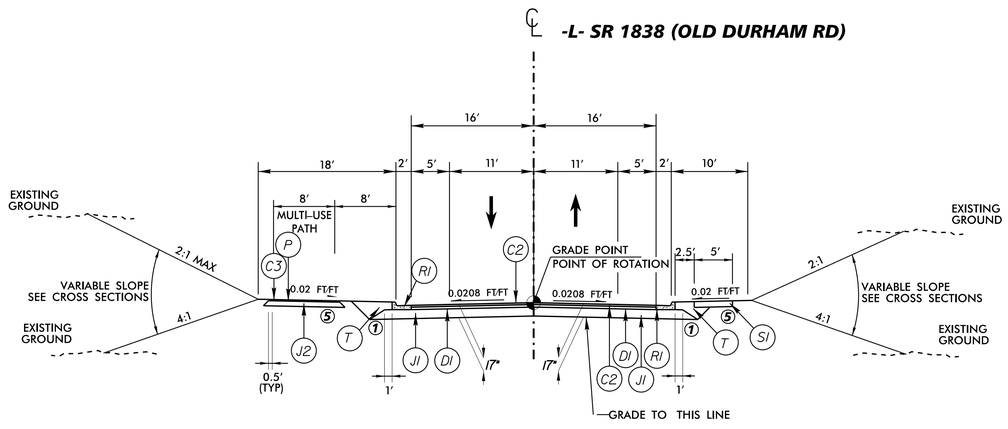
TYPICAL SECTION NO. 5

-L- STA 26+16.17 TO STA 32+00.00 ④
-L- STA 34+00.00 TO STA 40+50.00 ④



TYPICAL SECTION NO. 5A

-L- STA 27+50.00 (LT) TO STA 32+00.00 (LT)
-L- STA 34+00.00 (LT) TO STA 40+50.00 (LT)



TYPICAL SECTION NO. 6

-L- STA 32+00.00 TO STA 34+00.00

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2A-3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

DocuSigned by: Erin Thompson 2/4/2019

PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

1. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED
2. SEE PLANS FOR SPECIFIC TURN LANE AND TAPER LOCATION
3. SEE PLANS FOR SPECIFIC ISLAND LOCATIONS AND TYPE
4. SEE MATCH LINE SECTIONS FOR EXCEPTIONS TO STATION LIMITS
5. SIDEWALK AND MULTI-USE PATH LOCATIONS WILL VARY. STANDARD SIDEWALK OFFSET SHALL BE 2.5' FROM BACK OF CURB UNLESS OTHERWISE SHOWN IN THE PLAN SHEETS.

PAVEMENT SCHEDULE

C1	PROPOSED APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROPOSED VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
DI	PROPOSED APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROPOSED VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
EI	PROPOSED APPROX. 5.5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROPOSED VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
JI	10" AGGREGATE BASE COURSE
J2	4" AGGREGATE BASE COURSE
J3	8" AGGREGATE BASE COURSE
P	PRIME COAT (AT A RATE OF 0.35 GAL/SY)
RI	PROPOSED 2'-6" CONCRETE CURB & GUTTER
R2	PROPOSED 5" MONOLITHIC CONCRETE ISLAND
SI	PROPOSED 4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
VI	MILLING ASPHALT PAVEMENT, 1.5" DEPTH
V2	MILLING ASPHALT PAVEMENT, 0" TO 1.5" DEPTH (SEE DETAIL W4, SHEET 2A-7)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL W2, SHEET 2A-6)

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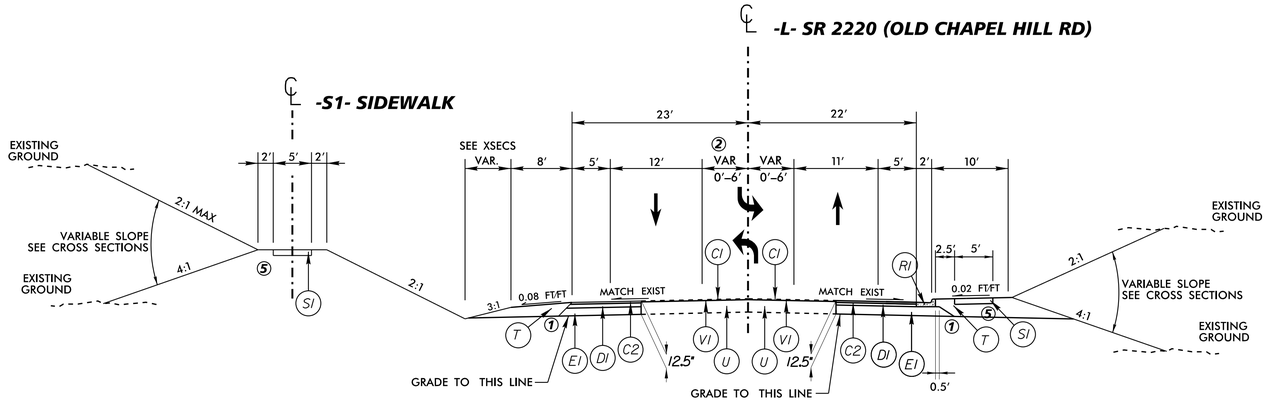
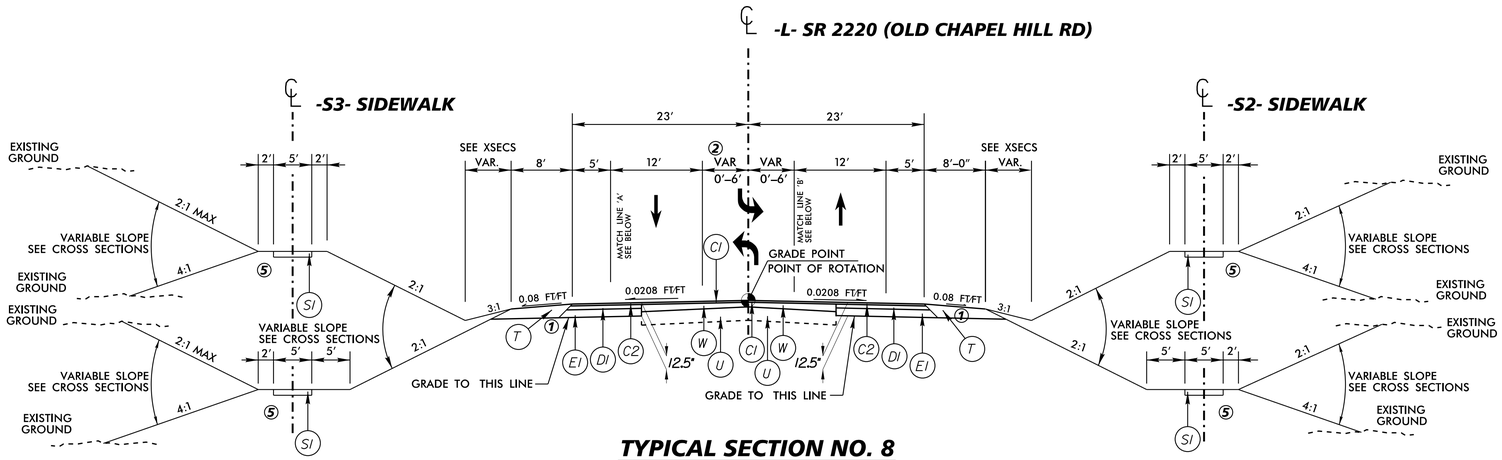
2/1/2019



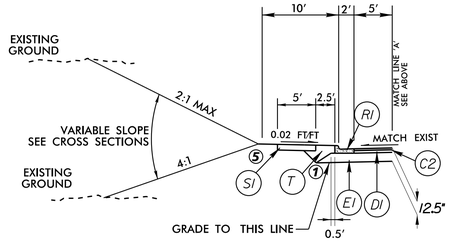
TYPICAL SECTION NO. 7

-L- STA 46+00.00 TO STA 47+51.39



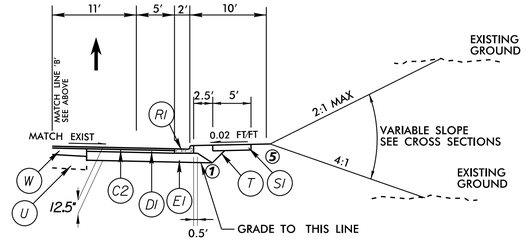
TYPICAL SECTION NO. 8

-L- STA 47+51.39 TO STA 58+60.00 ④



TYPICAL SECTION NO. 8A

-L- STA 52+02.90 (LT) TO STA 54+17.02 (LT)



TYPICAL SECTION NO. 8B

-L- STA 47+51.39 (RT) TO STA 52+00.77 (RT)

Kimley»Horn

P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2A-4

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

DocuSigned by: Erin Thompson 4/2019

SIGNATURE DATE

PAVEMENT DESIGN ENGINEER

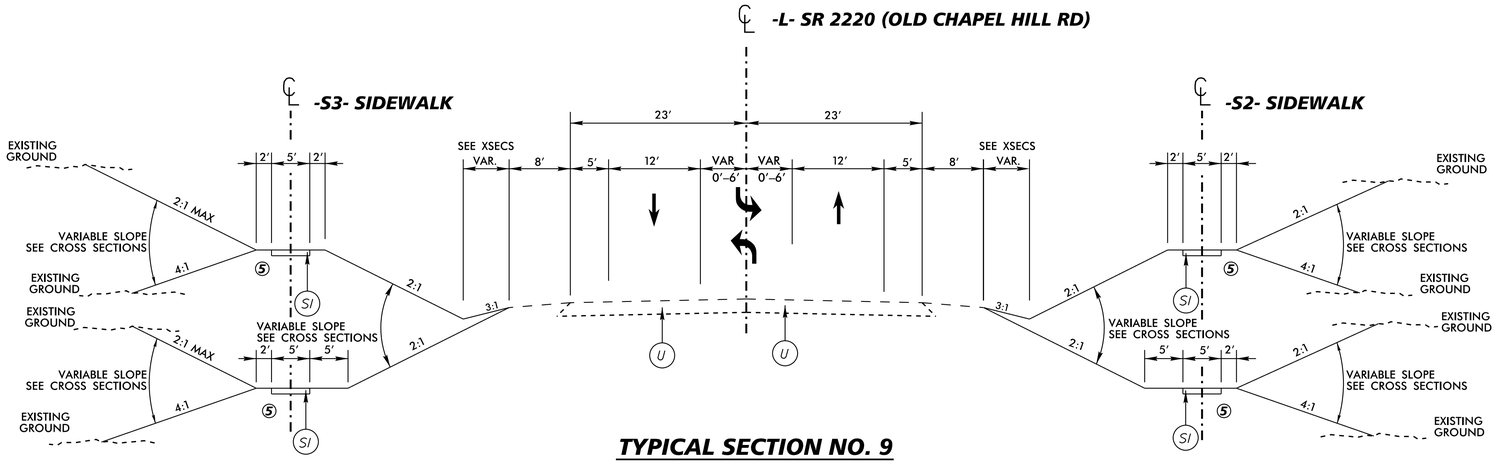
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

1. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED
2. SEE PLANS FOR SPECIFIC TURN LANE AND TAPER LOCATION
3. SEE PLANS FOR SPECIFIC ISLAND LOCATIONS AND TYPE
4. SEE MATCH LINE SECTIONS FOR EXCEPTIONS TO STATION LIMITS
5. SIDEWALK AND MULTI-USE PATH LOCATIONS WILL VARY. STANDARD SIDEWALK OFFSET SHALL BE 2.5' FROM BACK OF CURB UNLESS OTHERWISE SHOWN IN THE PLAN SHEETS.

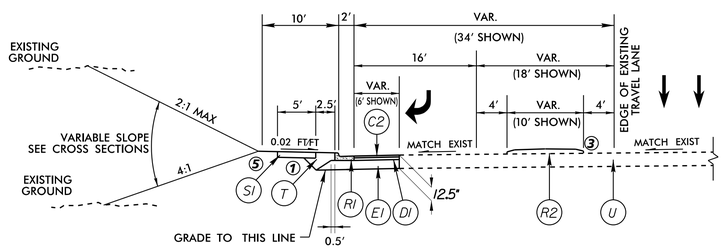
PAVEMENT SCHEDULE

C1	PROPOSED APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.
C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.IN EACH OF TWO LAYERS.
C3	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ.YD.IN EACH OF TWO LAYERS.
C4	PROPOSED VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ.YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROPOSED APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ.YD.
D2	PROPOSED VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ.YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
E1	PROPOSED APPROX. 5.5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ.YD.
E2	PROPOSED VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ.YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
J1	10" AGGREGATE BASE COURSE
J2	4" AGGREGATE BASE COURSE
J3	8" AGGREGATE BASE COURSE
P	PRIME COAT (AT A RATE OF 0.35 GAL/SY)
R1	PROPOSED 2'-6" CONCRETE CURB & GUTTER
R2	PROPOSED 5" MONOLITHIC CONCRETE ISLAND
S1	PROPOSED 4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING ASPHALT PAVEMENT, 1.5" DEPTH
V2	MILLING ASPHALT PAVEMENT, 0" TO 1.5" DEPTH (SEE DETAIL W4, SHEET 2A-7)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL W2, SHEET 2A-6)



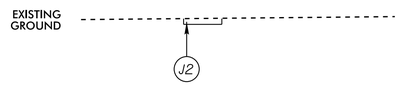
TYPICAL SECTION NO. 9

-S3- STA 58+60.00 TO STA 61+03.25
-S2- STA 58+60.00 TO STA 60+76.71



TYPICAL SECTION NO. 10

-Y2- STA 14+15.16 TO STA 15+05.20



TYPICAL SECTION NO. 11

-L- STA 23+00.0 TO STA 43+00.00 TMP
(OR AS SHOWN IN TMP PHASE I PLANS)

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P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2A-5

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON DocuSigned by: Erin Thompson 2/1/2019 STATE OF NORTH CAROLINA	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

1. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED
2. SEE PLANS FOR SPECIFIC TURN LANE AND TAPER LOCATION
3. SEE PLANS FOR SPECIFIC ISLAND LOCATIONS AND TYPE
4. SEE MATCH LINE SECTIONS FOR EXCEPTIONS TO STATION LIMITS
5. SIDEWALK AND MULTI-USE PATH LOCATIONS WILL VARY. STANDARD SIDEWALK OFFSET SHALL BE 2.5' FROM BACK OF CURB UNLESS OTHERWISE SHOWN IN THE PLAN SHEETS.

PAVEMENT SCHEDULE

C1	PROPOSED APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROPOSED VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROPOSED APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROPOSED VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
E1	PROPOSED APPROX. 5.5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROPOSED VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
J1	10" AGGREGATE BASE COURSE
J2	4" AGGREGATE BASE COURSE
J3	8" AGGREGATE BASE COURSE
P	PRIME COAT (AT A RATE OF 0.35 GAL/SY)
R1	PROPOSED 2'-6" CONCRETE CURB & GUTTER
R2	PROPOSED 5" MONOLITHIC CONCRETE ISLAND
SI	PROPOSED 4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING ASPHALT PAVEMENT, 1.5" DEPTH
V2	MILLING ASPHALT PAVEMENT, 0" TO 1.5" DEPTH (SEE DETAIL W4, SHEET 2A-7)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL W2, SHEET 2A-6)

2/1/2019 K:\RAL_Roadway\011036290 - EB-4707 Part A\Plan\Plan Sheets\EB-4707_rdy_TYP.dgn

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2A-6
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON
DocuSigned by: Erin Thompson ...4/2019

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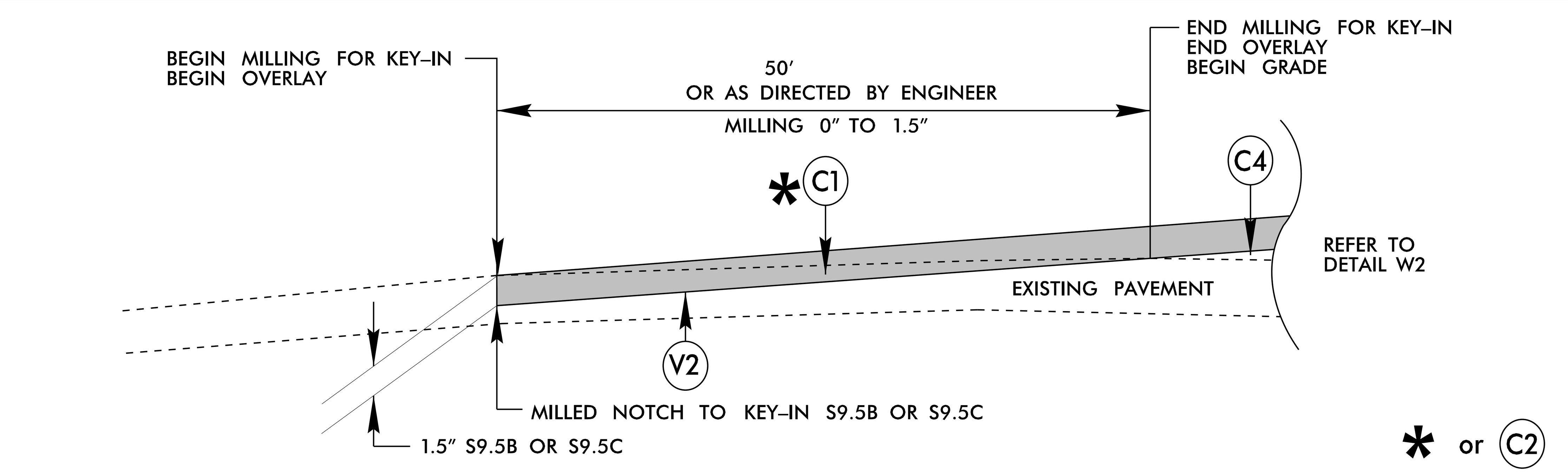
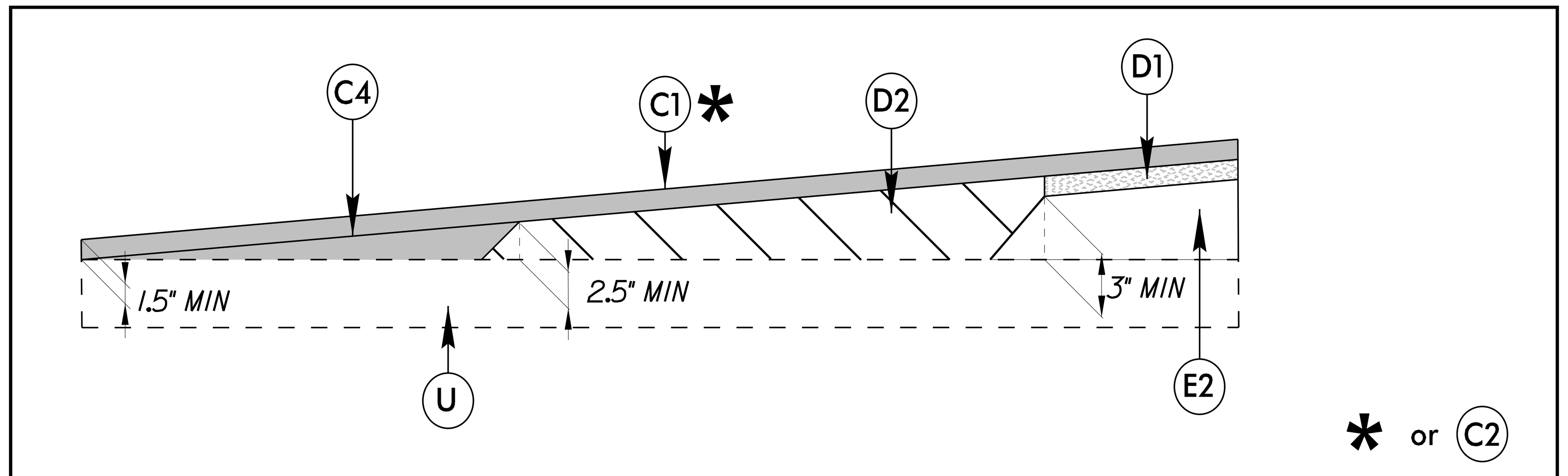
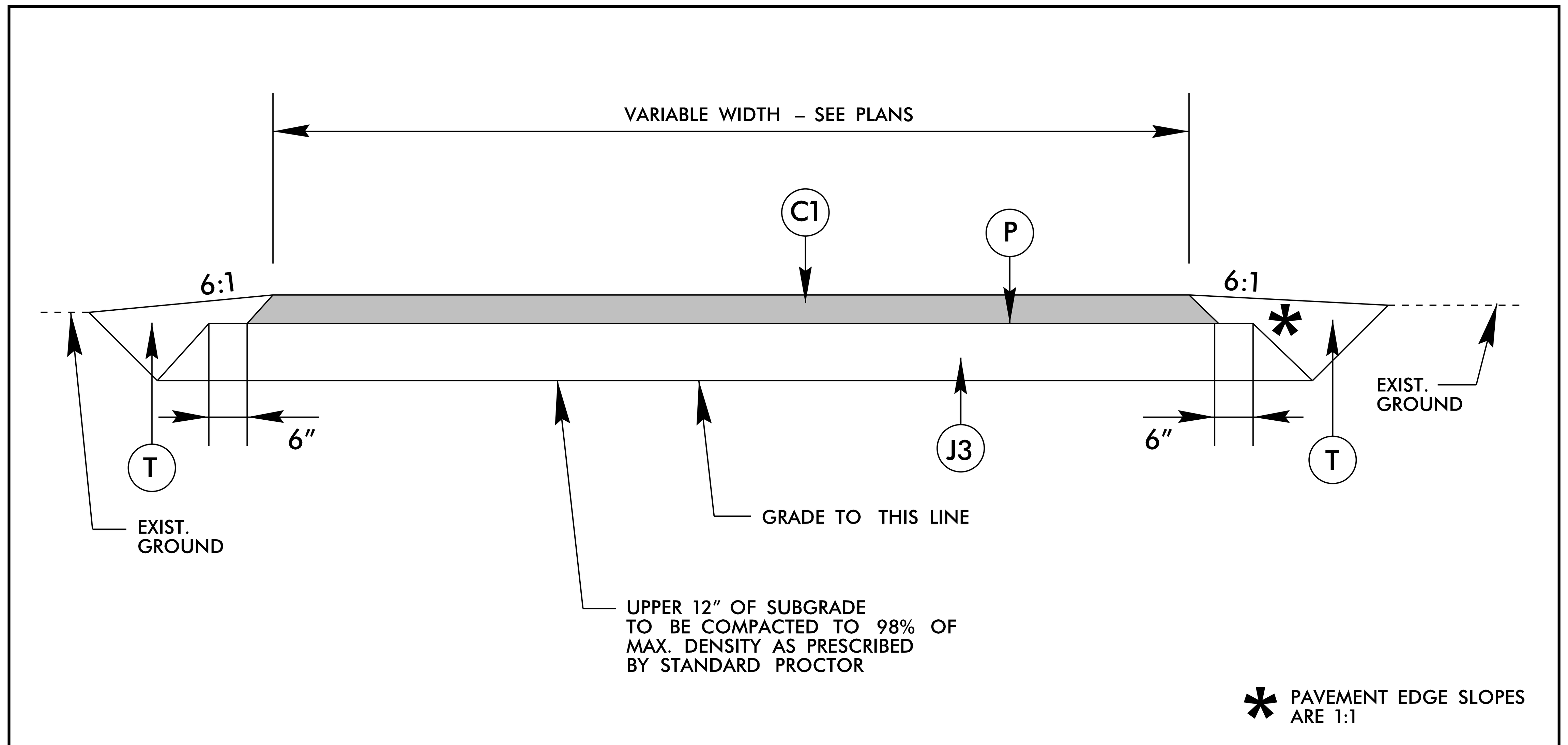


DETAIL W1 - INCIDENTAL MILLING (FOR KEY-IN AT PROJECT TERMINI)



DETAIL W2 - METHOD OF WEDGING



DETAIL W3 - STANDARD ASPHALT DRIVE

PAVEMENT SCHEDULE

C1	PROPOSED APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.
C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.IN EACH OF TWO LAYERS.
C3	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ.YD.IN EACH OF TWO LAYERS.
C4	PROPOSED VAR.DEPTH ASPHALT CONCRETE SURFACE COURSE,TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ.YD.PER 1" DEPTH.TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROPOSED APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ.YD.
D2	PROPOSED VAR.DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE,TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS.PER SQ.YD.PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
E1	PROPOSED APPROX. 5.5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ.YD.
E2	PROPOSED VAR.DEPTH ASPHALT CONCRETE BASE COURSE,TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS.PER SQ.YD.PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
J1	10" AGGREGATE BASE COURSE
J2	4" AGGREGATE BASE COURSE
J3	8" AGGREGATE BASE COURSE
P	PRIME COAT (AT A RATE OF 0.35 GAL/SY)
R1	PROPOSED 2'-6" CONCRETE CURB & GUTTER
R2	PROPOSED 5" MONOLITHIC CONCRETE ISLAND
S1	PROPOSED 4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING ASPHALT PAVEMENT, 1.5" DEPTH
V2	MILLING ASPHALT PAVEMENT, 0" TO 1.5" DEPTH (SEE DETAIL W4, SHEET 2A-7)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL W2, SHEET 2A-6)

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2/1/2019

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2A-7

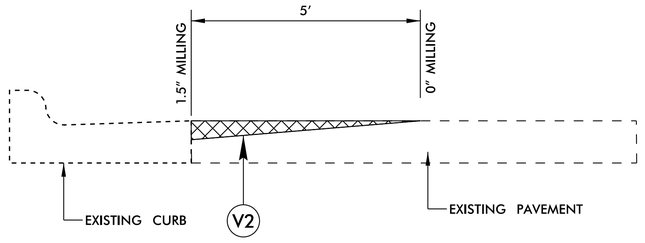
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

DocuSigned by: Erin Thompson 2/4/2019

PAVEMENT DESIGN ENGINEER

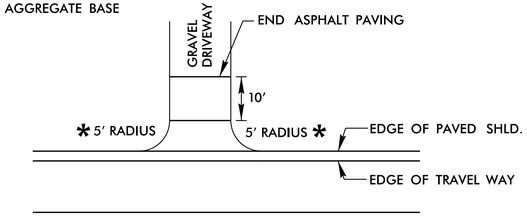
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



* SEE TYPICAL SECTIONS 2B (RT) AND 2B (LT) FOR STATION RANGES

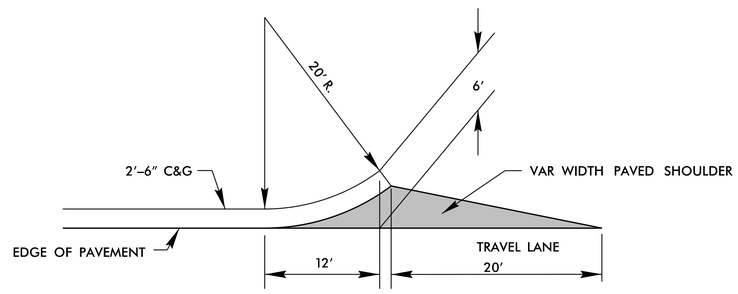
DETAIL W4 - INCIDENTAL MILLING ADJACENT TO EXISTING CURB

REBUILD ALL GRAVEL DRIVEWAYS USING 8" AGGREGATE BASE COURSE.



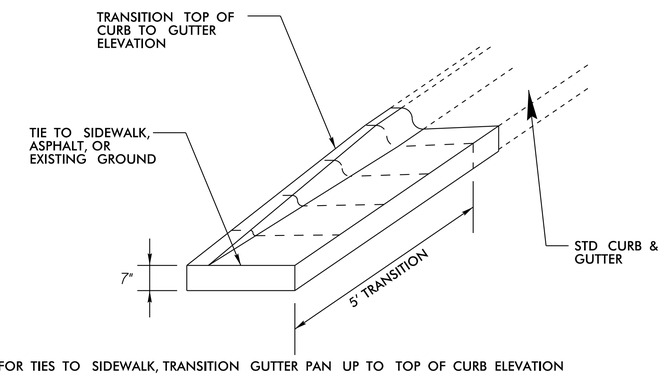
✻ OR AS SHOWN ON PLAN SHEETS

DETAIL W7 - TYPICAL DRIVEWAY TURNOUT



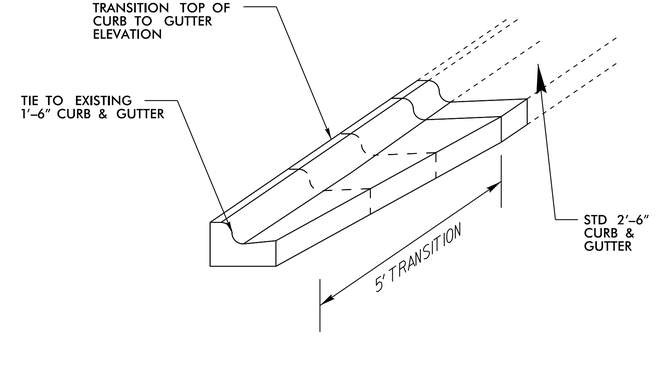
NOT TO SCALE

DETAIL W5 - STANDARD CURB & GUTTER FLARE



** FOR TIES TO SIDEWALK, TRANSITION GUTTER PAN UP TO TOP OF CURB ELEVATION

DETAIL W6 - CURB TRANSITION DETAIL



DETAIL W6 - CURB TRANSITION 2'-6" TO 2'-0" DETAIL

PAVEMENT SCHEDULE

C1	PROPOSED APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROPOSED VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROPOSED APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROPOSED VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
E1	PROPOSED APPROX. 5.5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROPOSED VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
J1	10" AGGREGATE BASE COURSE
J2	4" AGGREGATE BASE COURSE
J3	8" AGGREGATE BASE COURSE
P	PRIME COAT (AT A RATE OF 0.35 GAL/SY)
R1	PROPOSED 2'-6" CONCRETE CURB & GUTTER
R2	PROPOSED 5" MONOLITHIC CONCRETE ISLAND
S1	PROPOSED 4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING ASPHALT PAVEMENT, 1.5" DEPTH
V2	MILLING ASPHALT PAVEMENT, 0" TO 1.5" DEPTH (SEE DETAIL W4, SHEET 2A-7)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL W2, SHEET 2A-6)

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.
CONST. REV.

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

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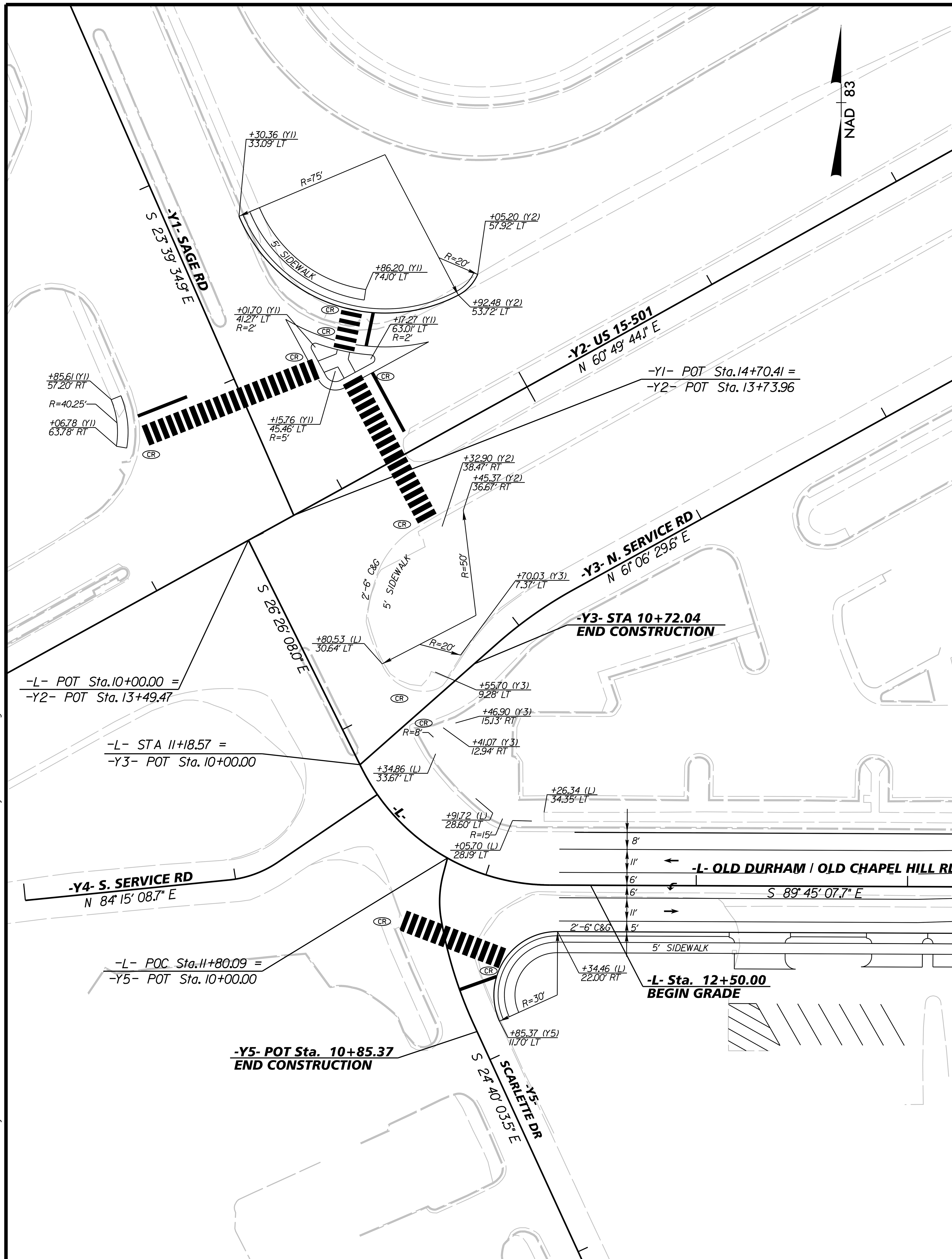
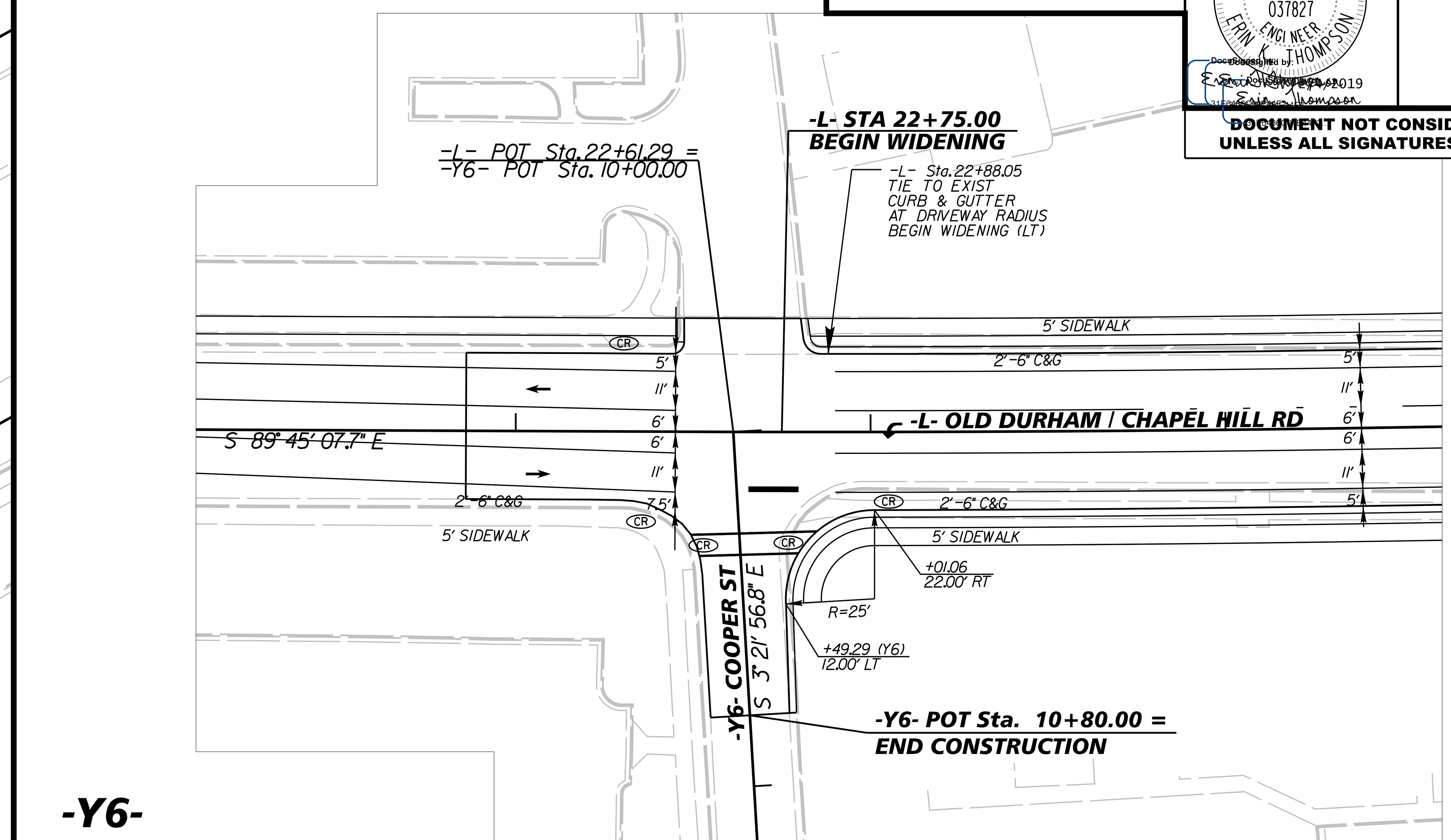
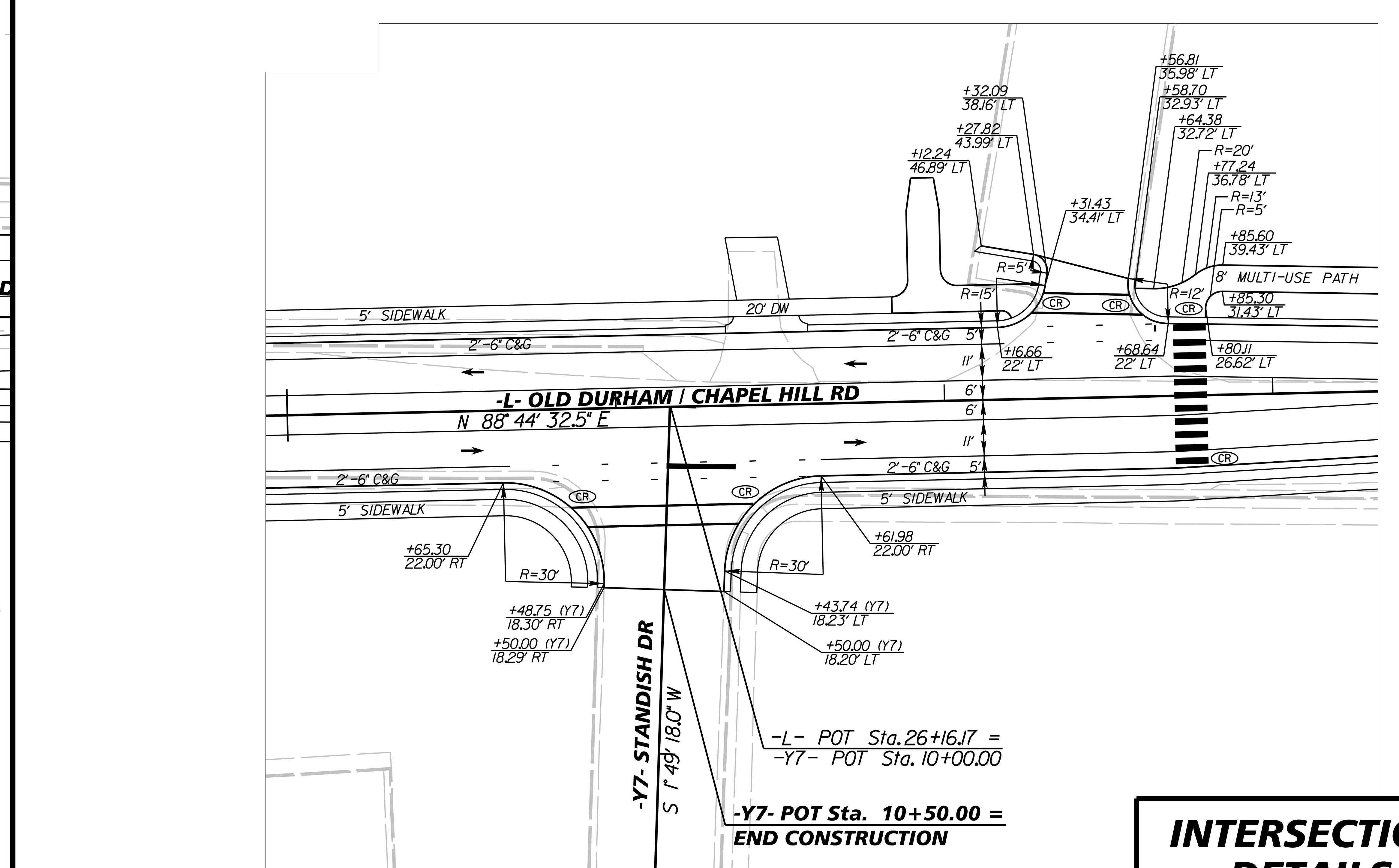

NAD 83
-Y1- SAGE RD
S 23° 39' 34.9" E
-Y2- US 15-501
N 60° 49' 44" E
-Y1- POT Sta.14+70.41 =
-Y2- POT Sta. 13+73.96
-Y3- N. SERVICE RD
N 61° 06' 29.6" E
-Y3- STA 10+72.04
END CONSTRUCTION
-L- POT Sta.10+00.00 =
-Y2- POT Sta. 13+49.47
S 26° 26' 08.0" E
-L- STA 11+18.57 =
-Y3- POT Sta. 10+00.00
-Y4- S. SERVICE RD
N 84° 15' 08.7" E
-L- OLD DURHAM / OLD CHAPEL HILL RD
S 89° 45' 07.7" E
-L- POC Sta.11+80.09 =
-Y5- POT Sta. 10+00.00
-L- Sta. 12+50.00
BEGIN GRADE
-Y5- POT Sta. 10+85.37
END CONSTRUCTION
-Y5- SCARLETTE DR
S 24° 40' 03.5" E
5' SIDEWALK
2'-6" C&G
R=75'
R=20'
R=40.25'
R=50'
R=30'
R=15'
R=8'
R=5'
R=2'

-Y1-/-Y3-/-Y5-
(SEE SHEET NO.4 FOR PLAN)


NAD 83
-L- POT Sta.22+61.29 =
-Y6- POT Sta. 10+00.00
-L- STA 22+75.00
BEGIN WIDENING
-L- Sta.22+88.05
TIE TO EXIST
CURB & GUTTER
AT DRIVEWAY RADIUS
BEGIN WIDENING (LT)
5' SIDEWALK
2'-6" C&G
-L- OLD DURHAM / CHAPEL HILL RD
S 89° 45' 07.7" E
-Y6- COOPER ST
S 3° 21' 56.8" E
R=25'
+01.06
22.00' RT
+49.29 (Y6)
12.00' LT
-Y6- POT Sta. 10+80.00 =
END CONSTRUCTION

-Y6-
(SEE SHEET NO.5 FOR PLAN)



-Y7-
(SEE SHEET NO.5 FOR PLAN)

INTERSECTION DETAILS

15 0 30

K:\RAL_Roadway\011036290 - EB-4707 Part A\Plan Sheets\EB-4707_rdy_Intersection01.dgn
2/1/2019

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RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2B-2
RW SHEET NO.	

RIGHT-OF-WAY REV.

CONST. REV.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

DocuSigned by: Erin Thompson 2/1/2019

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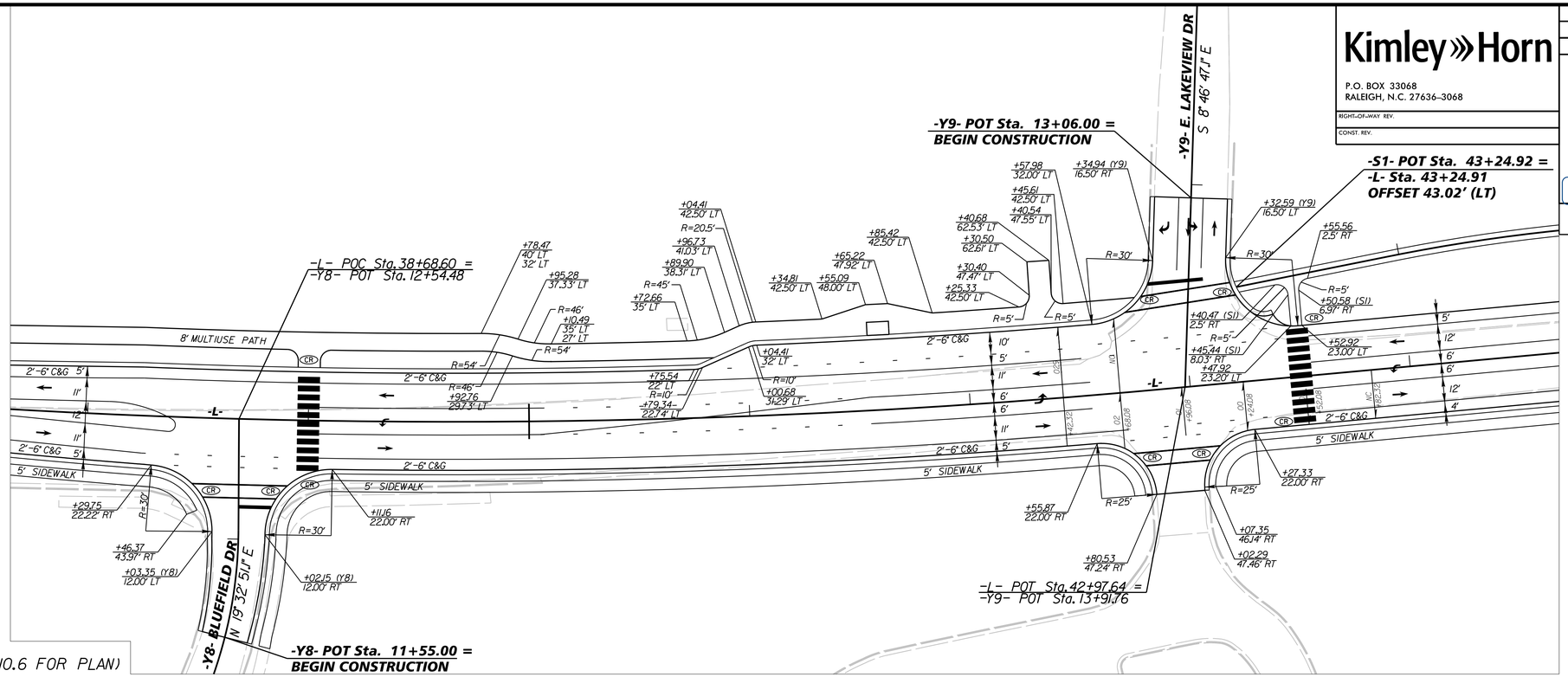
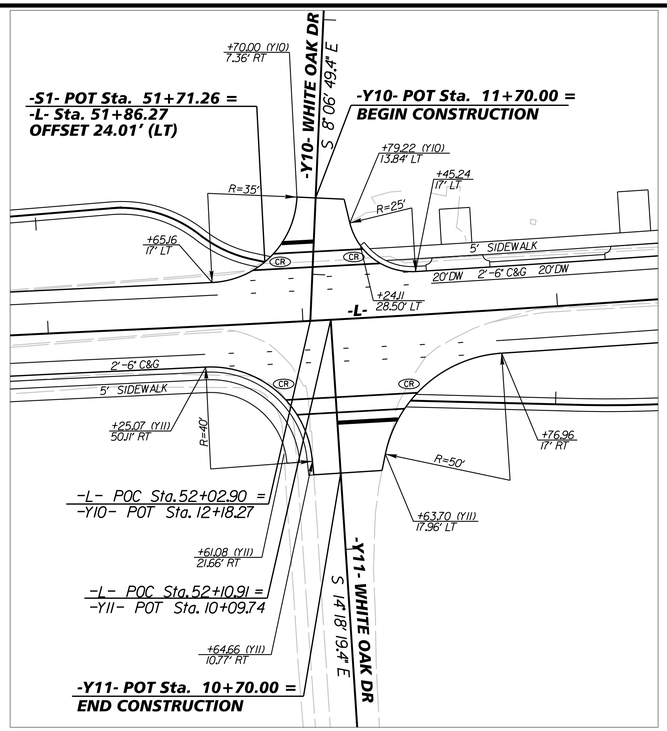


-Y8-/-Y9-
(SEE SHEET NO.6 FOR PLAN)



-Y10-/-Y11-
(SEE SHEET NO.7 FOR PLAN)

INTERSECTION DETAILS

15 0 30

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2/1/2019

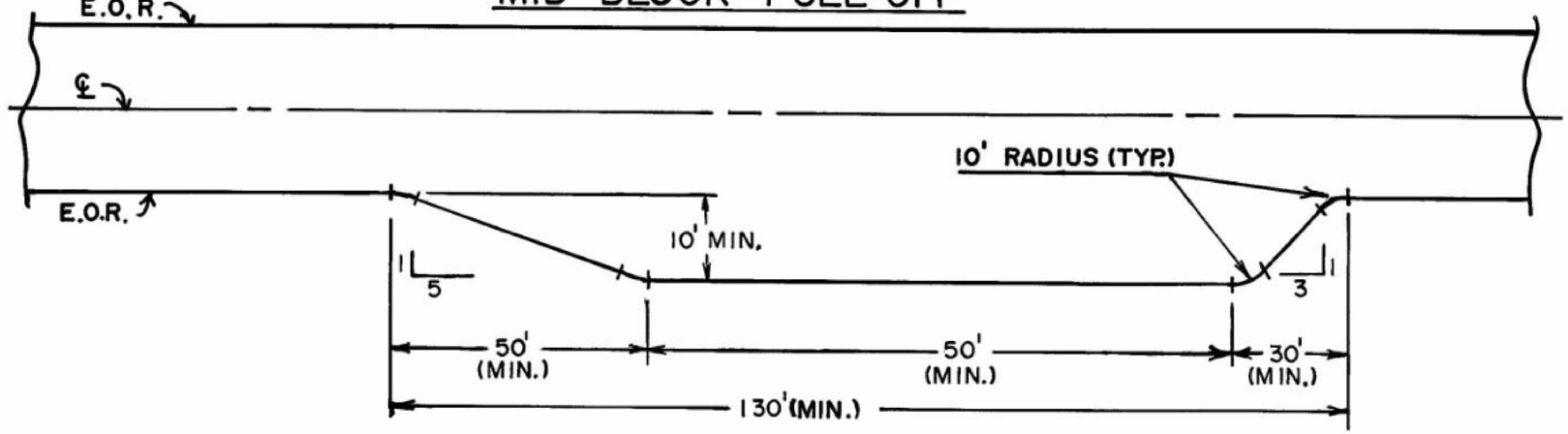
*** NOTE: THIS IS A TOWN OF CHAPEL HILL STANDARD DETAIL. IT IS UNDERSTOOD THAT THE ENGINEER'S SIGNATURE SHOWN RELATES TO THE USE OF THE TOWN STANDARD IN THESE PLANS. CURRENT TOWN OF CHAPEL HILL STANDARD DRAWINGS FOR BUS PULL-OFFS SHOULD BE USED FOR CONSTRUCTION.

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2B-3

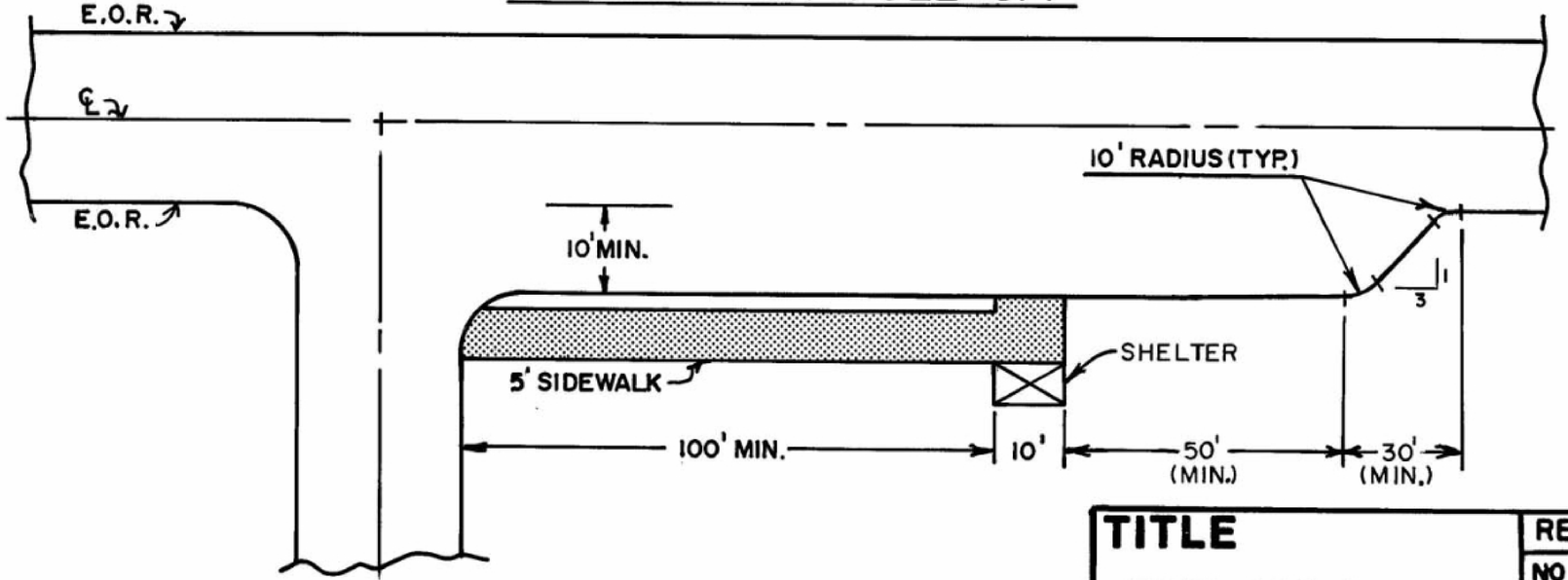
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN M. THOMPSON

DocuSigned by: Erin Thompson 31E6486C94E44F2... 2/4/2019

MID-BLOCK PULL-OFF



INTERSECTION PULL-OFF



NO SCALE

CHAPEL HILL 1793 1851 NORTH CAROLINA

ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE

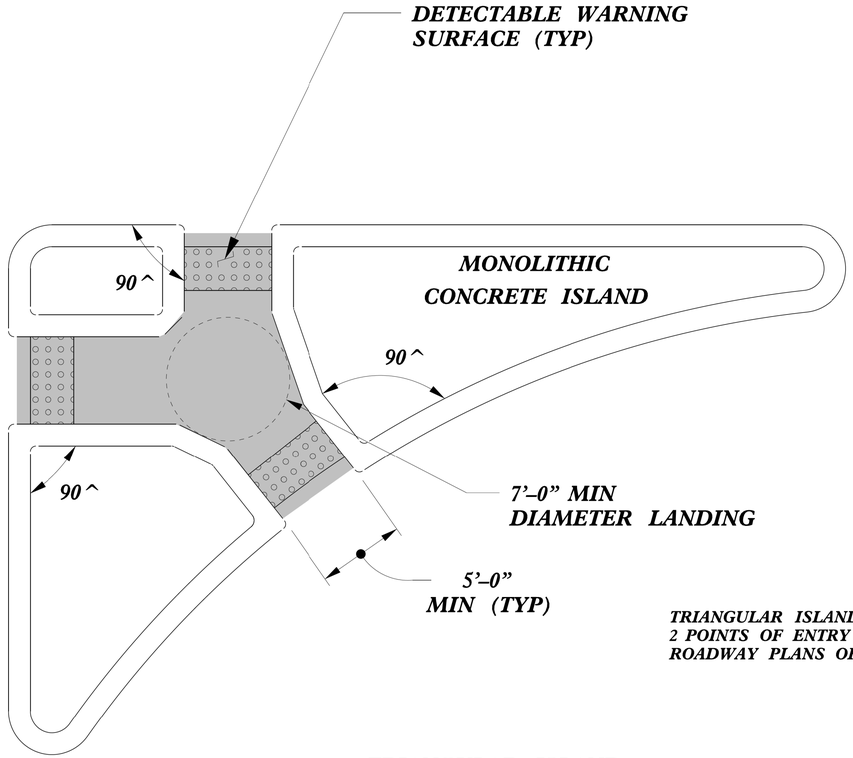
BUS PULL-OFFS

REVISIONS		
NO	DATE	BY

DET.NO.

ST-8

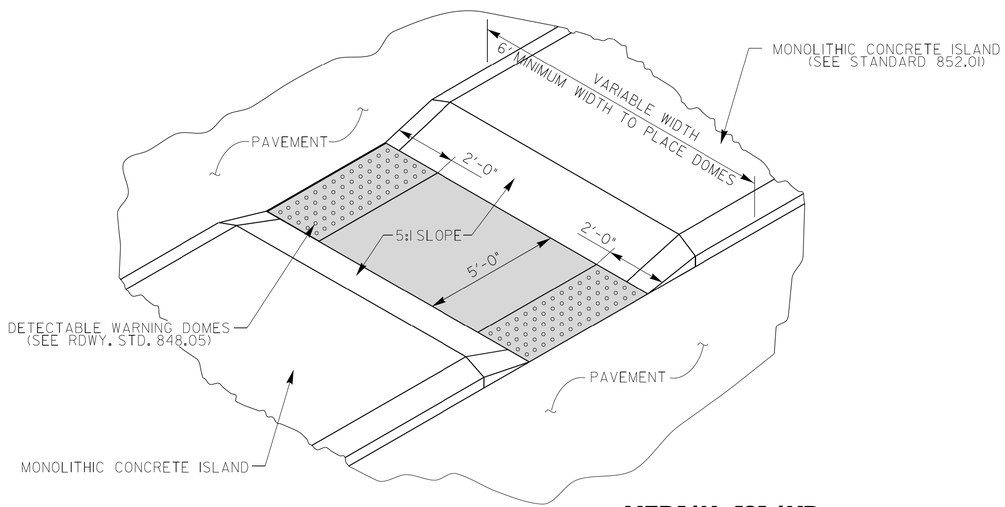
PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2C-1



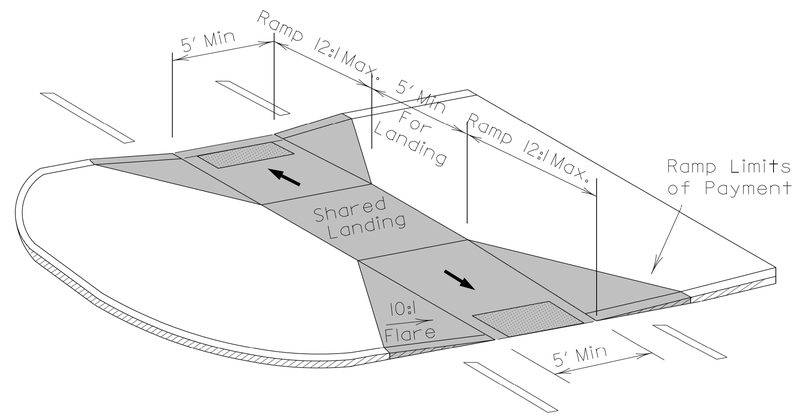
PAY LIMITS FOR 2 OR 3 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)

TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY 2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.

TRIANGULAR ISLAND WITH CUT THROUGH



MEDIAN ISLAND WITH CUT THROUGH



MEDIAN ISLAND CURB RAMPS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton
3/7/2019

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

CURB RAMPS

Median or Turn Lane Islands

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

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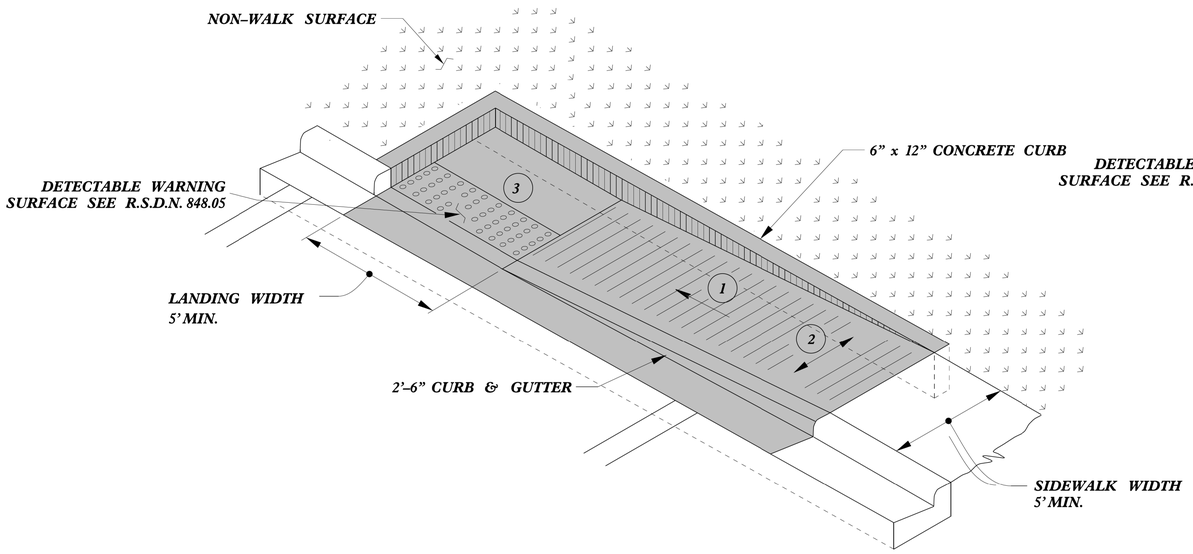
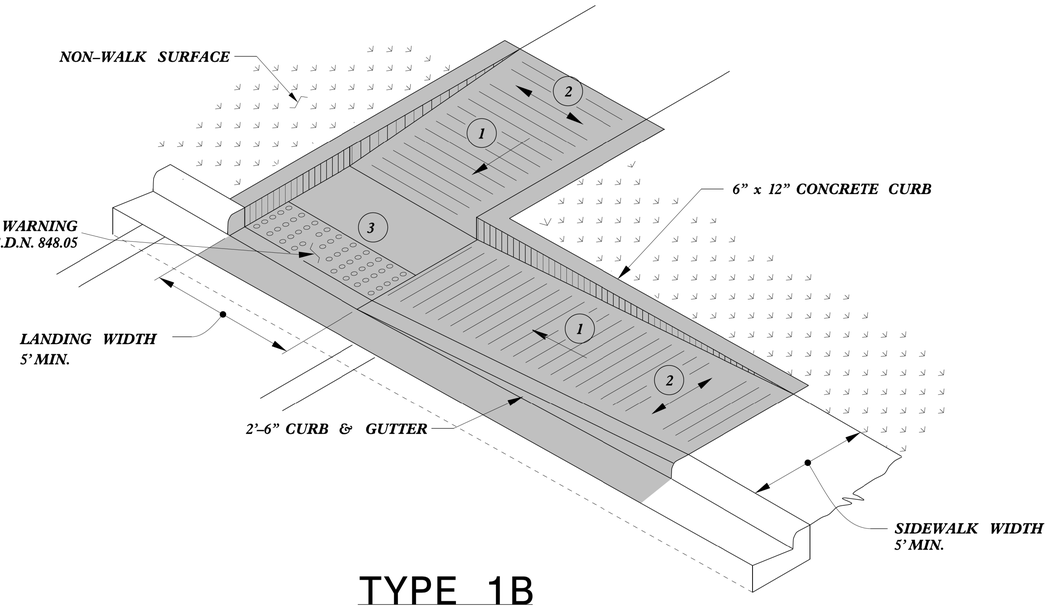
2/11/2019

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2C-2



TYPE 1A



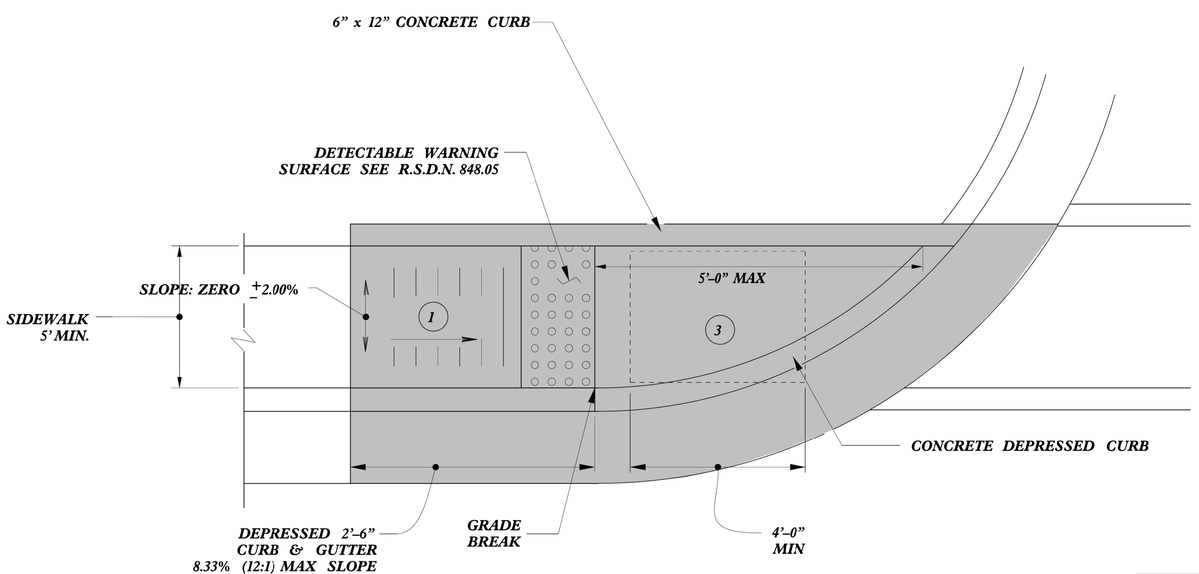
TYPE 1B

PAY LIMITS FOR 1 CURB RAMP

(1) *8.33% (12:1) MAX RAMP SLOPE*

(2) *CROSS SLOPE: 2.00%*

(3) *CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.*



TYPE 1

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton
Joel S. Howerton
873F3D17DCDC45F...
3/7/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

CURB RAMPS

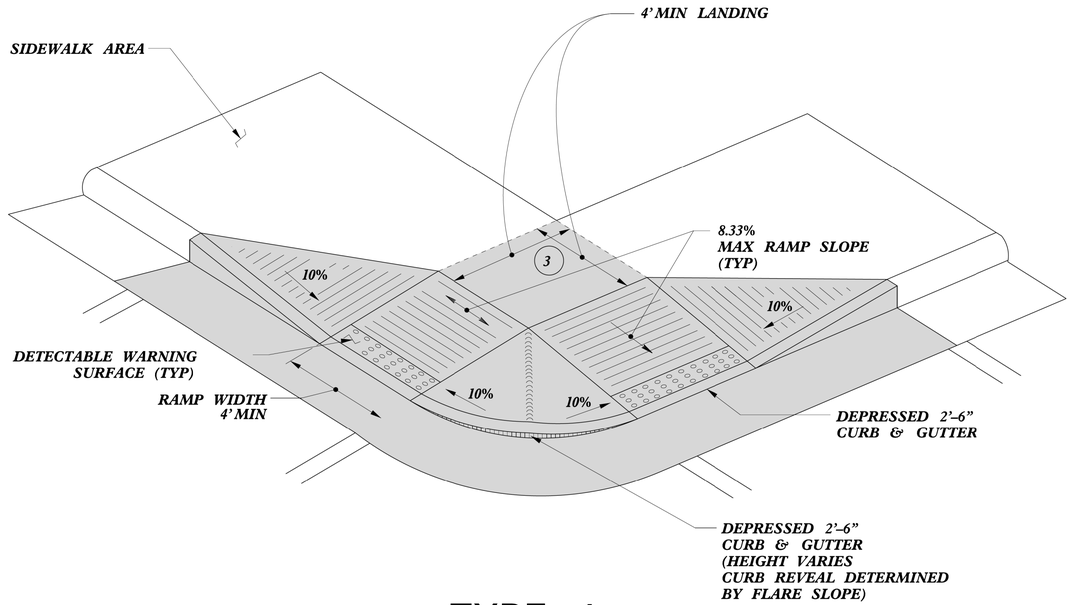
Directional Ramps

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

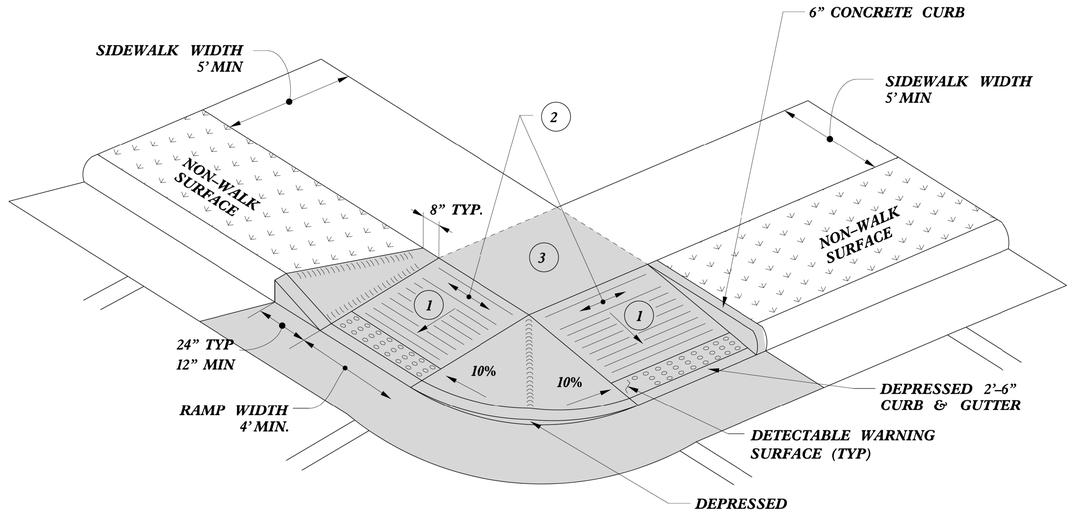
K:\RAL_Roadway\0110356290 - EB-4707 Part A\PlanPlan Sheets\EB-4707_rdy_Details2.dgn
2/11/2019

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2C-3

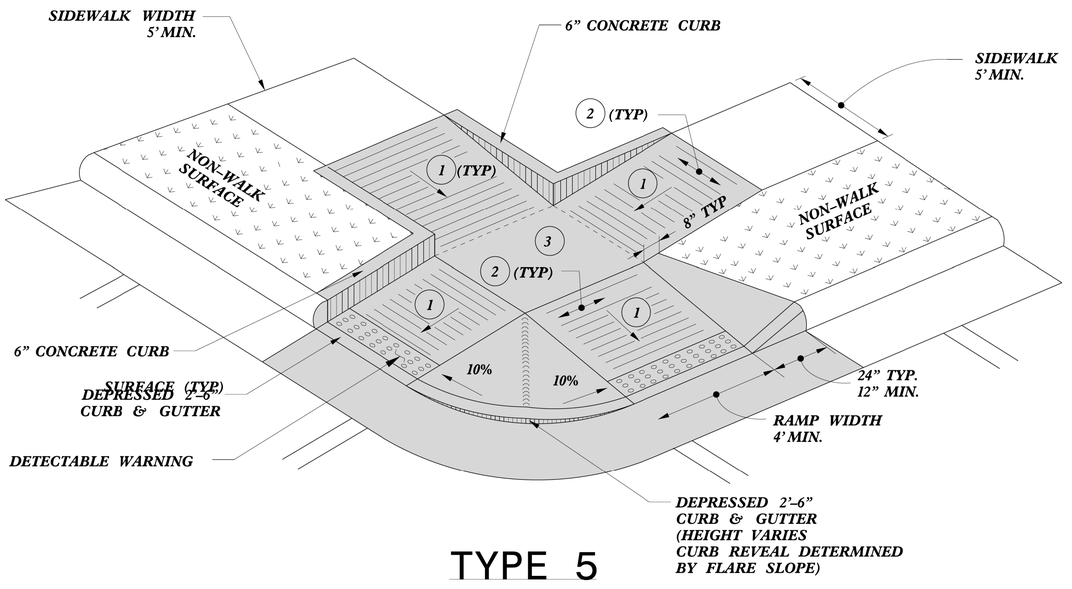
PAY LIMITS FOR 2 CURB RAMPS



TYPE 4



TYPE 4A



TYPE 5

1. 8.33% (12:1) MAX RAMP SLOPE
2. CROSS SLOPE: 2.00%
3. CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
Jeffrey Howerton
7/7/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

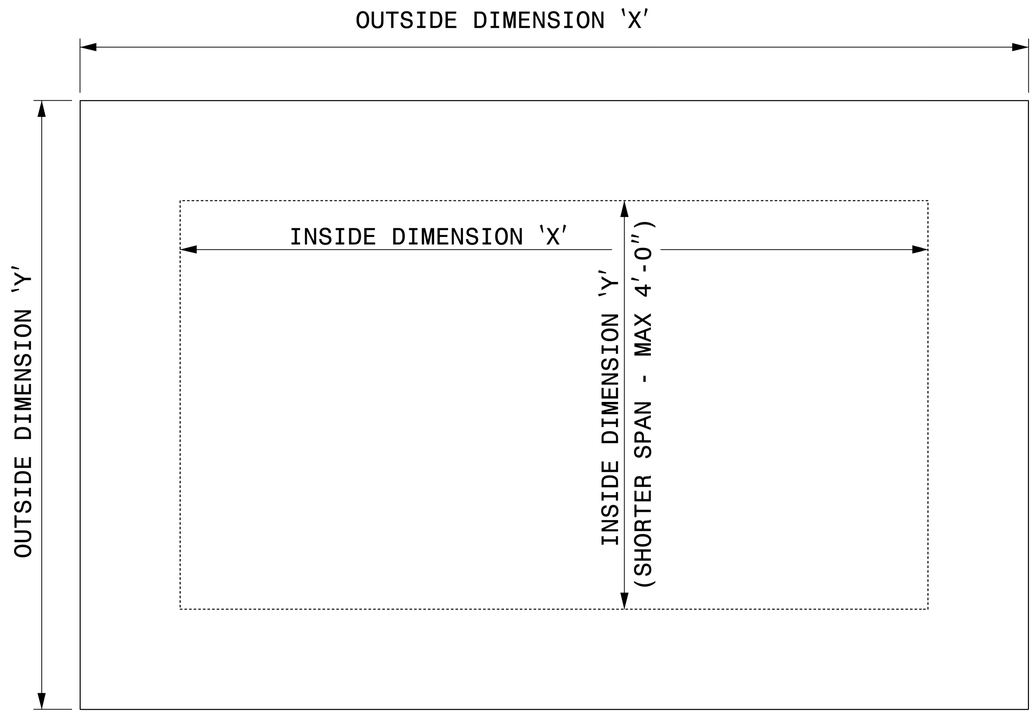
CURB RAMPS

Shared Landing

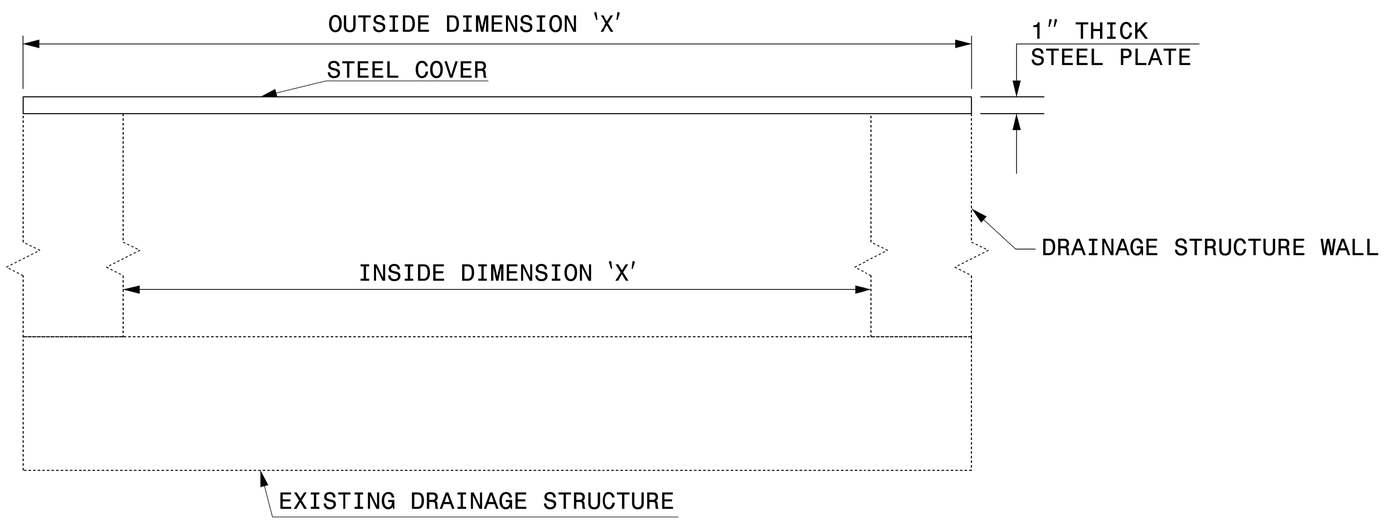
ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

K:\RAL_Roadway\0II036290 - EB-4707 Part A\Plan\Plan Sheets\EB-4707_rdy_Details2.dgn
2/1/2019

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2C-4



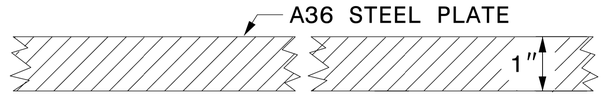
PLAN VIEWS



ELEVATION VIEWS

GENERAL NOTES:

-USE GRADE A36 STEEL
-STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
-FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
-SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
-QUANTITES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



SECTION VIEW OF STEEL TOP PLATE

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel Howerton
873F3D17DCDC45F...
3/7/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE

ORIGINAL BY: E.E. WARD DATE: 2-2-98
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: eric:/usr/details/metric/stand/stlcvr2.dgn

K:\RAL_Roadway\0I\0336290 - EB-4707 Part A\Plan\Plan Sheets\EB-4707_rdy_Details2.dgn
2/1/2019

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2C-5

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

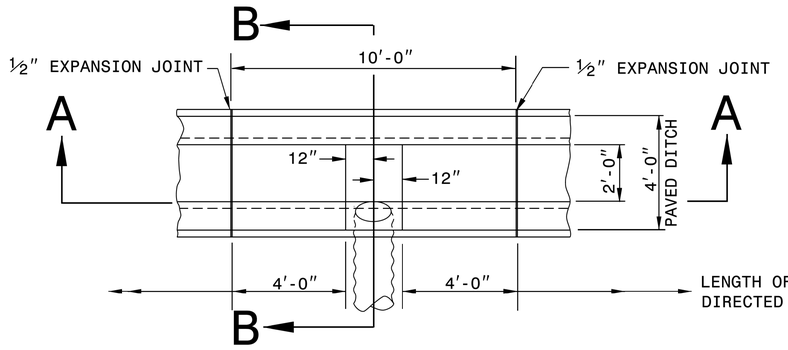
ROADWAY DETAIL DRAWING FOR

GUIDE FOR BERM DRAINAGE OUTLET

12" PIPE

SHEET 1 OF 1

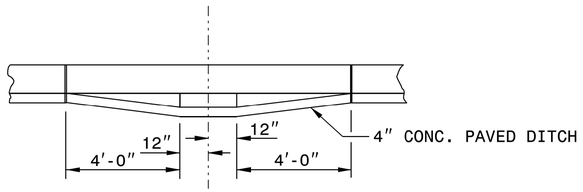
850D10



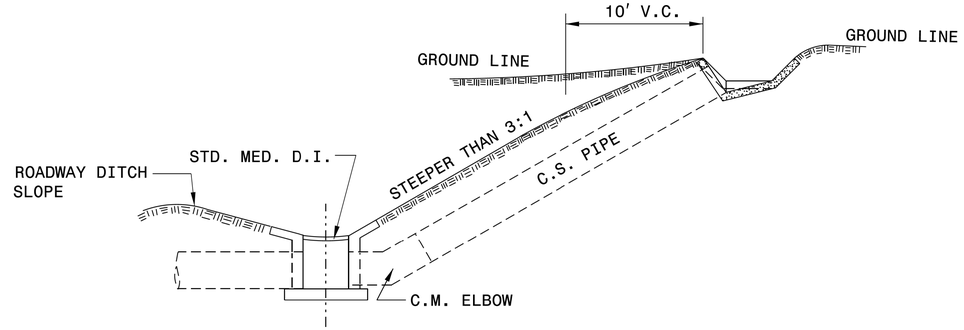
PLAN

GENERAL NOTES:

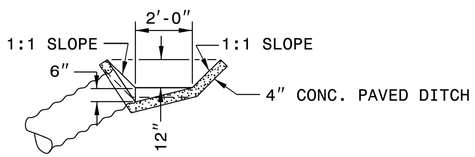
WHERE NECESSARY, ELBOWS MAY BE USED TO SKEW PIPE TO FIT INLETS WHERE THERE IS OFFSET BETWEEN THE INLET END AT BERM AND THE D.I.



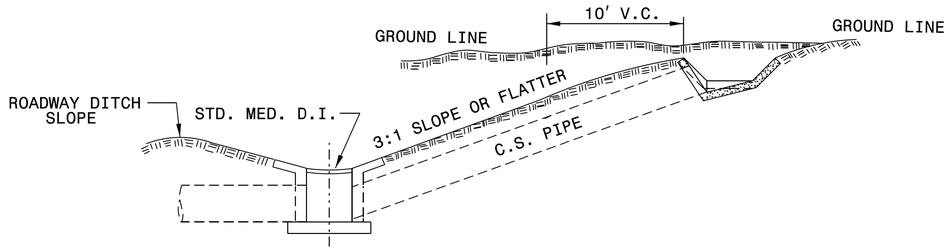
SECTION A-A



ELEVATION FOR SLOPE GREATER THAN 3:1



SECTION B-B



ELEVATION FOR SLOPE 3:1 OR LESS

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

GUIDE FOR BERM DRAINAGE OUTLET

12" PIPE

SHEET 1 OF 1

850D10

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Jeffrey J. Howerton
873F3D17DCDC45F...
3/7/2019

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

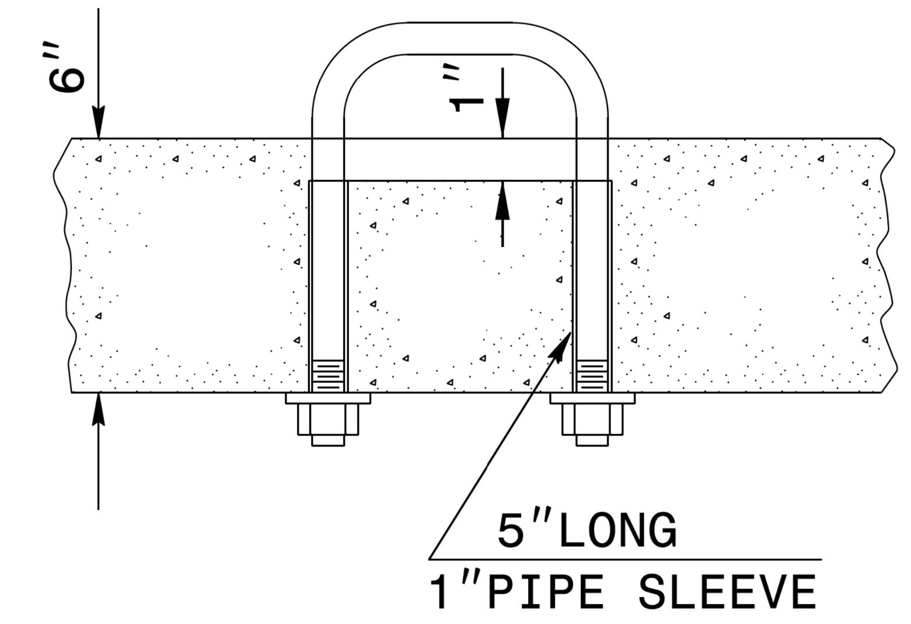
SEE TITLE BLOCK

ORIGINAL BY: J. Howerton DATE: 1/22/14
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: jhowerton\minimum depth type A.dgn

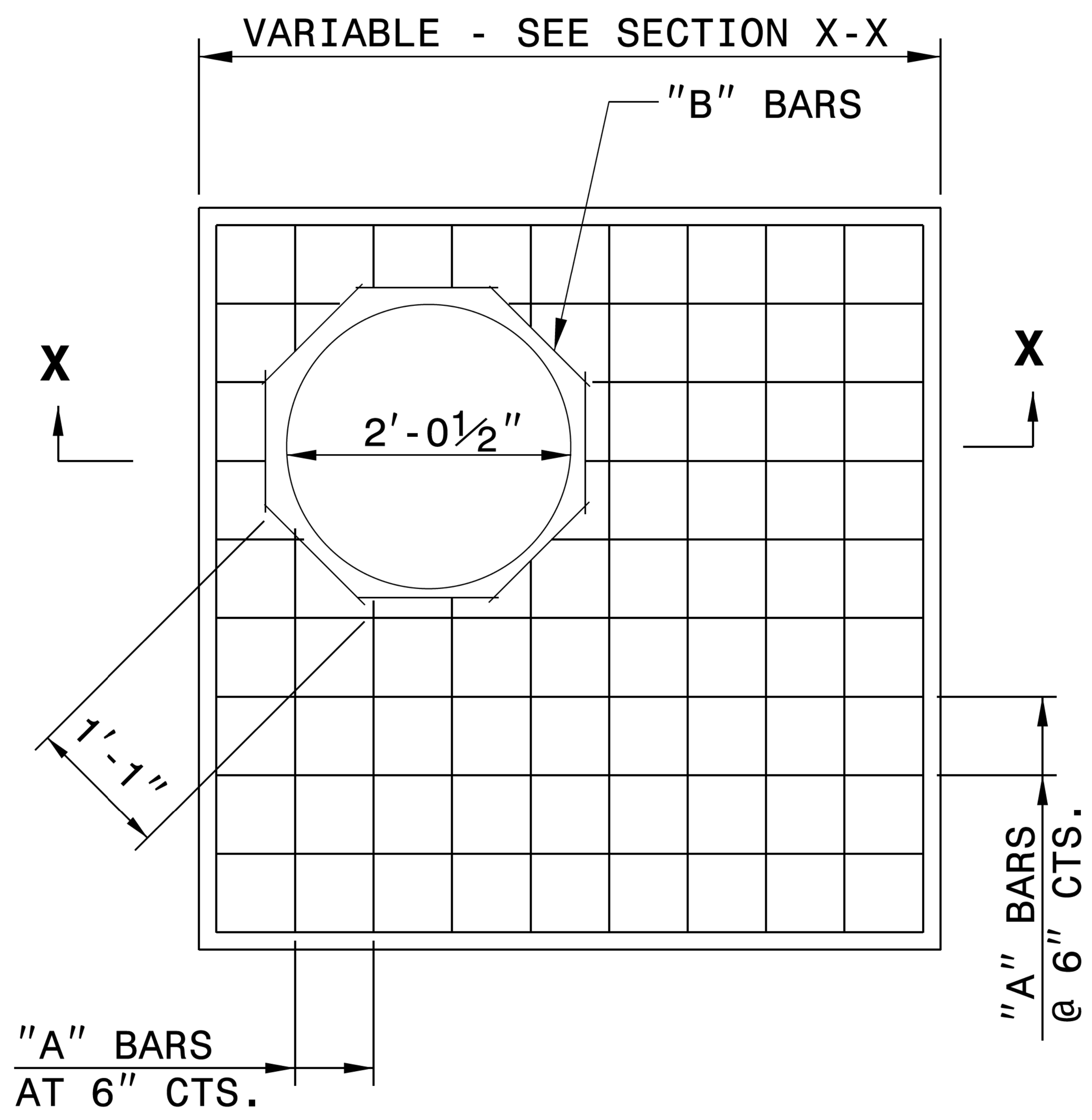
K:\RAL_Roadway\0I1036290 - EB-4707 Part A\PlanPlan Sheets\EB-4707_rdy_Details2.dgn

2/1/2019

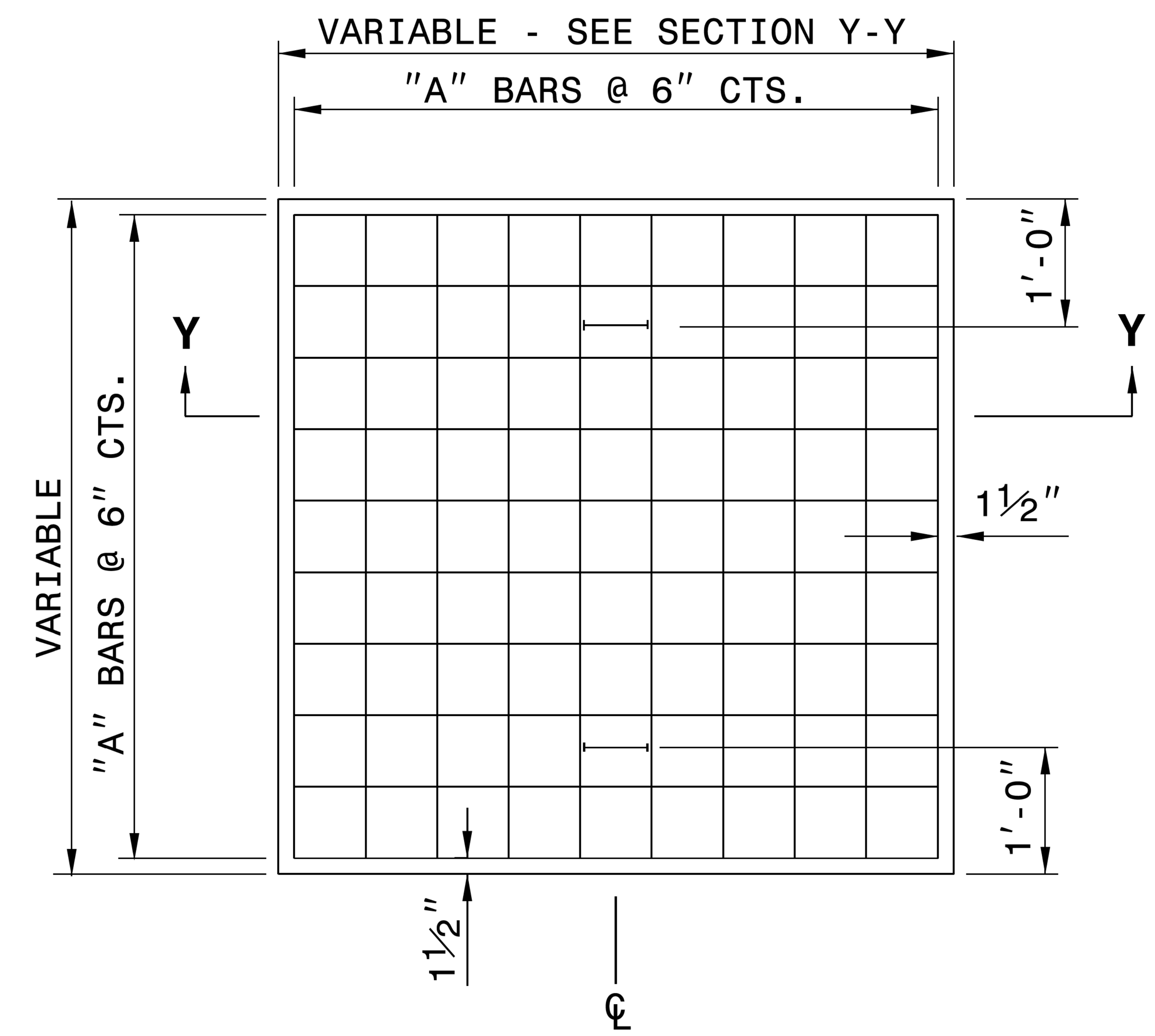
PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2C-6



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

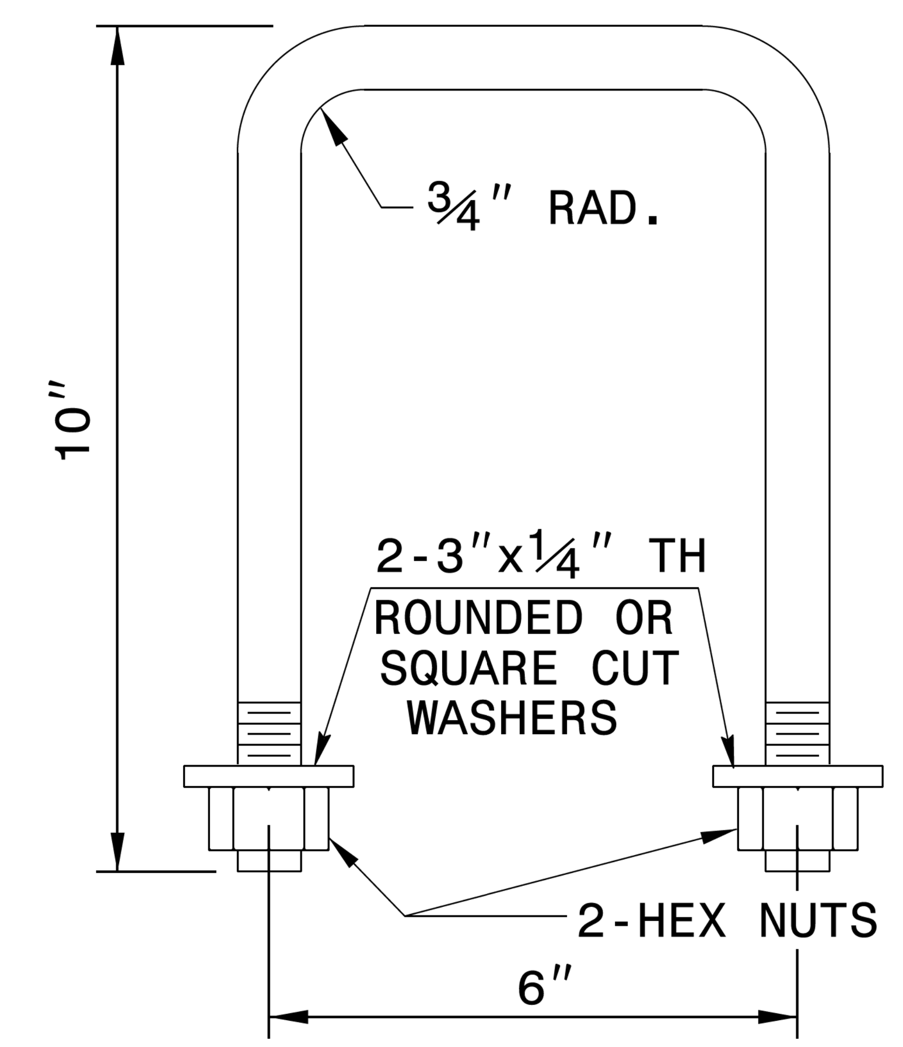
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

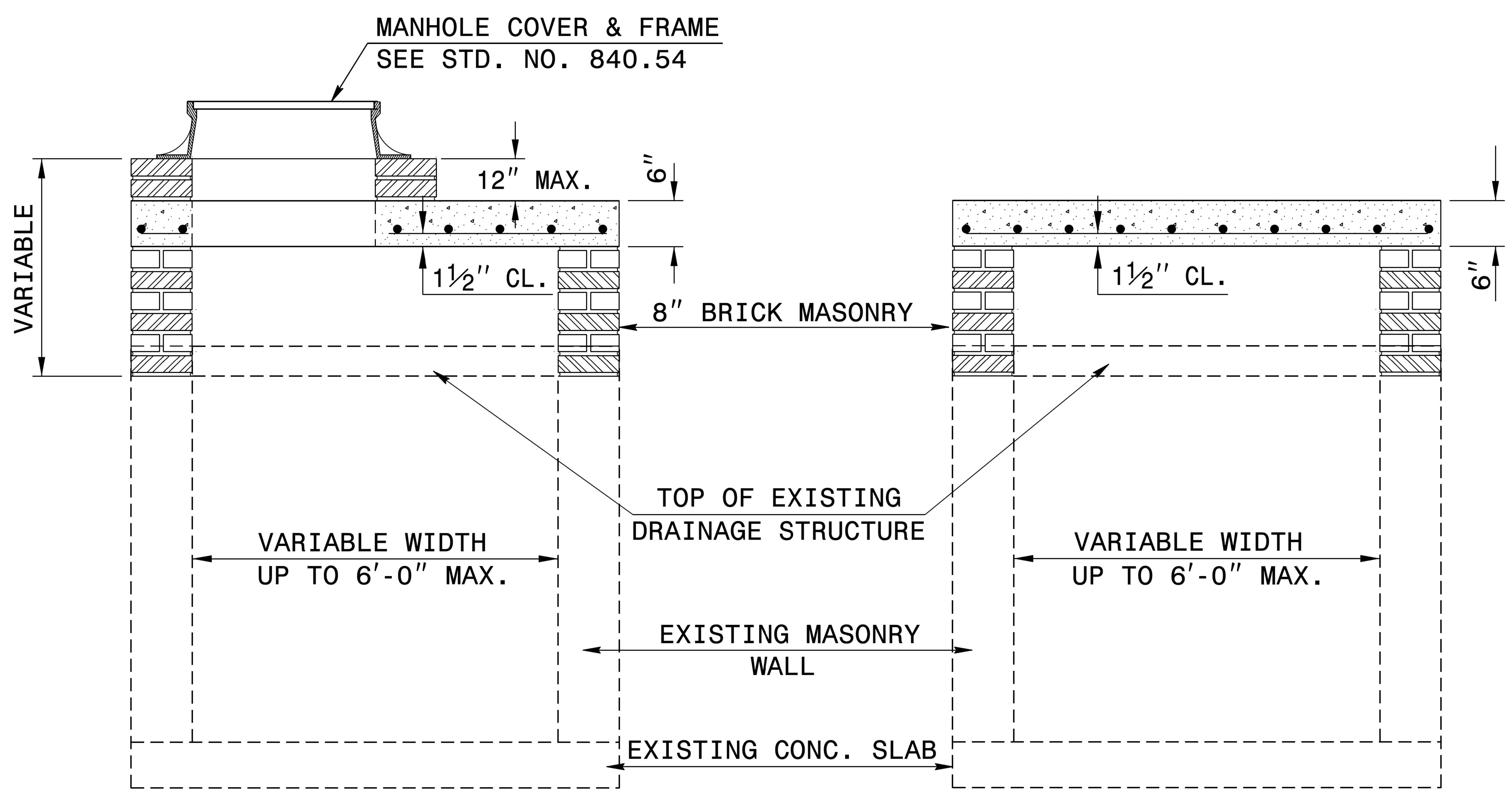
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

MASONRY	CU YDS
TOP SLAB CONCRETE CLASS "B"	.4326 *
BRICK MASONRY PER FT HT (MIN)	.4111

* NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



DETAIL OF HANDLE



SECTION X-X

SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton
3/7/2019

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

DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

K:\RAL_Roadway\011036290 - EB-4707 Part A\Plan\Plan Sheets\EB-4707_rdy_Details2.dgn

2/1/2019

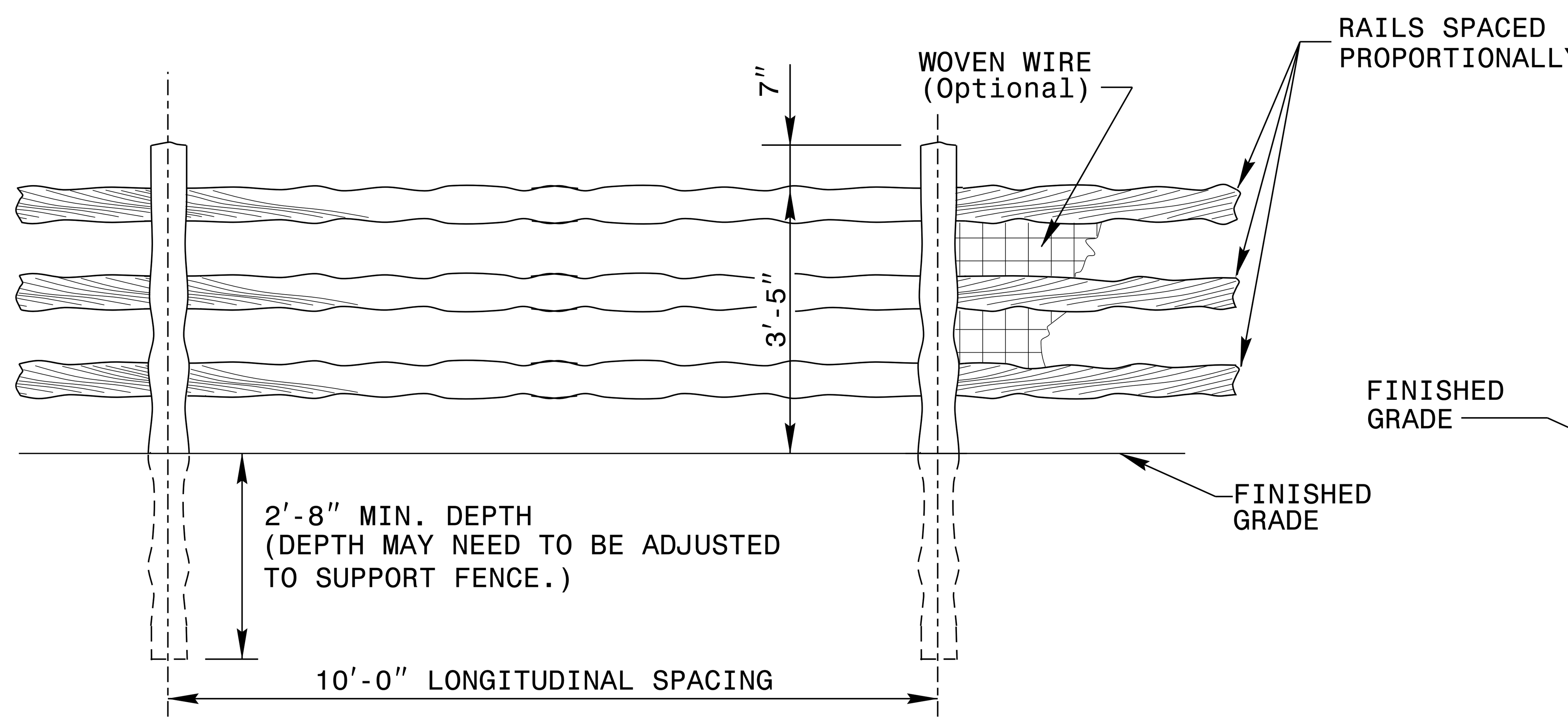
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2C-7

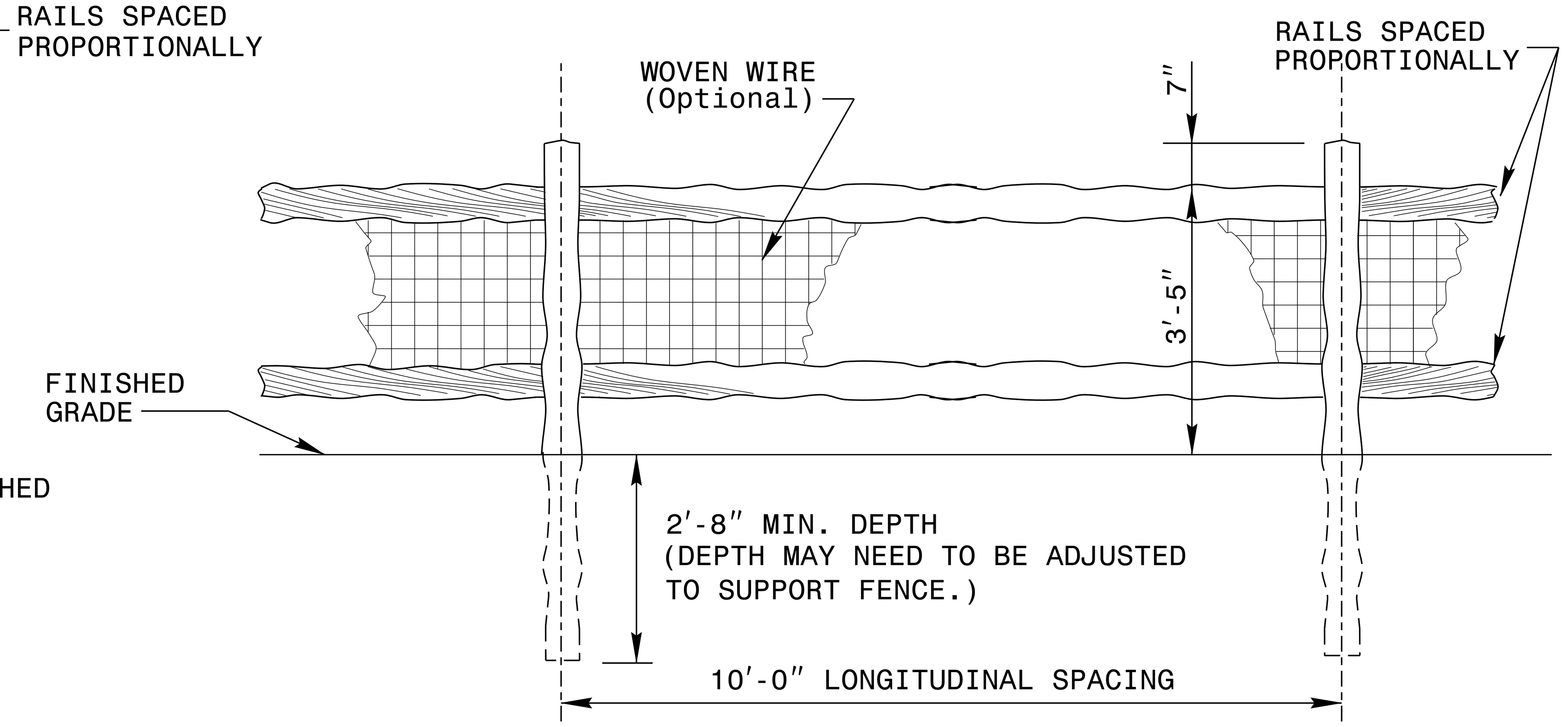
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

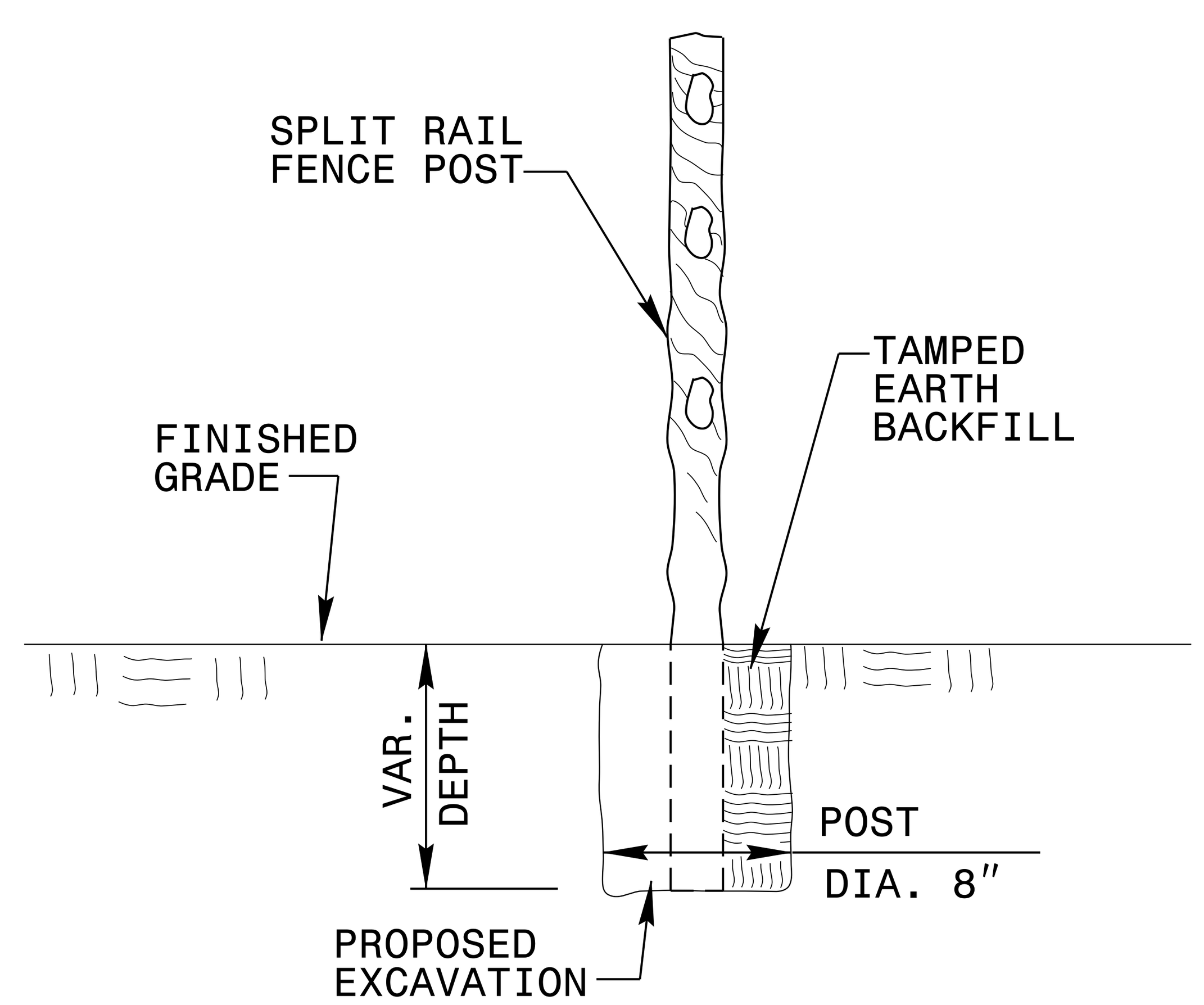
SPLIT RAIL FENCE



3 RAIL ELEVATION



2 RAIL ELEVATION



NOTE:
VARIABLE DEPTH - SEE TWO AND THREE RAIL ALTERNATES

EXCAVATION OR EMBANKMENT DETAIL

SPLIT RAIL FENCE SPECIFICATIONS

	FACE	THICKNESS	LENGTH
RAILS:	3″ TO 6″	3″ TO 6″	10′ + *
POSTS:	4″ TO 7″	2 3/4″ TO 4 1/2″	6′-8″ MIN-3 RAIL 6′-2″ MIN-2 RAIL

* RAIL LENGTH MAY VARY, BUT MUST BE LONG ENOUGH FOR 10′ SPACING.

GENERAL NOTES:

SPLIT RAIL FENCE TO BE CONSTRUCTED FROM TREATED LUMBER IN ACCORDANCE WITH DETAILS AS SHOWN IN PLANS OR AS DIRECTED BY THE ENGINEER.

SEE SPECIAL PROVISIONS WITH REGARDS TO UNIT BID.

THE SPLIT RAIL SIZES MAY VARY IN CONFIGURATION BY THE MANUFACTURER.

THE CONTRACTOR SHALL CONFORM TO THESE SECTIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES: TREATED TIMBER AND LUMBER (1082-3), PRESERVATIVE TREATMENT (1082-3).

SHEET 1 OF 1

SRFENCE

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

SPLIT RAIL FENCE

SHEET 1 OF 1

SRFENCE

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
2/22/2019

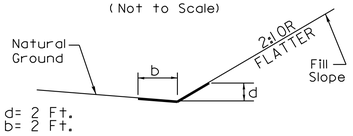
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE PLATE FOR TITLE

ORIGINAL BY: T.Spell DATE: OCT.2001
MODIFIED BY: rnbritt DATE: 01-14-05
CHECKED BY: DATE:
FILE SPEC.: details/nbritt/english/splitrailfence.dgn

DETAIL 1
TOE PROTECTION
(Not to Scale)



d= 2 Ft.
b= 2 Ft.

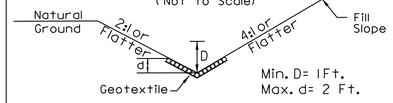
Type of Liner= Erosion Control Matting

FROM STA. 28+00 TO STA. 29+30 –L– (RT)

FROM STA. 29+00 TO STA. 30+35 –L– (LT)

FROM STA. 31+50 TO STA. 32+40 –L– (LT)

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1Ft.
Max. d= 2 Ft.

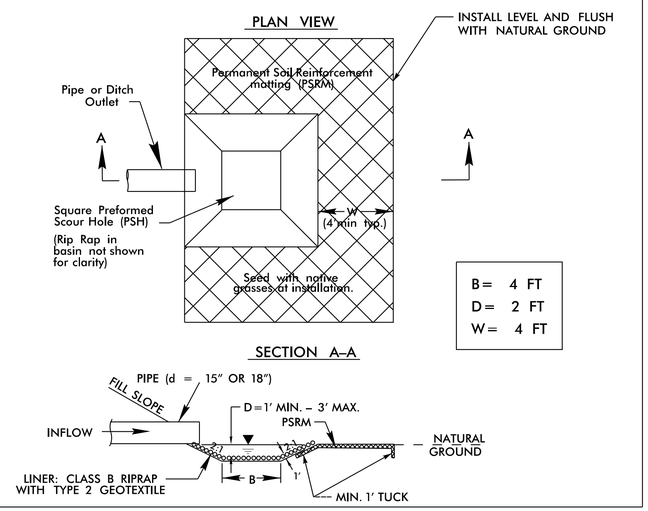
Type of Liner= Class 'B' Rip-Rap

FROM STA. 29+50 TO STA. 30+25 –L– (RT)

FROM STA. 40+28 TO STA. 41+00 –L– (LT)

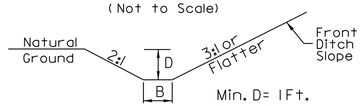
FROM STA. 40+10 TO STA. 42+35 –L– (RT)

DETAIL 3
PREFORMED SCOUR HOLE
•NOT TO SCALE



STA. 30+45 –L– (LT)

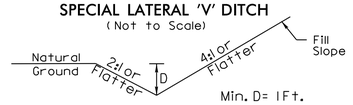
DETAIL 4
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1Ft.
B= 2 Ft.

FROM STA. 39+50 TO STA. 40+28 –L– (LT)

DETAIL 5
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

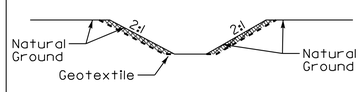


Min. D= 1Ft.

FROM STA. 43+65 TO STA. 45+50 –L– (LT)

FROM STA. 53+00 TO STA. 57+84 –L– (RT)

DETAIL 11
PIPE OUTLET/INLET BANK STABILIZATION
(Not to Scale)



Type of Liner= Class I Rip-Rap

STA. 31+38 –L– (LT)

STA. 31+53 –L– (RT)

DETAIL 12
OUTLET PROTECTION W/ COUNTER–SUNK RIP RAP PAD
(Not to Scale)

Type of Liner= Class I Rip-Rap

STA. 40+09 –L– (RT)

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636–3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	2D-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

DocuSigned by: Erin Thompson 2/4/2019

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY O. ROBINSON, JR.

DocuSigned by: Larry Robinson 2/4/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	3B-1

EARTHWORK SUMMARY

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	EMBT + %	BORROW	WASTE
-L- STA 12+00.00 to 18+50.00	855	25		830
-L- STA 21+86.00 TO STA 42+00	5398	3736		1662
-L- STA 42+00.00 TO STA 61+04.00	3894	2074		1820
-Y1- STA 13+30.00 TO STA 14+20.00	50	240	190	
SUB-TOTAL	10197	6075	190	4312
LOSS DUE TO CLEARING & GRUBBING	-5641		5641	
EARTH WASTE TO REPLACE BORROW			-4312	-4312
ESTIMATED SHOULDER MATERIAL		540	540	
PROJECT TOTALS	4556	6615	2059	0
EST.5% FOR REPLACING TOPSOIL ON BORROW PITS			103	
GRAND TOTALS	4556		2162	0
SAY	4560		2170	0

Notes:
1. Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

2/1/2019 K:\RAL_Roadway\0110362390 - EB-4707 Part A\Plan\Plan Sheets\EB-4707_rdy_SUM.dgn

COMPUTED BY: T. SPRING DATE: XX/XX/XX
CHECKED BY: E. THOMPSON DATE: XX/XX/XX

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	3B-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

48" CHAIN LINK FENCE						
LINE	STATION	STATION	LOCATION	LENGTH	4" POST EA.	5" POST EA.
–L–	56+35	57+60	LT	132	11	2
–L–	60+07	60+44	LT	42	4	2
			TOTAL	174	15	X
			SAY	180	15	4

REMOVAL OF EXISTING ASPHALT PAVEMENT			
LINE	STATION TO STATION	LOCATION	SQ. YDS.
–Y1–	13+30 TO 13+43	LT	1
–Y2–	14+79 TO 14+99	LT	1
–Y2–	13+83 TO 14+44	RT	26
–Y3–	10+40 TO 10+72	LT	15
–Y5–	10+75 TO 10+85	RT	1
–Y6–	10+48 TO 10+80	LT	2
–L–	22+88 TO 24+06	LT	7
–Y7–	10+41 TO 10+50	LT	1
–L–	26+30 TO 38+75	RT	2233
–L–	27+10 TO 27+31	LT	27
–L–	27+56 TO 27+57	LT	1
–Y8–	11+55 TO 11+67	RT	1
–L–	30+80 TO 41+21	RT	134
–Y9–	13+06 TO 13+40	LT	3
–Y9–	13+06 TO 13+40	RT	4
–L–	42+74 TO 42+82	RT	4
–L–	43+01 TO 43+14	RT	6
–L–	50+87 TO 51+85	LT	23
–L–	52+23 TO 54+52	LT	96
TOTAL			2585
SAY			2590

47" WOVEN WIRE FENCE						
LINE	STATION	STATION	LOCATION	LENGTH	4" POST EA.	5" POST EA.
–L–	39+88	39+88	RT	38	1	4
			TOTAL	38	1	4
			SAY	40	1	4

48" WOOD FENCE				
LINE	STATION	STATION	LOCATION	LENGTH
–L–	39+20	39+88	RT	69
–L–	52+80	55+66	RT	286
			TOTAL	355
			SAY	360

Notes:
1. Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

K:\RAL_Roadway\0110362290 - EB-4707 Part A\PlanPlan Sheets\EB-4707_rdy_SUM.dgn
2/11/2019

COMPUTED BY: ADJ DATE: 7/6/2015

CHECKED BY: BTV DATE: 10/23/2017

DL84031

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
EB-4707A	3D-1

Kimley»Horn P.O. Box 33068 Raleigh, N.C. 27636-3068

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) 12''	15''	18''	24''	30''	36''	42''	48''	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
14+50 -L-	RT	415		341.0															
		415	414		338.0	337.4													
13+50 -L-	RT	414		340.4															
		414	401		337.4	336.0													
12+38 -L-	RT	401		339.0															
		401	402		336.0	334.9													
12+06 -L-	RT	402		339.0															
		402	403		334.9	334.5													
17+85 -L-	RT	417		342.5															
		417	418		340.2	339.7			16										
17+85 -L-	RT	416		342.7															
		416	418		339.8	339.7			4										
17+85 -L-	RT	418		343.5															
		418	419																
17+10 -L-	RT	407		342.4															
17+12 -L-	RT	413		342.1															
		413	419		339.4	339.2			16										
17+01 -L-	RT	406		342.7															
		406	413		339.5	339.4			8										
		407	419		339.4	339.2			4										
17+10 -L-	RT	419		342.9															
		419	420		339.2	337.2													
15+50 -L-	RT	420		342.3															
		420	408		336.9	336.9													
15+50 -L-	RT	408		341.5															
		408	409		336.9	335.6													
25+54 -L-	RT	501		337.5															
10+42 -Y7-	RT	502		334.6															
28+42 -L-	RT	503		326.4															
29+33 -L-	RT	504		322.4															
29+33 -L-	RT	505		321.7															
		505	504		318.7	318.4													
		504	506		316.9	316.5				20									
26+28 -L-	LT	507		338.0															
		507	508		337.0	331.3		24								X			
26+30 -L-	LT	508		334.3															
		508	509		331.3	320.1													
29+00 -L-	LT	509		323.1															
		509	510		320.1	313.9													
30+45 -L-	LT	510		317.1															
30+45 -L-	RT	523		317.1															
		523	510		314.1	313.9													
		510	520		313.9	313.7				36									
31+38 -L-	LT	511		313.3															
		511	516		309.8	308.5													
33+85 -L-	LT	601		313.3															
		601	512		310.3	309.7													
33+00 -L-	LT	512		312.8															
30+37 -L-	RT	524																	
SHEET TOTALS								24	48	56									

SIZE / THICKNESS OR GAUGE

STRUCTURE NO.	C.S. PIPE 12'' .064	15'' .064	18'' .064	24'' .064	30'' .079	36'' .079	42'' .109	48'' .109	R.C. PIPE CLASS III 12''	15''	18''	24''	30''	36''	42''	48''	R.C. PIPE CLASS IV 12''	15''	18''	24''	30''	36''	42''	48''
415																								
415–414																		100						
414																								
414–401																		112						
401																								
401–402																		36						
402																								
402–403																								
417																								
417–418																								
416																								
416–418																								
418																								
418–419																		72						
407																								
413																								
413–419																								
406																								
406–413																								
407–419																								
419																								
419–420																		160						
420																								
420–408																			4					
408																								
408–409																			48					
501																								
502																								
503																								
504																								
505																								
505–504																								
504–506																								
507																								
507–508																								
508																								
508–509																		268						
509																								
509–510																		144						
510																								
523																								
523–510																		32						
510–520																								
511																								
511–516																							60	
601																								
601–512																		84						
512																								
524												24												
SHEET TOTALS												24						1024	52				60	

STRUCTURE NO.	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	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
415						1			1			1
415–414												
414						1			1			1
414–401												
401						1			1			1
401–402												
402						1						
402–403												
417						1						
417–418												
416						1			1			1
416–418												
418						1						
418–419												
407						1			1			1
413						1						
413–419												
406						1			1	1		
406–413												
407–419												
419						1						
419–420												
420						1						
420–408												
408						1			1			1
408–409												
501						1			1		1	
502												
503												
504												
505						1			1		1	
505–504												
504–506												
507												
507–508												
508						1			1			1
508–509												
509						1			1			1
509–510												
510						1			1			1
523						1			1		1	
523–510												
510–520												
511					4.5							
511–516												
601						1			1		1	
601–512												
512						1			1		1	
524												
SHEET TOTALS				4.5		21			15	1	5	9

STRUCTURE NO.	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	C.B. STD. 840.02	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUSTMENT OF CATCH BASINS	ADJUSTMENT OF MANHOLES	CONVERT EXIST D.I. TO J.B. W/ M.H.	CONVERT EXIST C.B. TO J.B. W/ M.H.	BDO 4" CONCRETE PAVED DITCH S.Y.	2GI STD. 840.24		DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
415																				
415–414																				
414																				
414–401																				
401																				
401–402																				
402							1		1											REMOVE EXIST DI
402–403																				RETAIN EXIST 15" RCP
417			1	1																
417–418																				
416																			64	
416–418																			35	
418						1			1											
418–419																				
407																				
413			1	1																
413–419																				
406																				
406–413																			16	
407–419																			159	
419						1			1											
419–420																				
420						1			1											
420–408																				
408																				
408–409																			35	
501																			10	
502										1										
503											1									
504									1				1							
505																				
505–504																				
504–506																			28	
507														11						
507–508																	2 @ 12"		21	
508																				
508–509																			156	
509																				
509–510																				
510																				
523																			24	
523–510																				
510–520																				
511																				
511–516																			41	
601																				
601–512																			40	
512																				
524																				
SHEET TOTALS			2	2		3	1		5	1	1		1	11			2 @ 12"		629	

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

DL84031

COMPUTED BY: ADJ DATE: 7/6/2015

CHECKED BY: BTV DATE: 10/23/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
EB-4707A	3D-2

Kimley»Horn P.O. Box 33068 Raleigh, N.C. 27636-3068

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
		512	513		309.7	309.6	
32+83 -L-	LT	513		312.8			
32+60 -L-	LT	514		312.9			
		514	513		309.9	309.6	
		513	517		309.6	309.3	
33+00 -L-	RT	521		312.8			
		521	517		309.8	309.3	
32+83 -L-	RT	517		312.8			
		517	522		309.3	309.2	
32+60 -L-	RT	522		312.9			
		522	516		309.2	308.7	
31+50 -L-	RT	516		314.2			
		516	518		308.5	308.1	
37+76 -L-	LT	602		315.6			
		602	603		312.6	311.7	
36+75 -L-	LT	603		315.0			
		603	604		311.7	310.8	
35+80 -L-	LT	604		314.4			
		604	605		310.8	310.0	
34+87 -L-	LT	605		313.8			
		605	606		310.0	309.7	
34+87 -L-	RT	606		314.9			
		606	607		309.7	308.8	
39+35 -L-	LT	608		316.5			
		608	619		313.5	313.3	
40+28 -L-	LT	610		316.0			
		610	617		313.0	306.3	
13+37 -Y9-	LT	611		326.6			
		611	614		323.6	320.0	
42+48 -L-	LT	614		323.3			
		614	609		320.0	315.0	
41+05 -L-	LT	609		318.3			
		609	612		315.0	314.8	
43+60 -L-	RT	615		327.9			
		615	621		324.9	324.9	
43+60 -L-	RT	621		328.6			
		621	620		324.9	321.3	
42+35 -L-	RT	616		324.4			
		616	620		321.4	321.3	
42+35 -L-	RT	620		325.1			
		620	618		321.3	321.2	
51+50 -L-	LT	704	705		320.0	319.6	
SHEET TOTALS							

SIZE / THICKNESS OR GAUGE

FROM	TO	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)								DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE								R.C. PIPE CLASS III								R.C. PIPE CLASS IV							
		12"	15"	18"	24"	30"	36"	42"	48"					12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
														.064	.064	.064	.064	.079	.079	.109	.109																
512	513																														16						
514	513																														20						
513	517																															32					
521	517																														16						
517	522																															20					
522	516																															108					
516	518																																			20	
602	603																														100						
603	604																														92						
604	605																														92						
605	606																															32					
608	619		32																																		
610	617																																		120		
611	614																														76						
614	609																														140						
609	612		24																																		
615	621		4																																		
621	620																														124						
616	620		4																																		
620	618		16																																		
704	705		44																																		
SHEET TOTALS			124																												676	192			120	20	

FROM	TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') 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	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	C.B. STD. 840.02	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUSTMENT OF CATCH BASINS	ADJUSTMENT OF MANHOLES	CONVERT EXIST D.I. TO J.B. W/ M.H.	CONVERT EXIST C.B. TO J.B. W/ M.H.	BDO 4" CONCRETE PAVED DITCH S.Y.	2GI STD. 840.24		DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
513							1			1	1																						
514							1			1			1																				
521							1			1			1																				
517							1			1	1																						
522							1			1		1																					
516							1	0.63		1		1																					
516	518																															40	
602							1			1		1																					
603							1			1		1																					
604							1			1		1																					
604	605																															38	
605							1			1		1																					
605	606																															24	
606							1	0.25		1			1																				
606	607																																Existing 18" RCP
608							1			1		1																					
608	619																															10	
610						3.4																										33	
610	617																															71	
611							1			1	1																						
611	614																															76	
614							1			1		1																					
609							1			1		1																					
609	612																															11	
615							1			1			1																				
615	621																															57	
621							1												1			1											
616							1			1			1																				
616	620																															15	
620							1												1			1											
SHEET TOTALS					3.4		19	0.88		17	3	9	5						2			2										375	

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

DL84031

COMPUTED BY: ADJ DATE: 7/6/2015

CHECKED BY: BTV DATE: 10/23/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
EB-4707A	3D-3

Kimley»Horn
P.O. Box 33068
Raleigh, N.C. 27636-3068

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
THICKNESS OR GAUGE																			
48+00 -L-	RT	701		325.3															
		701	710		322.3	322.3			4										
48+00 -L-	RT	710		326.0															
		710	711		322.3	320.7													
51+60 -L-	RT	711		324.5															
		711	703		320.7	319.9													
51+60 -L-	RT	702		323.7															
		702	711		320.7	320.7													
54+10 -L-	LT	706		322.8															
		706	801		319.8	315.7			164										
55+75 -L-	LT	801		317.9															
		801	802		315.7	315.6			32										
47+73 -L-	LT	708							24										
49+33 -L-	LT	709							24										
56+30 -L-	RT	818							24										
57+85 -L-	LT	819							24										
SHEET TOTALS									296										
PROJECT TOTALS								24	468	56									

STATION	FROM	TO	C.S. PIPE								R.C. PIPE CLASS III								R.C. PIPE CLASS IV								** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN
SIZE			12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"			
THICKNESS OR GAUGE			.064	.064	.064	.064	.079	.079	.109	.109																			
48+00 -L-	701																												
	701	710																											
48+00 -L-	710																												
	710	711																		356									
51+60 -L-	711																												
	711	703																		24									
51+60 -L-	702																												
	702	711																		4									
54+10 -L-	706																												
	706	801																											
55+75 -L-	801																												
	801	802																											
47+73 -L-	708																												
49+33 -L-	709																												
56+30 -L-	818																												
57+85 -L-	819																												
SHEET TOTALS																				384									
PROJECT TOTALS														24						2084	244			120	80				

STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') 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	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN
48+00 -L-	701				1			1		1			
	701	710											
48+00 -L-	710				1								
	710	711											
51+60 -L-	711				1								
	711	703											
51+60 -L-	702				1			1		1			
	702	711											
54+10 -L-	706				1			1			1		
	706	801											
55+75 -L-	801				1								
	801	802											
47+73 -L-	708												
49+33 -L-	709												
56+30 -L-	818												
57+85 -L-	819												
SHEET TOTALS					6			3		2	1		
PROJECT TOTALS			7.9		46	0.88		35	4	16	15		

STATION	FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	C.B. STD. 840.02	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUSTMENT OF CATCH BASINS	ADJUSTMENT OF MANHOLES	CONVERT EXIST D.I. TO J.B. W/ M.H.	CONVERT EXIST C.B. TO J.B. W/ M.H.	BDO 4" CONCRETE PAVED DITCH S.Y.	2GI STD. 840.24		DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
48+00 -L-	701																			
	701	710																		
48+00 -L-	710					1			1											
	710	711																		
51+60 -L-	711					1			1											
	711	703																		
51+60 -L-	702																			
	702	711																	21	
54+10 -L-	706																			
	706	801																		
55+75 -L-	801		1	1																
	801	802																		
47+73 -L-	708																		73	
49+33 -L-	709																		20	
56+30 -L-	818																		24	
57+85 -L-	819																			
SHEET TOTALS			1	1		2			2										138	
PROJECT TOTALS			3	3		7	1		9	1	1		1	11			2 @ 12"		1142	

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

COMPUTED BY: Jamey Batts DATE: 10/1/18
CHECKED BY: _____ DATE: _____

(5-15-18)

PROJECT NO.	SHEET NO.
EB-4707A	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				UD	100
				TOTAL LF:	100

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY					650	1300	2000		
			TOTAL CY/TONS/SY:		650	1300**	2000**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

K:\RAL_Roadway\0110362290 - EB-4707 Part A\PlanPlan Sheets\EB-4707_rdy_SUM.dgn
2/11/2019

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX

PARCEL NO.	SHEET NO.	PROPERTY OWNER NAME	DEED BOOK
1	4	BODDIE NOEL ENTERPRISE	DB 242 PG 1905
2	4	DEVAINDER GOLI & KARUNA GOLI	DB 5924 PG 436
3	4	EDWARD B. HEARD	DB 4546 PG 414
4	4	EDWARD B. HEARD & FRANCES M. HEARD	DB 894 PG 513
5	4	HUI-YUN WU	DB 5265 PG 197
6	4	HUI-YUN WU	DB 5265 PG 197
7	4	JHH ASSOCIATES LTD	DB 4268 PG 168
8	4	JOYCE R. GARRETT	DB 1500 PG 283
9	4	HILLMUSIC INC.	DB 384 PG 577
10	4	DANHONG LU	DB 275 PG 1036
11	4,5	HENDRICK AUTOMOTIVE GROUP	DB 642 PG 282
12	4,5	HENDRICK AUTOMOTIVE GROUP	DB 1125 PG 187
13	5	CAROLINA 223 LLC	DB 620 PG 443
14	5	CAROLINA 223 LLC	DB 2082 PG 65
15	5,6	CORIUM LLC	DB 2368 PG 327
16	5	CLYDE LEE MYERS	DB 08-E-197
17	5,6	DORIS J. SMITH	DB 260 PPG 1679
18	6	PICKARD OAKS HOMEOWNERS ASSOC. INC	DB 2220 PG 374
19	6,7	BEL EQR III LIMITED PARTNERSHIP	DB 2102 PG 272 DB 2869 PG 8
20	6,7	HULDA J. CHEEK HEIRS	DB 127 PG 278
21	6,7	HULDA J. CHEEK HEIRS	DB 127 PG 278
22	7	HULDA J. CHEEK HEIRS	DB 127 PG 278
23	7	JOHN K. WOODY III	DB 5896 PG 811

PARCEL NO.	SHEET NO.	PROPERTY OWNER NAME	DEED BOOK
24	7	JACK R. CHEEK	DB 207 PG 157
25	7	JOHN K. WOODY III	DB 5896 PG 811
26	7	JOHN K. WOODY III	DB 5896 PG 811
27	7	GEORGE GARRETT	DB 1037 PG 516
28	7	KNOLLWOOD HOMEOWNERS ASSOC.	DB 2490 PG 494
29	7	THE JULIA TRUST	DB 202 PG 421
30	7	JOHN L. MCKEE JR.	DB 2009 PG 29
31	7,8	WEST DURHAM CONGREGATION OF JEHOVAH'S WITNESSES	DB 2015 PG 2
32	7	MICHELE HODGSON	DB 4895 PG 215
33	7	JOHN L. MCKEE JR.	DB 2170 PG 71
34	7	BOUNCING BULLDOGS	DB 7095 PG 792
35	7,8	JOHN L. MCKEE JR.	DB 2170 PG 71
36	7,8	BETTY R. COPELAND	DB 416 PG 204
37	8	CHARLES E. TURNER	DB 357 PG 52
38	7,8	JOHN T. WHALEY III	DB 2954 PG 5
39	8	NONI S. RILEY	DB 181 PG 24
40	8	HOWARD R. HUSE HEIRS	DB 318 PG 688
41	8	FREDERICK DIVALLERINO	DB 6459 PG 860
42	8	HOWARD R. HUSE HEIRS	DB 7160 PG 286
43	4	WENDY'S PROPERTIES, LLC.	DB 6033 PG 523
44	4	NATHAN LUSTMAN TRUST	DB 6218 PG 382
45	4	JTW, LLC.	DB 3226 PG 123
46	6	DORIS M. PICKARD	DB 2021 PG 316

2	DEVAINDER GOLI KARUNA GOLI DB 5924 PG 436 PB 4 PG 17
3	EDWARD B. HEARD, FAMILY LLC DB 4546 PG 414 PB 4 PG 17
43	WENDY'S PROPERTIES, LLC DB 6033 PG 523

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	4
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIC W. CHADWICK
Docusigned by: Eric W. Chadwick
31E6485C34E44F2...
3/6/2019

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. KRODEL, JR.
Docusigned by: larry D. Krodel
CE17B2971D5643E...
3/6/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET NO. 9 FOR -L- PROFILE
SEE SHEET NO. 12 FOR -Y1-, -Y2-, -Y3-, -Y4-, AND -Y5- PROFILE

-L-
PI Sta 11+81.89
Δ = 63° 18' 59.7" (LT)
D = 57° 17' 44.8"
L = 110.51'
T = 61.66'
R = 100.00'
e = MATCH EXIST.

-Y2-
PI Sta 15+53.12
Δ = 0° 19' 38.2" (LT)
D = 0° 34' 22.6"
L = 57.12'
T = 28.56'
R = 10,000.00'

-Y3-
PI Sta 11+09.13
Δ = 12° 32' 37.6" (RT)
D = 28° 38' 52.4"
L = 43.79'
T = 21.98'
R = 200.00'

-Y4-
PI Sta 11+09.57
Δ = 28° 28' 41.1" (LT)
D = 114° 35' 29.6"
L = 24.85'
T = 12.69'
R = 50.00'

-Y5-
PI Sta 10+19.04
Δ = 24° 32' 10.8" (LT)
D = 114° 35' 29.6"
L = 21.41'
T = 10.87'
R = 50.00'

PI Sta 10+55.61
Δ = 14° 50' 06.4" (LT)
D = 28° 38' 52.4"
L = 51.78'
T = 26.04'
R = 200.00'

NAD 83/2001

MATCHLINE STA 21+00 (SHEET 5)

K:\RAL_Roadway\011036290 - EB-4707 Part A\Plan\Plan Sheets\EB-4707_rdy_PSH4.dgn

3/6/2019

-L-
PI Sta 23+76.45
Δ = 1° 30' 19.8" (LT)
D = 0° 34' 22.6"
L = 262.76'
T = 131.39'
R = 10,000.00'
e = NC

PIPE HYDRAULIC DATA
42" RCP-IV
(511) (518) (BURY AS DIRECTED BY ENGINEER)

DRAINAGE AREA	=	10.4 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	36 CFS
DESIGN HW ELEVATION	=	313.47 FT
100 YEAR DISCHARGE	=	39 CFS
100 YEAR HW ELEVATION	=	313.62 FT
OVERTOPPING FREQUENCY	=	> 100 YRS
OVERTOPPING DISCHARGE	=	> 40 CFS
OVERTOPPING ELEVATION	=	314.2 FT

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RALEIGH, N.C. 27636-3068
RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	5
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON
DocuSigned by: Erin K. Thompson
31E6486C94E44F2...
2/22/2019

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY T. ROBINSON, JR.
DocuSigned by: larry T. Robinson
CE17B2971D5643E...
2/22/2019

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SEE SHEET NO. 9 FOR -L- PROFILE
SEE SHEET NO. 12 FOR -Y6- PROFILE
SEE SHEET NO. 13 FOR -Y7- PROFILE

NAD 83/2001

HENDRICK AUTOMOTIVE GROUP
DB 1125 PG 187
PB 100 PG 37
(12)

(15) CORIUM LLC
DB 2368 PG 327
PB 56 PG 83

-L- STA 22+75.00
BEGIN WIDENING

-L- POT Sta.22+61.29 =
-Y6- POT Sta. 10+00.00

PC Sta. 22+45.06

S 89° 45' 07.7" E

+82 39.25' LT
-L- Sta.22+88.05
TIE TO EXIST CURB & GUTTER AT DRIVEWAY RADIUS
BEGIN WIDENING (LT)
TIE TO EXIST CONC. SIDEWALK

PT Sta. 25+07.82

MATCHLINE STA 21+00 (SHEET 4)

MATCHLINE STA 33+20 (SHEET 6)

-L- OLD DURHAM RD

N 88° 44' 32.5" E

-Y6- COOPER ST

S 3° 21' 56.8" E

-Y7- STANDISH DR

S 1° 49' 18.0" W

DO NOT DISTURB EXISTING TREES. CONTRACTOR TO CONTACT TOWN OF CHAPEL HILL IF DISTURBANCE WITHIN 30 FT.

(11) HENDRICK AUTOMOTIVE GROUP
DB 1642 PG 282
PB 100 PG 37

S 89°44'37" E
165.82'

(13) CAROLINA 223 LLC
DB 620 PG 443
PB 141 PG 187

(14) CAROLINA 223 LLC
DB 2082 PG 65
PB 141 PG 187

150' LEFT TURN LANE

EXISTING BUS STOP SHELTER (TO BE REMOVED BY OTHERS)

-BL-3 -L- STA 22+93.41
(17.95 RT)

EXISTING BRICK WALLS TO BE REMOVED

REMOVE EX CB AND 10 LF OF EX 15" RCP

EXISTING CONDOMINIUM SIGN TO BE RELOCATED

TIE PROP CB INTO EX 15" RCP

RETAIN 15" RCP

ADJUST EXIST CB

-Y6- Sta. 10+80.00
END CONSTRUCTION

POT Sta. 11+99.83

-L- POT Sta.26+16.17 =
-Y7- POT Sta. 10+00.00

-Y7- Sta. 10+50.00
END CONSTRUCTION

POT Sta. 12+18.91

STANDISH TOWNHOMES HOMEOWNERS ASSOC INC
DB 1471 PG 294
PB 73 PG 72

STANDISH TOWNHOMES HOMEOWNERS ASSOC INC
DB 1635 PG 406
PB 73 PG 151

(16) CLYDE LEE MYERS
DB 08-E-197
PB 76 PG 129

(17) DORIS J. SMITH
DB 260 PG 1679
PB 16 PG 102

JURISDICTIONAL INTERMITTENT STREAM

-L- STA 30+52.40
86.19' LT.
ELEV. 316.39'
BM#2

PREFORMED SCOUR HOLE
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GFD
EST 30 SY PSRM
SEE DETAIL 3
SHEET 2D-1

TOE PROTECTION
EST 60 SY ECM
SEE DETAIL 1
SHEET 2D-1

160' LANE TAPER

INLET PROTECTION
CLASS I RIP RAP
STREAM BANKS ONLY
EST 12 TONS
EST 12 SY GFD
SEE DETAIL II
SHEET 2D-1

EXISTING PEDESTRIAN BRIDGE TO BE REMOVED. REMOVAL INCLUDED IN LUMP SUM GRADIN (CLEARING AND GRUBBING)

42" RCP CLASS IV
REMOVE EX 8" PVC
TOE PROTECTION
EST 40 SY ECM
SEE DETAIL 1
SHEET 2D-1
15" RCP CLASS IV
18" RCP CLASS IV
15" RCP CLASS IV

8' MULTI-USE PATH

-BL-5 -L- STA 31+30.20
(32.68 RT)

-BL-4
-L- STA 26+51.96
(29.55' RT)

EXISTING SIDEWALK TO BE REMOVED

BRICK PLANTER TO BE REMOVED

RETAIN

RETAIN JB

CONVERT EX CB TO JB W/ MH

OUTLET PROTECTION CLASS 'B' RIP RAP
EST 3 TONS
EST 10 SY GFD

REMOVE EX 15" RCP

RETAIN AND ADJUST TOP OF EX MH

TOE PROTECTION
EST 60 SY ECM
SEE DETAIL 1
SHEET 2D-1

REMOVE EXISTING CURB AND GUTTER (RT)

LATERAL 'V' DITCH
W/ CLASS 'B' RIP RAP
EST 19 TONS
EST 45 SY GFD
SEE DETAIL 2
SHEET 2D-1

REMOVE EX 15" RCP AND REPLACE W/ 24" RCP
IF NECESSARY GRADE TO DRAIN

REMOVE EX 24" RCP

42" RCP CLASS IV

OUTLET PROTECTION CLASS I RIP RAP
STREAM BANKS ONLY
EST 25 TONS
EST 30 SY GFD
SEE DETAIL 11
SHEET 2D-1

20' DRIVEWAY EASEMENT

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	6
RW SHEET NO.	

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RIGHT-OF-WAY REV.

CONST. REV.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON — 2/4/2019

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR. — 2/4/2019

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SEE SHEET NO. 10 FOR -L- PROFILE
SEE SHEET NO. 13 FOR -Y8- AND -Y9- PROFILE
SEE SHEET NO. 14 FOR -S1- PROFILE

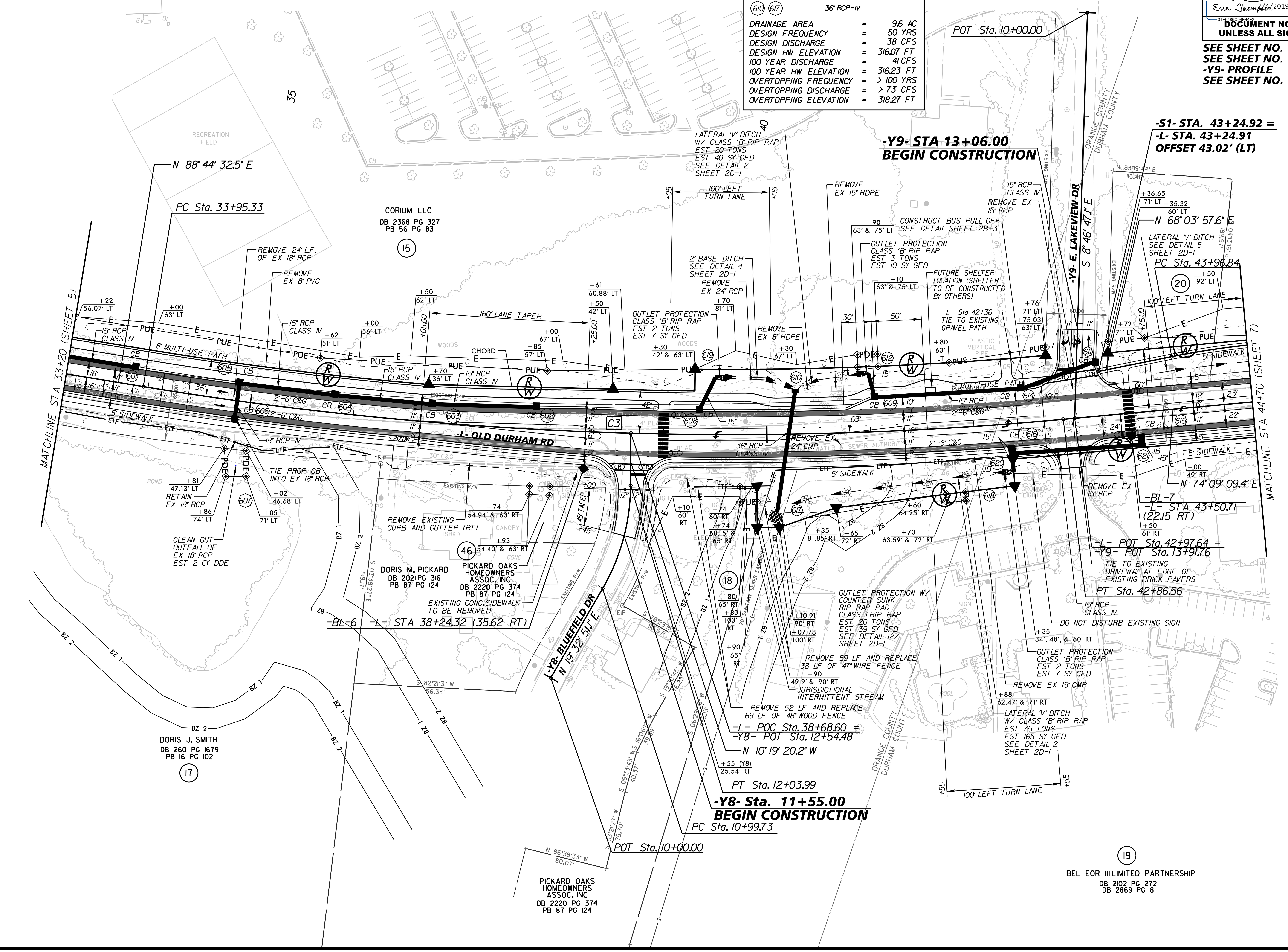
-L-	-Y8-	-S1-
PI Sta 38+43.37	PI Sta 11+53.07	PI Sta 44+67.87
Δ = 14° 35′ 23.1″ (LT)	Δ = 29° 52′ 11.3″ (LT)	Δ = 10° 08′ 51.4″ (RT)
D = 1° 38′ 13.3″	D = 28° 38′ 52.4″	D = 7° 09′ 43.1″
L = 891.24′	L = 104.27′	L = 141.69′
T = 448.04′	T = 53.35′	T = 71.03′
R = 3,500.00′	R = 200.00′	R = 800.00′
e = 2.92		
R_{OFF} = 56′		

PIPE HYDRAULIC DATA

610 617 — 36″ RCP-IV

DRAINAGE AREA	=	9.6 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	38 CFS
DESIGN HW ELEVATION	=	316.07 FT
100 YEAR DISCHARGE	=	41 CFS
100 YEAR HW ELEVATION	=	316.23 FT
OVERTOPPING FREQUENCY	=	> 100 YRS
OVERTOPPING DISCHARGE	=	> 73 CFS
OVERTOPPING ELEVATION	=	318.27 FT

HULDA J. CHEEK HEIRS (20) DB 127 PG 278 PB 34 PG 17



-L-	-S2-	-S3-
PI Sta 49+40.64	PI Sta 53+28.12	PI Sta 53+95.26	PI Sta 54+18.32
△ = 2° 42' 37.4" (RT)	△ = 5° 17' 26.0" (LT)	△ = 0° 17' 28.2" (LT)	△ = 10° 36' 58.2" (LT)
D = 0° 42' 58.3"	D = 11° 27' 33.0"	D = 0° 43' 06.2"	D = 190° 59' 09.4"
L = 378.44'	L = 46.17'	L = 40.53'	L = 5.56'
T = 189.26'	T = 23.10'	T = 20.26'	T = 2.79'
R = 8,000.00'	R = 500.00'	R = 7,975.50'	R = 30.00'
e = NC			
PI Sta 53+39.66			
△ = 3° 00' 17.8" (LT)			
D = 0° 42' 58.3"			
L = 419.57'			
T = 209.83'			
R = 8,000.00'			
e = NC			

-S1-			
PI Sta 44+67.87	PI Sta 46+76.79	PI Sta 51+47.54	PI Sta 51+63.34
△ = 10° 08' 51.4" (RT)	△ = 3° 31' 11.4" (LT)	△ = 42° 47' 11" (RT)	△ = 26° 10' 00" (RT)
D = 7° 09' 43.1"	D = 11° 27' 33.0"	D = 180° 0' 0"	D = 179° 59' 32"
L = 141.69'	L = 30.72'	L = 23.77'	L = 14.54'
T = 71.03'	T = 15.36'	T = 19.29'	T = 11.62'
R = 800.00'	R = 500.00'	R = 50.00'	R = 50.00'

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	7
R/W SHEET NO.	

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RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.
CONST. REV.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON
DocuSigned by: Erin Thompson 2/4/2019

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson 2/4/2019

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SEE SHEET NO. 10 FOR -L- PROFILE
SEE SHEET NO. 13 FOR -Y10- AND -Y11- PROFILE
SEE SHEET NO. 14 FOR -S1- AND -S2- PROFILE
SEE SHEET NO. 15 FOR -S3- PROFILE

NAD 83/2001

100' BAY TAPER
160' LANE TAPER
PC Sta. 47+51.39
PT Sta. 46+92.14
PC Sta. 46+61.43
PT Sta. 45+38.53
N 78° 12' 49.0" E
LATERAL 'V' DITCH SEE DETAIL 5 SHEET 2D-1
REMOVE EX 15" RCP
REMOVE EX 12" RCP
REMOVE EX 12" CLAY
REMOVE EX 12" RCP
N 74° 41' 37.6" E
-L- OLD CHAPEL HILL RD
15" RCP CLASS IV
2'-6" C&G
5' SIDEWALK
PUE
N 74° 09' 09.4" E
MATCHLINE STA 44+70 (SHEET 6)
MATCHLINE STA 55+50 (SHEET 8)
CLEAN OUT 130 LF.EXISTING DITCH EST 10 CY DDE FROM ELEV 319.68 TO ELEV 318.30 SLOPE = 1.06%
-S1- Sta. 51+71.26 =
-L- Sta. 51+86.27
OFFSET 24.01' (LT)
CLEAN OUT EXISTING PIPE
POT Sta. 10+00.00
PT Sta. 54+21.09
-Y10- Sta. 11+70.00
BEGIN CONSTRUCTION
PC Sta. 54+15.53
PRC Sta. 55+49.40
PC Sta. 55+38.51
N 64° 11' 23.8" E
-S3- Sta. 53+75.00 =
-L- Sta. 53+76.37
OFFSET 24.50' (LT)
-L- Sta.54+17.02 END 2'-6" CURB AND GUTTER (LT)
-L- Sta.52+24.11 BEGIN 2'-6" CURB AND GUTTER (LT)
PRC Sta. 51+51.72
PC Sta. 51+27.95
PRC Sta. 51+29.83
PT Sta. 51+66.26
S 88° 41' 11.4" E
OUTLET PROTECTION CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GFD
-Y10- WHITE OAK DR
S 8° 06' 49.4" E
-Y11- WHITE OAK DR
S 14° 18' 19.4" E
CHORD
-BL-8 -L- STA 51+69.53 (8.03 RT)
EXISTING SIGN TO BE REMOVED
OUTLET PROTECTION CLASS 'B' RIP RAP EST 1 TON EST 5 SY GFD
15" RCP CLASS IV
-L- POC Sta.52+02.90 =
-Y10- POT Sta. 12+18.27
-L- POC Sta.52+10.91 =
-Y11- POT Sta. 10+09.74
-L- Sta.52+00.77 END 2'-6" CURB AND GUTTER
-Y11- Sta. 10+70.00
END CONSTRUCTION
POT Sta. 12+10.63
PT Sta. 53+51.18
PC Sta. 53+05.01
REMOVE 332 LF AND REPLACE 286 LF OF 48" WOOD FENCE
-S2- Sta. 52+40.39 =
-L- Sta. 52+40.34
OFFSET 33.44' (RT)
N 80° 51' 51.0" E
N 75° 34' 25.0"
N 76° 52' 16" E 100.00'
BM#3 -L- STA 45+31.41 52.14' RT. ELEV.331.58'

JOHN K. WOODY III DB 5896 PG 811 PB 5 PG 191 (23)
GEORGE GARRETT DB 1037 PG 516 PB 5 PG 191 (27)
HULDA J. CHEEK HEIRS DB 127 PG 278 PB 34 PG 17 (21)
HULDA J. CHEEK HEIRS DB 127 PG 278 PB 34 PG 17 (22)
JOHN L. MCKEE JR. DB 2009 PG 29 PB 5 PG 191 (30)
JOHN L. MCKEE JR. DB 2170 PG 71 PB 148 PG 15 (33)
JOHN L. MCKEE JR. DB 2170 PG 71 PB 148 PG 15 (35)
MICHELE HODGSON DB 4895 PG 215 PB 168 PG 151 (32)
BOUNCING BULLDOGS DB 7095 PG 792 PB 195 PG 340 (34)
THE JULIA TRUST DB 202 PG 421 PB 126 PG 128 (29)
KNOLLWOOD HOMEOWNERS ASSOC. DB 2490 PG 394 PB 141 PG 37 (28)
JACK R. CHEEK DB 207 PG 157 PB 92 PG 50 (24)
WEST DURHAM CONGREGATION OF JEHOVAH'S WITNESSES DB 2015 PG 2 PB 126 PG 128 (31)
JOHN T. WHALEY III DB 2954 PG 5 PB 18 PG 113 (38)

2/11/2019 K:\RAL_Roadway\011036290 - EB-4707 Part A\PlanPlan Sheets\EB-4707_rdy_PSht.dgn

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	8
R/W SHEET NO.	

RIGHT-OF-WAY REV.

CONST. REV.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON
DocuSigned by: Erin Thompson 2/4/2019

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson 2/4/2019

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NAD 83/2001

SEE SHEET NO. 11 FOR -L- PROFILE

-L-

PI Sta 55+74.59	PI Sta 57+90.76	PI Sta 60+44.09
△ = 21° 54' 56.7" (RT)	△ = 21° 49' 48.0" (RT)	△ = 15° 16' 29.4" (RT)
D = 5° 47' 14.8"	D = 5° 47' 14.8"	D = 11° 27' 33.0"
L = 50.38'	L = 377.20'	L = 133.30'
T = 25.20'	T = 190.91'	T = 67.05'
R = 990.00'	R = 990.00'	R = 500.00'
e = 3.6	e = 3.6	e = 4.0
R_{OFF} = 108'	R_{OFF} = 108'	R_{OFF} = 120'

-Y13-

PI Sta 10+51.61	PI Sta 12+35.58
△ = 6° 56' 57.0" (LT)	△ = 40° 38' 05.3" (RT)
D = 6° 44' 26.4"	D = 28° 38' 52.4"
L = 103.09'	L = 141.84'
T = 51.61'	T = 74.05'
R = 850.00'	R = 200.00'

-S2-

PI Sta 56+18.27	PI Sta 58+63.03
△ = 9° 40' 09.8" (RT)	△ = 10° 49' 11.6" (RT)
D = 11° 27' 33.0"	D = 5° 12' 31.3"
L = 84.38'	L = 207.73'
T = 42.29'	T = 104.17'
R = 500.00'	R = 1,100.00'

-S3-

PI Sta 56+01.80	PI Sta 57+13.50
△ = 23° 49' 37.8" (RT)	△ = 0° 37' 49.4" (LT)
D = 19° 05' 54.9"	D = 5° 43' 46.5"
L = 124.76'	L = 11.00'
T = 63.29'	T = 5.50'
R = 300.00'	R = 1,000.00'

PI Sta 59+27.09	PI Sta 60+58.12
△ = 11° 22' 16.8" (RT)	△ = 27° 19' 37.3" (RT)
D = 19° 05' 54.9"	D = 38° 11' 49.9"
L = 59.54'	L = 71.54'
T = 29.87'	T = 36.46'
R = 300.00'	R = 150.00'

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	9

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON
DocuSigned by: Erin Thompson 2/4/2019

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson 2/4/2019

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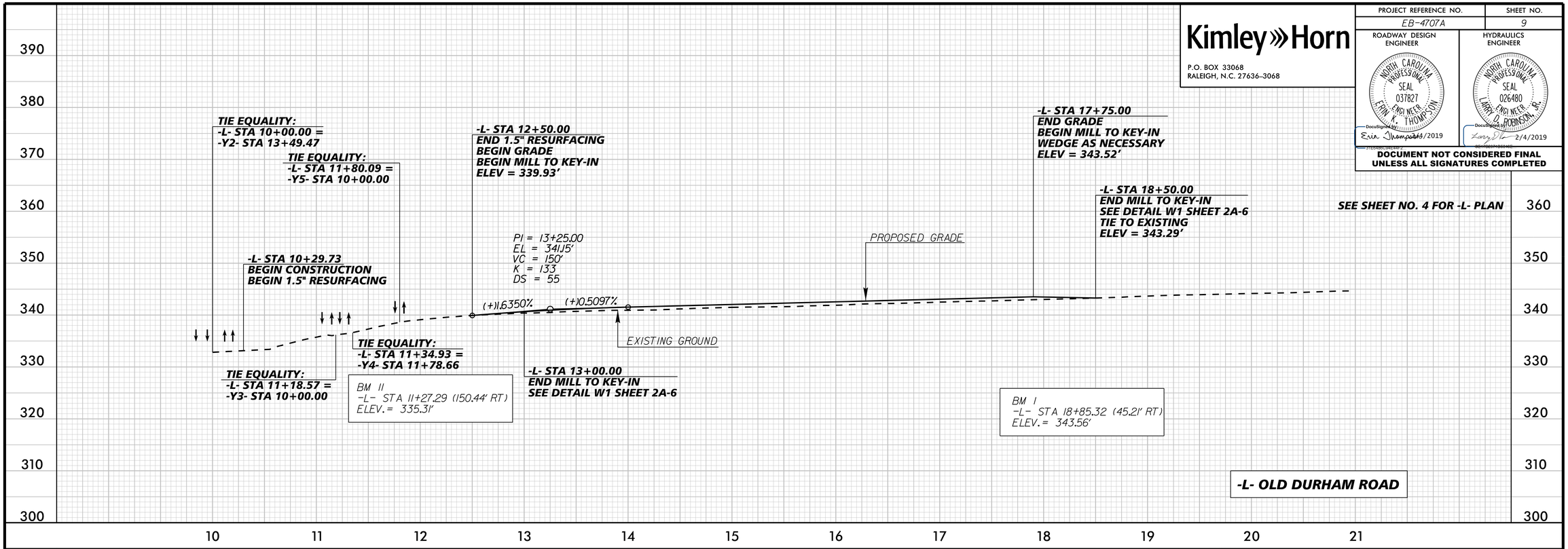

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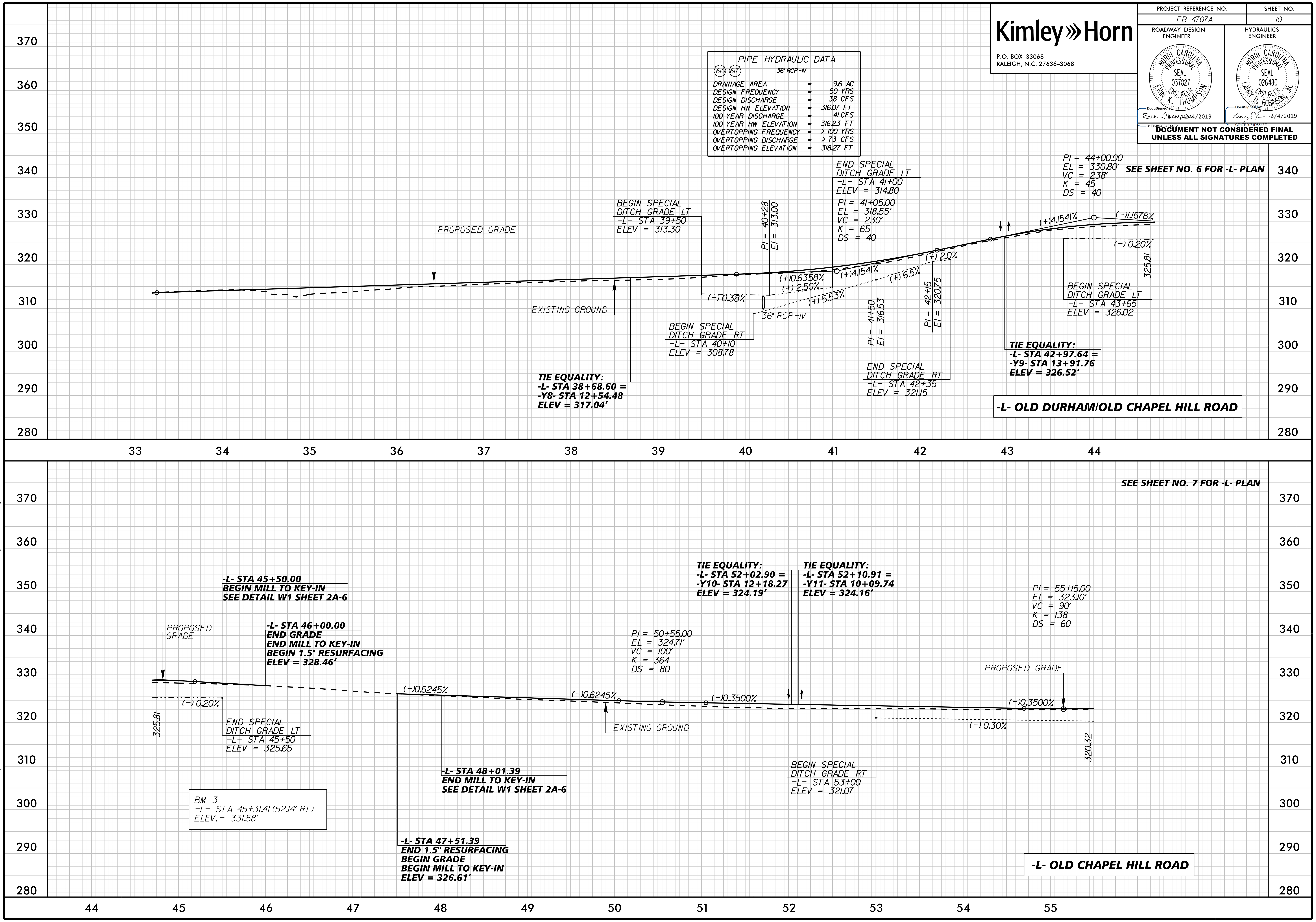

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	11

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RALEIGH, N.C. 27636-3068

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON — Erin Thompson 2/4/2019

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR. — 2/4/2019

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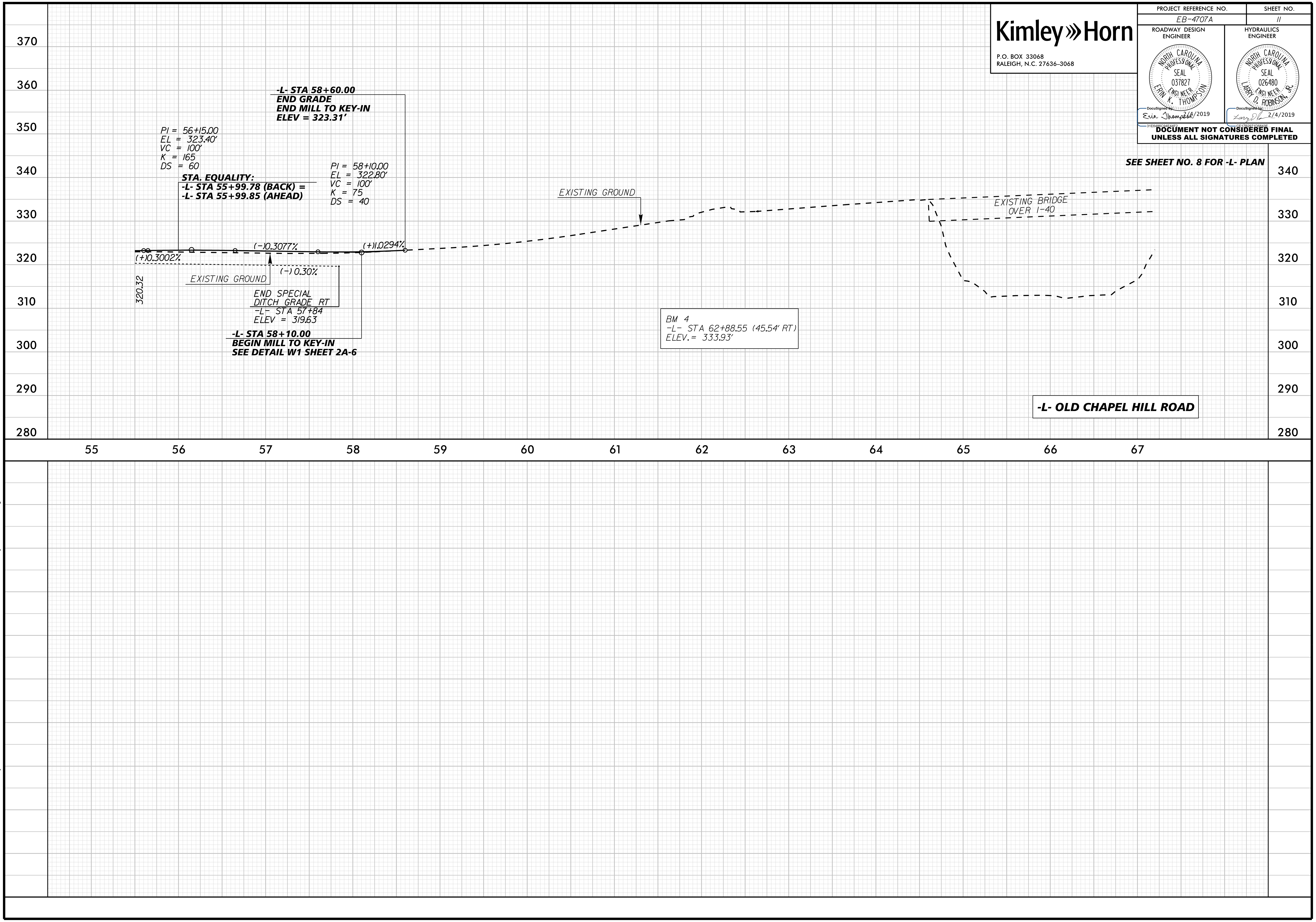
SEE SHEET NO. 8 FOR -L- PLAN



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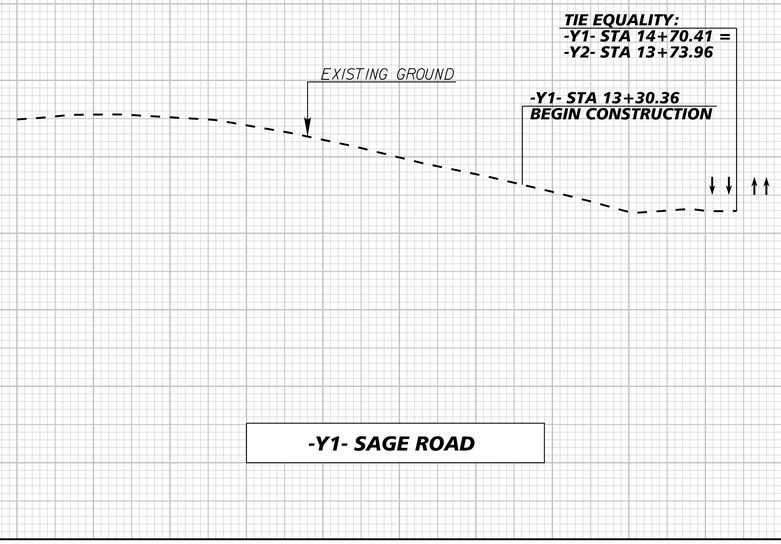
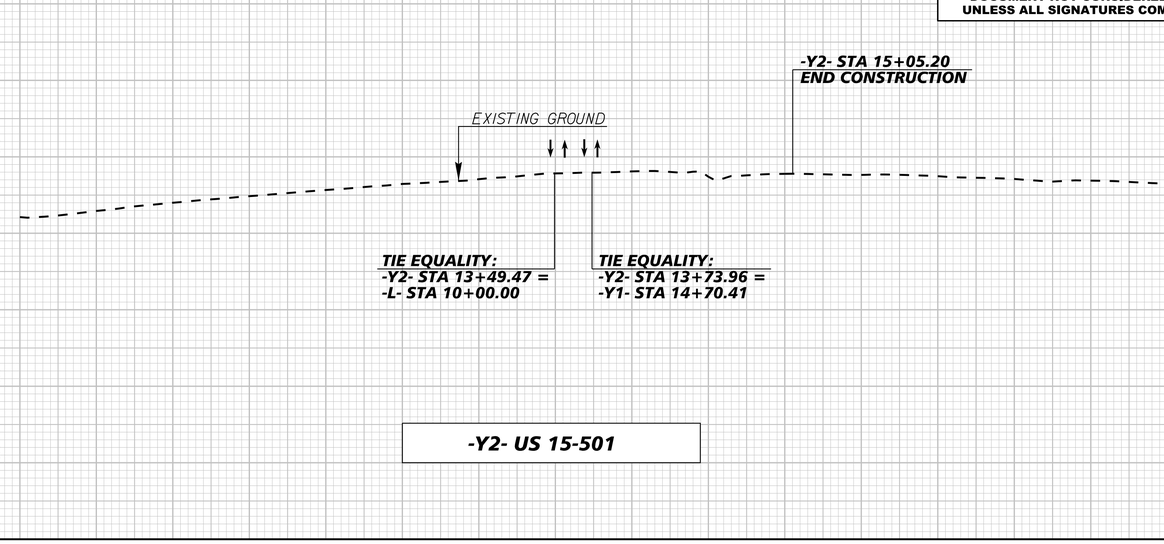
SEE SHEET NO. 4 FOR -Y1- PLAN



SEE SHEET NO. 4 FOR -Y2- PLAN



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P.O. BOX 33068
RALEIGH, N.C. 27636–3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	12

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

DocuSigned by: Erin Thompson 2/4/2019

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.

DocuSigned by: Larry Robinson 2/4/2019

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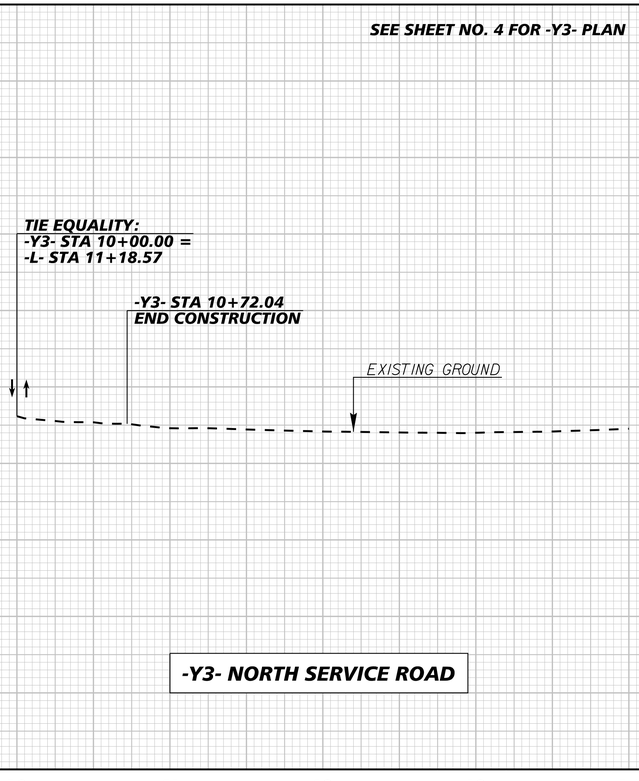
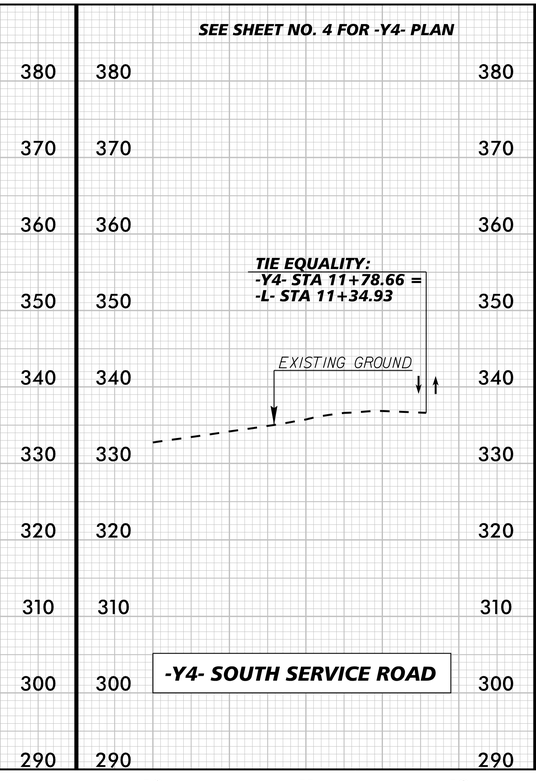
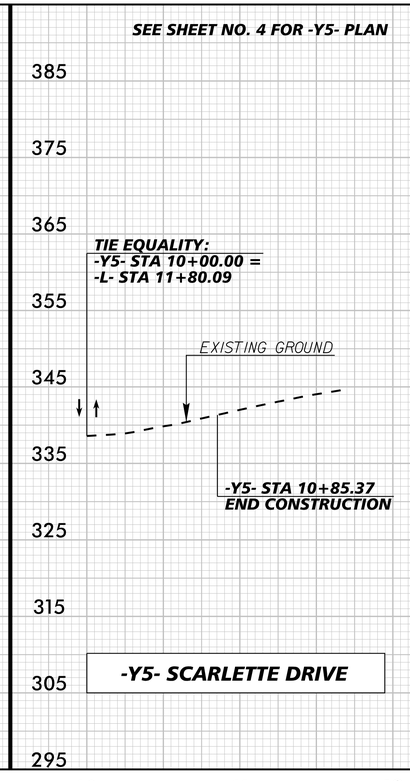
SEE SHEET NO. 4 FOR -Y3- PLAN



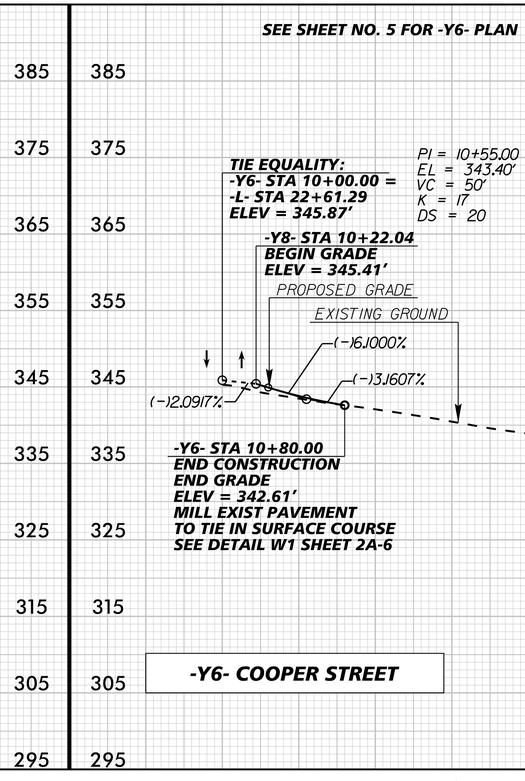
SEE SHEET NO. 4 FOR -Y4- PLAN



SEE SHEET NO. 4 FOR -Y5- PLAN



SEE SHEET NO. 5 FOR -Y6- PLAN



SEE SHEET NO. 5 FOR -Y7- PLAN

TIE EQALITY:
-Y7- STA 10+00.00=
-L- STA 26+16.47
ELEV = 335.64'

-Y7- STA 10+16.43
BEGIN GRADE
ELEV = 335.23'

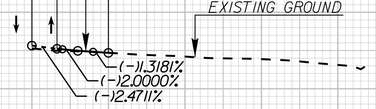
PROPOSED GRADE

PI = 10+30.00
EL = 334.96'
VC = 20'
K = 29
DS = 25

-Y7- STA 10+50.00
END CONSTRUCTION
END GRADE
ELEV = 334.70'
MILL EXIST PAVEMENT
TO TIE IN SURFACE COURSE
SEE DETAIL W1 SHEET 2A-6

EXISTING GROUND

(-)1.3181%
(-)2.0000%
(-)2.4711%



-Y7- STANDISH DRIVE

SEE SHEET NO. 6 FOR -Y8- PLAN

-Y8- STA 11+55.00
BEGIN CONSTRUCTION
BEGIN GRADE
ELEV = 313.98'
MILL EXIST PAVEMENT
TO TIE IN SURFACE COURSE
SEE DETAIL W1 SHEET 2A-6

PI = 12+12.00
EL = 317.00'
VC = 40'
K = 14
DS = 25

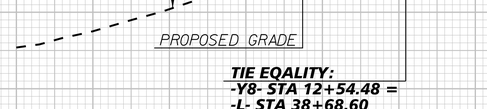
-Y8- STA 12+32.48
END GRADE
ELEV = 317.51'

(+)2.5000%
(+)5.2945%
(-)2.1364%

EXISTING GROUND

PROPOSED GRADE

TIE EQALITY:
-Y8- STA 12+54.48 =
-L- STA 38+68.60
ELEV = 317.04'



-Y8- BLUEFIELD DRIVE

SEE SHEET NO. 6 FOR -Y9- PLAN

PI = 13+17.00
EL = 328.20'
VC = 22'
K = 12
DS = 20

PI = 13+48.00
EL = 326.67'
VC = 40'
K = 17
DS = 15

PROPOSED GRADE

-Y9- STA 13+68.59
END GRADE
ELEV = 326.16'

-Y9- STA 13+06.00
BEGIN CONSTRUCTION
BEGIN GRADE
ELEV = 328.53'
MILL EXIST PAVEMENT
TO TIE IN SURFACE COURSE
SEE DETAIL W1 SHEET 2A-6

TIE EQUALITY:
-Y9- STA 13+91.76 =
-L- STA 42+97.64
ELEV = 326.52'

EXISTING GROUND

(-)3.0000%
(-)4.9050%
(-)2.5000%
(+)1.5537%

-Y9- E. LAKEVIEW DRIVE

SEE SHEET NO. 7 FOR -Y10- PLAN

PROPOSED GRADE

-Y10- STA 11+70.00
BEGIN CONSTRUCTION
BEGIN GRADE
ELEV = 322.66'
MILL EXIST PAVEMENT
TO TIE IN SURFACE COURSE
SEE DETAIL W1 SHEET 2A-6

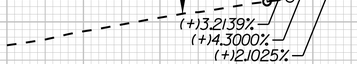
-Y10- STA 12+01.10
END GRADE
ELEV = 323.83'

TIE EQUALITY:
-Y10- STA 12+18.27 =
-L- STA 52+02.90
ELEV = 324.19'

EXISTING GROUND

(+)3.2139%
(+)4.3000%
(+)2.1025%

PI = 11+85.00
EL = 323.14'
VC = 30'
K = 28
DS = 25



-Y10- WHITE OAK DRIVE

SEE SHEET NO. 7 FOR -Y11- PLAN

TIE EQUALITY:
-Y11- STA 10+09.74 =
-L- STA 52+10.91
ELEV = 324.16'

-Y11- STA 10+25.96
BEGIN GRADE
ELEV = 323.83'

PI = 10+50.00
EL = 322.26'
VC = 40'
K = 18
DS = 20

PROPOSED GRADE

-Y11- STA 10+70.00
END CONSTRUCTION
END GRADE
ELEV = 321.41'
MILL EXIST PAVEMENT
TO TIE IN SURFACE COURSE
SEE DETAIL W1 SHEET 2A-6

EXISTING GROUND

(-)4.2631%
(-)6.5000%
(-)12.0838%

-Y11- WHITE OAK DRIVE

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	13

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON

DocuSigned by: Erin Thompson 2/4/2019

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.

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PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	14

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON	NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
2/1/2019	2/4/2019

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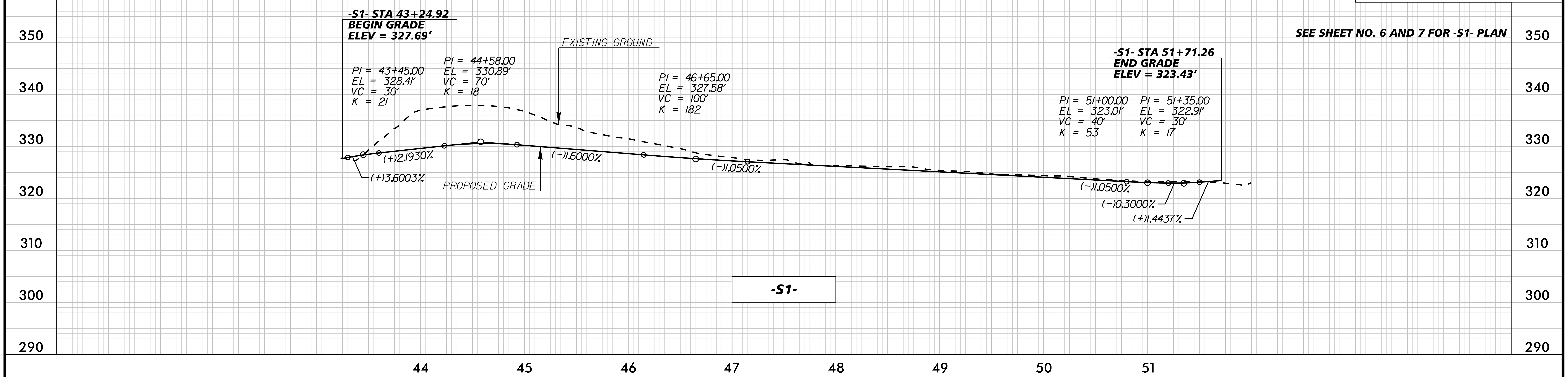
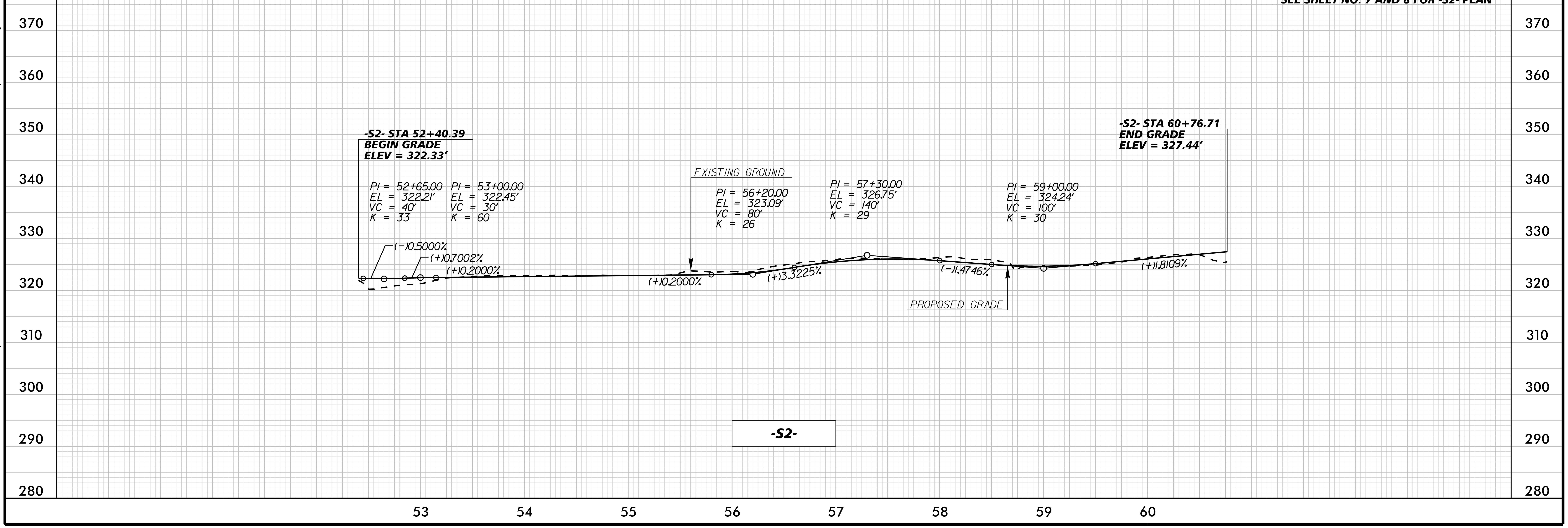
SEE SHEET NO. 6 AND 7 FOR -S1- PLAN



SEE SHEET NO. 7 AND 8 FOR -S2- PLAN



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RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
EB-4707A	15

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON	NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Erin Thompson 2/4/2019	DocuSigned by: 2/4/2019

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SEE SHEET NO. 7 AND 8 FOR -S3- PLAN