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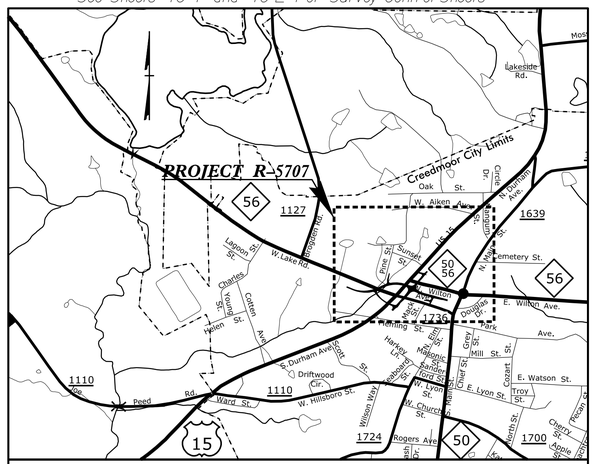
09/08/09

TIP PROJECT: R-5707

CONTRACT: C204324

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheets 1C-1 and 1C-2 For Survey Control Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GRANVILLE COUNTY

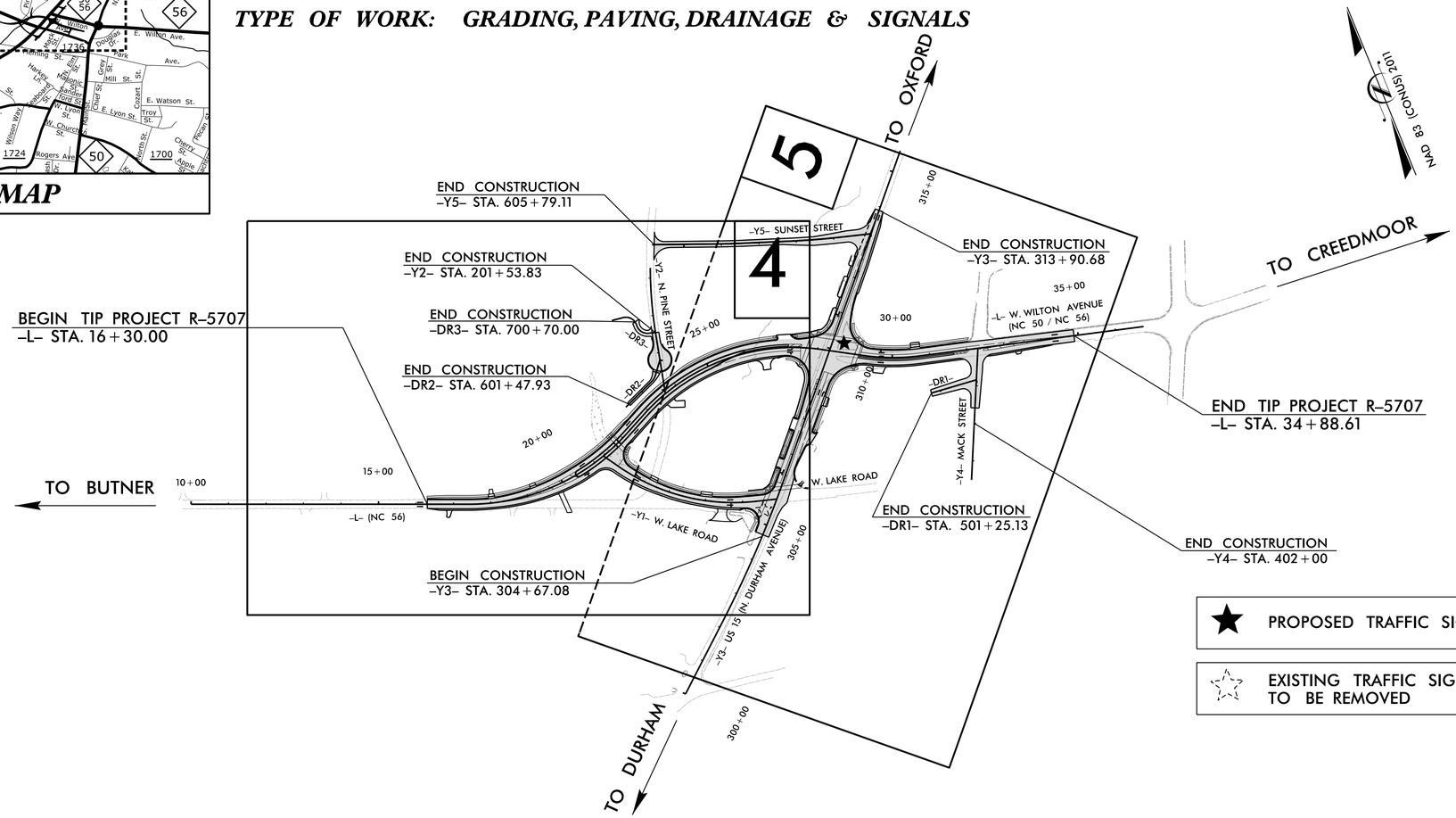
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5707	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46379.1.1		PE
46379.2.1		R/W, UTIL.
46379.3.1		CONST.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: *NC 56 (W. LAKE ROAD & W. WILTON AVENUE) AT US 15 (N. DURHAM AVENUE) AND NC 50 IN CREEDMOOR*

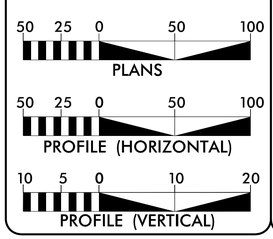
TYPE OF WORK: *GRADING, PAVING, DRAINAGE & SIGNALS*



★ PROPOSED TRAFFIC SIGNAL

☆ EXISTING TRAFFIC SIGNAL TO BE REMOVED

GRAPHIC SCALES



DESIGN DATA

ADT 2015= 9,600 VPD
ADT 2040= 16,900 VPD

T = 3%*
V = 40 MPH
* TTST =2% DUAL 1%

FUNC CLASS =
MINOR ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT R-5707 = 0.352 MILES

NCDOT CONTACT: S. REID DAVIDSON, PE
DIVISION 5 DDC ENGINEER
PH: 919-220-4600

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

2018 STANDARD SPECIFICATIONS

JULY 18, 2017
RIGHT OF WAY DATE:
APRIL 16, 2019
LETTING DATE:

CLAUDETTE M.K. ROQUE, PE
PROJECT ENGINEER

HERB RIDGEWAY, IV
PROJECT DESIGNER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER
DocuSigned by: Karen Hefner 1/30/2019
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE
DocuSigned by: Claudette M.K. Roque 1/29/2019
SIGNATURE:

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

1/29/2019
...\Roadway\Proj\R5707_Rdy_tsh.dgn
User:kwise

8/17/99

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

INDEX OF SHEETS, GENERAL NOTES AND 2018 ROADWAY ENGLISH STANDARD DRAWINGS

PROJECT REFERENCE NO.	SHEET NO.
R–5707	1A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE
Claudette M.K. Roque
1/29/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NC License No. C-0910

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-2	SURVEY CONTROL SHEETS
2A-1 THRU 2A-4	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-2	RIGHT OF WAY DETAIL SHEETS
2C-1	EXTRA DEPTH CONC CATCH BASIN FOR 12" THRU 84" PIPE
2C-2	CONC CATCH BASIN (OPEN THROAT) FOR 12" THRU 60" PIPE
2C-3	DIRECTIONAL CURB RAMP DETAILS
2C-4	PARALLEL CURB RAMP DETAILS
2C-5	TEMP STEEL COVER OVER DRAINAGE STRUCTURE
2C-6	CONVERT EXIST DI, CB, OTCB OR GI TO JUNCTION BOX
3B-1	EARTHWORK, PAVEMENT REMOVAL, AND PARCEL INDEX
3D-1 THRU 3D-4	DRAINAGE SUMMARY SHEETS
4 THRU 5	PLAN SHEETS
6 THRU 7	PROFILE SHEETS
TMP-1 THRU TMP-7	TRAFFIC CONTROL PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING SIGNING PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
SIGN-1 THRU SIGN-6	SIGNING PLANS
SIG-1 THRU SIG-16	SIGNAL PLANS
UC-1 THRU UC-6	UTILITY CONSTRUCTION PLANS
UO-1 THRU U0-3	UTILITY BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-25	CROSS-SECTIONS

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

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 ON WHICH THE PROPOSED 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 III.

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

GENERAL NOTES (CONTINUED): 2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

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.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 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.

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE SGWASA, PSNC, DUKE ENERGY, FRONTIER, AND CHARTER (SPECTRUM)

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

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.

EFF. 01–16–2018
REV.

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	
200.03	Method of Clearing – Method III
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

EFF. 01–16–2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS (CONTINUED)

STD.NO.	TITLE
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
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
838.21	Reinforced Concrete Endwall – for Single 54" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall – Std. Dwg 838.21 thru 838.40
838.51	Reinforced Brick Endwall – for Single 54" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall – Std. Dwg 838.51 thru 838.70
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
840.17	Concrete Grated Drop Inlet Type 'A' – 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' – 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' – 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames – Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' – 12" thur 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' – 12" thur 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' – 12" thur 36" Pipe
840.31	Concrete Junction Box – 12" thru 66" Pipe
840.32	Brick Junction Box – 12" thru 66" Pipe
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
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
852.01	Concrete Islands
852.05	Median Curb for Catch Basin – for Use with 1'–6" Curb and Gutter
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

1/29/2019
...\Roadway\Proj\R5707_Rdy_1A.dgn
User: kwise

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-5707	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 — CA
- Existing Control of Access — CA
- New Control of Access — CA
- 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 — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

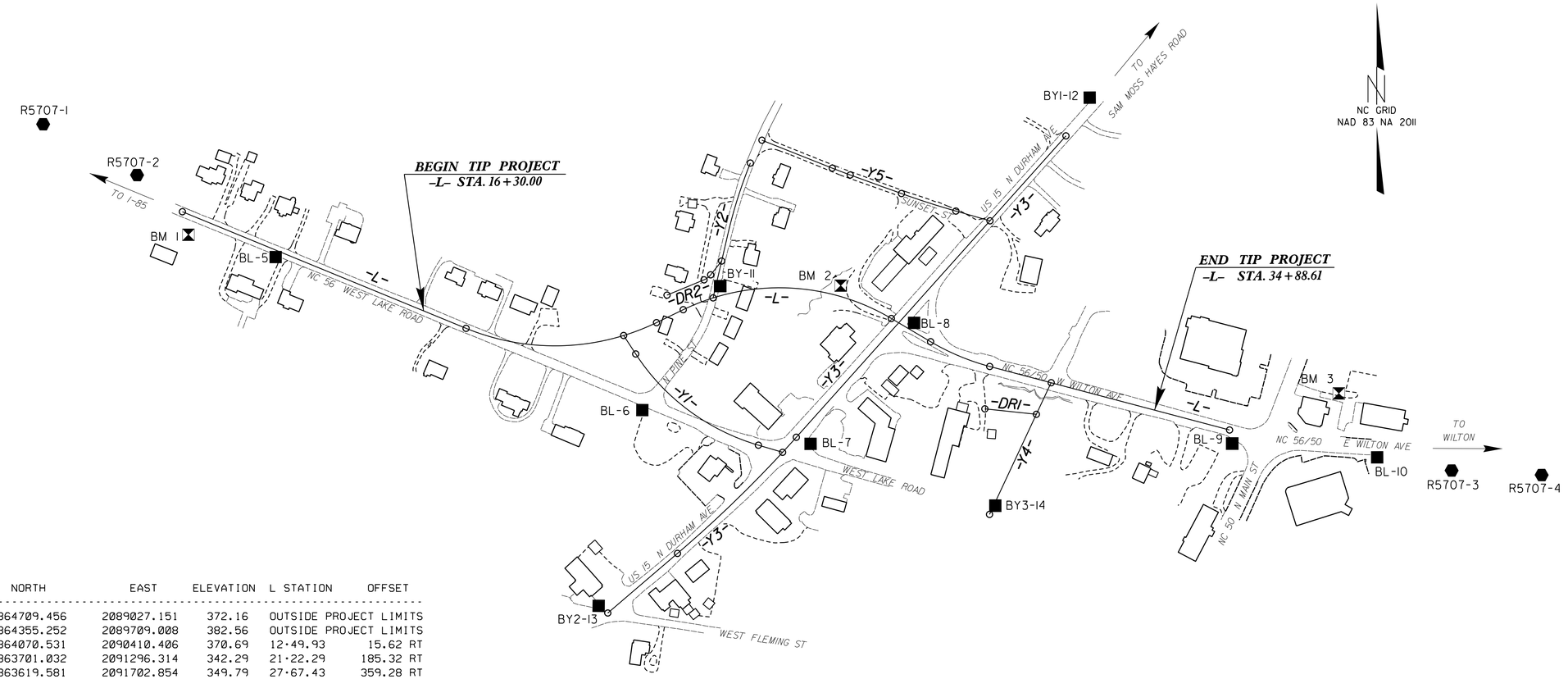
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
R-5707	1C-1
Location and Surveys	

SURVEY CONTROL SHEET R-5707



CONTROL DATA
BASELINE

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	R5707-1	864709.456	2089027.151	372.16	OUTSIDE PROJECT LIMITS	
2	R5707-2	864355.252	2089709.008	382.56	OUTSIDE PROJECT LIMITS	
5	BL-5	864070.531	2090410.406	370.69	12+49.93	15.62 RT
6	BL-6	863701.032	2091296.314	342.29	21+22.29	185.32 RT
7	BL-7	863619.581	2091702.854	349.79	27+67.43	359.28 RT
8	BL-8	863911.668	2091952.987	351.97	28+63.54	18.86 LT
9	BL-9	863620.102	2092721.582	369.96	OUTSIDE PROJECT LIMITS	
10	BL-10	863586.506	2093072.219	384.39	OUTSIDE PROJECT LIMITS	
3	R5707-3	863563.846	2093457.978	373.14	OUTSIDE PROJECT LIMITS	
4	R5707-4	863542.866	2094343.020	356.14	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
11	BY-11	864000.6210	2091484.7860	347.42	200+21.04	10.42 RT
6	BL-6	863701.0320	2091296.3140	342.29	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
12	BY1-12	864455.4560	2092378.4460	364.30	OUTSIDE PROJECT LIMITS	
8	BL-8	863911.6680	2091952.9870	351.97	310+18.81	27.67 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
7	BL-7	863619.5810	2091702.8540	349.79	306+34.35	36.08 RT
13	BY2-13	863228.3060	2091190.8510	344.07	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
7	BL-7	863619.5810	2091702.8540	349.79	OUTSIDE PROJECT LIMITS	
14	BY3-14	863470.2880	2092149.0180	374.00	403+26.11	3.35 LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R5707-1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 864709.456(ft) EASTING: 2089027.151(ft)
ELEVATION: 372.16(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99997555 (1/X = 1.00002445)
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"R5707-1" TO -L- STATION 16+30.00 IS
S 66°10'11.1' E 1903.00'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

BENCHMARK DATA

BM 1 ELEVATION = 380.02'
N 864124 E 2090200
L STATION 10+35.00 46' RIGHT
RRS IN 26" PINE

BM 2 ELEVATION = 350.79'
N 864001 E 2091776
L STATION 26+70.00 25' LEFT
RRS IN 24" SWEET GUM

BM 3 ELEVATION = 385.68'
N 863741 E 2092979
L STATION 36+76.00
N 71°29'37.2" E DIST 278.51'
RRS IN 16" OAK

NOTES:

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⬢ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

PROJECT REFERENCE NO.	SHEET NO.
R-5707	1C-2
Location and Surveys	

SURVEY CONTROL SHEET R-5707

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	17+05.00	-55.00	863962.9731	2090858.1873
L	17+10.00	-57.00	863962.9236	2090863.5723
L	17+10.00	-40.00	863947.1982	2090857.1140
L	17+10.00	-30.38	863938.2968	2090853.4582
L	17+16.00	41.00	863869.9916	2090831.8921
L	17+16.00	47.00	863864.4414	2090829.6127
L	17+18.00	-35.00	863939.5338	2090862.6147
L	17+21.00	30.08	863878.1934	2090840.6658
L	17+24.65	41.00	863866.7062	2090839.8917
L	17+26.65	47.00	863860.3940	2090839.4678
L	17+31.00	60.00	863846.7175	2090838.5494
L	17+41.00	-30.44	863926.5765	2090882.1573
L	17+41.00	-35.00	863930.7961	2090883.8903
L	17+43.34	59.86	863842.0738	2090850.2499
L	17+46.00	69.00	863832.4851	2090849.5790
L	17+49.88	59.84	863839.4060	2090856.9719
L	17+52.00	67.00	863831.8802	2090856.5662
L	19+51.24	102.69	863753.4706	2091073.4980
L	19+52.00	113.00	863743.1471	2091074.2269
L	19+53.00	-29.77	863885.8808	2091077.4941
L	19+56.00	-52.00	863908.0792	2091080.5398
L	19+57.75	105.65	863750.4239	2091081.1745
L	19+58.00	112.00	863744.0683	2091081.4320
L	19+69.00	-50.00	863906.1069	2091092.3707
L	19+74.00	-73.00	863929.1842	2091096.4057
L	19+76.00	-50.00	863906.2347	2091098.7499
L	19+81.00	-72.00	863928.3608	2091102.5338
L	19+86.00	-31.00	863887.5760	2091108.6934
L	19+89.00	-48.00	863904.6841	2091110.6892
L	20+60.00	-33.00	863897.1737	2091177.8175
L	20+60.00	-65.00	863928.6855	2091172.2492
L	21+05.00	-70.00	863942.0075	2091209.8884
L	21+90.00	-33.00	863932.0925	2091294.8567
L	21+90.00	-57.00	863954.1510	2091285.4006
L	25+90.00	-60.00	864052.1007	2091697.4646
L	25+90.00	-33.00	864025.2921	2091694.2549
L	26+65.00	-33.00	864010.3010	2091772.4079
L	26+75.00	-80.00	864052.6635	2091795.5713
L	26+85.00	-73.00	864042.7040	2091804.5472
L	29+80.00	50.00	863793.4113	2092024.2967
L	29+80.00	60.00	863784.3201	2092020.1315
L	30+00.00	72.00	863764.3833	2092035.7948
L	30+11.00	50.00	863780.2049	2092055.3438
L	30+11.00	72.00	863759.7317	2092047.2910
L	30+27.41	-48.77	863866.8354	2092105.5281
L	30+28.76	-39.29	863857.4967	2092103.4982
L	31+00.00	-32.00	863831.2624	2092166.7586
L	31+00.00	-48.00	863846.7296	2092170.8534
L	31+30.00	-32.00	863823.5848	2092195.7596
L	31+30.00	-48.00	863839.0519	2092199.8543
L	33+05.00	52.00	863697.5959	2092343.4342
L	33+30.00	45.00	863697.9647	2092369.3931
L	34+10.00	29.84	863692.1487	2092450.6093
L	34+10.00	45.00	863677.4910	2092446.7289

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	102+15.00	-55.00	863758.7885	2091422.9126
Y1	102+15.00	-35.00	863743.3554	2091410.1918
Y1	102+25.00	82.00	863645.8164	2091344.7476
Y1	102+25.00	56.19	863666.0372	2091360.7871
Y1	102+36.00	90.00	863631.6630	2091349.9309
Y1	102+46.00	85.00	863628.7141	2091362.2527
Y1	102+55.00	-55.00	863737.0320	2091451.4236
Y1	102+55.00	-35.00	863720.6885	2091439.8958
Y1	102+67.00	44.50	863648.3492	2091404.7810
Y1	103+15.00	-56.00	863709.4317	2091497.5266
Y1	103+21.00	-58.00	863708.6400	2091503.1909
Y1	103+25.00	-35.00	863686.6034	2091495.6602
Y1	103+35.00	-35.00	863682.3421	2091503.9750
Y1	103+35.00	-50.00	863695.7548	2091510.6908
Y1	103+65.00	-50.00	863684.2736	2091535.3292
Y1	103+65.00	-35.00	863670.5044	2091529.3786

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	305+93.83	-58.00	863652.6545	2091606.0002
Y3	308+35.00	-52.57	863828.2203	2091770.6142
Y3	310+85.00	-52.51	864014.4618	2091937.3898
Y3	310+85.00	-57.00	864017.4584	2091934.0418
Y3	310+91.00	-52.50	864018.9300	2091941.3943
Y3	310+91.00	-57.00	864021.9292	2091938.0433
Y3	311+47.00	49.58	863992.5787	2092054.8047
Y3	311+47.00	61.00	863984.9607	2092063.3163
Y3	311+53.00	49.58	863997.0464	2092058.8098
Y3	311+53.00	61.00	863989.4315	2092067.3178

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	400+78.00	45.00	863715.4950	2092210.4162
Y4	401+28.00	35.00	863665.9712	2092198.2753
Y4	401+28.00	45.00	863670.2108	2092189.2185

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	18+23.01	-24.87	863896.9968	2090954.4706
L	20+40.00	-33.00	863894.2257	2091159.2188
L	22+15.14	-33.00	863941.9012	2091316.4011
L	22+86.91	-33.00	863973.0849	2091381.0407
L	23+57.53	-33.00	864001.1071	2091450.5453
L	23+57.96	50.00	863922.3623	2091476.7833
L	24+25.00	50.00	863937.5764	2091535.5573
L	24+35.00	-49.06	864036.8105	2091527.5513
L	24+63.41	-33.00	864025.3470	2091560.1449
L	26+00.00	75.00	863916.9565	2091689.9380
L	26+39.00	56.00	863929.7169	2091726.9181
L	27+00.00	-33.00	863999.5786	2091807.9877
L	27+40.00	55.00	863903.4638	2091813.3698
L	27+65.00	-45.00	863984.3936	2091877.0729
L	29+25.29	50.00	863820.7963	2091971.4414
L	29+73.93	-32.00	863870.3721	2092053.2597
L	30+29.77	-32.00	863850.3086	2092101.9386
L	30+76.51	50.00	863758.0047	2092123.0657
L	30+76.51	-32.00	863837.2739	2092144.0512
L	31+85.38	50.00	863730.1416	2092228.3138
L	32+00.00	-32.00	863805.6703	2092263.4284
L	32+21.07	-45.00	863812.8459	2092287.1205
L	32+56.52	50.00	863711.9361	2092297.0814
L	33+00.00	29.45	863720.6715	2092344.3709

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	101+72.94	-35.00	863769.5180	2091380.8867
Y1	104+25.00	-35.00	863651.2054	2091581.9805

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	200+47.65	-22.87	864034.0928	2091458.4093
Y2	201+09.66	27.34	864083.0812	2091521.3934
Y2	201+13.37	-22.74	864098.0716	2091473.4634

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	306+00.00	-52.10	863653.1637	2091614.4396
Y3	309+00.00	-53.18	863877.0582	2091813.5121
Y3	309+05.00	49.39	863812.3839	2091893.2688
Y3	310+60.00	-52.52	863995.8447	2091920.7044
Y3	311+00.00	49.54	863957.5822	2092023.4321

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	402+10.00	13.79	863582.7104	2092182.7214
Y4	402+10.00	-14.70	863570.6318	2092208.5245
Y4	402+10.00	35.00	863591.7033	2092163.5101
Y4	402+10.00	-35.00	863562.0264	2092226.9080

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R5707-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 864709.456(ft) EASTING: 2089027.151(ft) ELEVATION: 372.16(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99997555 (1/X = 1.00002445) THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R5707-1" TO -L- STATION 16+30.00 IS S 66°10'11.1" E 1903.00' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	864179.9270	2090185.1487
PC	17+41.01	863898.4173	2090870.6007
PT	22+15.14	863912.1791	2091330.7397
PC	22+86.91	863943.3628	2091395.3793
PT	28+10.96	863922.1786	2091898.1244
PC	29+21.19	863866.1012	2091993.0237
PT	30+76.51	863806.3396	2092135.8617
POT	36+75.86	863652.9525	2092715.2534

Y1

TYPE	STATION	NORTH	EAST
POT	100+00.00	863881.0465	2091251.4166
PC	100+53.30	863836.4071	2091280.5397
PT	104+30.39	863616.1788	2091576.9548
POT	104+91.38	863599.0166	2091635.4803

Y2

TYPE	STATION	NORTH	EAST
POT	199+89.07	863971.8530	2091467.3808
PC	201+48.52	864127.1421	2091503.5892
PT	203+27.40	864297.5116	2091557.5084

Y3

TYPE	STATION	NORTH	EAST
POT	300+00.00	863210.9808	2091212.9847
PC	302+21.56	863354.8698	2091381.4648
PT	306+23.26	863635.3857	2091668.5725
POT	316+00.00	864363.1881	2092319.9757

Y4

TYPE	STATION	NORTH	EAST
POT	400+00.00	863767.0584	2092284.2395
POT	403+51.13	863449.0489	2092135.3778

Y5

TYPE	STATION	NORTH	EAST
POT	600+00.00	864158.0244	2092136.3485
PC	600+85.59	864181.5190	2092054.0438
PT	602+23.70	864223.9825	2091922.6538
PC	603+55.40	864268.7862	2091798.8065
PT	604+01.86	864285.2645	2091755.3714
POT	605+84.63	864352.7320	2091585.5134

DR1

TYPE	STATION	NORTH	EAST
POT	500+00.00	863690.8333	2092248.5582
POT	501+25.13	863703.8866	2092124.1076

DR2

TYPE	STATION	NORTH	EAST
POT	600+00.00	864060.8591	2091488.1342
PC	600+42.49	864027.6161	2091461.6652
PT	600+62.76	864015.5627	2091445.6465
POT	601+59.48	863978.6313	2091356.2554

NOTES:

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⬢ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5707	2A-1

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17306, CLAUDETTE M.K. ROQUE — DocuSigned by: Claudette M.K. Roque 4BB3927205CC441... 3/5/2019

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030459, BEN UPSHAW — DocuSigned by: Ben Upshaw CD6EB110D6E54E5... 3/5/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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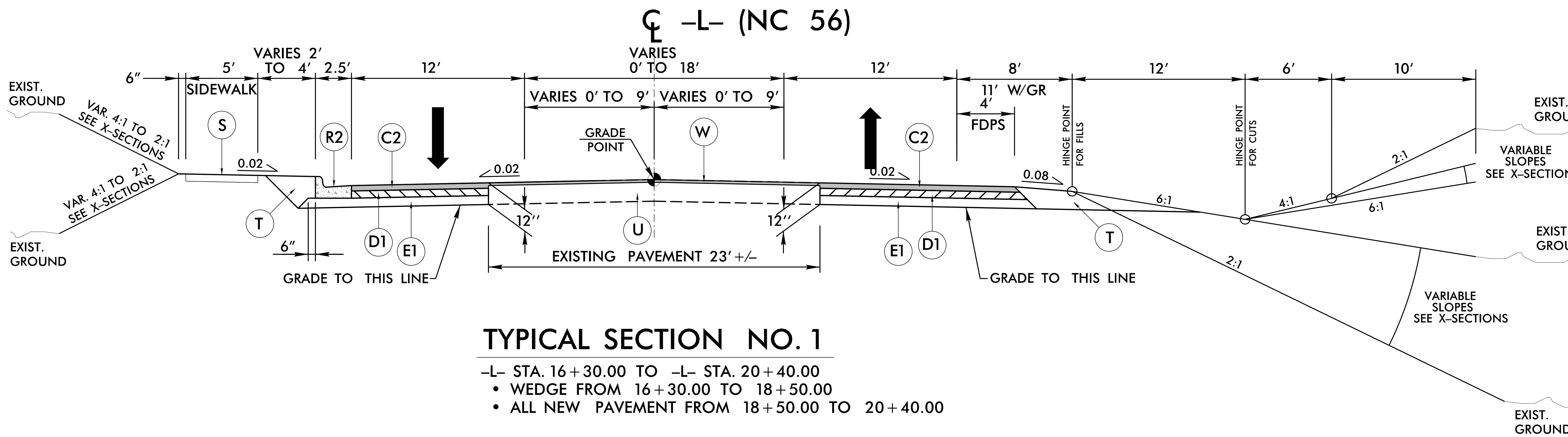
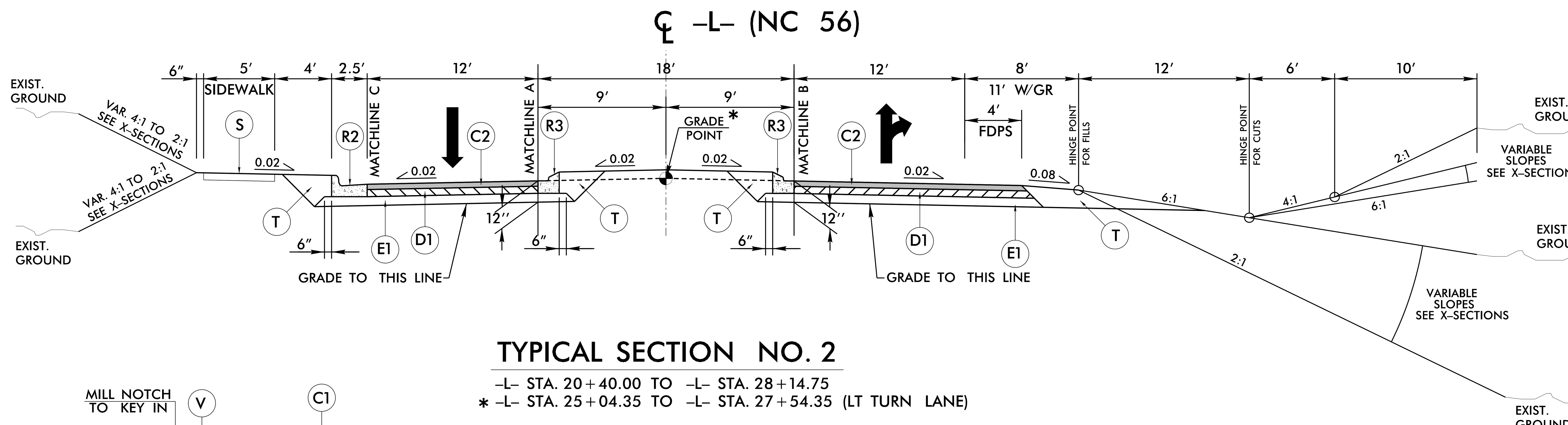


TYPICAL SECTION NO. 1

-L- STA. 16+30.00 TO -L- STA. 20+40.00
- WEDGE FROM 16+30.00 TO 18+50.00
- ALL NEW PAVEMENT FROM 18+50.00 TO 20+40.00



TYPICAL SECTION NO. 2

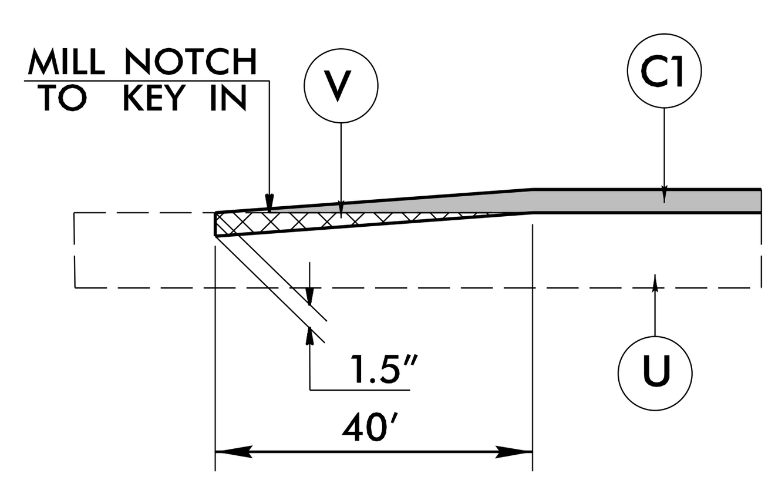
-L- STA. 20+40.00 TO -L- STA. 28+14.75
* -L- STA. 25+04.35 TO -L- STA. 27+54.35 (LT TURN LANE)

	PAVEMENT SCHEDULE
C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. 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	PROP. 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 TO EXCEED 2″ IN DEPTH.
D1	PROP. APPROX.4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. 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	PROP. APPROX. 5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. 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.
R1	5″ MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
R2	2′-6″ CURB AND GUTTER
R3	1′-6″ CURB AND GUTTER
R4	8″ X 6″ CURB
S	4″ CONCRETE SIDEWALK
T	COMPACTED EARTH MATERIAL
U	EXISTING PAVEMENT
U1	EXISTING GRAVEL
V	VAR. DEPTH MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD DETAIL ON THIS SHEET)

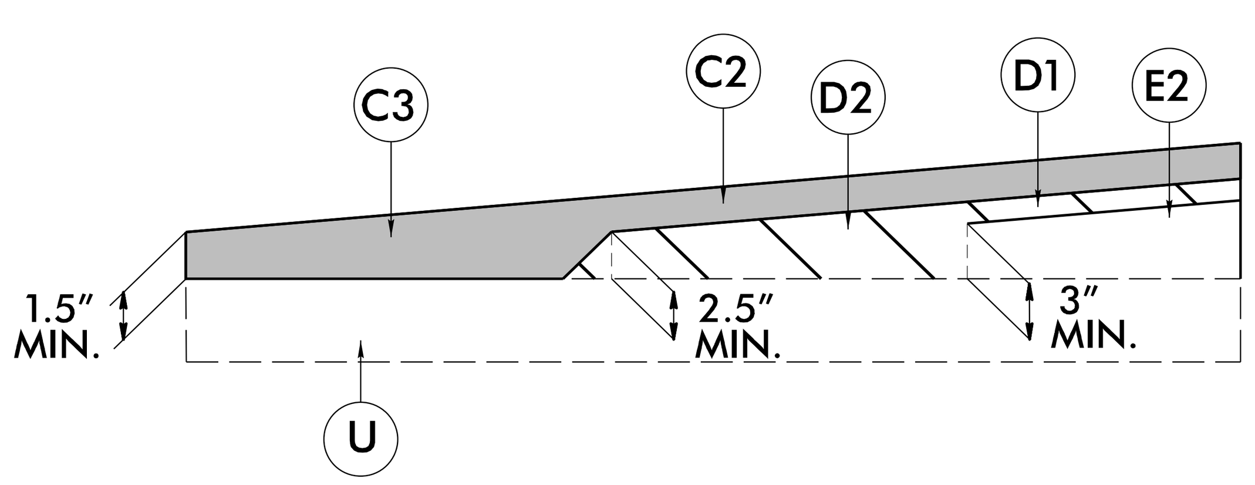
NOTE: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SPECIFIED.

NOTES:

1. SEE PLANS FOR LOCATION OF TURN LANES AND TAPERS.
2. SEE PLANS FOR RADII TURNOUTS AT INTERSECTIONS.

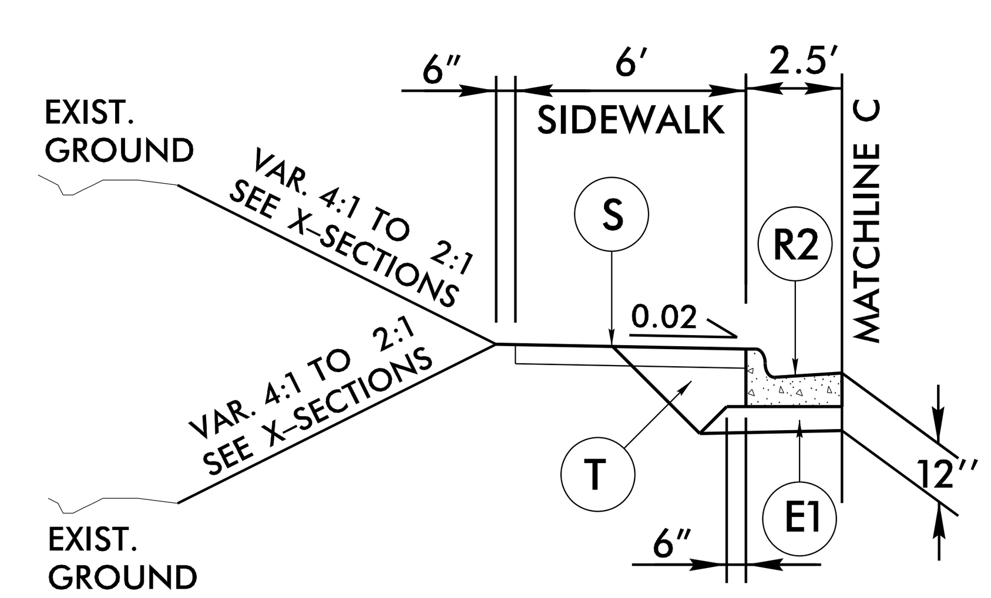


INCIDENTAL MILLING DETAIL



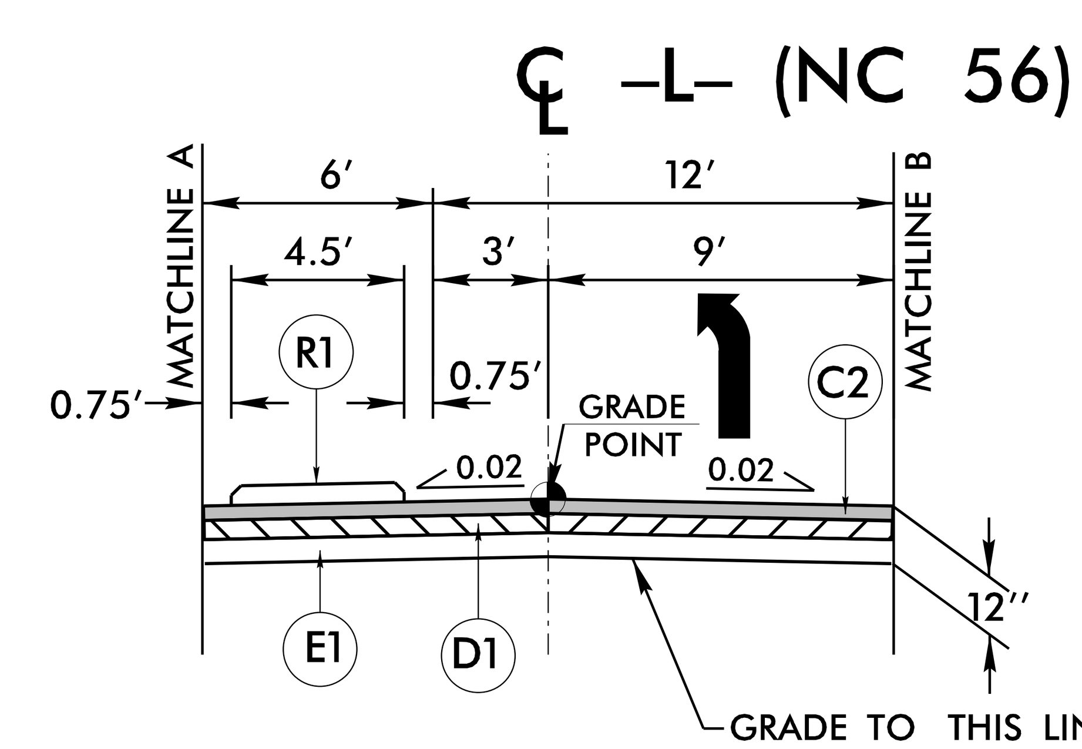
WEDGING DETAIL FOR RESURFACING

USE IN CONJUNCTION WITH TYPICAL SECTION NOS. 1 & 5



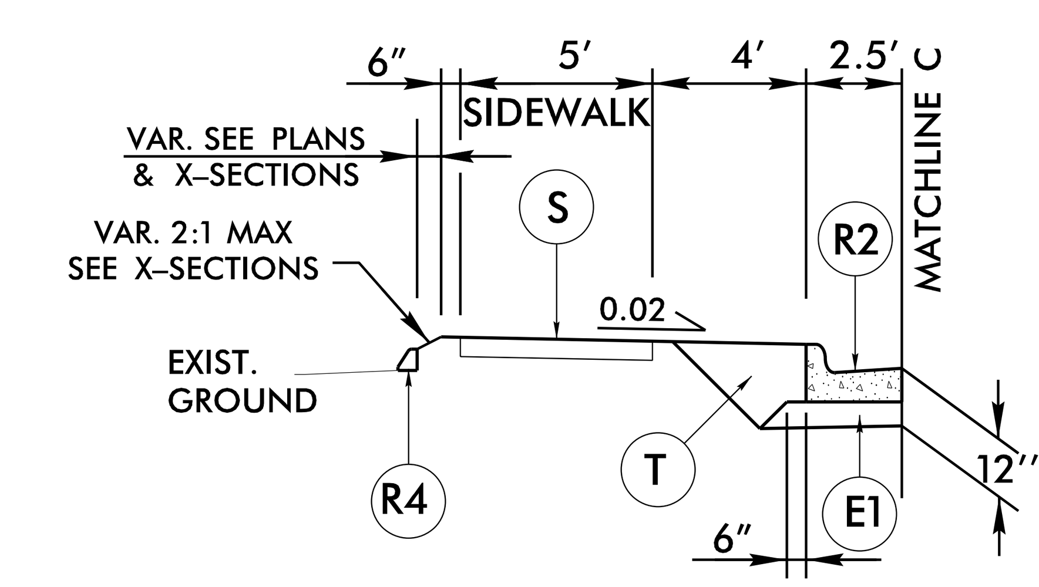
PARTIAL TYPICAL SECTION NO. 2A

-L- STA. 22+50.00 TO -L- STA. 24+20.00



PARTIAL TYPICAL SECTION NO. 2B

-L- STA. 26+04.35 TO -L- STA. 27+21.92



PARTIAL TYPICAL SECTION NO. 2C

-L- STA. 27+29.10 TO -L- STA. 28+12.32

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5707	2A-2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M. K. ROQUE — 3/5/2019

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030459 ENGINEER BEN UPSHAW — 3/5/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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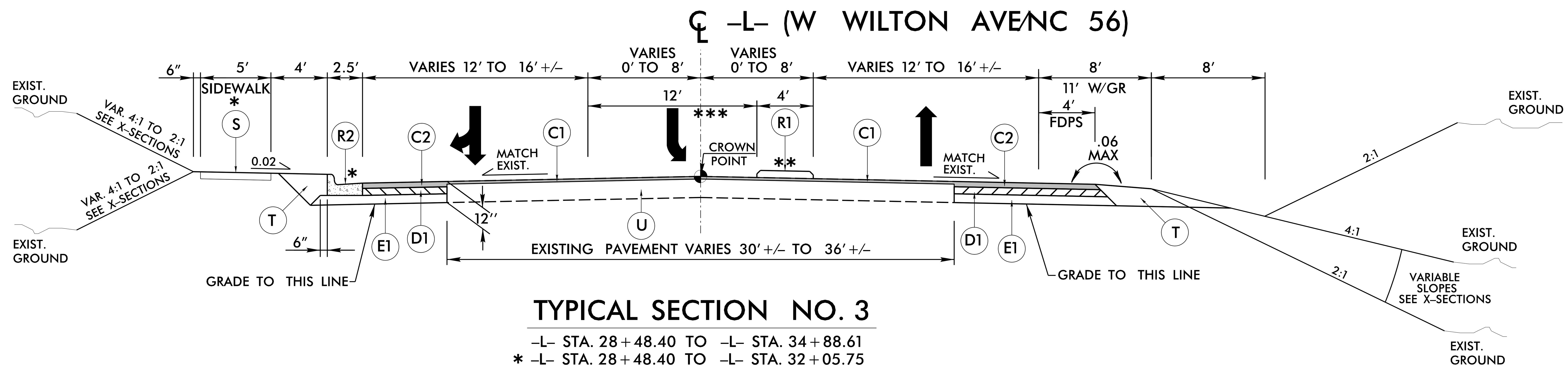
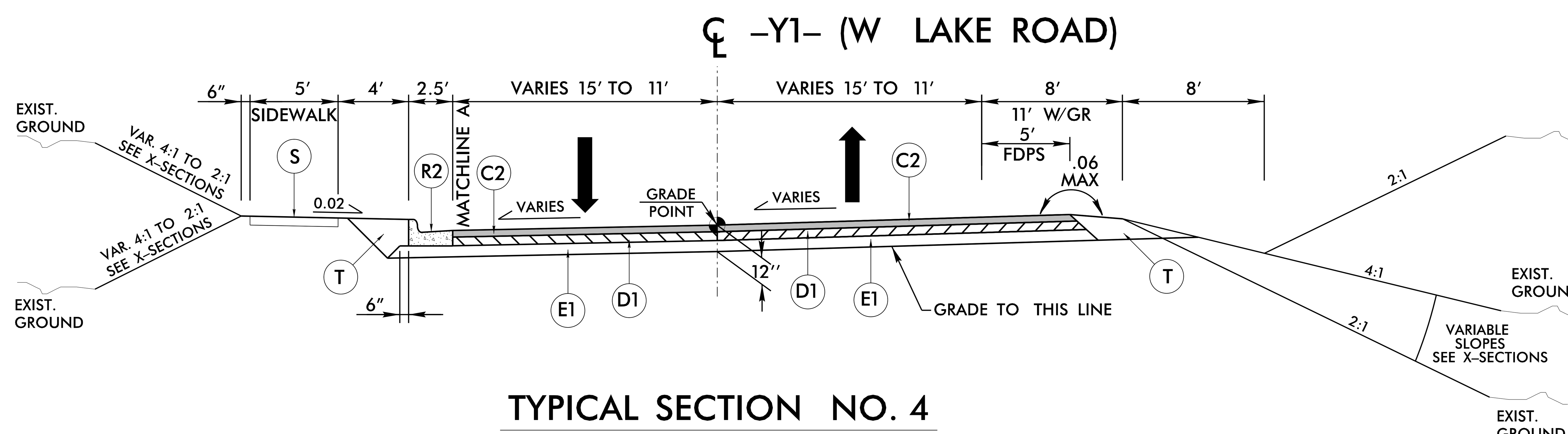


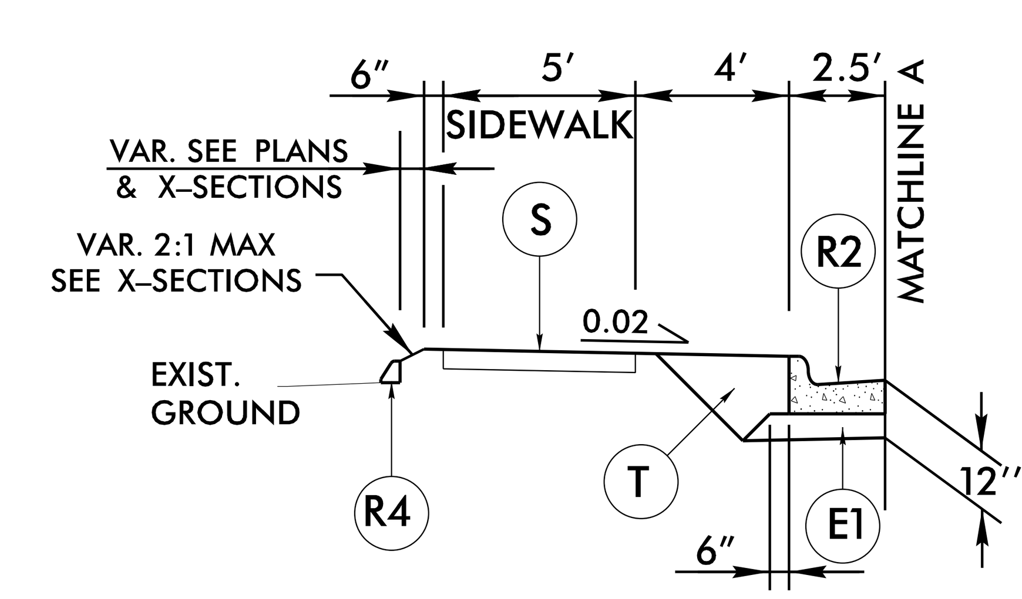
TYPICAL SECTION NO. 3

-L- STA. 28+48.40 TO -L- STA. 34+88.61
* -L- STA. 28+48.40 TO -L- STA. 32+05.75
** -L- STA. 29+10.89 TO -L- STA. 31+65.00
*** -L- STA. 28+95.28 TO -L- STA. 33+45.28 (LT TURN LANE)



TYPICAL SECTION NO. 4

-Y1- STA. 100+77.31 TO -Y1- STA. 104+72.94



PARTIAL TYPICAL SECTION NO. 4A

-Y1- STA. 104+17.12 TO -Y1- STA. 104+68.67

PAVEMENT SCHEDULE

C1	1.5″ S9.5C
C2	3″ S9.5C
C3	VAR. DEPTH S9.5C
D1	4″ I19.0C
D2	VAR. DEPTH I19.0C
E1	5″ B25.0C
E2	VAR. DEPTH B25.0C
R1	5″ MONO. ISLAND (SURFACE MOUNTED)
R2	2′-6″ CURB AND GUTTER
R3	1′-6″ CURB AND GUTTER
R4	8″ X 6″ CURB
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
U1	EXISTING GRAVEL
V	VAR. DEPTH MILLING
W	WEDGING

NOTE: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SPECIFIED.

NOTES:

1. SEE PLANS FOR LOCATION OF TURN LANES AND TAPERS.
2. SEE PLANS FOR RADII TURNOUTS AT INTERSECTIONS.

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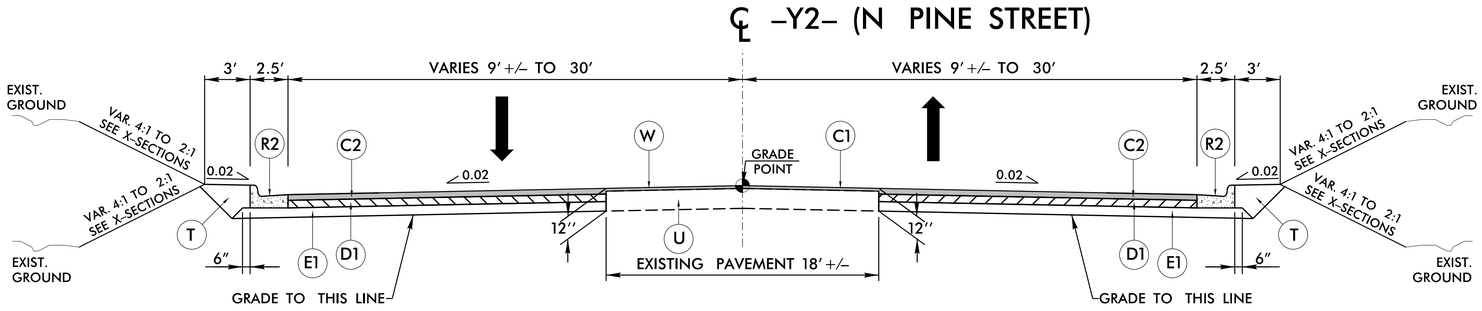
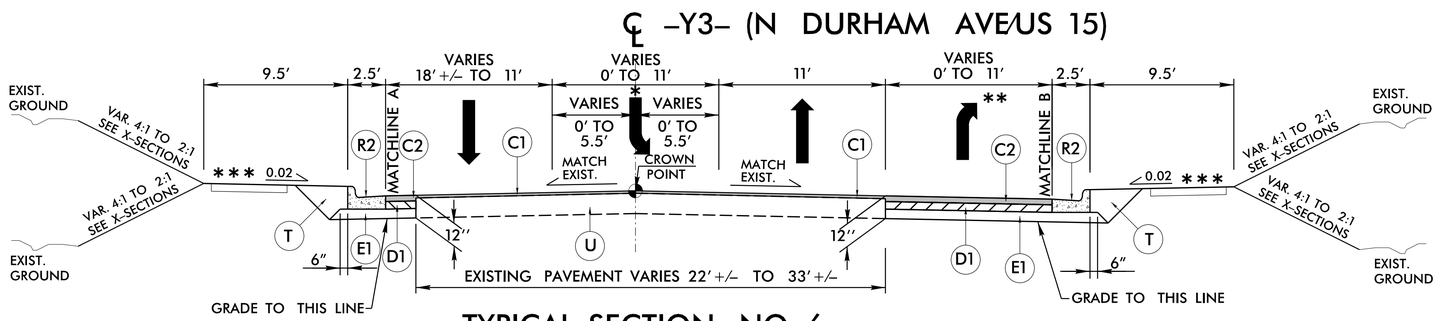


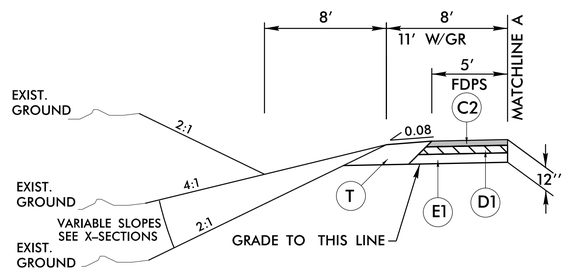
TYPICAL SECTION NO. 5

–Y2– STA. 200+80.46 (Cul–De–Sac Radius Point) TO –Y2– STA. 201+53.83



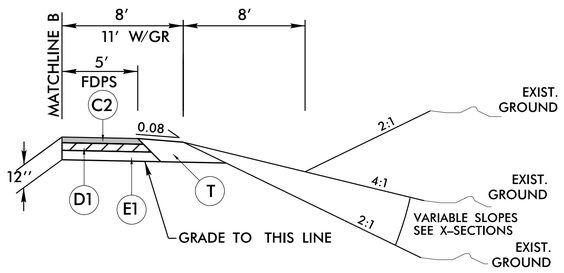
TYPICAL SECTION NO. 6

–Y3– STA. 304+72.11 TO –Y3– STA. 313+90.68 LT
–Y3– STA. 306+44.25 TO –Y3– STA. 313+90.68 RT (RESURFACE 304+72.11 TO 306+44.25)
* –Y3– STA. 306+17.46 TO –Y3– STA. 309+12.46 (LT TURN LANE)
* –Y3– STA. 310+40.68 TO –Y3– STA. 312+90.68 (LT TURN LANE)
** –Y3– STA. 306+67.13 TO –Y3– STA. 309+37.13 (RT TURN LANE)
*** SIDEWALK BEGINS –Y3– STA. 304+67.08 LT
*** SIDEWALK BEGINS –Y3– STA. 307+75.39 RT



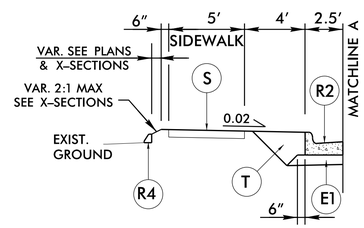
PARTIAL TYPICAL SECTION NO. 6A

–Y3– STA. 312+54.87 TO –Y3– STA. 313+90.68



PARTIAL TYPICAL SECTION NO. 6B

–Y3– STA. 311+59.70 TO –Y3– STA. 313+90.68



PARTIAL TYPICAL SECTION NO. 6C

–Y3– STA. 305+96.32 TO –Y3– STA. 312+52.09

PROJECT REFERENCE NO.	SHEET NO.
R–5707	2A–3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE
3/5/2019

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030459 ENGINEER BEN UPSHAW
3/5/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PAVEMENT SCHEDULE

C1	1.5″ S9.5C
C2	3″ S9.5C
C3	VAR. DEPTH S9.5C
D1	4″ I19.0C
D2	VAR. DEPTH I19.0C
E1	5″ B25.0C
E2	VAR. DEPTH B25.0C
R1	5″ MONO. ISLAND (SURFACE MOUNTED)
R2	2′-6″ CURB AND GUTTER
R3	1′-6″ CURB AND GUTTER
R4	8″ X 6″ CURB
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
U1	EXISTING GRAVEL
V	VAR. DEPTH MILLING
W	WEDGING

NOTE: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SPECIFIED.

NOTES:

1. SEE PLANS FOR LOCATION OF TURN LANES AND TAPERS.
2. SEE PLANS FOR RADII TURNOUTS AT INTERSECTIONS.

3/5/2019
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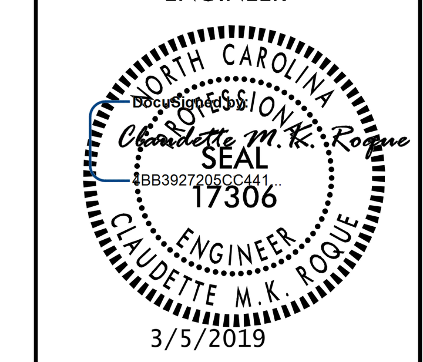
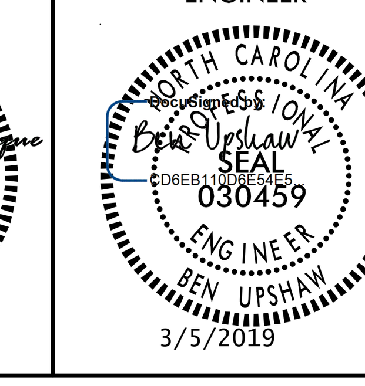
PROJECT REFERENCE NO.	SHEET NO.
R-5707	2A-4

ROADWAY DESIGN ENGINEER



PAVEMENT DESIGN ENGINEER



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Raleigh, North Carolina 27609
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www.rameykemp.com
NC License No. C-0910

PAVEMENT SCHEDULE

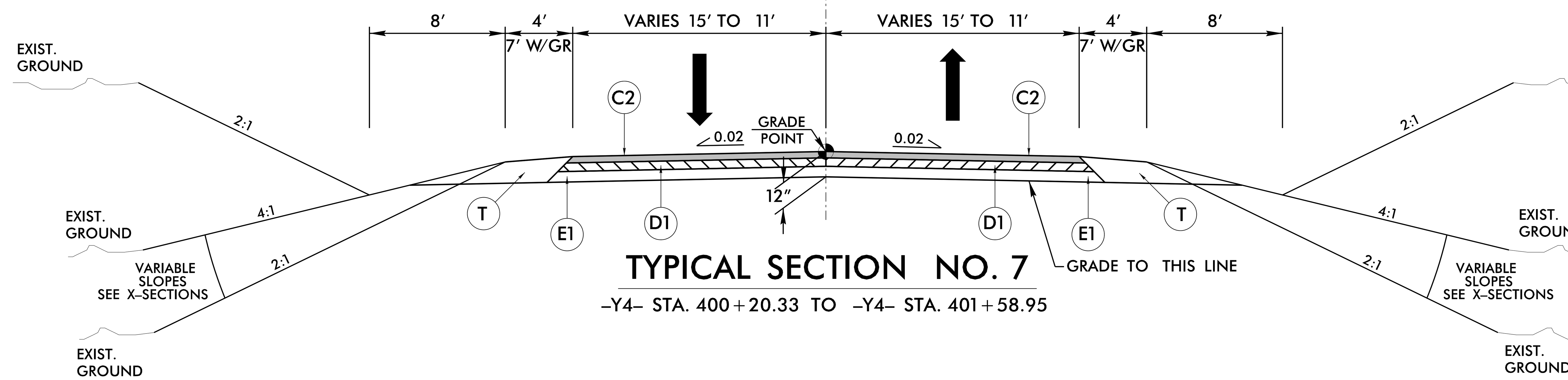
C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	4" I19.0C
D2	VAR. DEPTH I19.0C
E1	5" B25.0C
E2	VAR. DEPTH B25.0C
R1	5" MONO. ISLAND (SURFACE MOUNTED)
R2	2'-6" CURB AND GUTTER
R3	1'-6" CURB AND GUTTER
R4	8" X 6" CURB
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
U1	EXISTING GRAVEL
V	VAR. DEPTH MILLING
W	WEDGING

NOTE: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SPECIFIED.

NOTES:

1. SEE PLANS FOR LOCATION OF TURN LANES AND TAPERS.
2. SEE PLANS FOR RADII TURNOUTS AT INTERSECTIONS.

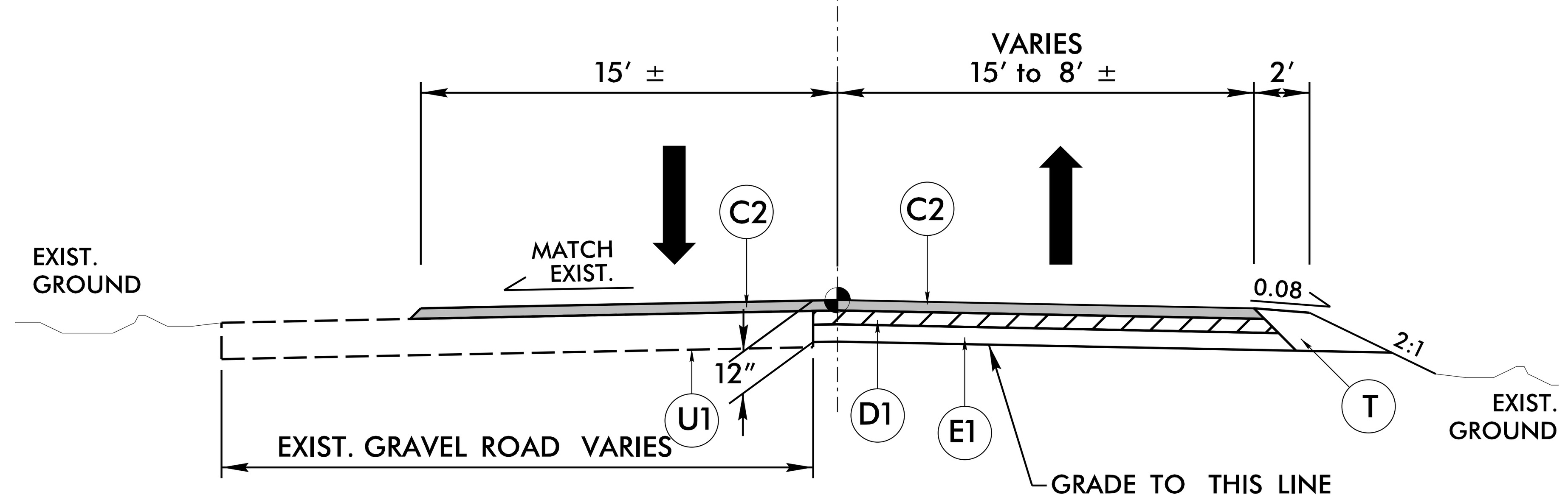
℄ -Y4- (MACK STREET)



TYPICAL SECTION NO. 7

-Y4- STA. 400+20.33 TO -Y4- STA. 401+58.95

℄ -Y5- (SUNSET STREET)

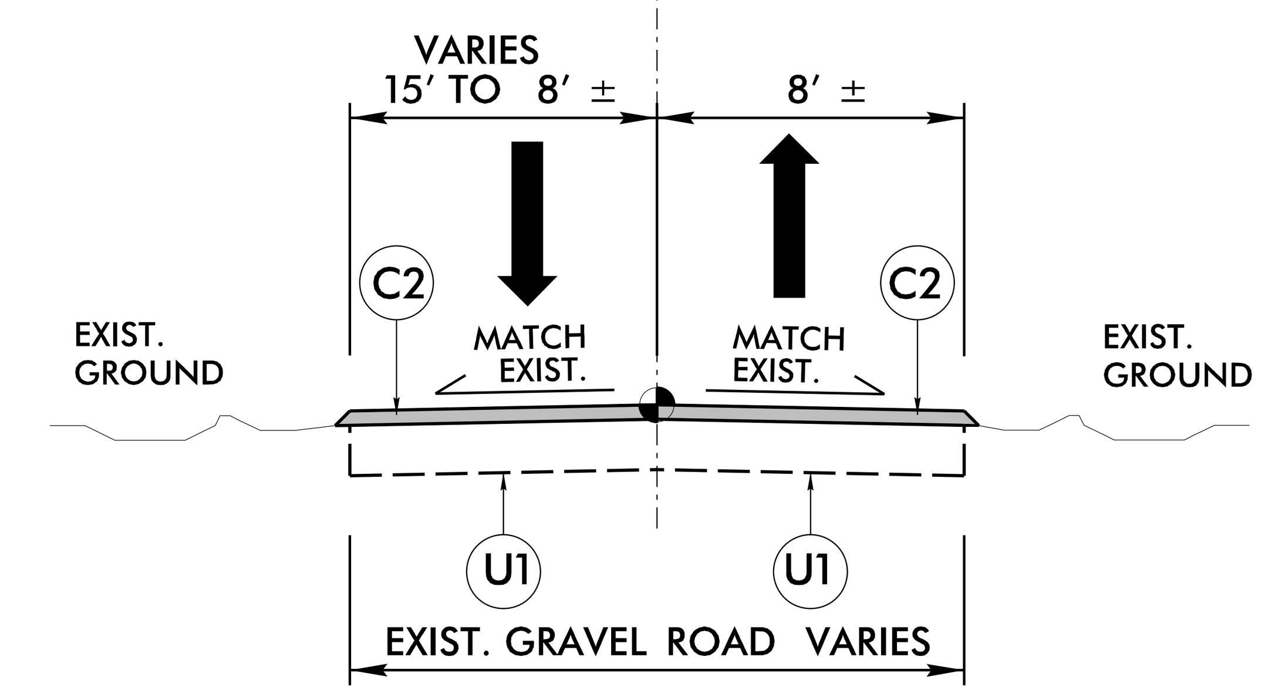


TYPICAL SECTION NO. 8

-Y5- STA. 600+64.86 TO -Y5- STA. 601+54.86

NOTE: -Y5- RADIUS STA. 600+13.74 TO -Y5- STA. 600+64.86 TO MATCH -Y3- FULL DEPTH PAVEMENT DESIGN

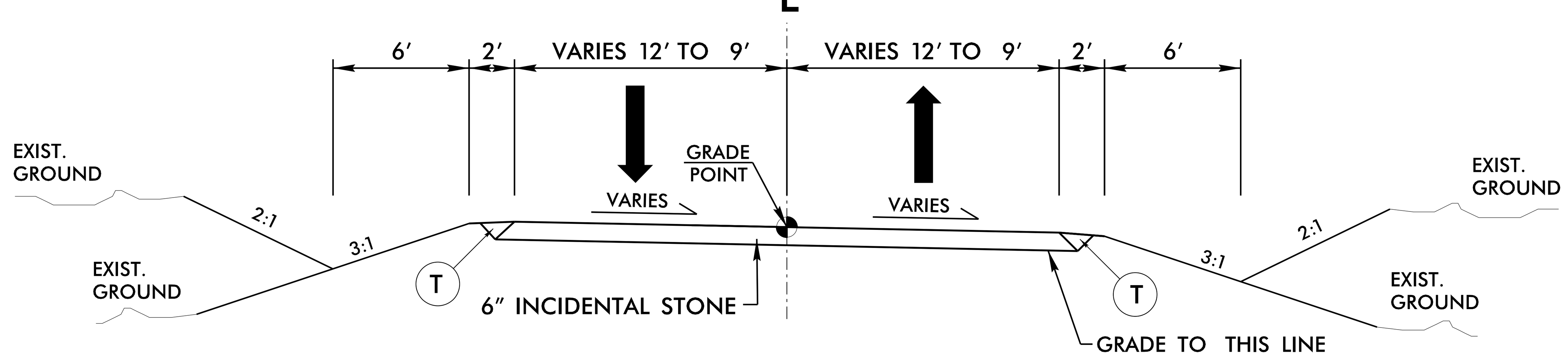
℄ -Y5- (SUNSET STREET)



TYPICAL SECTION NO. 9

-Y5- STA. 601+54.86 TO -Y5- STA. 605+79.11

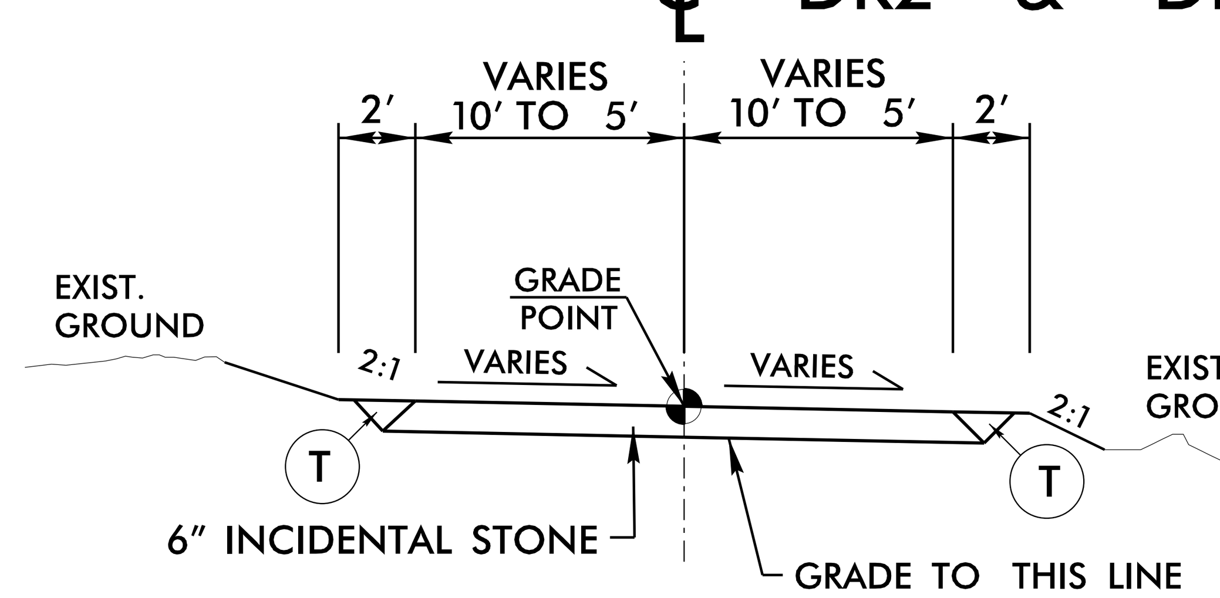
℄ -DR1-



TYPICAL SECTION NO. 10

-DR1- STA. 500+45.16 TO -DR1- STA. 501+25.13

℄ -DR2- & -DR3-



TYPICAL SECTION NO. 11

-DR2- STA. 600+35.50 TO -DR2- STA. 601+47.93
-DR3- STA. 700+09.12 TO -DR3- STA. 700+70.00

PROJECT REFERENCE NO.	SHEET NO.
R-5707	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17306 CLAUDETTE M.K. ROUSE
12/11/2018

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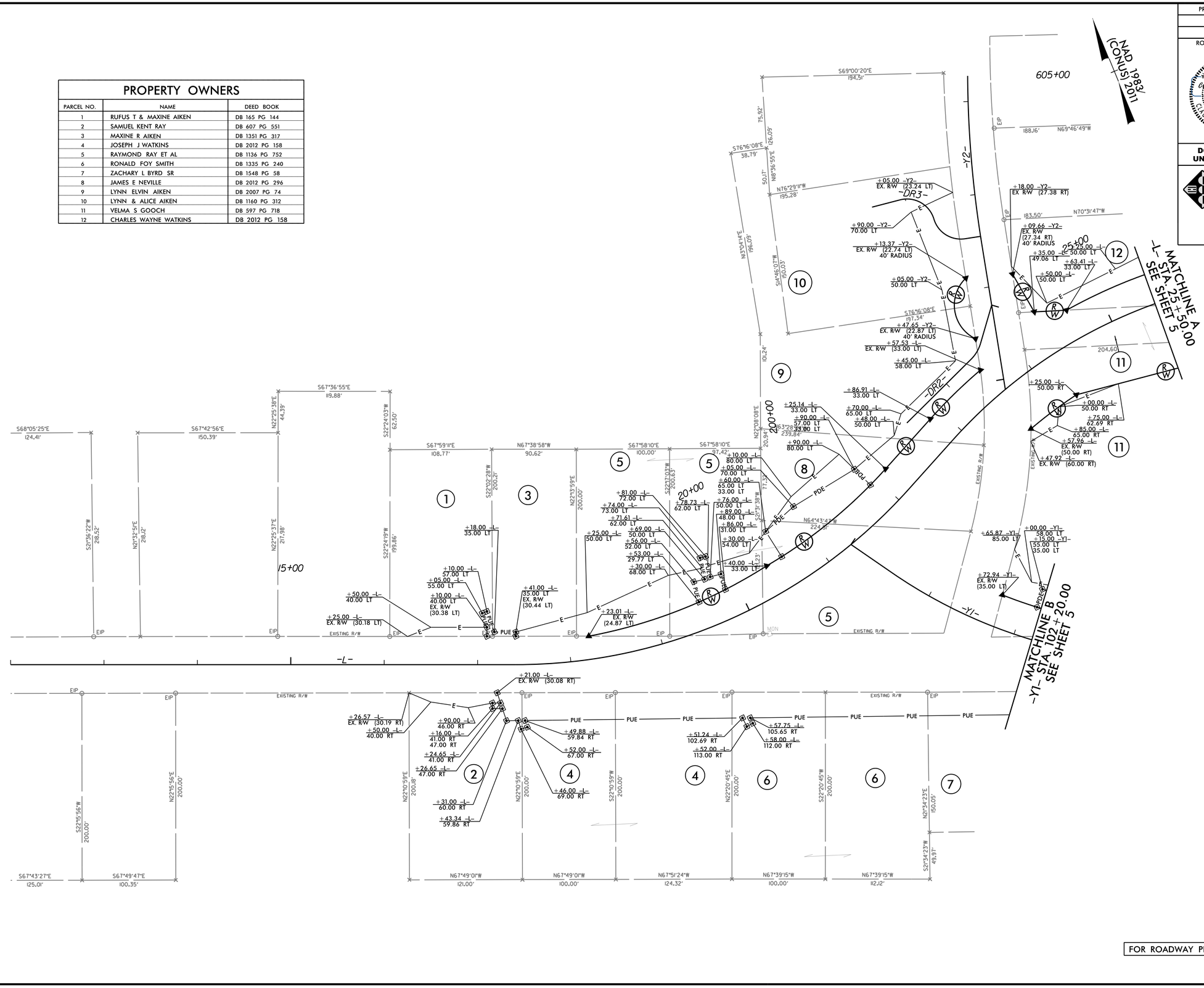
Raleigh, North Carolina 27609
Phone: 919-872-5115
www.rameykemp.com
NC License No. C-0910

REVISIONS 8/17/99

PROPERTY OWNERS

PARCEL NO.	NAME	DEED BOOK
1	RUFUS T & MAXINE AIKEN	DB 165 PG 144
2	SAMUEL KENT RAY	DB 607 PG 551
3	MAXINE R AIKEN	DB 1351 PG 317
4	JOSEPH J WATKINS	DB 2012 PG 158
5	RAYMOND RAY ET AL	DB 1136 PG 752
6	RONALD FOY SMITH	DB 1335 PG 240
7	ZACHARY L BYRD SR	DB 1548 PG 58
8	JAMES E NEVILLE	DB 2012 PG 296
9	LYNN ELVIN AIKEN	DB 2007 PG 74
10	LYNN & ALICE AIKEN	DB 1160 PG 312
11	VELMA S GOOCH	DB 597 PG 718
12	CHARLES WAYNE WATKINS	DB 2012 PG 158



FOR ROADWAY PLAN, SEE SHEET NO. 4

PROJECT REFERENCE NO.	SHEET NO.
R-5707	2B-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

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

12/11/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RAMEY KEMP & ASSOCIATES, INC.
Transportation Engineers
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Raleigh, North Carolina 27609
Phone: 919-872-5115
www.rameykemp.com
NC License No. C-0910

NAD 1983/ (CONUS) 2011

MATCHLINE B –Y1– STA. 102+20.00 SEE SHEET 4

MATCHLINE A –L– STA. 25+50.00 SEE SHEET 4

305+00

310+00

30+00

35+00

REVISIONS 8/17/99

PROPERTY OWNERS

PARCEL NO.	NAME	DEED BOOK
7	ZACHARY L BYRD SR	DB 1548 PG 58
11	VELMA S GOOCH	DB 597 PG 718
12	CHARLES WAYNE WATKINS	DB 2012 PG 158
13	VELMA GOOCH	DB 1181 PG 426
14	ADLAI S WOODLIEF	DB 695 PG 748
15	HOLMES OIL COMPANY INC	DB 1406 PG 682
16	JAMES D III & ROBIN H GRAY	DB 930 PG 111
17	HOLMES OIL COMPANY LLC	DB 145 PG 91
18	DARLENE E BENNETT	DB 1559 PG 248
19	ZACHARY L BYRD SR	DB 688 PG 821
20	CLAYTON HILL PROPERTIES LLC	DB 1512 PG 730
21	COOL RIDGE DEVELOPMENT LLC	DB 1604 PG 616
22	VELMA S GOOCH	DB 195 PG 323

FOR ROADWAY PLAN, SEE SHEET NO. 5

11/21/2018
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User:kwise

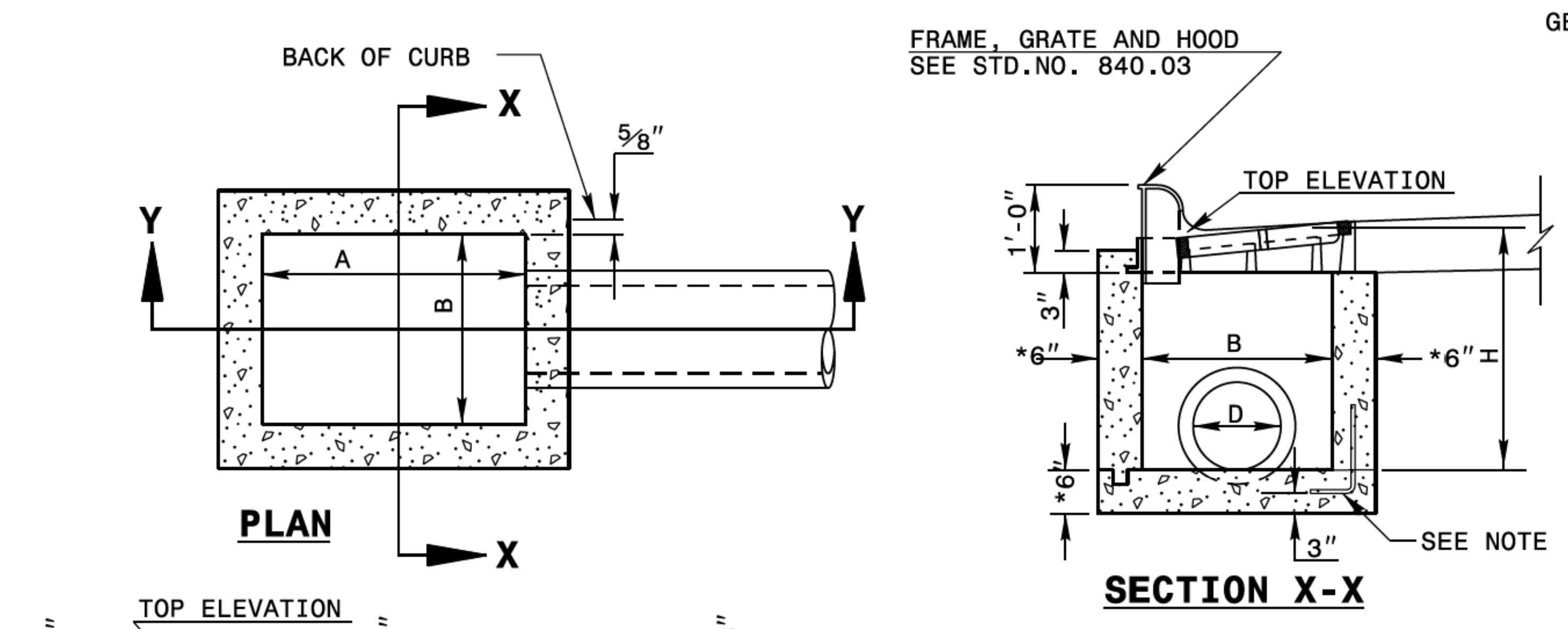
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5707	2C-1

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

ENGLISH DETAIL DRAWING FOR
EXTRA DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

SHEET 1 OF 2
840D02



GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

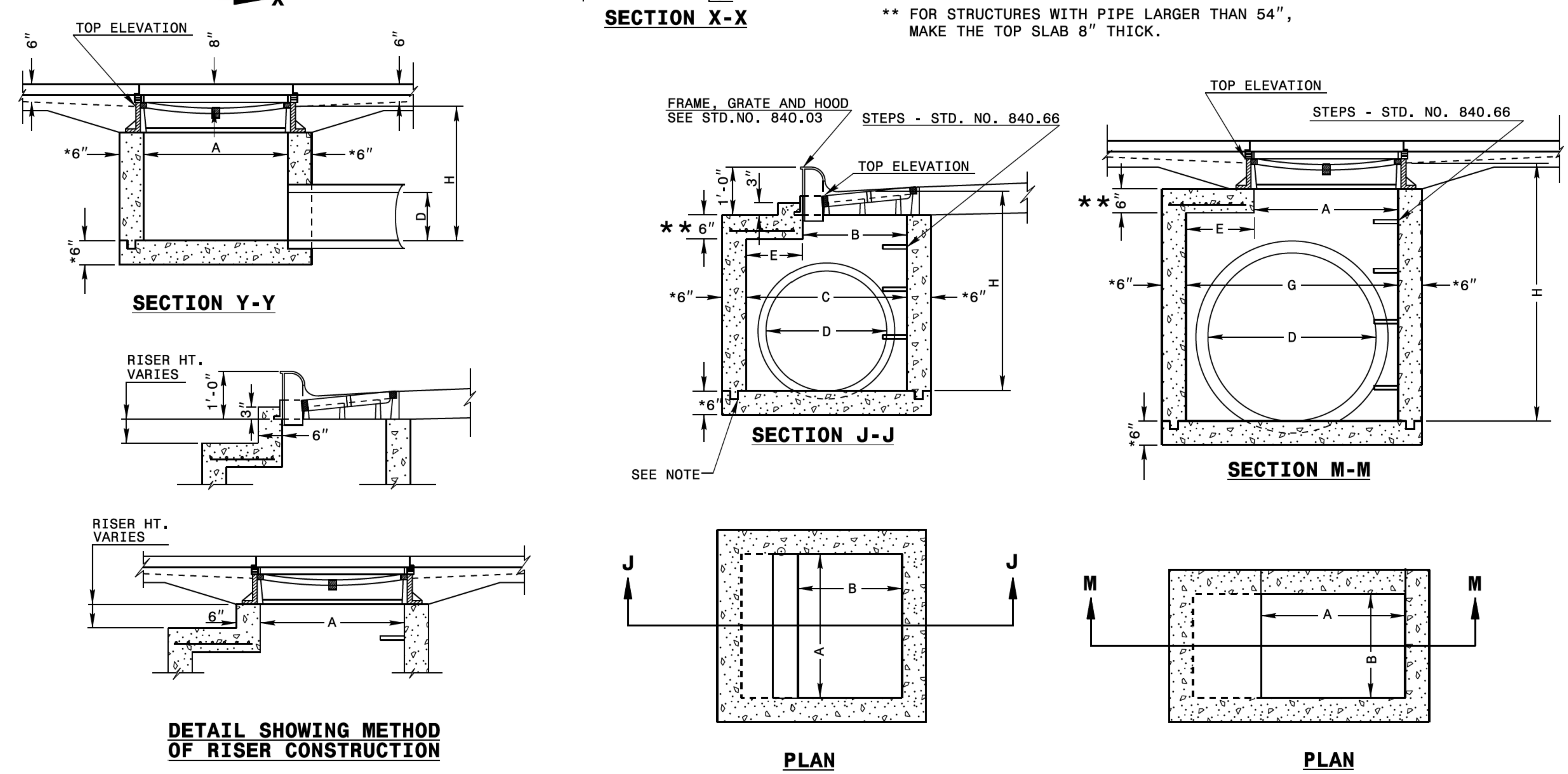
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

* USE 6" WALLS FOR BOXES UP TO 8' IN HEIGHT. USE 8" WALLS, 8" BOTTOM SLAB AND 8" TOP SLAB FOR BOXES GREATER THAN 8' IN HEIGHT AND UP TO 20' IN HEIGHT.

CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1".

** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.



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

ENGLISH DETAIL DRAWING FOR
EXTRA DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

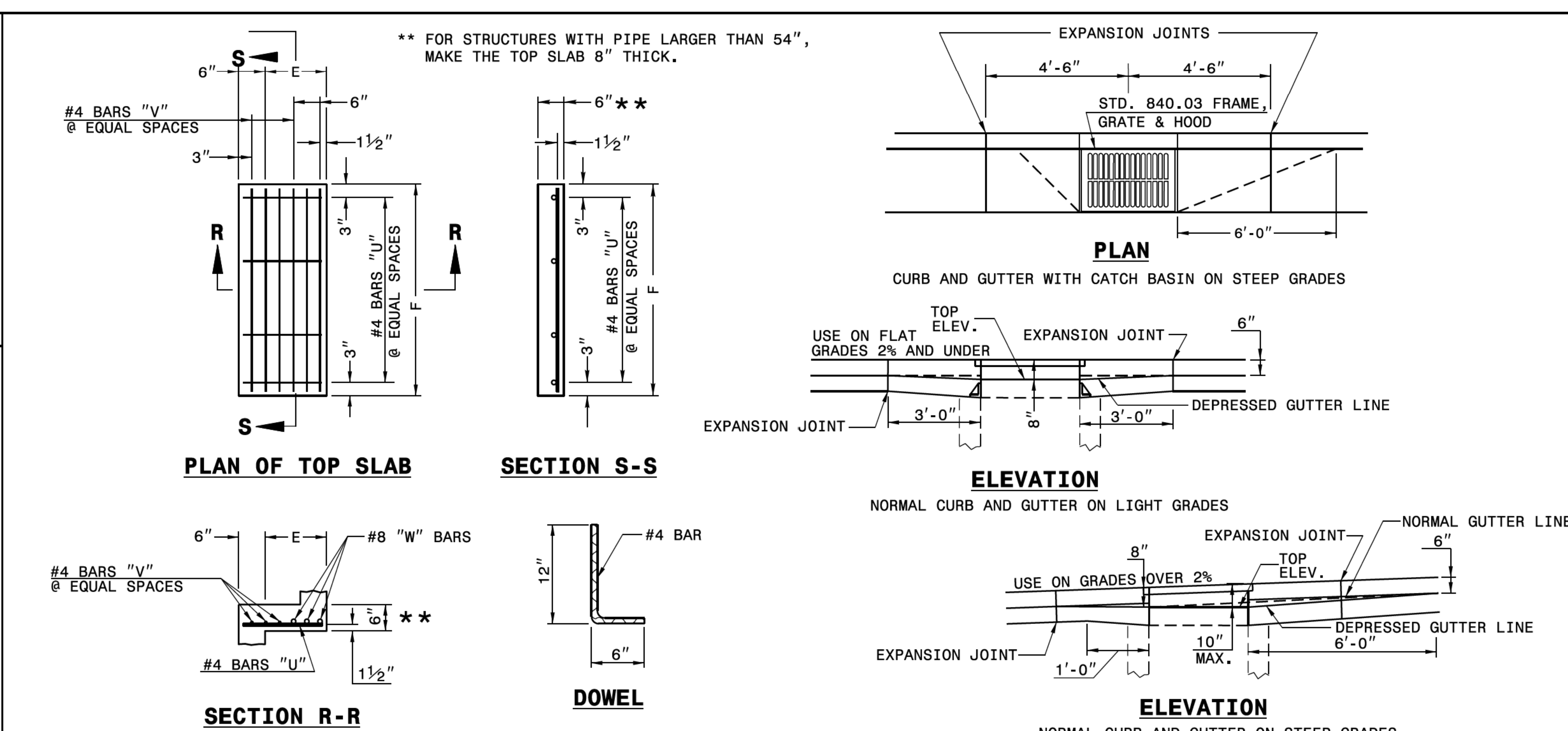
SHEET 1 OF 2
840D02

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

ENGLISH DETAIL DRAWING FOR
EXTRA DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

SHEET 2 OF 2
840D02

** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.



* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) *

DIMENSIONS OF BOX AND PIPE						COVER DIMENSION		BARS-U		BARS-V		BARS-W		TOTAL LBS.	CU.YDS. CONC. IN BOX			DEDUCTIONS ONE PIPE	
PIPE	SPAN	WIDTH	WIDTH	SPAN	MIN. HEIGHT										TOP SLAB	BOTTOM SLAB	TOT. CONC. FOR MINIMUM HEIGHT, H		
D	A	B	C	G	H	E	F	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH					C.M.	R.C.
12"	3'-0"	2'-2"	--	--	2'-0"	--	--	--	--	--	--	--	--	--	--	0.235	0.772	0.015	0.026
15"	3'-0"	2'-2"			2'-3"											0.235	0.829	0.023	0.036
18"	3'-0"	2'-2"			2'-6"											0.235	0.887	0.033	0.049
24"	3'-0"	2'-2"			3'-1"											0.235	1.001	0.059	0.085
30"	3'-0"	2'-2"	3'-4"	3'-4"	3'-10"	1'-2"	4'-4"	4	1'-5"	2	4'-1"	3	4'-1"	39	0.123	0.347	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"	3'-10"	4'-6"	1'-8"	4'-10"	4	1'-11"	3	4'-7"	3	4'-7"	43	0.161	0.432	1.714	0.132	0.178
42"	3'-0"	2'-2"	4'-5"	4'-5"	4'-11"	2'-2"	5'-5"	5	2'-5"	4	5'-2"	3	5'-2"	47	0.200	0.543	1.738	0.180	0.243
48"	3'-0"	2'-2"	5'-0"	5'-0"	5'-6"	2'-10"	6'-0"	5	3'-1"	4	5'-9"	3	5'-9"	51	0.235	0.667	2.052	0.235	0.317
54"	3'-0"	2'-2"	5'-7"	5'-7"	6'-0"	3'-5"	6'-7"	6	3'-8"	5	6'-4"	3	6'-4"	56	0.289	0.802	2.387	0.297	0.401
60"	3'-0"	2'-2"	6'-3"	6'-3"	6'-6"	4'-1"	7'-3"	6	4'-4"	5	7'-0"	3	7'-0"	61	0.340	0.973	2.722	0.363	0.546
66"	3'-0"	2'-2"	6'-11"	6'-11"	7'-0"	4'-9"	7'-11"	7	5'-0"	6	7'-8"	3	7'-8"	66	0.391	1.160	3.057	0.440	0.655
72"	3'-0"	2'-2"	7'-6"	7'-6"	7'-6"	5'-3"	8'-6"	7	5'-6"	6	8'-3"	3	8'-3"	72	0.442	1.340	3.392	0.524	0.774
78"	3'-0"	2'-2"	8'-1"	8'-1"	8'-0"	5'-11"	9'-1"	8	6'-2"	7	8'-10"	3	8'-10"	78	0.493	1.530	3.727	0.615	0.893
84"	3'-0"	2'-2"	8'-9"	8'-9"	8'-6"	6'-7"	9'-9"	8	6'-10"	7	9'-6"	3	9'-6"	84	0.544	1.760	4.062	0.713	1.010

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

ENGLISH DETAIL DRAWING FOR
EXTRA DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

SHEET 2 OF 2
840D02

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton
DocuSigned by: 873F3D17DCDC45F...
12/11/2018

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 Std.840.01 DATE:
MODIFIED BY: E.E. WARD DATE: 3-1-02
CHECKED BY: DATE:
FILE SPEC.: jhowerton/840d02 Extra Depth CB.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-5707	2C-2

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR. 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN IN STD. NO. 840.03.

FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

CONSTRUCT WITH PIPE CROWNS MATCHING.

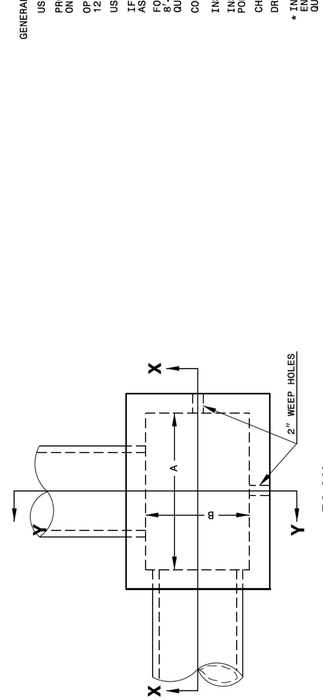
INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

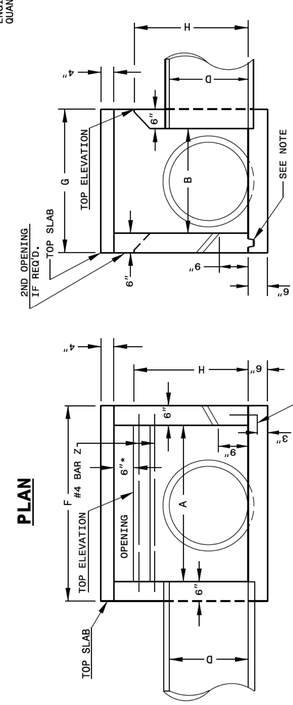
CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

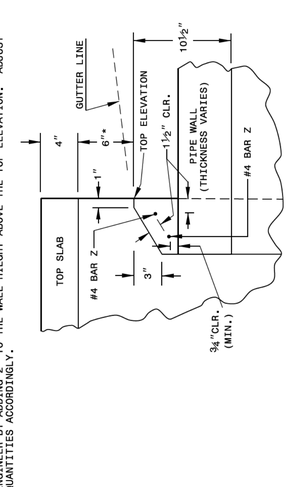
* INCREASE THE SIZE OF THE 6" OPENING TO 8" MAX., AS DIRECTED BY THE ENGINEER BY ADDING 2" TO THE WALL HIEGHT ABOVE THE TOP ELEVATION. ADJUST QUANTITIES ACCORDINGLY.



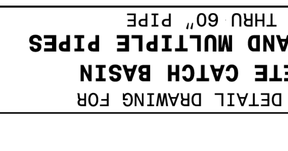
PLAN



SECTION X-X



SECTION Y-Y



PART SECTION Y-Y
SHOWING DETAILS AT OPENING

MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H)

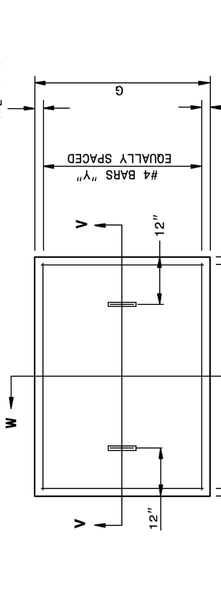
DIMS OF BOX & PIPE				MIN. REINFORCING						CU. YDS. CONC. IN BOX		TOTAL QUANTITIES BOX & SLABS			DEDUCTION ONE PIPE		DED. ONE WING OPENING
PIPE D	SPAN A	WIDTH B	HEIGHT H	#3 BARS - X NO.	#3 BARS - X LENGTH	#4 BARS - Y NO.	#4 BARS - Y LENGTH	#4 BARS - Z NO.	#4 BARS - Z LENGTH	TOP & BOT. SLAB	WALLS, FT.	CONC. yd³	REINF. LBS.	STEEL NO.	C.S.	R.C.	CONC. yd³
12"	3'-6"	2'-3"	1'-10"	4	3'-0"	6	4'-3"	2	4'-3"	0.181	0.271	0.250	27	1.046	0.015	0.032	0.046
15"	3'-6"	2'-3"	2'-1"	4	3'-0"	6	4'-3"	2	4'-3"	0.181	0.271	0.250	27	1.108	0.023	0.036	0.046
18"	4'-0"	2'-8"	2'-4"	5	3'-5"	7	4'-9"	2	4'-9"	0.226	0.340	0.284	35	1.379	0.033	0.049	0.053
24"	4'-0"	2'-8"	2'-10"	5	3'-5"	7	4'-9"	2	4'-9"	0.226	0.340	0.284	35	1.521	0.059	0.065	0.053
30"	4'-0"	3'-6"	3'-4"	5	4'-3"	9	4'-9"	2	4'-9"	0.278	0.417	0.315	43	1.916	0.092	0.127	0.053
36"	4'-6"	4'-0"	3'-10"	5	4'-9"	10	5'-3"	2	5'-3"	0.340	0.510	0.352	51	2.390	0.132	0.178	0.059
42"	5'-0"	4'-6"	4'-4"	5	5'-3"	12	5'-9"	2	5'-9"	0.407	0.611	0.389	64	2.914	0.180	0.243	0.066
48"	5'-0"	5'-0"	4'-10"	5	5'-9"	13	5'-9"	2	5'-9"	0.444	0.666	0.407	68	3.298	0.235	0.317	0.066
54"	6'-6"	6'-6"	5'-4"	5	7'-3"	14	7'-3"	2	7'-3"	0.694	1.042	0.518	99	4.501	0.305	0.467	0.090
60"	7'-0"	7'-0"	6'-2"	5	7'-9"	14	7'-9"	2	7'-9"	0.789	1.185	0.620	110	5.812	0.367	0.536	0.110

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **CONCRETE CATCH BASIN W/SINGLE AND MULTIPLE PIPES** 12" THRU 60" PIPE	SHEET 1 OF 2 **840D04**

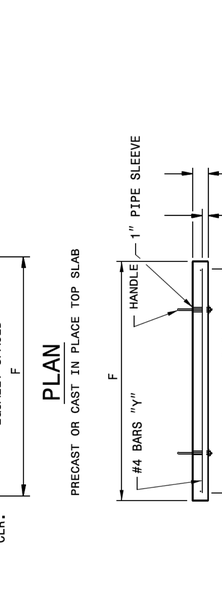
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR **CONCRETE CATCH BASIN W/SINGLE AND MULTIPLE PIPES** 12" THRU 60" PIPE

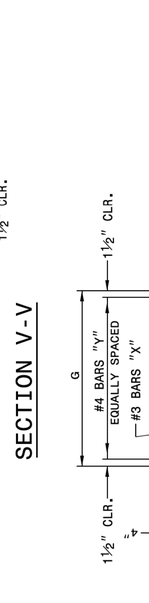
SHEET 1 OF 2 **840D04**



DETAIL OF HANDLE



PART SECTION
THRU COVER SHOWING HANDLE



DOWEL

PLAN
PRECAST OR CAST IN PLACE TOP SLAB

SECTION V-V

SECTION W-W

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

ENGLISH DETAIL DRAWING FOR **CONCRETE CATCH BASIN W/SINGLE AND MULTIPLE PIPES** 12" THRU 60" PIPE

SHEET 2 OF 2 **840D04**

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Israel S. Howerton 12/11/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE PLATE FOR TITLE

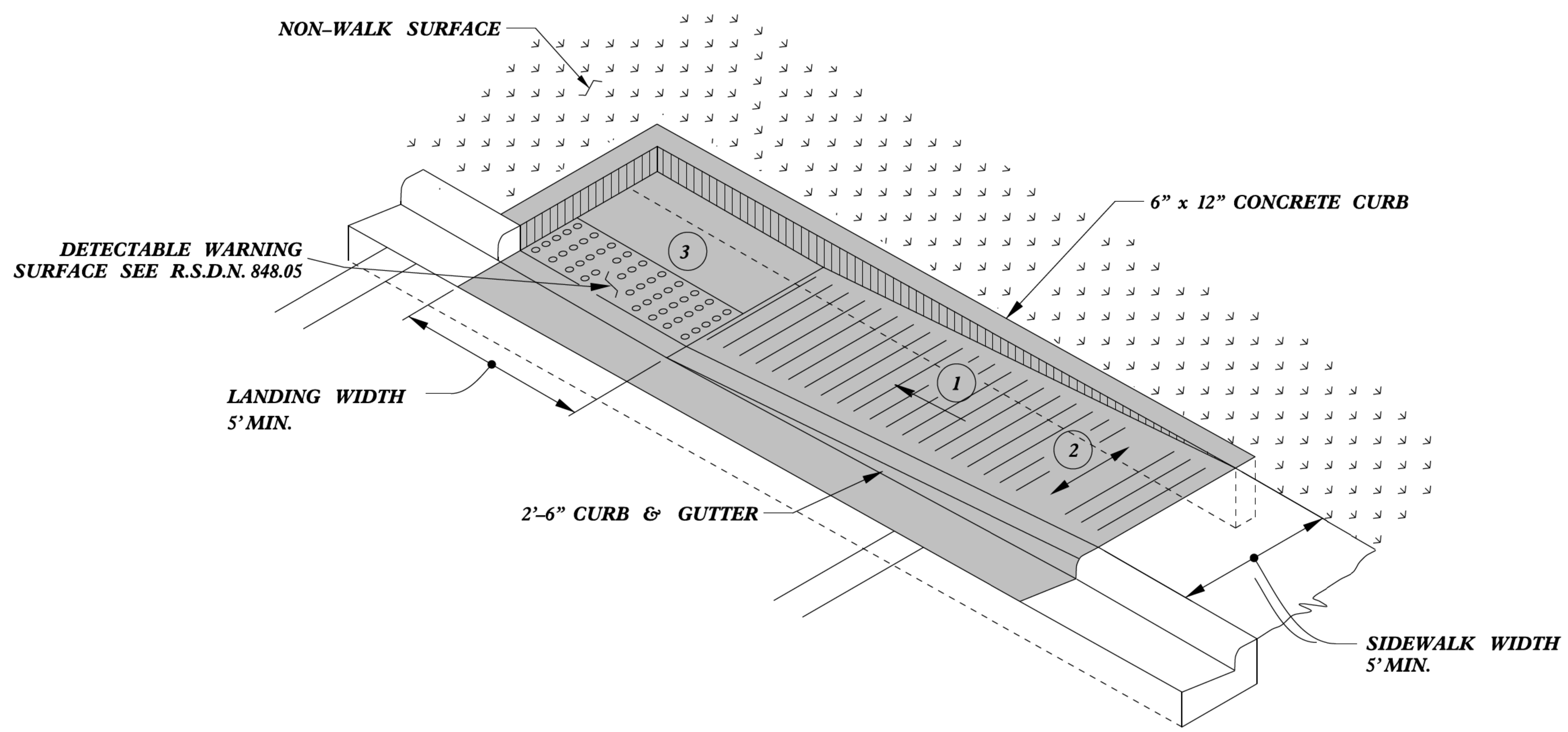
ORIGINAL BY: STD.NO.840.04 DATE: 4-9-02
MODIFIED BY: T.S.Spell DATE:
CHECKED BY: DATE:
FILE SPEC.: s:tspell/details/stand/840d04cb_60pip.dgn

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$SYSNAME$$$$$$
$$$$$$$$USERNAME$$$$$$

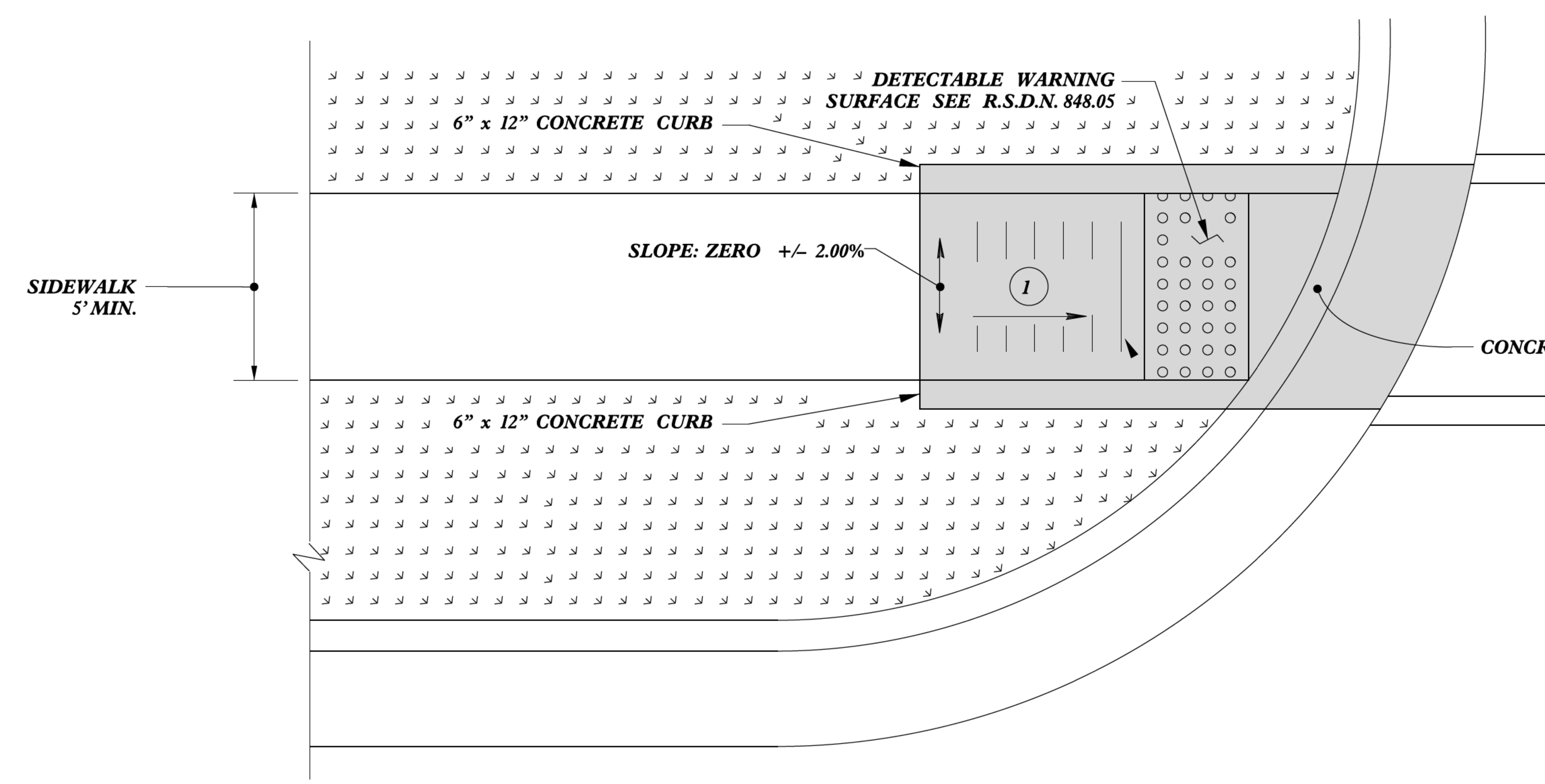
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5707	2C-3

PAY LIMITS FOR 1 CURB RAMP



TYPE 1A



12/11/2018

TYPE 1 Modified

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

$$$$$SYSTIME$$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

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

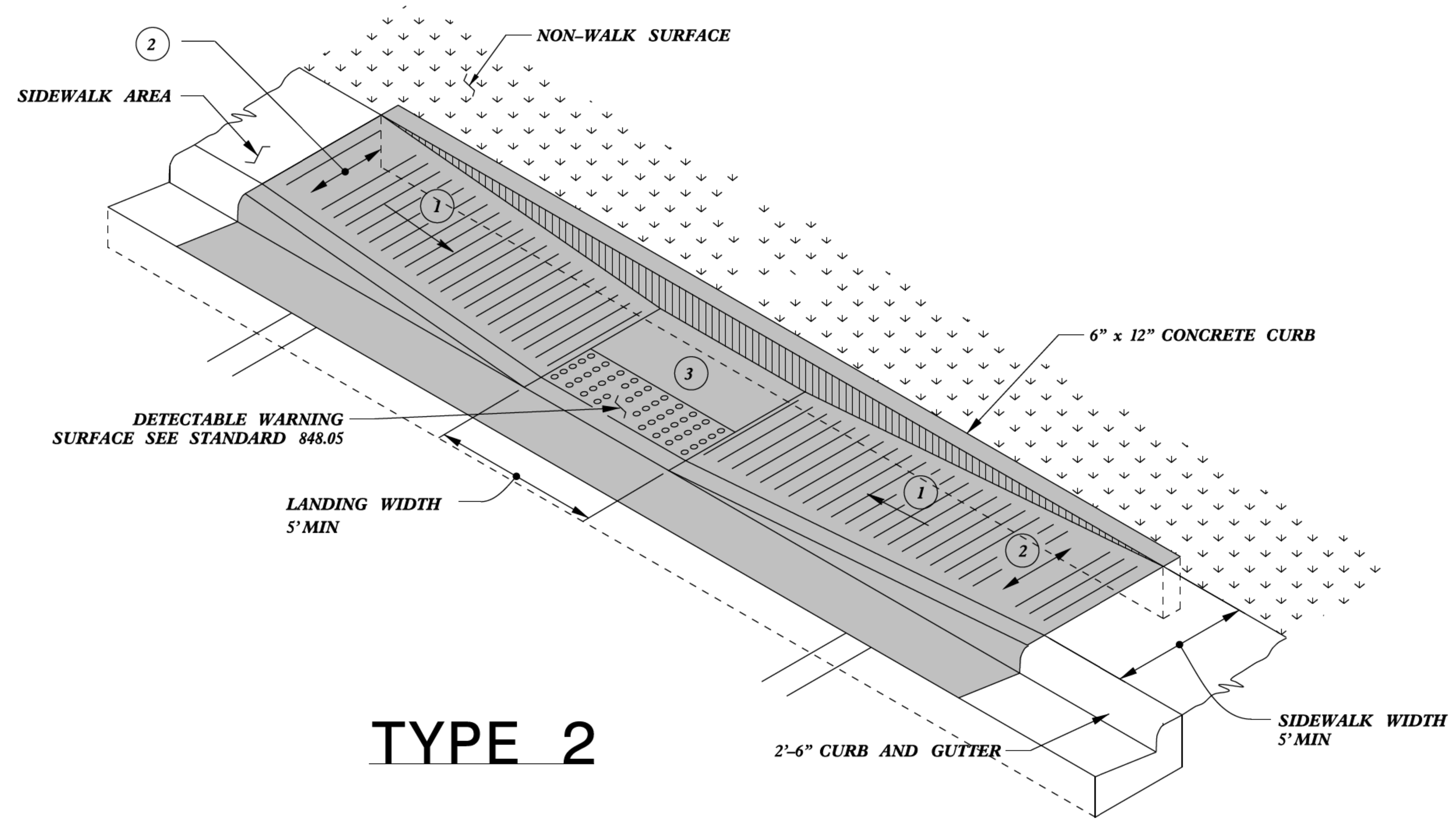
CURB RAMPS

Directional Ramps

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

5/14/99

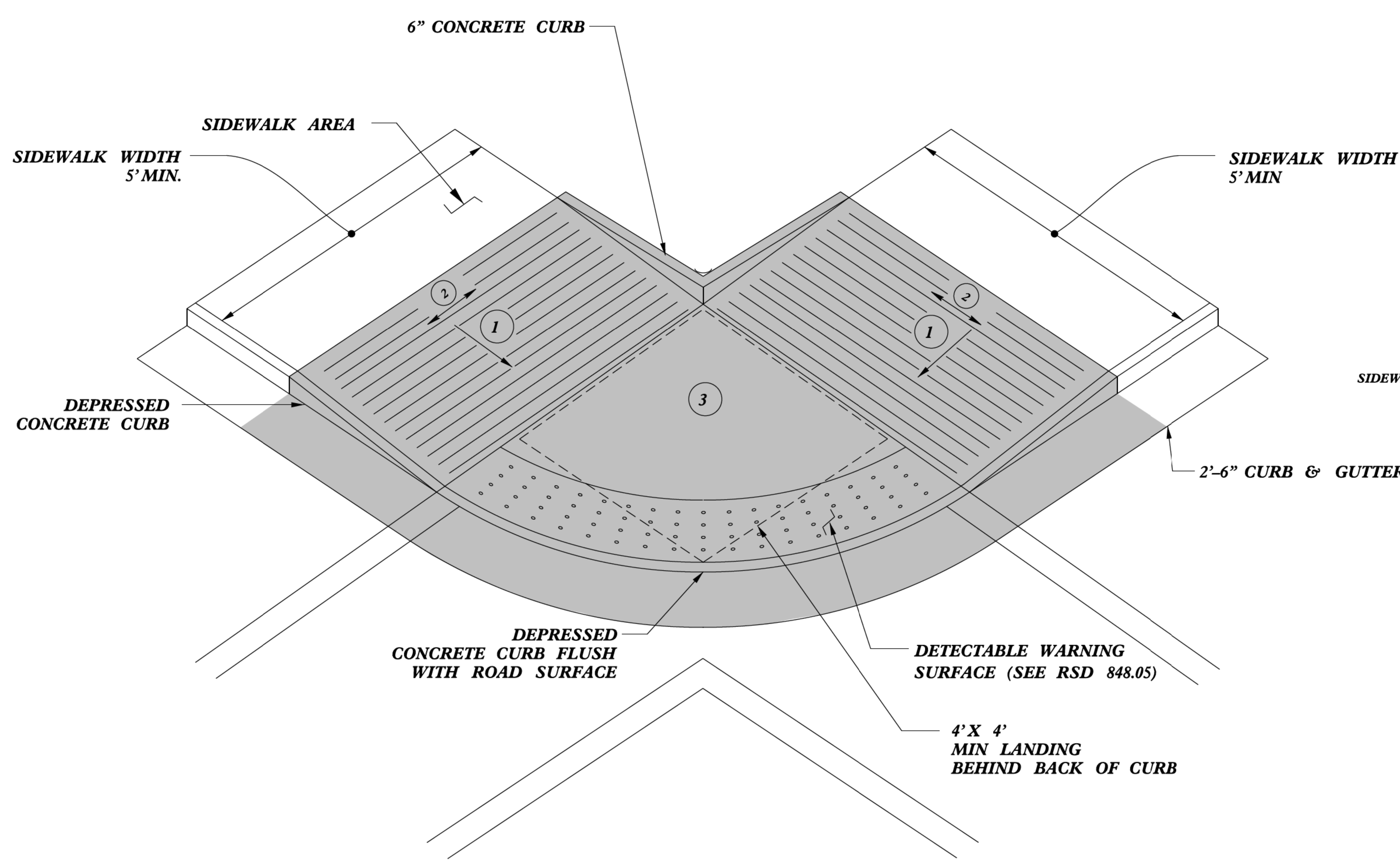
PROJECT REFERENCE NO.	SHEET NO.
R-5707	2C-4



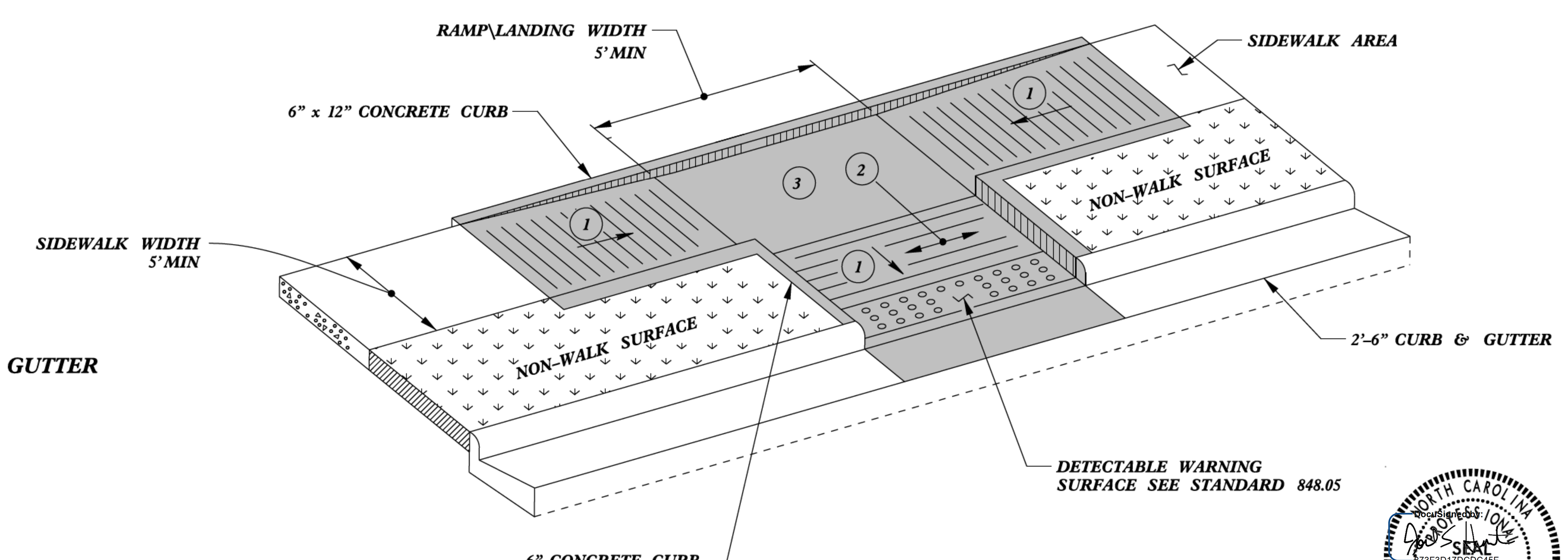
TYPE 2

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 2A



TYPE 3

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton
DocuSigned by: 373F3D17DCDC45F...
12/11/2018

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

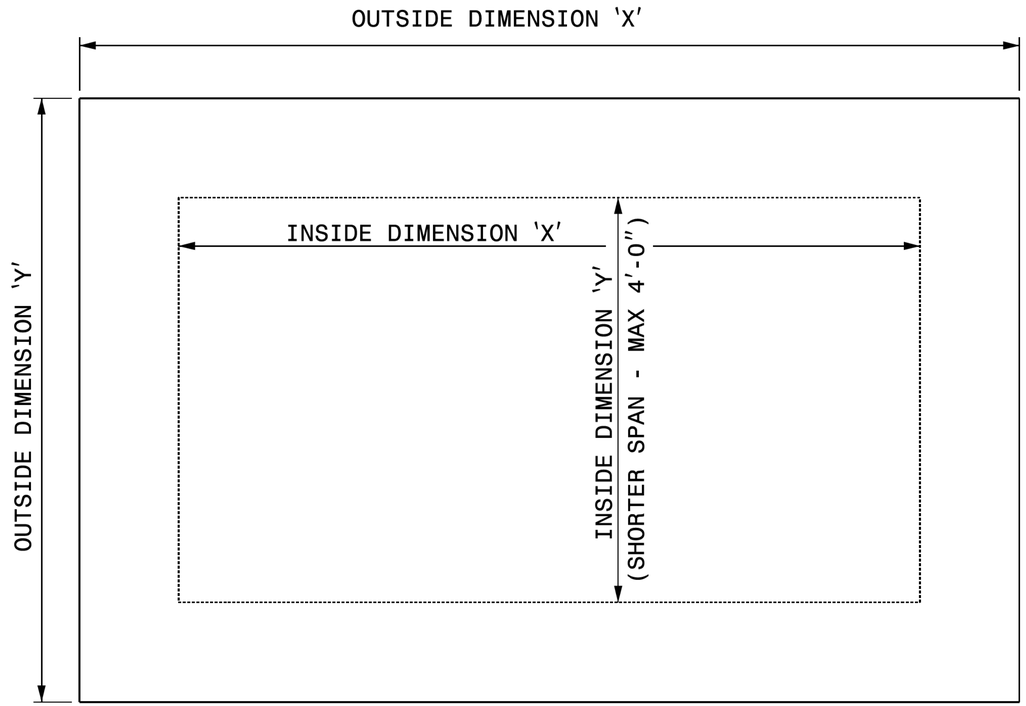
CURB RAMPS

Parallel Ramps

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

$$$$$SYSTIME$$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

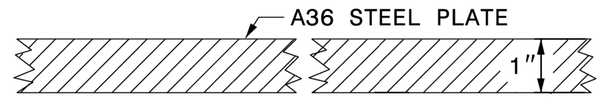
PROJECT REFERENCE NO.	SHEET NO.
R-5707	2C-5



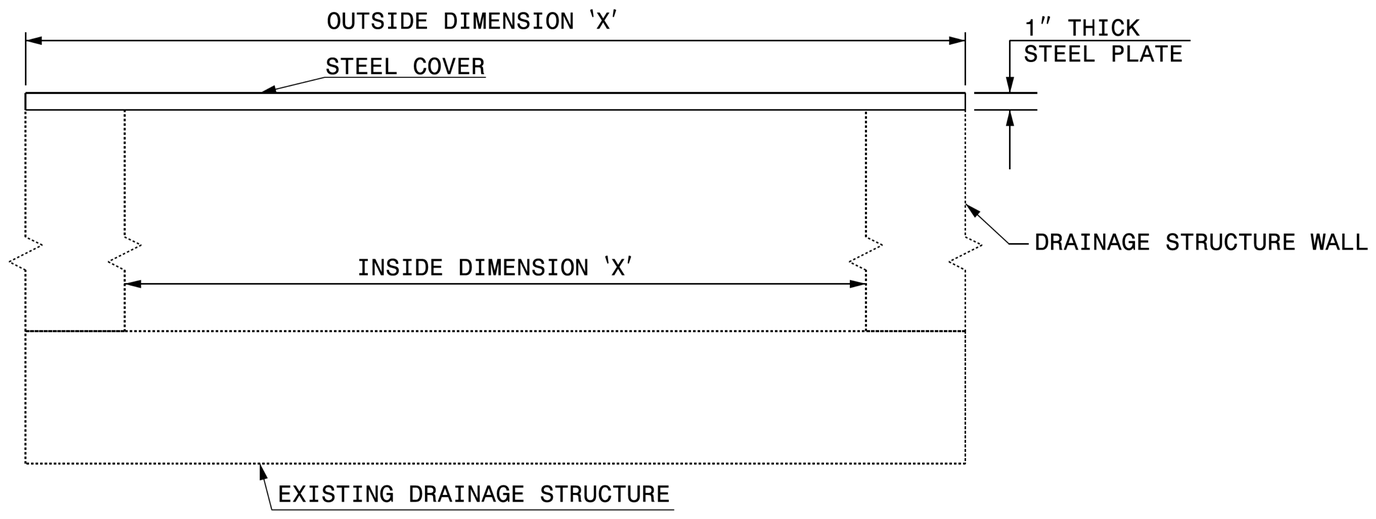
PLAN VIEWS

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



ELEVATION VIEWS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton 1/30/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

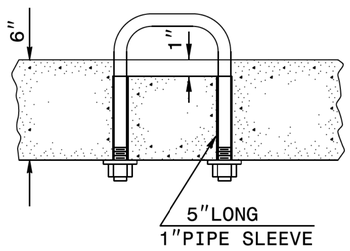
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE

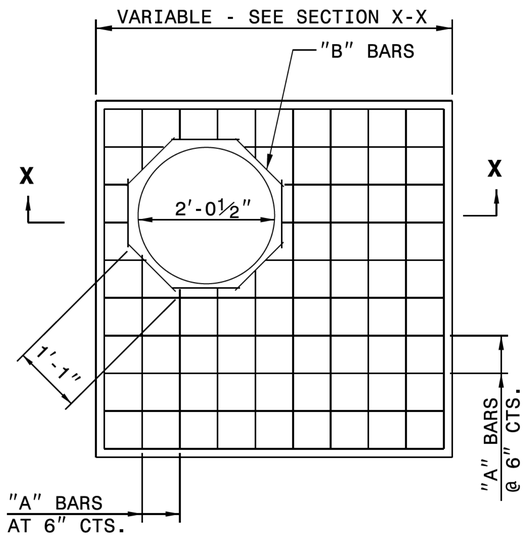
ORIGINAL BY: E.E. WARD DATE: 2-2-98
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: eric:/usr/details/metric/stand/stlcvr2.dgn

25-JAN-2019 12:26
S:\Contracts\Contracts\Special Details\jhowerton\Steel Cover.dgn
kkempf AT CSD-292596

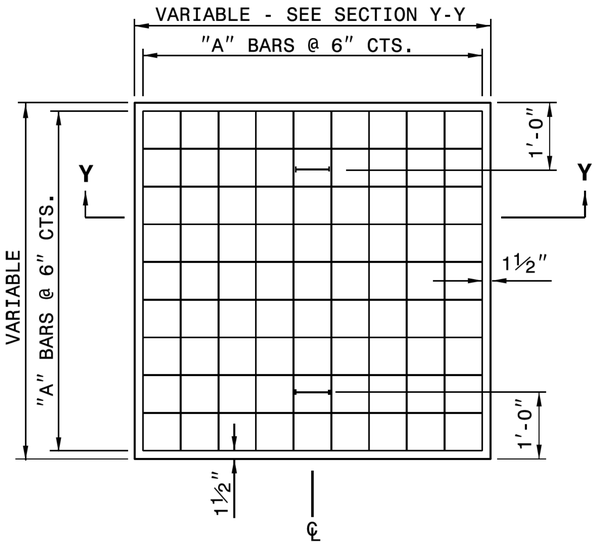
PROJECT REFERENCE NO.	SHEET NO.
R-5707	2C-6



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.

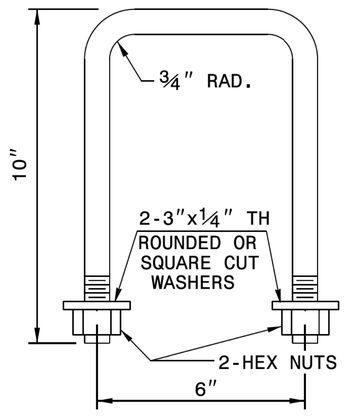
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

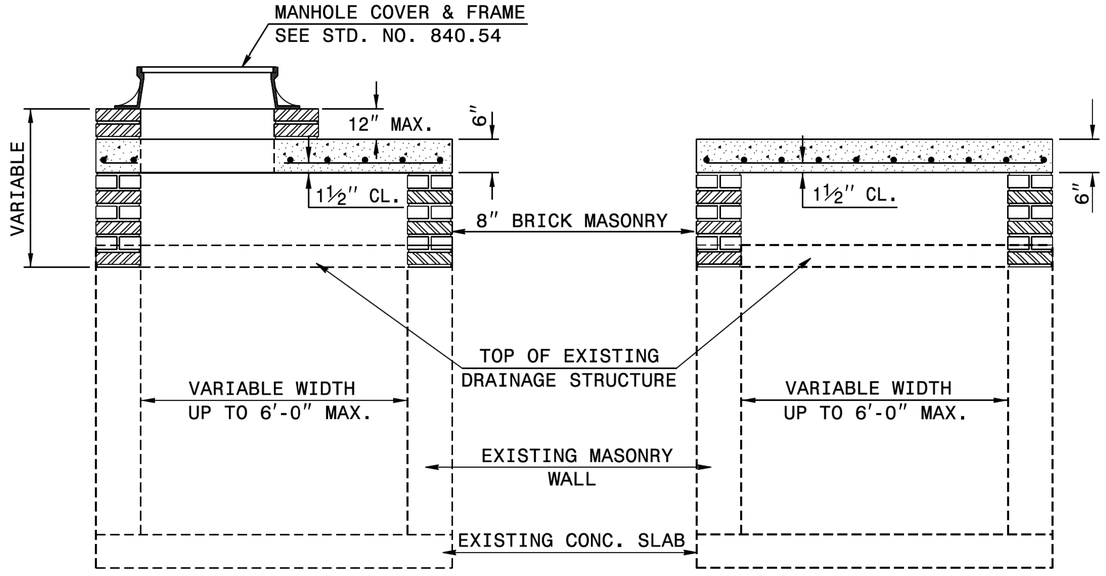
REINFORCING STEEL

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
1/30/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

25-JAN-2019 12:23
S:\Contracts\Contracts\Special Details\erickward\usr\details\stand\boxtojbe.dgn
kkempf AT CSD 2725916

RKA-RAL-DES-14

COMPUTED BY:	HLR	DATE:	6/26/2018
CHECKED BY:	CMKR	DATE:	1/29/2019

PROJECT NO.	SHEET NO.
R-5707	3B-1

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

LINE	Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
Phase 1						
L	16+30.00	28+00.00	2876	5961	3085	0
Y1	100+50.00	101+20.00	0	1649	1649	0
Y2	200+50.00	201+53.00	141	30	0	111
DR3	700+10.00	700+70.00	92	0	0	92
SUBTOTAL			3109	7640	4734	203
Y3	304+72.11	306+00.00	35	38	3	0
Y3	306+00.00	310+00.00	293	102	0	191
Y3	310+00.00	313+90.68	453	72	0	380
SUBTOTAL			781	212	3	571
L	29+00.00	34+00.00	214	473	259	0
Y4	400+50.00	402+00.00	1653	37	0	1616
DR1	500+25.00	501+25.00	81	2	0	79
SUBTOTAL			1948	512	259	1695
Phase 2						
Y1	101+20.00	104+50.00	8	4528	4521	0
SUBTOTAL			0	4528	4521	0
TOTAL			**5837**	**12892**	**9517**	**2469**
ADJUSTMENTS DUE TO						
Est. Loss Due To Clearing And Grubbing						
Shoulder Material				432	432	
Rock Waste To Replace Borrow						
Adjust For Rock Swell That Replaces Borrow						
Eliminate Shrinkage For Mat'l That Is Now Rock						
Earth Waste to Replace Borrow					-2469	-2469
PROJECT TOTAL			**5837**	**13324**	**7480**	**0**
Est. 5% to Replace Topsoil in Borrow Pits					374	
GRAND TOTAL			**5837**		**7854**	
SAY			**5900**		**7900**	
Est. Drainage Ditch Excav.	**260 CY**					
Select Granular Material	**300 CY**					
Geotextile For Soil Stab.	**300 SY**					
Estimate Undercut	**200 CY**					
Estimate Shallow Undercut	**200 CY**					
Class IV Subgrade Stab.	**400 TONS**					

SUMMARY OF REMOVAL OF EXISTING ASPHALT PAVEMENT

LINE	Station	Station	LOC LT/RT/CL	YD^2
L/Y1	17+77	101+94	RT	963.78
Y1	103+25	104+70	CL	777.67
L/Y2	23+65	PINE ST	CL	331.11
Y2	200+08	200+52	LT	80.33
Y3	306+03	308+34	LT	65.67
Y3	306+46	308+76	RT	108.78
Y3	310+56	312+55	LT	51.11
L	28+46	30+34	RT	275.44
L	28+66	29+59	LT	216.89
L	30+39	32+05	LT	58.67
			TOTAL:	**2929.45**
			SAY:	**3000**

SUMMARY OF BREAKING OF EXISTING ASPHALT PAVEMENT

LINE	Station	Station	LOC LT/RT/CL	YD^2
Y1	101+37	103+25	RT	761.00
			TOTAL:	**761.00**
			SAY:	**800**

Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, breaking of existing pavement, and removal of existing pavement will be paid for at the lump sum price for "Grading".

PARCEL INDEX

PARCEL NO.	PLAN SHEET NO.	PROPERTY OWNER NAME	R/W AREA TAKEN (SF)	TEMP CONST ESMT (SF)	PERM DRAIN ESMT (SF)	PERM UTIL ESMT (SF)	PERM DRAIN & UTIL ESMT (SF)
1	4	RUFUS T. & MAXINE AIKEN		703		153	
2	4	SAMUEL KENT RAY		1052		726	
3	4	MAXINE R. AIKEN		865		120	
4	4	JOSEPH J. WATKINS				6493	
5	4	RAYMOND RAY ET AL	27611	6466	1306	748	
6	4	RONALD FOY SMITH				5605	
7	4 & 5	ZACHARY L. BYRD SR.		858		2423	1202
8	4	JAMES E. NEVILLE	10795	2551	2564		
9	4	LYNN ELVIN AIKEN	3777	3786			
10	4	LYNN & ALICE AIKEN	351	3791			
11	4 & 5	VELMA S. GOOCH	25726	3505	451		408
12	4 & 5	CHARLES WAYNE WATKINS	6145	3926	3082		
13	5	VELMA GOOCH	428	349		28	
14	5	ADLAIS WOODLIEF	9340	4645	292	27	
15	5	HOLMES OIL COMPANY INC	888			2632	
16	5	JAMES D. GRAY III & ROBIN H. GRAY	7605	8157	604		210
17	5	HOLMES OIL COMPANY LLC	1709	2335	480		
18	5	DARLENE E. BENNETT	4194	2880	2297		
19	5	ZACHARY L. BYRD SR.		2672			
20	5	CLAYON HILL PROPERTIES LLC	2610	3260	707	707	
21	5	COOL RIDGE DEVELOPMENT LLC		765			
22	5	VELMA S. GOOCH				120	

RKA-RAL-DES-14

COMPUTED BY: Karen Hefner DATE: 01/28/2019

CHECKED BY: Andrew Nottingham DATE: 01/28/2019

PROJECT NO.	SHEET NO.
R-5707	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE: 15	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) THICKNESS OR GAUGE	R. C. PIPE CLASS III SIZE: 15	18	24	30	R. C. PIPE CLASS IV SIZE: 12	15	18	24	30	36	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH	B: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	J.B. STD. 840.31 OR STD. 840.32	M.H. FRAME AND COVER STD. 840.54	ADJUSTMENT OF CATCH BASINS	CONVERT EXISTING D.I. TO J.B. WITH MANHOLE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
-Y2- 201+38 LT	15.00	0416		352.00																				1																							
-DR3- 714+00 RT	17.00	0470		352.80																				1																							
		0470	0416		350.88	350.08										36																																	
-Y2- 201+38 RT	14.00		0413	351.20																				1																							
		0416	0413		350.08	349.28										28																																	
-L- 24+25 LT	36.00	0411		346.50																				1																							
-Y2- 200+50	0.00	0412		349.83																				1				1																		
		0413	0411		349.28	344.58										88																																	
		0412	0411		346.83	344.58										36																																	
-L- 24+25 LT	36.00	0460		347.40																				1				1				1														
		0411	0460		344.58	344.40										28																																	
		0460	0410		344.40	344.00										80																																	
-L- 23+45 RT	8.20	0410		347.00																				1				1	1				1													
-L- 23+45 RT	8.20		0409	347.00																				1				1	1				1													
		0410	0409		344.00	343.90										4																																49	PIPE REMOVAL
		0409	0430			343.50										68																																
-L- 23+00 RT	47.00	0430				343.50																	3.400																							OPEN END PIPE
-L- 22+18 RT	8.50	0404		347.79	344.79																			1				1	1				1													
-L- 22+20 LT	22.30	0403		347.40	344.40																			1				1			1													
		0403	0401		344.40	343.26										56																																	
-L- 21+56 RT	9.10	0402		349.16																				1	1.3			1			1													
		0404	0402		344.79	344.00										60																																	
-L- 21+55 LT		0400			345.00																		3.400																							
-L- 21+56 LT	22.00		0401	348.01																				1				1			1													
		0400	0401		345.00	343.76																28																										
		0401	0402		343.26	342.90																28																										
-Y1- 101+00LT	15.50	0405		347.66																				1	4.9			1			1													
		0402	0405		342.90	341.00																80																										
-Y1- 101+00 RT	45.60	0420			343.60																																									OPEN END PIPE
		0420	0406		343.60	340.50											76																													
-Y1- 101+30 LT	14.40	0406		347.08																				1	5.0	0.6	1			1															
		0405	0406		337.80	337.00																28																										
-Y1- 101+53 LT	76.00	0407		340.00																				1																							
-Y1- 101+21 LT	69.00	0408		340.60																				1																							
		0407	0408		337.75	337.50										32																																	
		0408	0406		337.50	337.25											52																																	
		0406	0501		336.50	335.00																96																										40	PIPE REMOVAL
-Y1- 103+48 LT	35.80	0504		344.70																				1																							
-Y1- 103+48 LT	13.30	0505		345.91																				1				1		1														
		0504	0505		342.45	342.10										20																																	
-Y1- 102+77 LT	12.10	0503		345.61																				1				1	1																	
		0505	0503		342.10	341.10										68																																	
-Y1- 102+77 LT	12.10	0502																						1				1			1													
		0503	0502		341.10	341.00										4																																	
		0502	0501		341.00	339.76										36																																	
				SHEET TOTALS												644	128			260		3.400				20	11.1	0.6	13	4	2	7		5		1	1	1	1	4		6	1							218	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RKA-RAL-DES-14

COMPUTED BY: Karen Hefner DATE: 01/28/2019

CHECKED BY: Andrew Nottingham DATE: 01/28/2019

PROJECT NO.	SHEET NO.
R-5707	3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) THICKNESS OR GAUGE	MINIMUM REQUIRED SLOPE %	R. C. PIPE CLASS III SIZE	R. C. PIPE CLASS III THICKNESS OR GAUGE	R. C. PIPE CLASS IV SIZE	R. C. PIPE CLASS IV THICKNESS OR GAUGE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH	B: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	J.B. STD. 840.31 OR STD. 840.32	M.H. FRAME AND COVER STD. 840.54	ADJUSTMENT OF CATCH BASINS	CONVERT EXISTING D.I. TO J.B. WITH MANHOLE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
-Y3- 310+50 LT	36.00	0510		352.50												1				1																
-Y3- 310+50 LT	21.30	0509		352.05												1			1		1															
		0510	0509		350.25	349.05						16																									
-Y3- 308+02 LT	17.80	0508		349.66												1			1		1															
		0509	0508		349.05	346.68						252																									
-Y3- 306+10 LT	17.60	0507		348.53												1			1		1															
		0508	0507		346.66	345.53						188																									
-Y1- 104+38 LT	16.20	0506		347.42												1			1		1															
		0507	0506		345.53	344.42						56																									
		0506	0505		344.42	342.25						88																									
-Y3- 311+00 RT	23.40	0530		352.63												1			1				1													
-Y3- 311+00 RT	40.00	0531		352.00												1					1															
		0530	0531		349.63	349.50						16																									
-Y3- 310+73 RT	62.60	0532		351.50												1									1											
		0531	0532		349.50	349.33						36																									
-L- 30+00 LT	22.00	0590		353.67	350.67											1			1																	
		0590	0533		350.67	353.37						52																									
-L- 29+50 LT	21.20	0533		353.37												1			1		1															
-L- 29+20 LT	25.10	0534		353.20												1			1		1															
		0532	0534		349.33	349.10						40																									
		0533	0534		350.37	350.20						28																									
		0529	0535		347.65	347.00								88																							
-L- 29+10 RT	28.00	0535		352.83												1	0.6		1				1													
-Y3- 309+50 RT	55.50	0536		352.15												1	0.8								1								1			
		0534	0535		349.10	348.60						56																									
		0535	0536		347.00	346.40								44																							
-Y3-309+00 RT	29.10	0537		350.69												1			1				1													
		0536	0537		346.40	345.94								52																							
-Y3- 308+29 RT	48.00	0538		350.00												1						1	1													
-Y3- 308+15 RT	35.00	0539		350.20	338.71																												1		1			USE INV OF EXIST.DI, Special Detail 2C-6
-Y3- 308+12 RT	29.10	0540		349.65												1	0.2		1		1															
		0537	0540		345.94	344.90								76																							
		0538	0539		347.75	346.00						20																									
		0540	0539		344.50	344.00								8																							
-L- 32+88 RT	30.00		0520																																0.4500			COLLAR
		0520	0571		355.01	354.60						16																									
-L- 34+00 RT	35.00	0572		360.80												1																					JB w/Slab Lid
-L- 32+77 RT	40.00	0571		357.00												1	0.8								1								1			
		0572	0560		357.00	354.25								40																						107	PIPE REMOVAL
-L- 33+63 RT	34.00	0560		359.00												1	0.3								1								1			
		0560	0571		353.75	351.75								80																							
-L- 32+52 RT	42.50	0521		355.80												1	0.8								1								1			
		0571	0521		351.25	350.05								24																							
-Y4- 514+00 RT	40.10	0550			356.70																																	OPEN END PIPE
-L- 32+00 RT	47.50		0522	355.80												1	1.3								1								1			
		0550	0522		356.70	352.30						72																									
SHEET TOTALS												824	112	40	80	292	21	4.5		11		7	4			3	3	5		1		6			1		1			1			0.4500		107	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RKA-RAL-DES-14

COMPUTED BY: Karen Hefner DATE: 01/28/2019

CHECKED BY: Andrew Nottingham DATE: 01/28/2019

PROJECT NO.	SHEET NO.
R-5707	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE	MINIMUM REQUIRED SLOPE %	R. C. PIPE CLASS III SIZE	R. C. PIPE CLASS IV SIZE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH	B: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	J.B. STD. 840.31 OR STD. 840.32	M.H. FRAME AND COVER STD. 840.54	ADJUSTMENT OF CATCH BASINS	CONVERT EXISTING D.I. TO J.B. WITH MANHOLE	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
		0521	0522		350.05	349.51				16																										
-L- 31+14 RT	41.00	0526		356.00									1	2.5																						
		0522	0526		349.51	348.52				80																											
-L- 31+14 LT	39.40	0523		356.00									1									1	1												76	PIPE REMOVAL
-L- 31+14 LT	22.00		0524	356..00									1			1		1																	14	PIPE REMOVAL
-L- 31+14 RT	26.00		0525																															0.4500			COLLAR
		0523	0524		353.50	353.35				16																											
		0524	0525		353.35	352.94																															Existing 18" RCP
		0525	0526		352.94	352.90				12																											
-L- 30+00 RT	38.50	0529		353.05									1	0.4																1		1			0.232		2 PIPE PLUGS. JB w/MH
		0526	0529		348.52	347.65				124																										102	PIPE REMOVAL
-L- 30+00 RT	48.50	0551		352.00									1										1	1											
		0551	0529		349.75	349.40				12																										29	PIPE REMOVAL
-L- 17+70 LT	13.30	0425		355.11									1			1		1																		
-L- 18+85 LT	15.90		0426	353.37									1			1		1																		
		0425	0426		352.11	350.37				108																											
-L- 20+00 LT	22.00		0450	351.12	348.12								1			1		1																		
		0426	0450		350.37	348.12				112																											
			0451			347.60																															OPEN END PIPE
		0450	0451		348.12	347.60				76																											
-L- 21+00 LT	22.20		0427	348.94									1			1		1																		
		0427	0428		345.94	345.90				28																											
-L- 21+00 LT			0428			345.90																															OPEN END PIPE
		0518		349.38									1			1		1																		
-L- 27+00 RT	17.00		0591	349.40									1										1	1											
-L- 27+00 RT	23.80	0518	0591		346.38	346.30				20																											
-L- 26+78 RT	40.00		0519			346.00																															OPEN END PIPE
		0591	0519		346.30	346.00				64																											
-L- 28+00 LT	9.00	0516		349.32									1			1		1			1															
-L- 24+50 LT	9.00	0414		348.88									1	0.9		1			1		1														
		0516	0414		345.00	343.00				152																											
		0414	0415		343.00	342.50				56																											
			0415			342.50																															OPEN END PIPE
-Y3- 307+38 RT	29.00	0582																													1					
-Y3- 307+73 RT	32.00	0583																													1					
-Y3- 306+50 RT	34.00	0580		348.85									1														1		1						
		0580	0581		346.93	346.35	72																														HDPE Pipe, ties to existing system.
-Y3- 307+18 RT	33.00	0581																																0.3990			COLLAR
-L- 16+40 RT	28.10	0440					20																													18	SIDE DRAIN/PIPE REMOVAL
-L- 16+90 RT	28.60	0441					20																													19	SIDE DRAIN/PIPE REMOVAL
-Y2- 201+29 RT	19.50	0416					28																													19	SIDE DRAIN/PIPE REMOVAL
-L-																																		18		0.260		Flowable Fill for 18" rcp/4 Pipe Plugs
																																				115	Removal of pipe from City Project C-5166
				SHEET TOTALS			140			628	28		220				14	3.8		8		3	5		2		3	3	1	1		2		1		1	2	18	0.8490	0.492	392	
				PROJECT TOTALS			140			2096	268	40	80	//2		3.400		55	20.2		32	4	12	16		/		/	/	/	1	6		14	1		2		2	2	1	18	1.2990	0.492	/1/	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

SAY 1.3 0.5

RKA-RAL-DES-14

COMPUTED BY: Karen Hefner DATE: 01/28/2019

CHECKED BY: Andrew Nottingham DATE: 01/28/2019

PROJECT NO.	SHEET NO.
R-5707	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54 INCHES & OVER)

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	% MINIMUM REQUIRED SLOPE	R. C. PIPE CLASS III 54	R. C. PIPE CLASS IV 54	R. C. PIPE CLASS IV 60	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	C.B.	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	GRATE TYPE F	GRATE TYPE G	OPEN THROAT C.B.	PIPE REMOVAL LIN. FT.	REMARKS
SIZE																			
THICKNESS OR GAUGE																			
-Y1- 102+31 LT	12.20	0501		345.76								7.000	1			1			Special Detail, 2C-1, Extra depth
-Y1- 102+32 LT	42.50	0500		340.00								10.500					1		Special Detail, 2C-2, Extra Depth
		0500	0501		329.00	328.59				28								12	PIPE REMOVAL
-Y1- 102+80 RT	53.00	0570		340.54	327.80							11.800					1		Special Detail, 2C-2, Extra Depth
		0501	0570		328.59	327.80				68									
-L- 26+35		0575			339.50	335.00			148		10.400								Endwall & Headwall
SHEET TOTALS									148	96	10.400	29.300	1			1	2	12	
PROJECT TOTALS									148	96	10.400	29.300	1			1	2	12	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

PROJECT REFERENCE NO.	SHEET NO.
R-5707	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M. K. ROQUE 1/29/2019	NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER 1/30/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Transportation Engineers
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Raleigh, North Carolina 27609
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NC License No. C-0910

Curve Data

-L-
PI Sta 19+93.04
Δ = 48° 04' 52.7" (LT)
D = 10° 08' 27.0"
L = 474.14'
T = 252.03'
R = 565.00'
e = .04
Runoff = 84 (PC)
Runoff = 124 (PT)

PI Sta 25+72.30
Δ = 56° 19' 59.4" (RT)
D = 10° 44' 58.8"
L = 524.05'
T = 285.39'
R = 533.00'
e = .04
Runoff = 124

-Y1-
PI Sta 102+50.12
Δ = 40° 32' 08.7" (LT)
D = 10° 44' 58.8"
L = 377.09'
T = 196.82'
R = 533.00'
e = .04
Runoff = 84

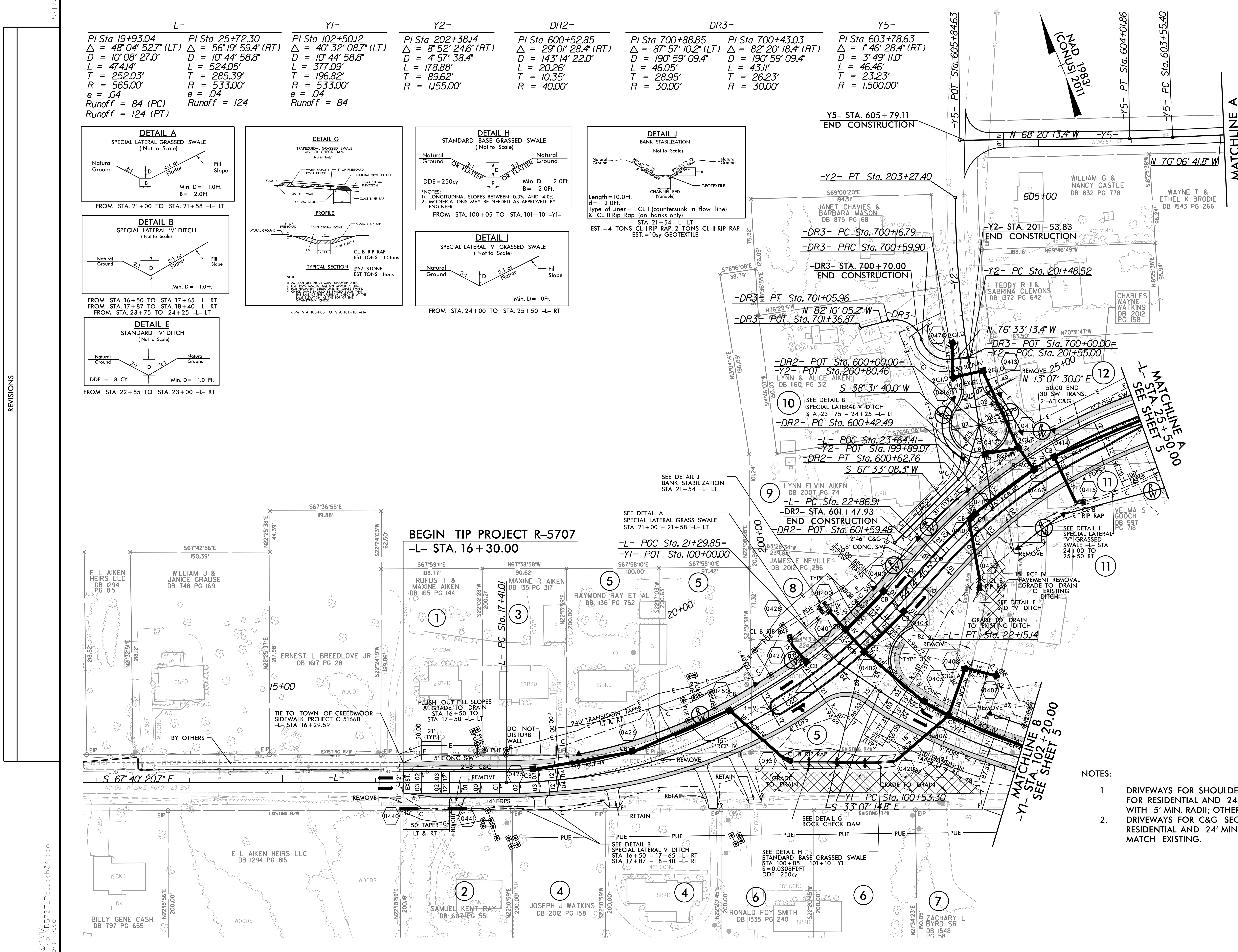
-Y2-
PI Sta 202+38.14
Δ = 8° 52' 24.6" (RT)
D = 4° 57' 38.4"
L = 178.88'
T = 89.62'
R = 1,155.00'

-DR2-
PI Sta 600+52.85
Δ = 29° 01' 28.4" (RT)
D = 143° 14' 22.0"
L = 20.26'
T = 10.35'
R = 40.00'

-DR3-
PI Sta 700+88.85
Δ = 87° 57' 10.2" (LT)
D = 190° 59' 09.4"
L = 46.05'
T = 28.95'
R = 30.00'

PI Sta 700+43.03
Δ = 82° 20' 18.4" (RT)
D = 190° 59' 09.4"
L = 43.11'
T = 26.23'
R = 30.00'

-Y5-
PI Sta 603+78.63
Δ = 1° 46' 28.4" (RT)
D = 3° 49' 11.0"
L = 46.46'
T = 23.23'
R = 1,500.00'



NOTES:

1. DRIVEWAYS FOR SHOULDER SECTIONS: USE 12' MIN. WIDTH FOR RESIDENTIAL AND 24' MIN. WIDTH FOR COMMERCIAL WITH 5' MIN. RADII; OTHERWISE MATCH EXISTING.
2. DRIVEWAYS FOR C&G SECTIONS: USE 16' MIN. WIDTH FOR RESIDENTIAL AND 24' MIN. WIDTH FOR COMMERCIAL; OTHERWISE MATCH EXISTING.

(hatched)	PAVEMENT REMOVAL
FOR ROW PLAN, SEE SHEET NO. 2B-1	
FOR -L- PROFILE, SEE SHEET NO. 6	
FOR -Y1- PROFILE, SEE SHEET NO. 6	
FOR -Y2- PROFILE, SEE SHEET NO. 7	
FOR -DR2- PROFILE, SEE SHEET NO. 7	
FOR -DR3- PROFILE, SEE SHEET NO. 7	

PROJECT REFERENCE NO.	SHEET NO.
R-5707	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE — 2/6/2019

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER KAREN HEFNER — 2/6/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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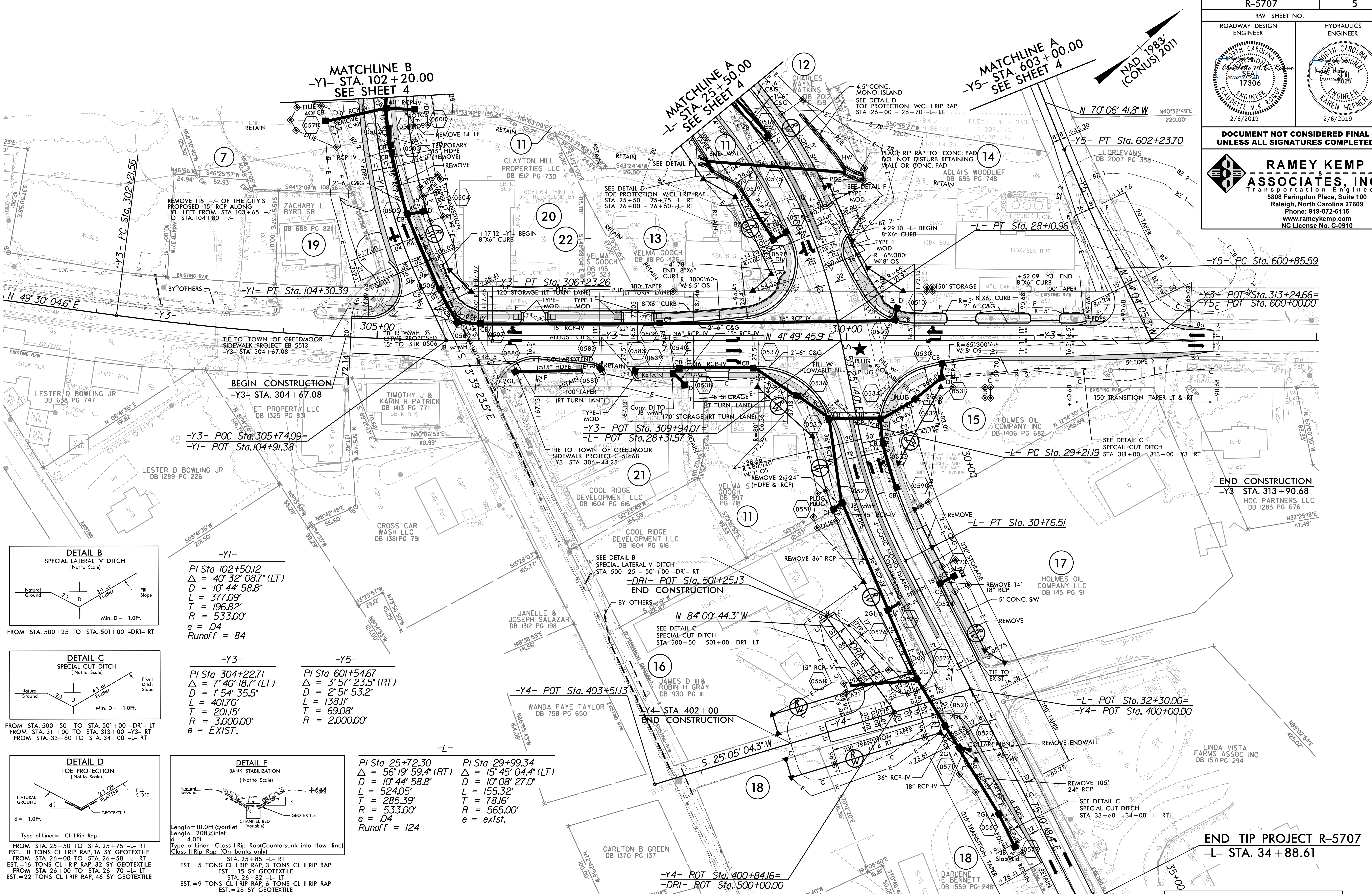
REVISIONS



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

Natural Ground; 2:1; D; 3:1 or Flatter; Fill Slope; Min. D= 1.0Ft.

FROM STA. 500+25 TO STA. 501+00 -DR1- RT

DETAIL C
SPECIAL CUT DITCH (Not to Scale)

Natural Ground; 2:1; D; 4:1 or Flatter; Front Ditch Slope; Min. D= 1.0Ft.

FROM STA. 500+50 TO STA. 501+00 -DR1- LT
FROM STA. 311+00 TO STA. 313+00 -Y3- RT
FROM STA. 33+60 TO STA. 34+00 -L- RT

DETAIL D
TOE PROTECTION (Not to Scale)

NATURAL GROUND; d; 2:1 OR FLATTER; FILL SLOPE; GEOTEXTILE; d= 1.0Ft.

Type of Liner= CL I Rip Rap

FROM STA. 25+50 TO STA. 25+75 -L- RT
EST.=8 TONS CL I RIP RAP, 16 SY GEOTEXTILE
FROM STA. 26+00 TO STA. 26+50 -L- RT
EST.=16 TONS CL I RIP RAP, 32 SY GEOTEXTILE
FROM STA. 26+00 TO STA. 26+70 -L- LT
EST.=22 TONS CL I RIP RAP, 46 SY GEOTEXTILE

DETAIL F
BANK STABILIZATION (Not to Scale)

Natural Ground; Natural Ground; d; GEOTEXTILE; CHANNEL BED (Variable)

Length=10.0Ft.@outlet
Length=20ft@inlet
d= 4.0Ft.
Type of Liner=Class I Rip Rap(Countersunk into flow line)
Class II Rip Rap (On banks only)

STA. 25+85 -L- RT
EST.=5 TONS CL I RIP RAP, 3 TONS CL II RIP RAP
EST.=15 SY GEOTEXTILE
STA. 26+82 -L- LT
EST.=9 TONS CL I RIP RAP, 6 TONS CL II RIP RAP
EST.=28 SY GEOTEXTILE

-Y1-
PI Sta 102+50.12
Δ = 40° 32' 08.7" (LT)
D = 10° 44' 58.8"
L = 377.09'
T = 196.82'
R = 533.00'
e = .04
Runoff = 84

-Y3-
PI Sta 304+22.71
Δ = 7° 40' 18.7" (LT)
D = 1° 54' 35.5"
L = 401.70'
T = 201.15'
R = 3,000.00'
e = EXIST.

-Y5-
PI Sta 601+54.67
Δ = 3° 57' 23.5" (RT)
D = 2° 51' 53.2"
L = 138.11'
T = 69.08'
R = 2,000.00'

-L-
PI Sta 25+72.30
Δ = 56° 19' 59.4" (RT)
D = 10° 44' 58.8"
L = 524.05'
T = 285.39'
R = 533.00'
e = .04
Runoff = 124

PI Sta 29+99.34
Δ = 15° 45' 04.4" (LT)
D = 10° 08' 27.0"
L = 155.32'
T = 78.16'
R = 565.00'
e = exist.

NOTES:
1. DRIVEWAYS FOR SHOULDER SECTIONS: USE 12' MIN. WIDTH FOR RESIDENTIAL AND 24' MIN. WIDTH FOR COMMERCIAL WITH 5' MIN. RADII; OTHERWISE MATCH EXISTING.
2. DRIVEWAYS FOR C&G SECTIONS: USE 16' MIN. WIDTH FOR RESIDENTIAL AND 24' MIN. WIDTH FOR COMMERCIAL; OTHERWISE MATCH EXISTING.

★ PROPOSED TRAFFIC SIGNAL

FOR ROW PLAN, SEE SHEET NO. 2B-2
FOR -L- PROFILE, SEE SHEET NO. 6
FOR -Y1- PROFILE, SEE SHEET NO. 6
FOR -Y3- PROFILE, SEE SHEET NO. 7
FOR -Y4- PROFILE, SEE SHEET NO. 7
FOR -DR1- PROFILE, SEE SHEET NO. 7

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R5707	6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17306 CLAUDETTE M. ROQUE

12/11/2018

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 30025 KAREN HEFNER

12/11/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

–L–

BM #1: RRS IN 26" PINE
45.8369' RIGHT OF STA. –L– 10+34.71
EL = 380.02'

EXIST. GROUND

PI=18+10.00
EL=355.78'
VC=110'
K=66
DS=45 MPH

–1.0660%
–0.2997%
+0.9565%
–0.9434%
–1.9564%
–1.7241%

BEGIN GRADE –L– STA. 16+30.00
EL=356.32' (TIE TO EXIST.)

BEGIN SPEC. LAT. 'V' DITCH STA. 16+50 –L– RT EL=353.60'

–L– PC STA. 17+55.00 EL=355.94'

END SPEC. LAT. 'V' DITCH STA. 17+65 –L– RT EL=354.70'

BEGIN SPEC. LAT. 'V' DITCH STA. 17+87 –L– RT EL=354.00'

END SPEC. LAT. 'V' DITCH STA. 18+40 –L– RT EL=353.50'

–L– PT STA. 18+65.00 EL=354.70'

PROPOSED GRADE

–L– STA. 21+29.85 =
–Y1– STA. 100+00.00

BEGIN SPEC. LAT. GRASSED SWALE STA. 21+00 –L– LT EL=345.50'

END SPEC. LAT. GRASSED SWALE STA. 21+58 –L– LT EL=344.50'

–L– PC STA. 21+80.00 EL=348.54'

PIPE HYDRAULIC DATA
54" RCP-III –L– Sta. 26+35

DRAINAGE AREA	= 39	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 345.7	FT
100 YEAR DISCHARGE	= 90	CFS
100 YEAR HW ELEVATION	= 346.1	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 145	CFS
OVERTOPPING ELEVATION	= 348.9	FT

BM #2: RRS IN 24" SWEET GUM
25.3792' LEFT OF –L– STA. 26+70.41
EL = 350.79'

END GRADE –L– STA. 28+14.75
EL=351.97' (INCLUDES 1.5" RESURF.)

–Y3– STA. 309+94.07 =
–L– STA. 28+31.57

BEGIN RESURF. –L– STA. 28+48.40
EL=352.30' (INCLUDES 1.5" RESURF.)

–L– STA. 32+30.00 =
–Y4– STA. 400+00.00

END RESURF. –L– STA. 34+88.61
TIE TO EXIST.

PI=23+15.00
EL=345.90'
VC=270'
K=85
DS=45 MPH

BEGIN SPEC. LAT. 'V' DITCH STA. 23+75 –L– LT EL=347.25'

END SPEC. LAT. 'V' DITCH STA. 24+25 –L– LT EL=346.50'

–L– PT STA. 24+50.00 EL=347.54'

END SPEC. LAT. GRASSED SWALE STA. 25+50 –L– RT EL=338.75'

PROPOSED GRADE

–0.8000%
–2.2000%
–2.5000%
+1.2146%
+3.8000%
–1.9564%

–L– STA. 23+64.41 =
–Y2– STA. 199+89.07

STA. 24+00.00 –L– LT
EL=347.05'

BEGIN SPEC. LAT. 'V' GRASSED SWALE STA. 24+00 –L– RT EL=342.50'

54" RCP–III

EXIST. GROUND

BEGIN SPEC. CUT DITCH STA. 33+60 –L– RT EL=359.00'

END SPEC. CUT DITCH STA. 34+00 –L– RT EL=360.52'

–Y1–

–L– STA. 21+29.85 =
–Y1– STA. 100+00.00
EL=349.52'

BEGIN GRADE –Y1– STA. 100+21.82
EL=350.19'

–Y1– PC STA. 101+35.00 EL=347.82'

PI=102+60.00
EL=345.20'
VC=250'
K=67
DS=40 MPH

–Y1– PT STA. 103+85.00 EL=347.24'

PROPOSED GRADE

–Y3– STA. 305+74.09 =
–Y1– STA. 104+91.38

+3.0706%
–2.0951%
+1.6296%

END GRADE –Y1– STA. 104+72.94
EL=348.67' (INCLUDES 1.5" RESURF.)

EXIST. GROUND

FOR –L– & –Y1– PLAN VIEW, SEE SHEET NOS. 4 & 5

DITCH PROFILE RIGHT -------
DITCH PROFILE LEFT -·-·-·-·-

11/2/2018
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User: kmas

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-5707	7

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CHRISTOPHER M. ROGUE

12/11/2018

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 30025 ENGINEER KAREN HEFNER

12/11/2018

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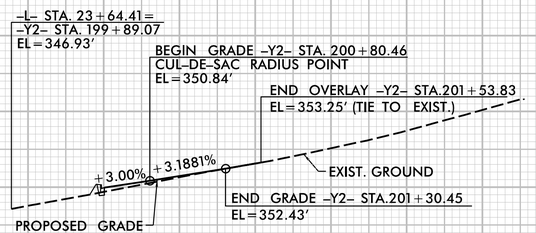
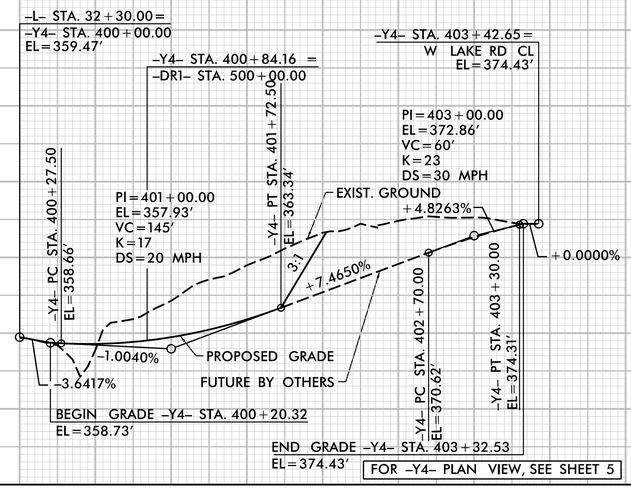
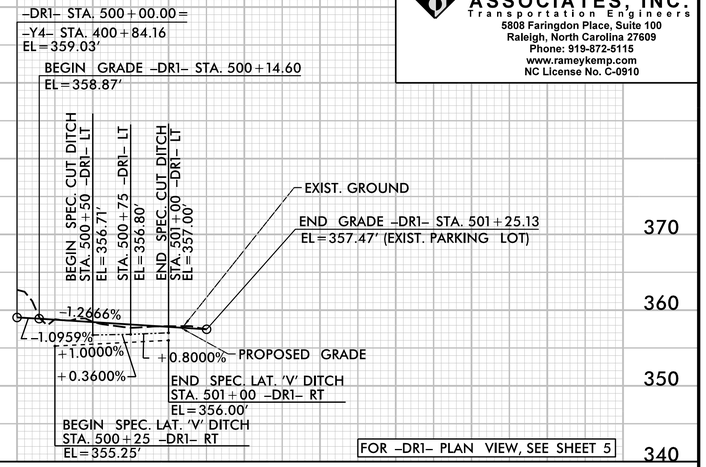
-Y2-



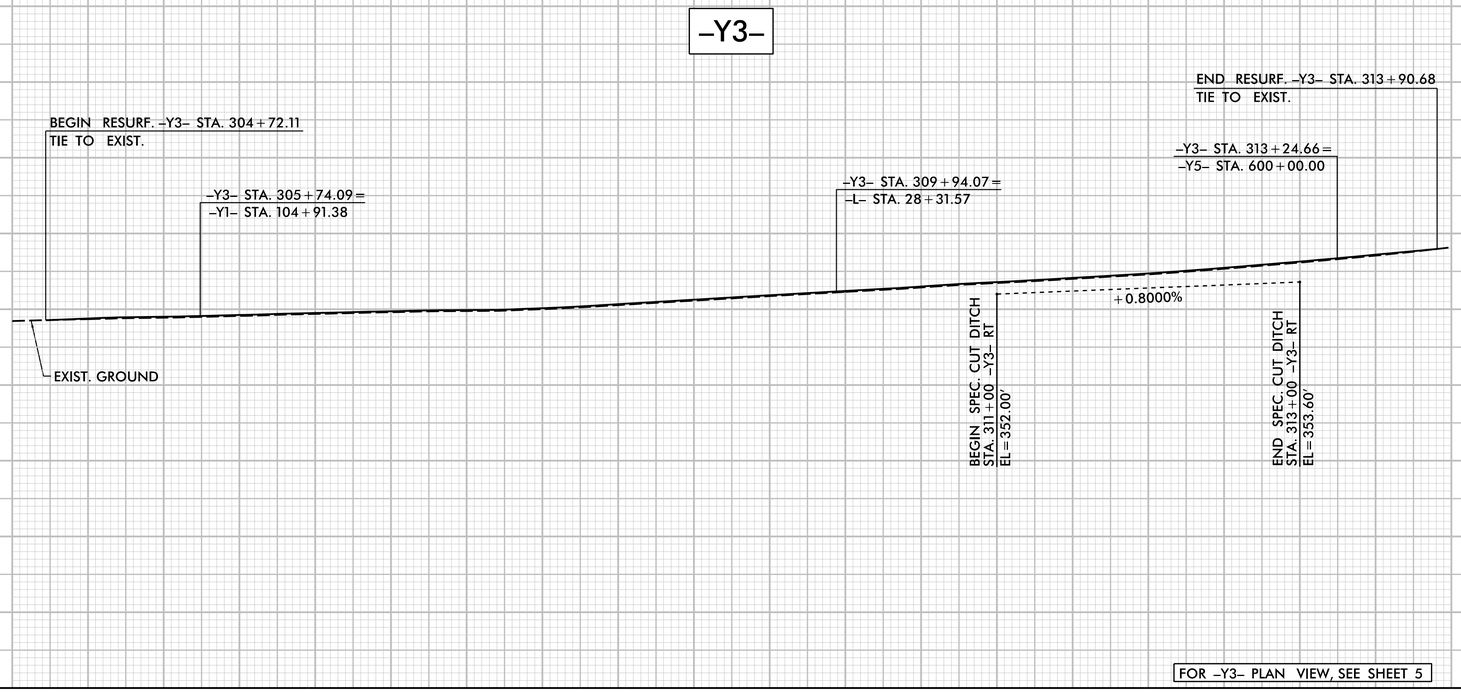
-Y4-



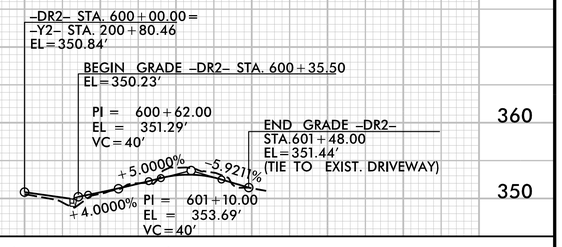
-DR1-



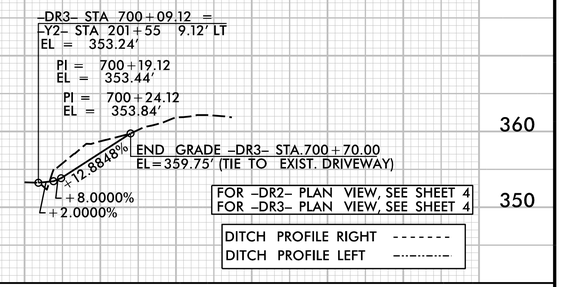
-Y3-



-DR2-



-DR3-



11/2/2018
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