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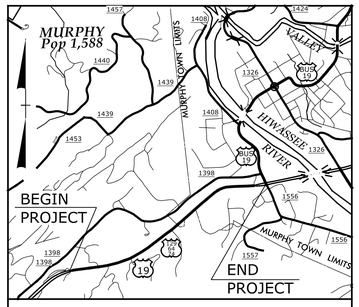
This file or an individual page shall not be considered a certified document.

09/08/99

TIP PROJECT: R-5735

CONTRACT: C204248

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

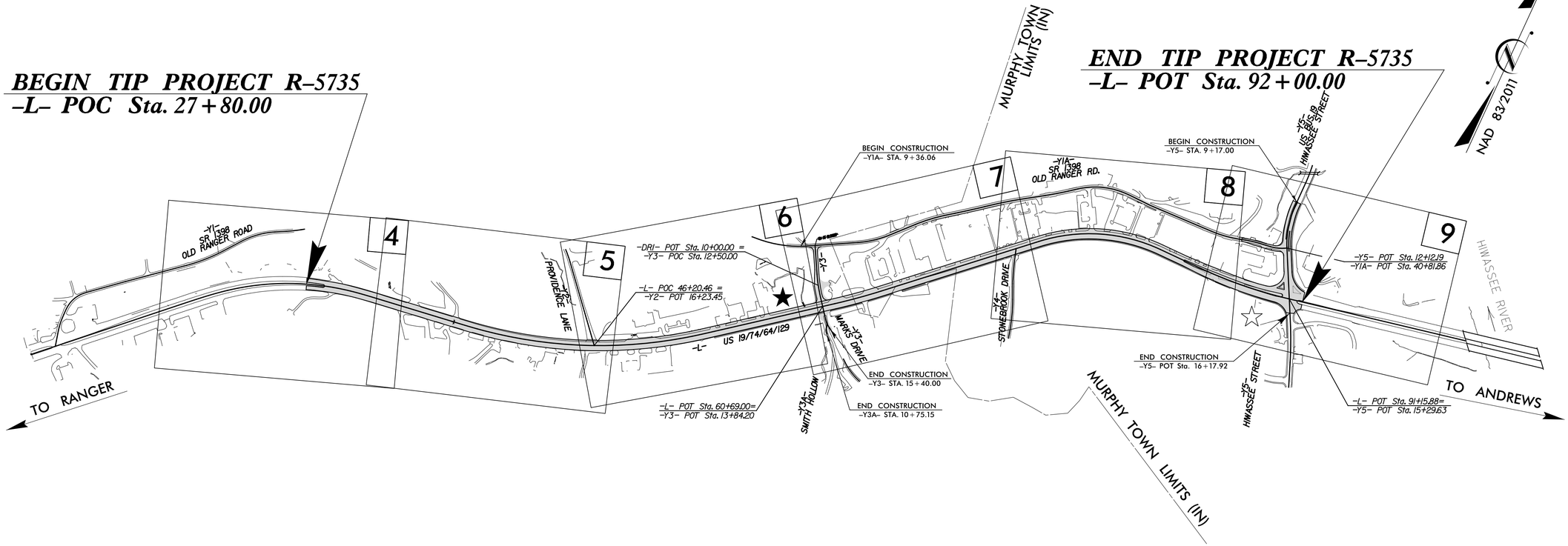
CHEROKEE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5735	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50193.1.1		PE
50193.2.1		R/W AND UTIL.
50193.3.1		CONST.

LOCATION: US 19/US 74/US 64/US 129 FROM END OF 4-LANE DIVIDED SECTION TO US 19 BUS. (HIWASSEE STREET)

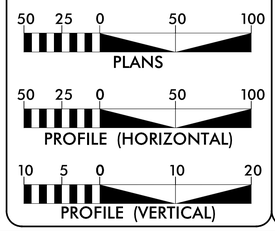
TYPE OF WORK: DRAINAGE, PAVING, GRADING, SIGNALS



★ = PROPOSED SIGNAL
☆ = REVISED SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2019 = 19,700
ADT 2041 = 24,200
K = 9 %
D = 53 %
T = 7 % *
V = 40/50 MPH
* TTST = 2% DUAL 5%
FUNC CLASS = ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5735	=	1.216 MILES
LENGTH STRUCTURE TIP PROJECT R-5735	=	0.000 MILES
TOTAL LENGTH OF TIP PROJECT R-5735	=	1.216 MILES

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Pkwy
Suite 600
Cary, NC 27518
NC License: F-1084

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 1, 2018

LETTING DATE:
MAY 21, 2019

TODD H. BUCKNER, PE
PROJECT ENGINEER

TERRY A. HARRIS, PE
PROJECT DESIGN ENGINEER

KENNETH J. MCDOWELL
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER

DocuSigned by: Karen Hefner BE3552047D81492...

4/4/2019

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER

DocuSigned by: 1087011E67F6430...

4/4/2019

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

28-FEB-2019 13:01
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12/2/2016

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-5735	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TIMOTHY D. BUCKNER

DocuSigned by: 10870116E67F6436...

4/4/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

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 OF SURVEY 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 II.

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.

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.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE MURPHY POWER, FRONTIER

COMMUNICATIONS, BLUE RIDGE MOUNTAIN EMC, BALSAMWEST FIBERNET,

THE CABLE COMPANY, AND TOWN OF MURPHY.

ANY RELOCATION OF EXISTING UTILITIES WILL BE COMPLISHED 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.

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	
200.02	Method of Clearing – Method II
225.02	Guide for Grading Subgrade – Secondary and Local
225.04	Method of Obtaining Superelevation – Two Lane Pavement
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	
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
838.27	Reinforced Concrete Endwall – for Single 60" Pipe 90 Skew
838.33	Reinforced Concrete Endwall – for Single 66" Pipe 90 Skew
838.39	Reinforced Concrete Endwall – for Single 72" Pipe 90 Skew
838.57	Reinforced Brick Endwall – for Single 60" Pipe 90 Skew
838.63	Reinforced Brick Endwall – for Single 66" Pipe 90 Skew
838.69	Reinforced Brick Endwall – for Single 72" 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" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' – 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' – 12" thru 36" Pipe
840.30	Driveway Drop Inlet
840.31	Concrete Junction Box – 12" thru 66" Pipe
840.32	Brick Junction Box – 12" thru 66" Pipe
840.37	Steel Grate and Frame
840.45	Precast Drainage Structure
840.46	Traffic Bearing 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
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet – 15" and 18" Pipe
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-5735	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.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2A-1

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034367 TODD H. BUCKNER — DocuSigned by: 1087011E67F6435... 4/4/2019

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031026 JOSHUA B. DEYTON — DocuSigned by: Joshua Deyton CF7578C4CC1041E... 4/4/2019

Michael Baker Engineering, Inc. — Michael Baker INTERNATIONAL — 8000 Regency Pkwy Suite 600 Cary, NC 27518 NC License: F-1084

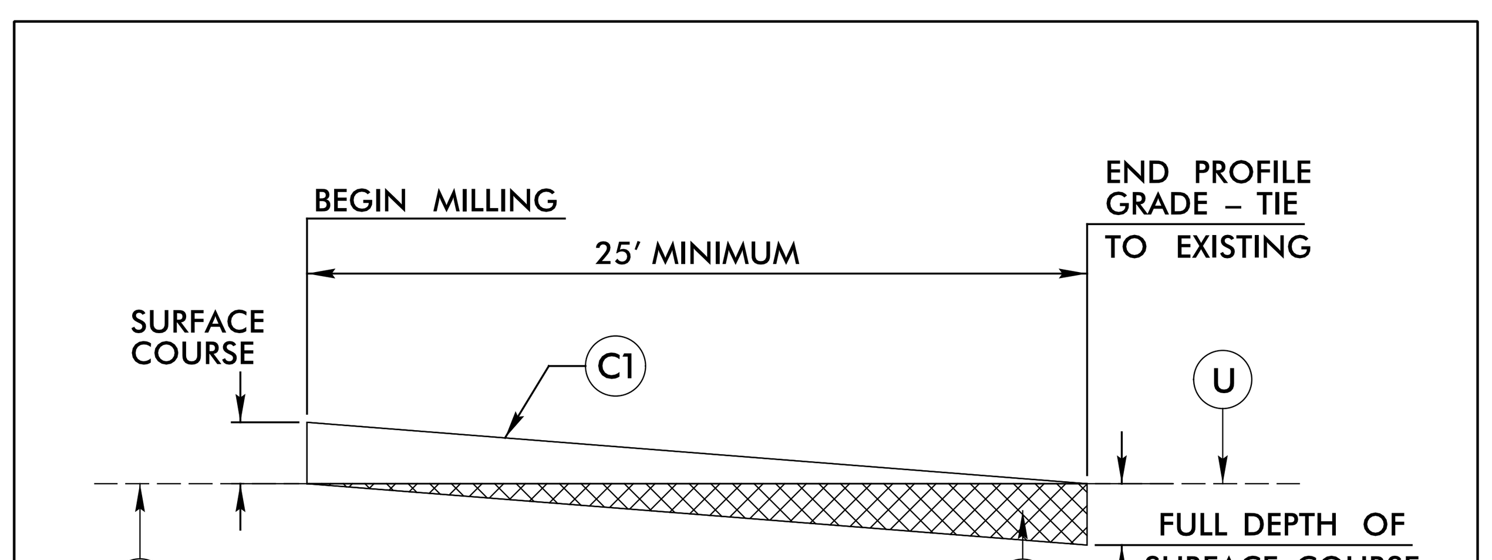
NC DEPARTMENT OF TRANSPORTATION DIVISION 14 53 WEBSTER ROAD SYLVA, NC 28779

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

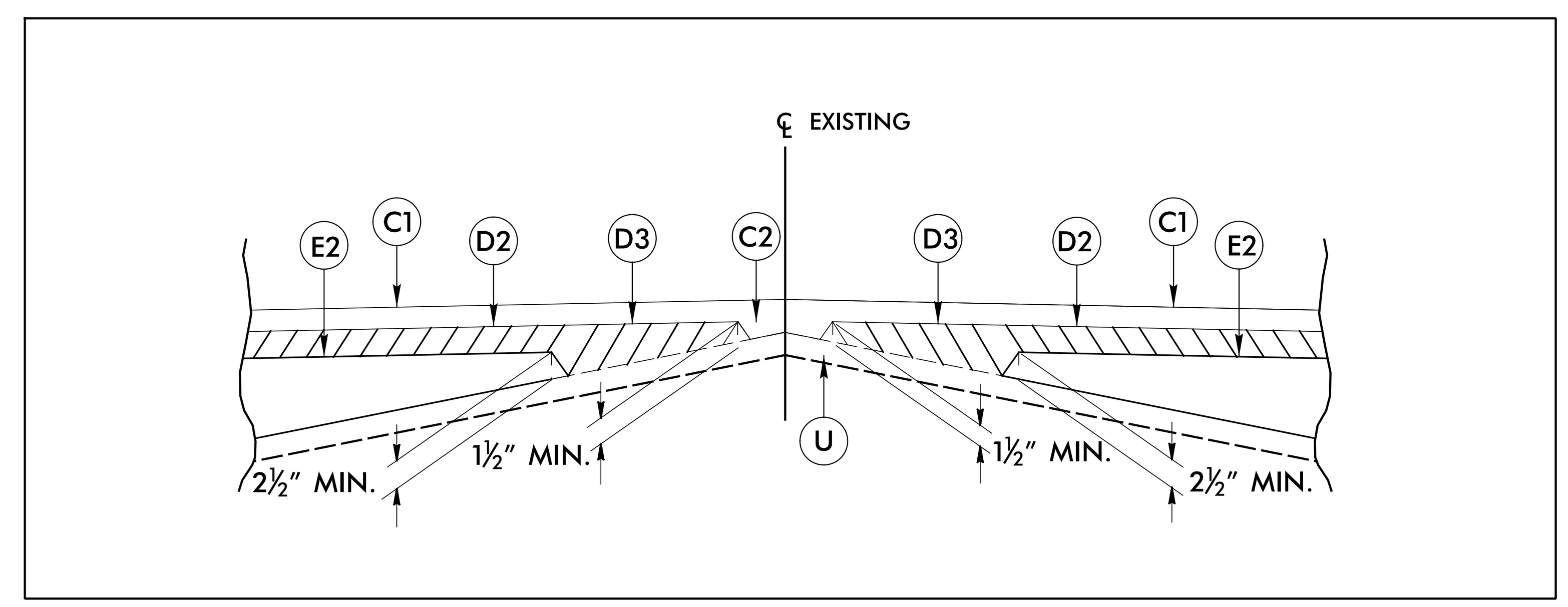
P A V E M E N T   S C H E D U L E

C1	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.	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 5½" IN DEPTH.	V1	0" TO 3" MILLING
C2	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 2.0".	E3	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	V2	3" MILLING
C3	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD..	R1	5" MONOLITHIC CONCRETE ISLAND (KEYED IN)	V3	5½" MILLING
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R2	2'-6" CONCRETE CURB AND GUTTER	V4	7" MILLING
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	S	4" CONCRETE SIDEWALK	V5	10" MILLING
D3	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 2½" OR GREATER THAN 4" IN DEPTH.	T	EARTH MATERIAL	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS)
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT		

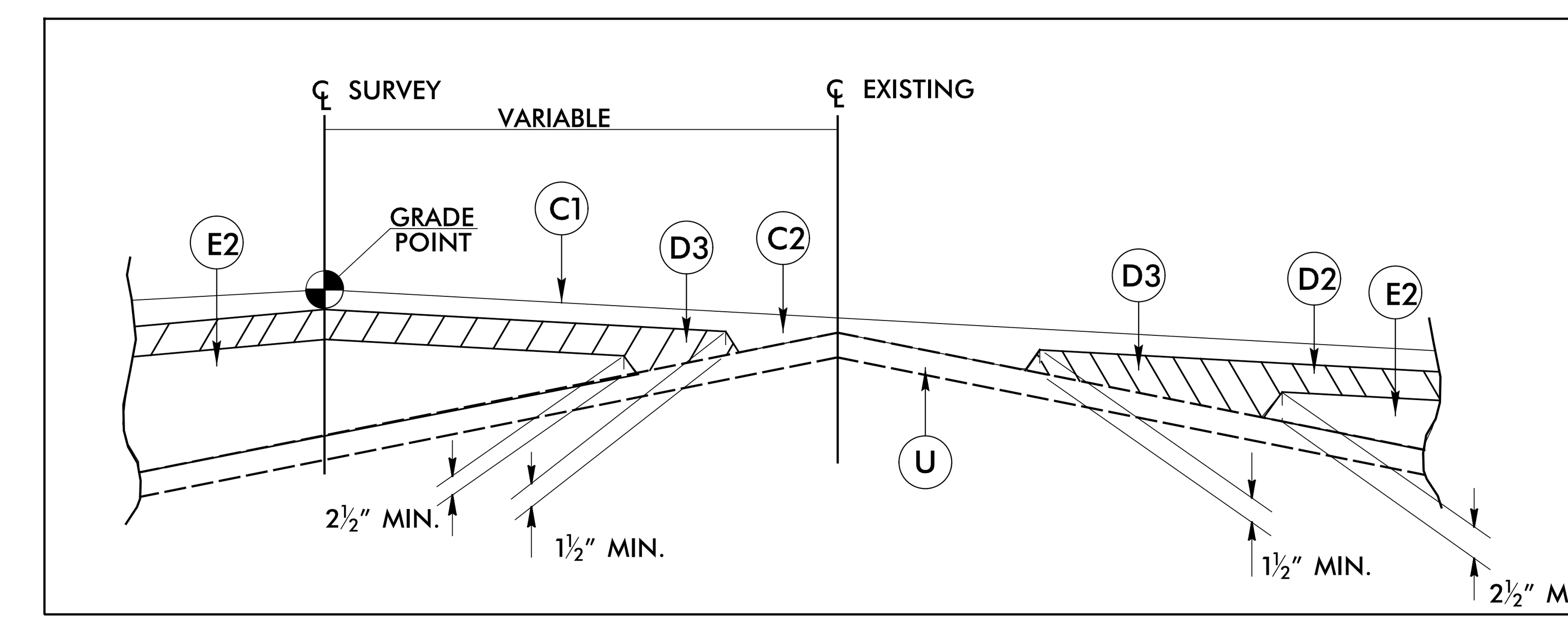
NOTE: PAVEMENT EDGE SLOPES 1:1 UNLESS SHOWN OTHERWISE.



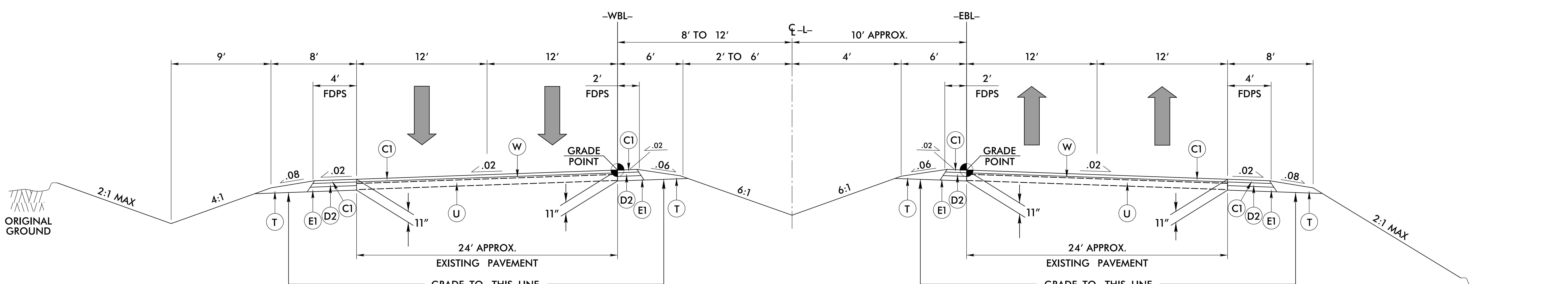
DETAIL 1
INCIDENTAL MILLING DETAIL
SEE PROFILE FOR LIMITS



Detail Showing Method of Wedging No. 1



Detail Showing Method of Wedging No. 2



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS

-L- STA. 27+80.00 TO STA. 28+92.50

04-APR-2019 10:23
R:\Roadway\Proj\R-5735_rdy_typ.dgn
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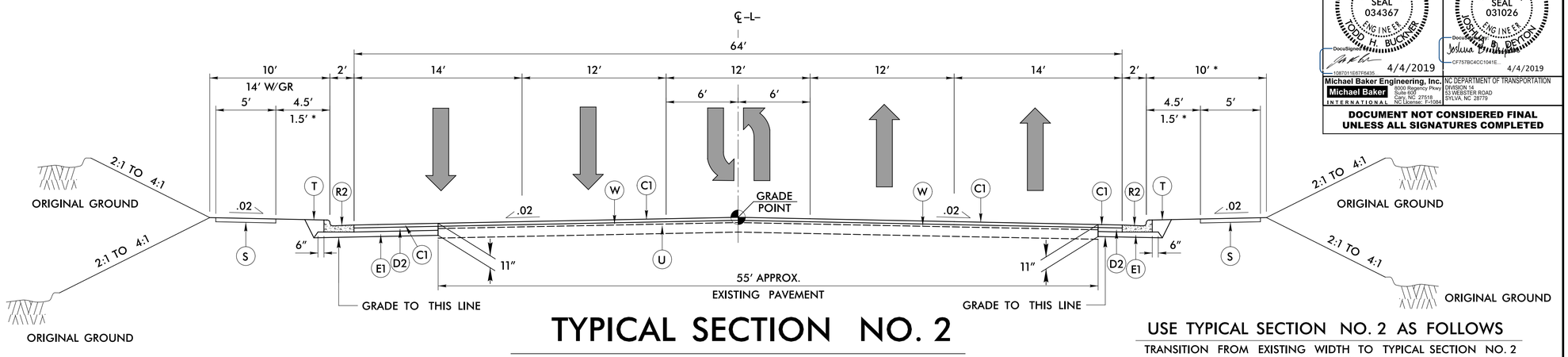
6/2/99

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	VAR. S9.5C
C3	1½″ S9.5C
D1	2½″ I19.0C
D2	4″ I19.0C
D3	VAR. I19.0C
E1	4″ B25.0C
E2	VAR. B25.0C
E3	3″ B25.0C
R1	MCI
R2	2′-6″ C & G
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	0″ TO 3″ MILLING
V2	3″ MILLING
V3	5.5″ MILLING
V4	7″ MILLING
V5	10″ MILLING
W	WEDGING



TYPICAL SECTION NO. 2

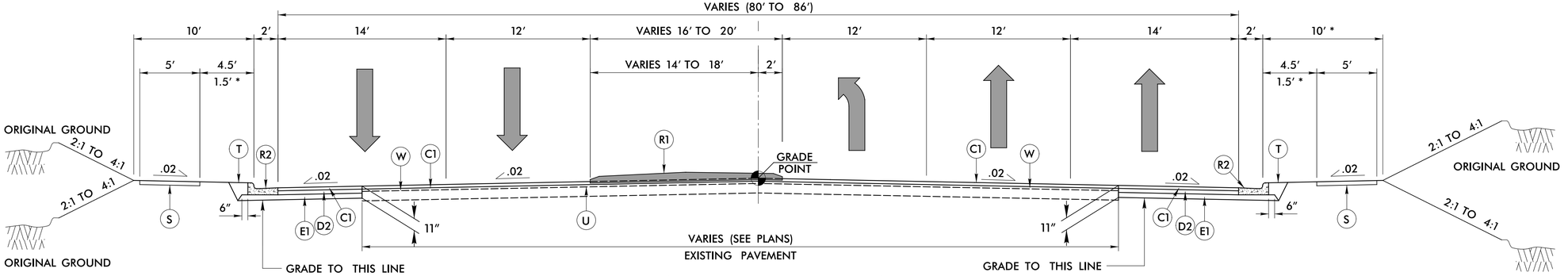
USE TYPICAL SECTION NO. 2 AS FOLLOWS

TRANSITION FROM EXISTING WIDTH TO TYPICAL SECTION NO. 2
–L– STA. 28+92.50 TO STA. 31+00.00

–L– STA 31+00.00 TO STA 84+20.00

* 7′ BERM AT FOLLOWING STATIONS
–L– STA. 31+50.00 TO 33+00.00 LT
–L– STA. 41+75.00 TO 44+50.00 LT
–L– STA. 57+50.00 TO 60+70.50 LT
–L– STA. 63+50.00 TO 64+00.00 RT
–L– STA. 68+00.00 TO 72+00.00 RT

SIDEWALKS BEGINS AT –L– STA. 53+68.79 RT
–L– STA. 61+08.45 LT



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS

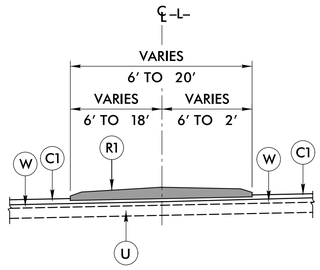
TRANSITION FROM TYPICAL SECTION NO. 2 TO TYPICAL SECTION NO. 3
–L– STA. 84+20.00 TO STA. 86+35.00

–L– STA 86+35.00 TO STA 90+60.00

TRANSITION FROM TYPICAL SECTION NO. 3 TO EXISTING
–L– STA. 90+60.00 TO STA. 92+00.00

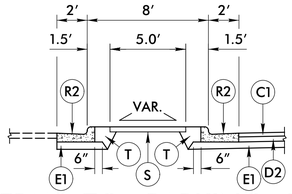
* 7′ BERM AT FOLLOWING STATIONS
–L– STA. 85+00.00 TO 86+00.00 RT

SIDEWALKS END
–L– STA. 90+26.76 LT.
–L– STA. 90+95.49 RT. (TIES TO EXISTING)



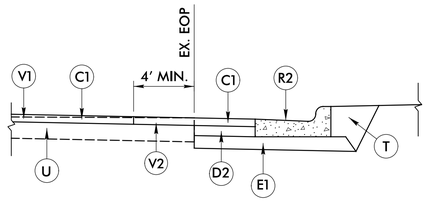
5″ MONOLITHIC ISLAND TRANSITION

–L– STA. 84+20.00 TO STA. 86+35.00



ISLAND BERMS TO PARKING LOT AREAS

–L– STATION LEFT SHOWN, VARIOUS LOCATIONS (SEE PLANS)
–L– STA. 86+50 TO 87+45 RT.
SIDEWALKS BEGIN AT –L– STA. 53+69 APPROX.
SEE PMP PLANS FOR CURB RAMP DETAILS



BENCH MILLING ALONG –L–

–L– STA. 75+40 TO STA. 81+30 LT
–L– STA. 86+50 TO STA. 90+96 RT

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2A-2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER
DocuSigned by: 4/4/2019
109701116575435...

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 031026 ENGINEER JOSHUA B. DEYTON
DocuSigned by: 4/4/2019
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Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Pkwy Suite 600 CARY, NC 27518
NCE License: F-1064

NC DEPARTMENT OF TRANSPORTATION
DIVISION 14
53 WEBSTER ROAD
SYLVA, NC 28779

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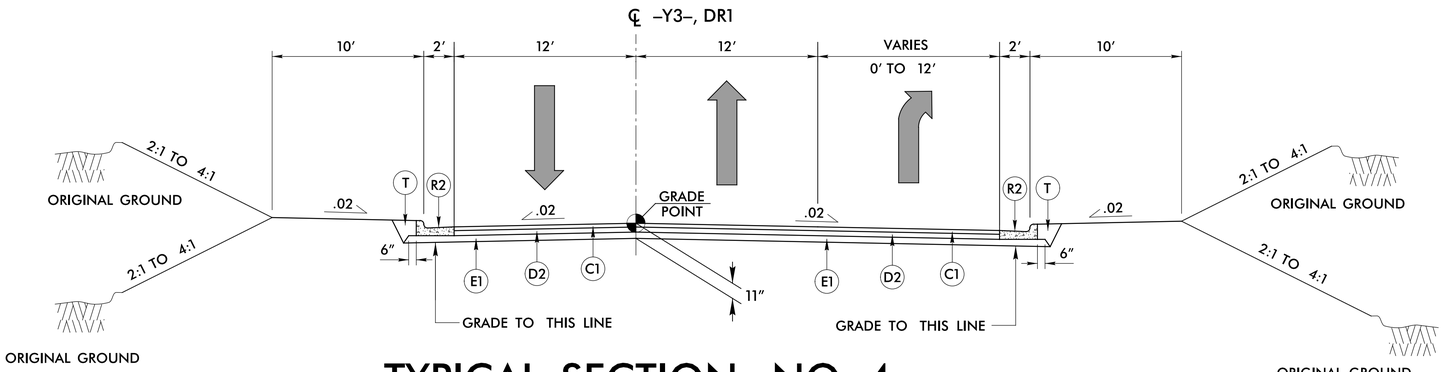
6/2/99

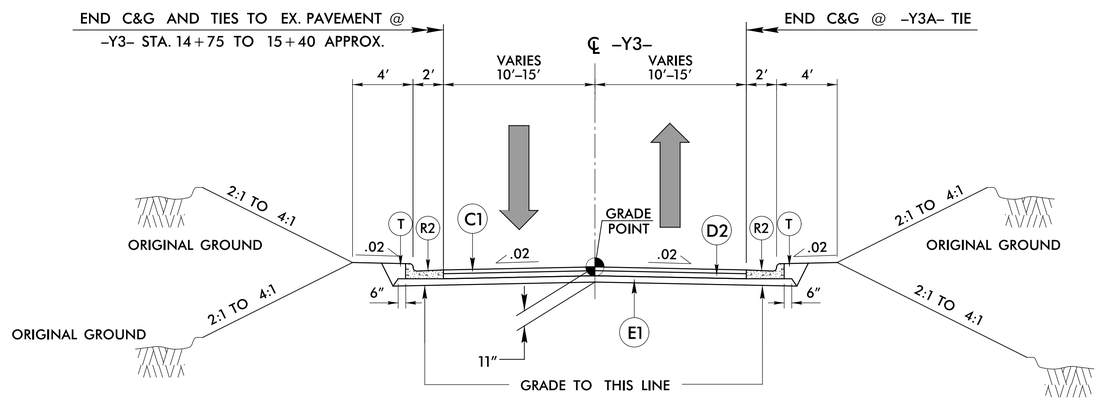
PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	VAR. S9.5C
C3	1½″ S9.5C
D1	2½″ I19.0C
D2	4″ I19.0C
D3	VAR. I19.0C
E1	4″ B25.0C
E2	VAR. B25.0C
E3	3″ B25.0C
R1	MCI
R2	2′-6″ C & G
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	0″ TO 3″ MILLING
V2	3″ MILLING
V3	5.5″ MILLING
V4	7″ MILLING
V5	10″ MILLING
W	WEDGING



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS

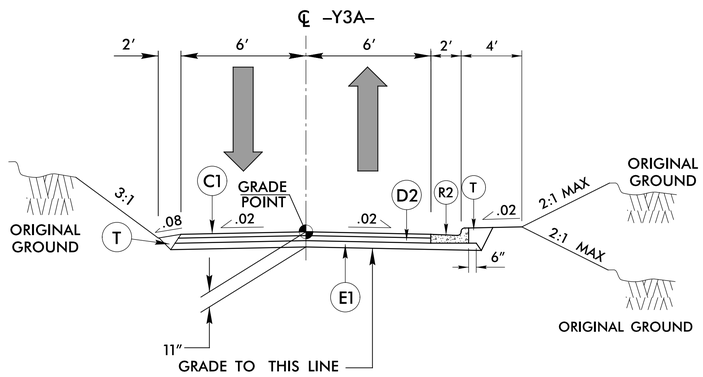
–Y3– STA. 10+10.00 TO 13+52.20
–DR1– STA. 10+12.00 TO 10+85.00



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS

–Y3– STA. 14+16.20 TO 15+40.00



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS

–Y3A– STA. 10+35.00 TO STA. 10+75.15

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2A-3

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER
DocuSigned by: 4/4/2019
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PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 031026 ENGINEER JOSHUA B. DEVON
DocuSigned by: 4/4/2019
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Michael Baker Engineering, Inc.
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DIVISION 14
53 WEBSTER ROAD
SYLVA, NC 28779

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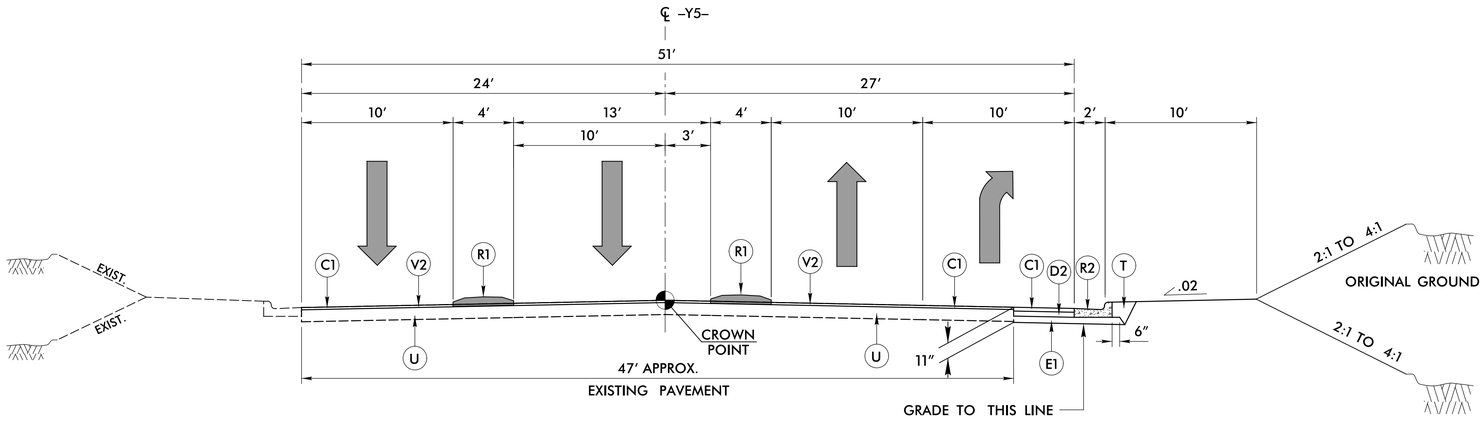
6/2/99

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	VAR. S9.5C
C3	1½″ S9.5C
D1	2½″ I19.0C
D2	4″ I19.0C
D3	VAR. I19.0C
E1	4″ B25.0C
E2	VAR. B25.0C
E3	3″ B25.0C
R1	MCI
R2	2′-6″ C & G
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	0″ TO 3″ MILLING
V2	3″ MILLING
V3	5.5″ MILLING
V4	7″ MILLING
V5	10″ MILLING
W	WEDGING

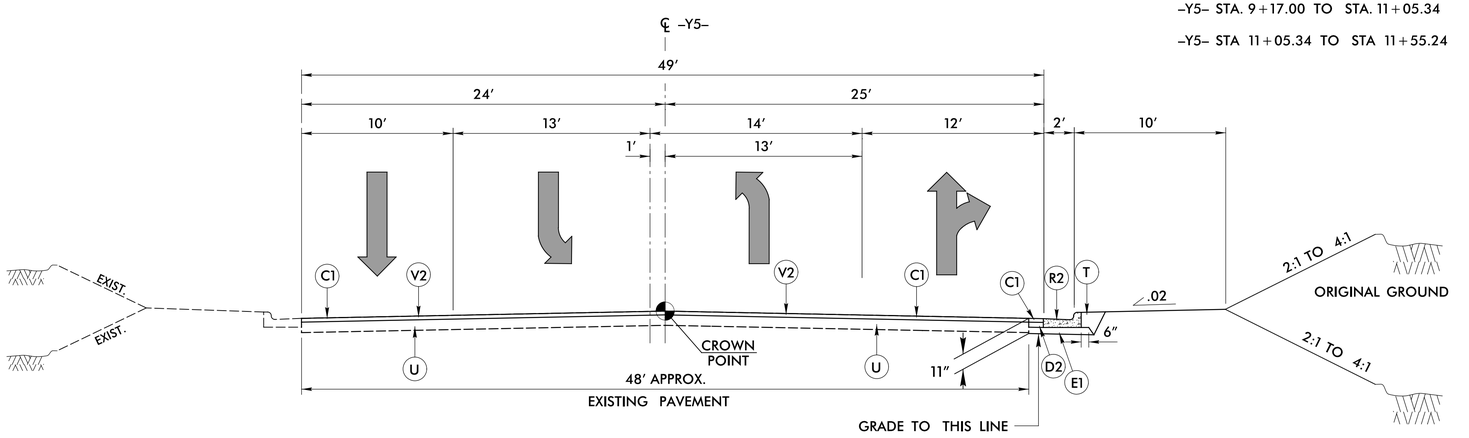


TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 AS FOLLOWS

TRANSITION FROM EXISTING WIDTH TO TYPICAL SECTION NO. 8
–Y5– STA. 9+17.00 TO STA. 11+05.34

–Y5– STA 11+05.34 TO STA 11+55.24

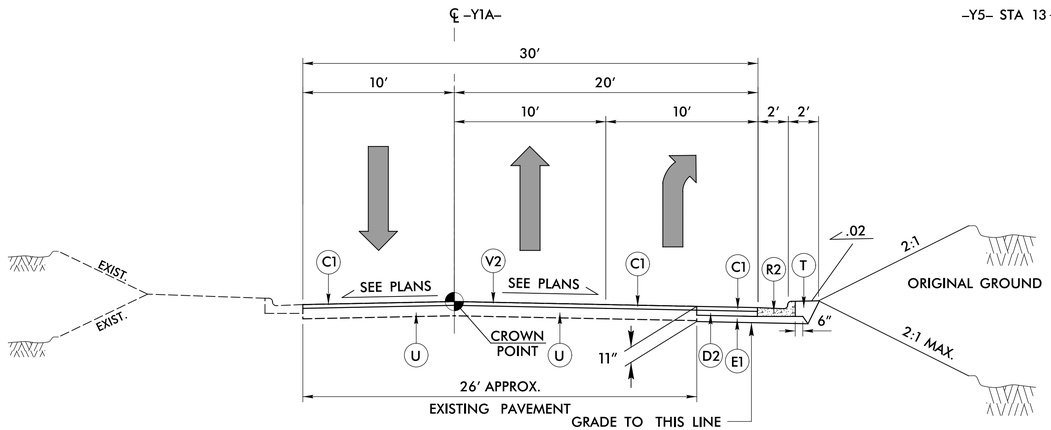


TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 AS FOLLOWS

TRANSITION FROM TYPICAL SECTION NO. 8 TO TYPICAL SECTION NO. 9
–Y5– STA. 11+55.24 TO STA. 13+18.77

–Y5– STA 13+18.77 TO STA 14+81.00



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9 AS FOLLOWS

MILL/OVERLAY EXISTING WIDTH
–Y1A– STA. 9+36.06 TO 37+94.17

TRANSITION FROM EXISTING WIDTH TO TYPICAL SECTION NO. 9
–Y1A– STA. 37+94.17 TO STA. 38+73.07

–Y1A– STA 38+73.07 TO STA 40+54.91

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2A-4

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER
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PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 031026 ENGINEER JOSHUA B. DEYTON
DocuSigned by: 4/4/2019
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53 WEBSTER ROAD
SYLVA, NC 28779

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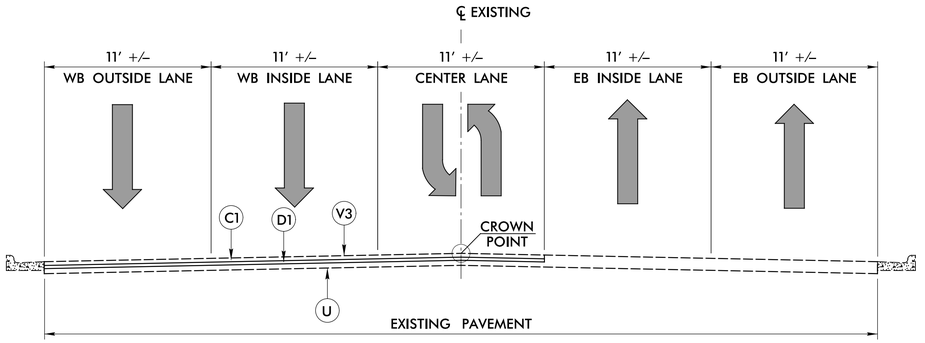
6/2/99

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	VAR. S9.5C
C3	1½″ S9.5C
D1	2½″ I19.0C
D2	4″ I19.0C
D3	VAR. I19.0C
E1	4″ B25.0C
E2	VAR. B25.0C
E3	3″ B25.0C
R1	MCI
R2	2′-6″ C & G
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	0″ TO 3″ MILLING
V2	3″ MILLING
V3	5.5″ MILLING
V4	7″ MILLING
V5	10″ MILLING
W	WEDGING

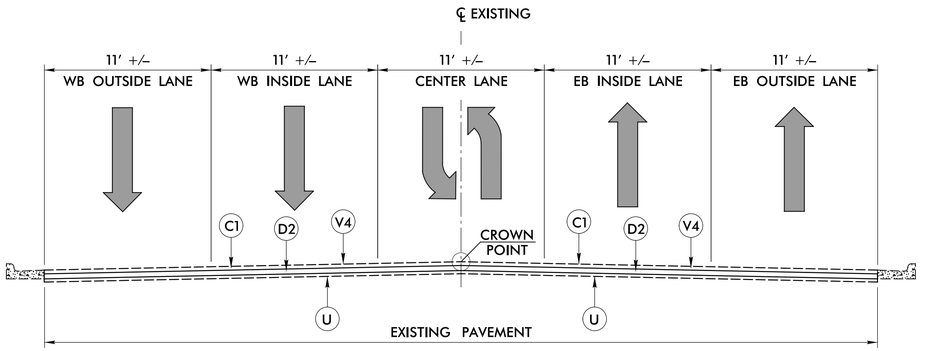
MILLING DETAILS



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10 AS FOLLOWS

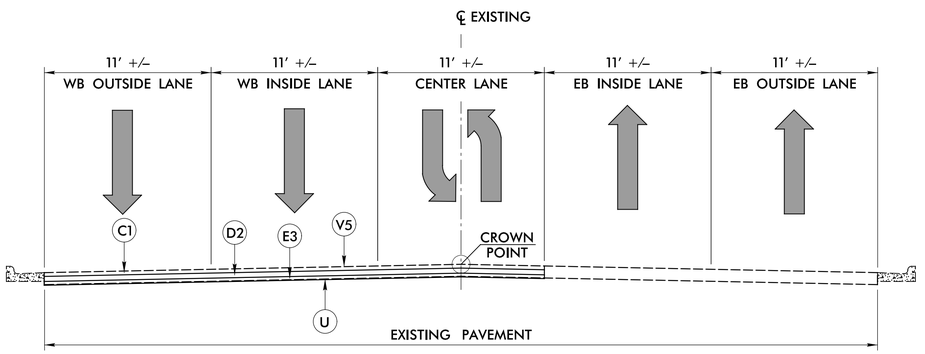
MILLING LIMITS (5.5″ DEPTH)
WB OUTSIDE, WB INSIDE, AND CENTER LANES
–L– STA. 28+00.00 TO 38+00.00



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11 AS FOLLOWS

MILLING LIMITS (7″ DEPTH)
WB OUTSIDE LANE
–L– STA. 38+00.00 TO 58+00.00
–L– STA. 68+50.00 TO 75+50.00
–L– STA. 81+00.00 TO 92+00.00
WB INSIDE LANE
–L– STA. 38+00.00 TO 48+00.00
–L– STA. 68+50.00 TO 92+00.00
CENTER LANE
–L– STA. 38+00.00 TO 58+00.00
–L– STA. 68+50.00 TO 92+00.00
EB INSIDE AND OUTSIDE LANES
–L– STA. 28+00.00 TO 92+00.00



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12 AS FOLLOWS

MILLING LIMITS (10″ DEPTH)
WB OUTSIDE LANE
–L– STA. 58+00.00 TO 68+50.00
WB INSIDE LANE
–L– STA. 48+00.00 TO 68+50.00
CENTER LANE
–L– STA. 58+00.00 TO 68+50.00

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2A-5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER
DocuSigned by: 4/4/2019
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PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 031026 ENGINEER JOSHUA B. DEYTON
DocuSigned by: 4/4/2019
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Michael Baker Engineering, Inc. / Michael Baker INTERNATIONAL
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NC DEPARTMENT OF TRANSPORTATION
DIVISION 14
53 WEBSTER ROAD
SYLVA, NC 28779

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CURB & GUTTER AND ISLAND DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER

DocuSigned by: 4/4/2019

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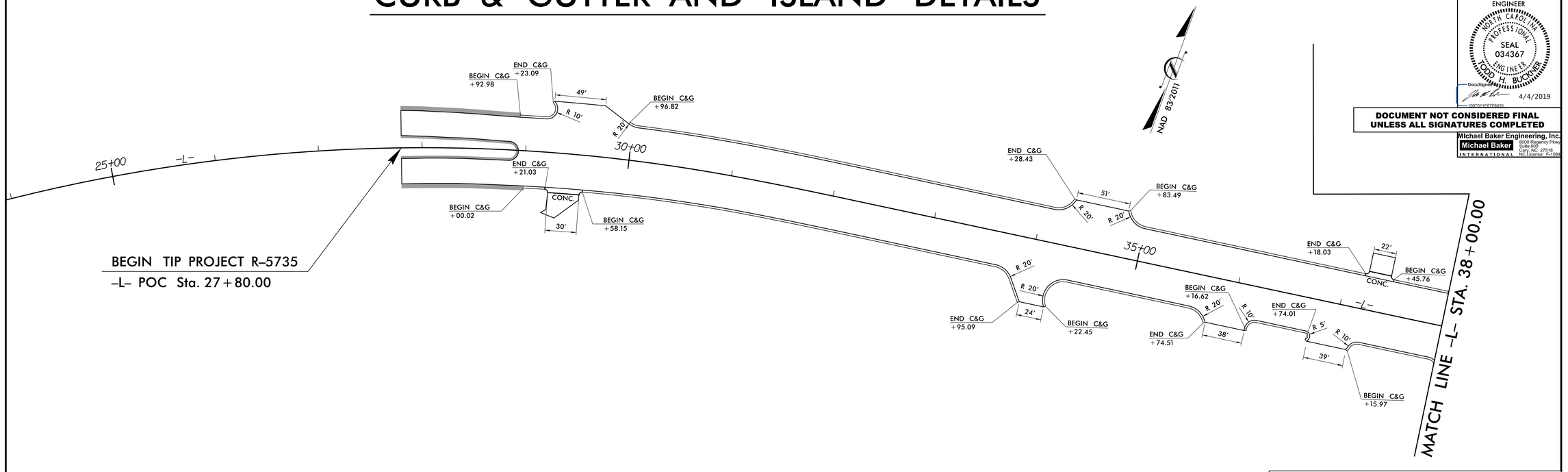
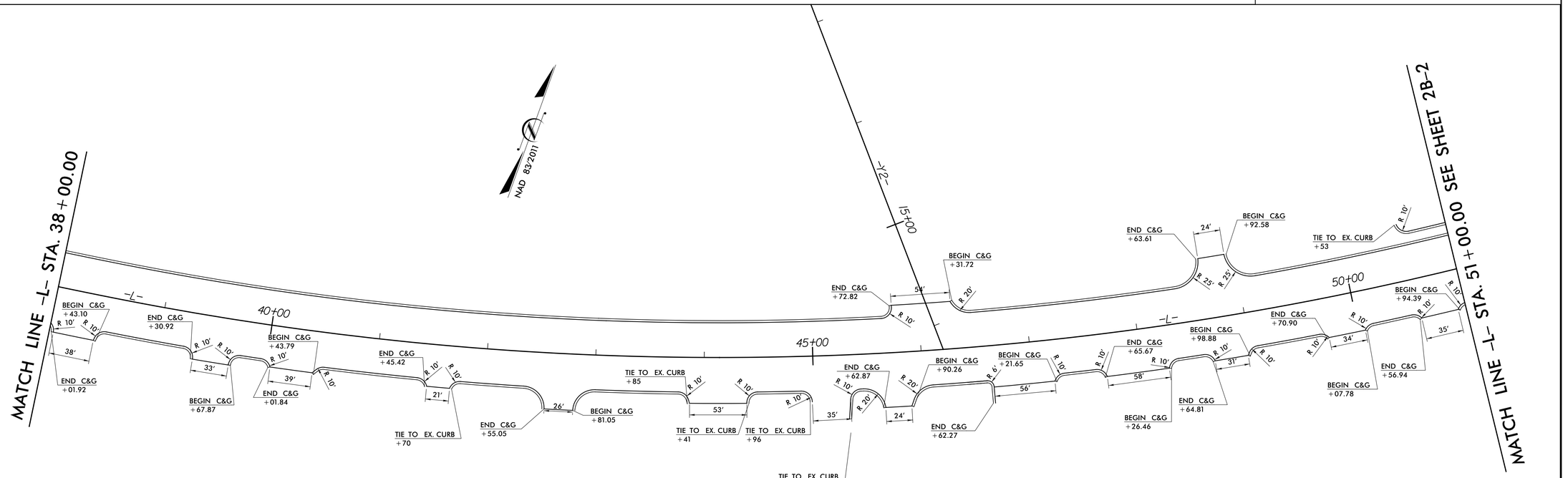
8000 Regency Pkwy Suite 600 Cary, NC 27518 NC License: P-1084

REVISIONS

8/17/99



FOR -L- ALIGNMENT SEE SHEETS 4 & 5



FOR -L- ALIGNMENT SEE SHEETS 5 & 6
FOR -Y2- ALIGNMENT SEE SHEETS 5 & 6

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CURB & GUTTER AND ISLAND DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2B-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER

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4/4/2019

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Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Pkwy Suite 600 Cary, NC 27518 NC License: P-1084

REVISIONS 8/17/99

FOR –L– ALIGNMENT SEE SHEETS 6 & 7
FOR –Y1A– ALIGNMENT SEE SHEET 7
FOR –Y3– ALIGNMENT SEE SHEET 7
FOR –Y3A– ALIGNMENT SEE SHEET 7
FOR –DR1– ALIGNMENT SEE SHEET 7

FOR –L– ALIGNMENT SEE SHEETS 7 & 8

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2B-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER

4/4/2019

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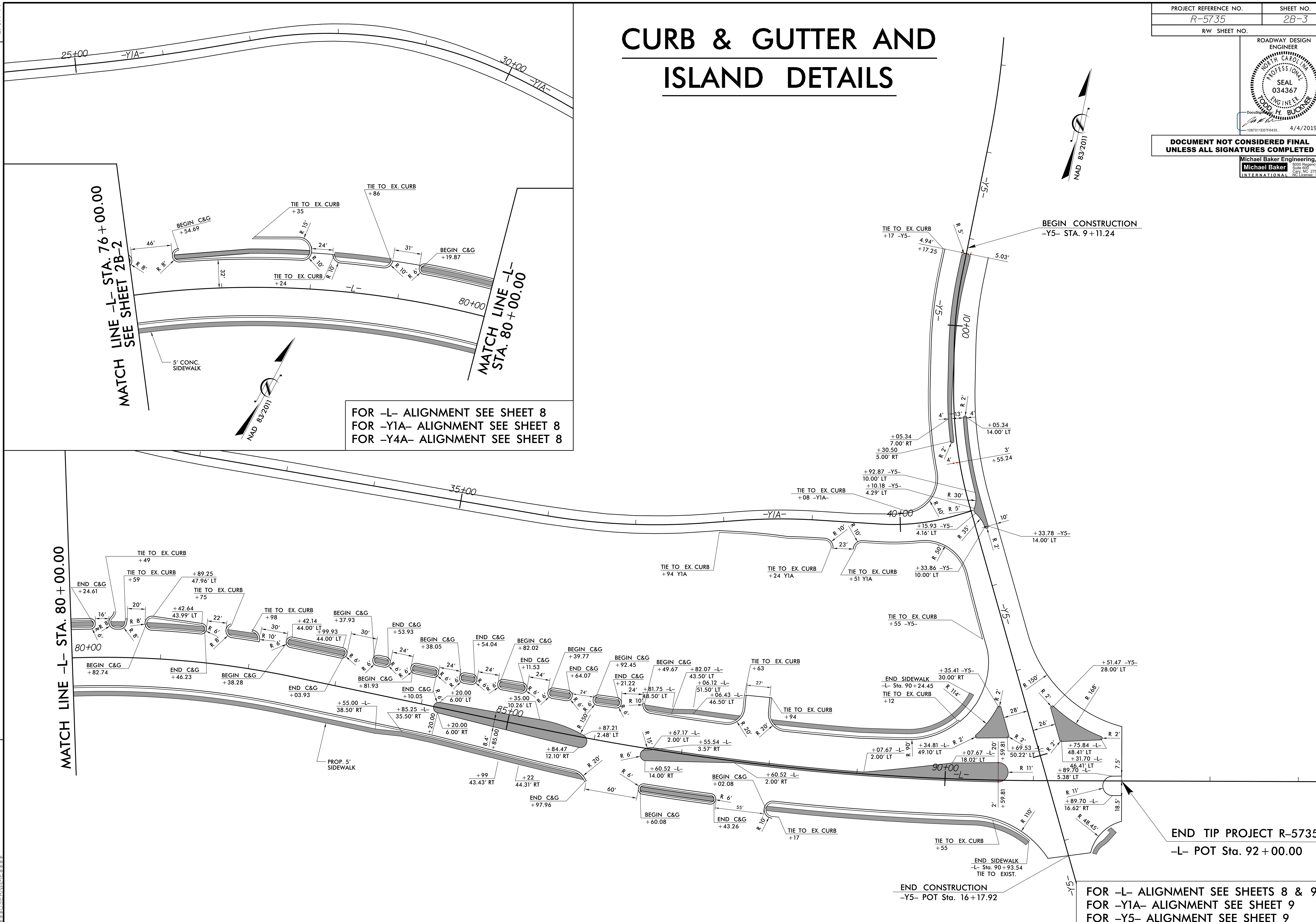
Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Pkwy Suite 600 Cary, NC 27518 NC License: F-1084

CURB & GUTTER AND ISLAND DETAILS



FOR -L- ALIGNMENT SEE SHEET 8
FOR -Y1A- ALIGNMENT SEE SHEET 8
FOR -Y4A- ALIGNMENT SEE SHEET 8

FOR -L- ALIGNMENT SEE SHEETS 8 & 9
FOR -Y1A- ALIGNMENT SEE SHEET 9
FOR -Y5- ALIGNMENT SEE SHEET 9

REVISIONS

8/17/99

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2C-1

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.

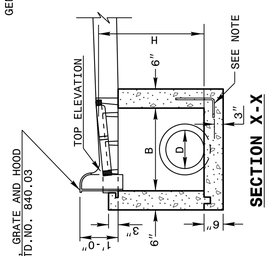
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

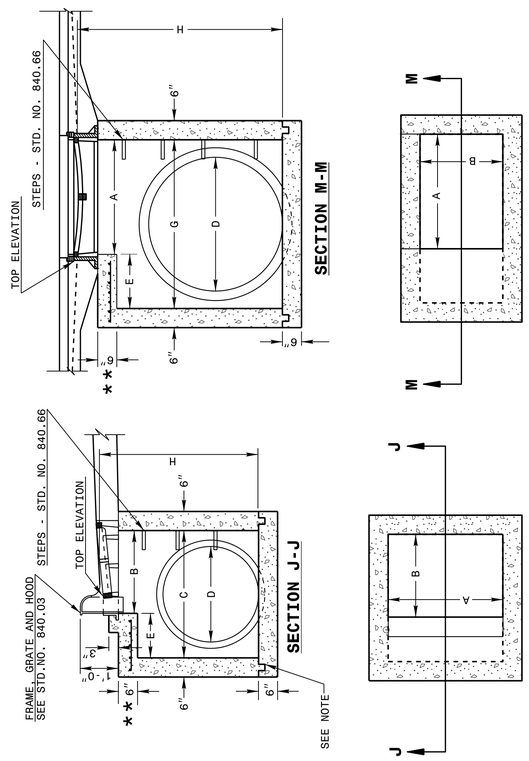
FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1".

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

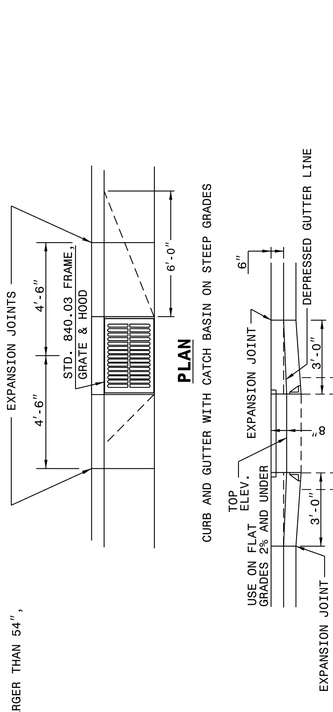


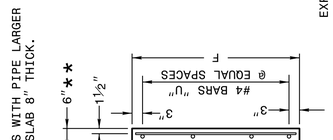


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

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

SHEET 1 OF 2 **840D02**





* 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) *

PIPE D	DIMENSIONS OF BOX AND PIPE COVER SPAN A	WIDTH B	WIDTH C	SPAN G	MIN. HEIGHT H	DIMENSION E	DIMENSION F	BARS-U NO.	BARS-U LENGTH	CU.YDS. CONC. IN BOX TOP SLAB	CU.YDS. CONC. IN BOX BOTTOM SLAB	CU.YDS. CONC. IN BOX TOT. CONC. FOR MINIMUM HEIGHT H	DEDUCTIONS ONE PIPE C.M.	DEDUCTIONS ONE PIPE 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'-6"	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"	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"	0.200	0.543	1.738	0.160	0.243
48"	3'-0"	2'-2"	5'-0"	5'-0"	5'-6"	2'-10"	6'-0"	5	3'-1"	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"	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"	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"	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"	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"	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"	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
MINIMUM DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

SHEET 2 OF 2 **840D02**

3/4/2019

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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:
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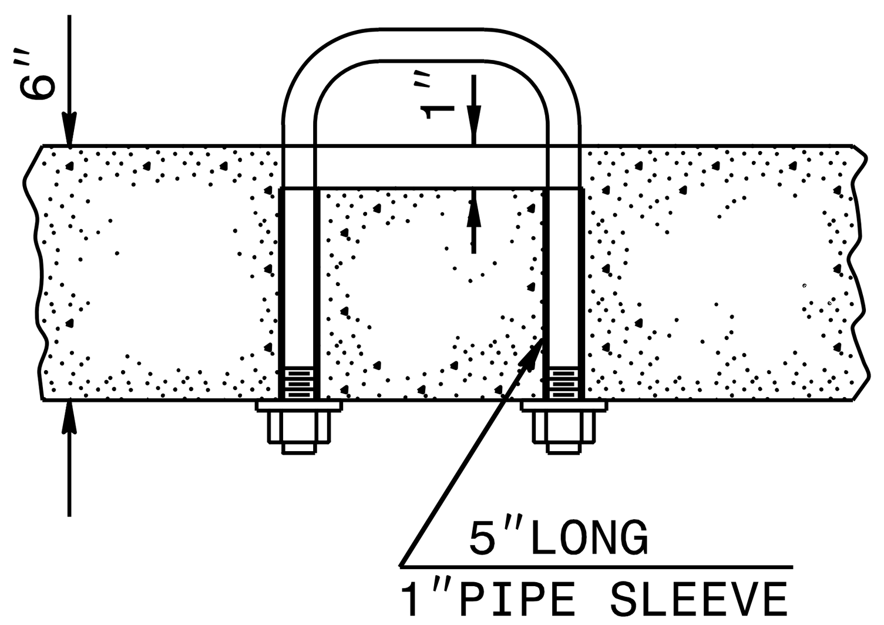
jhowerton
AT CSD-292595



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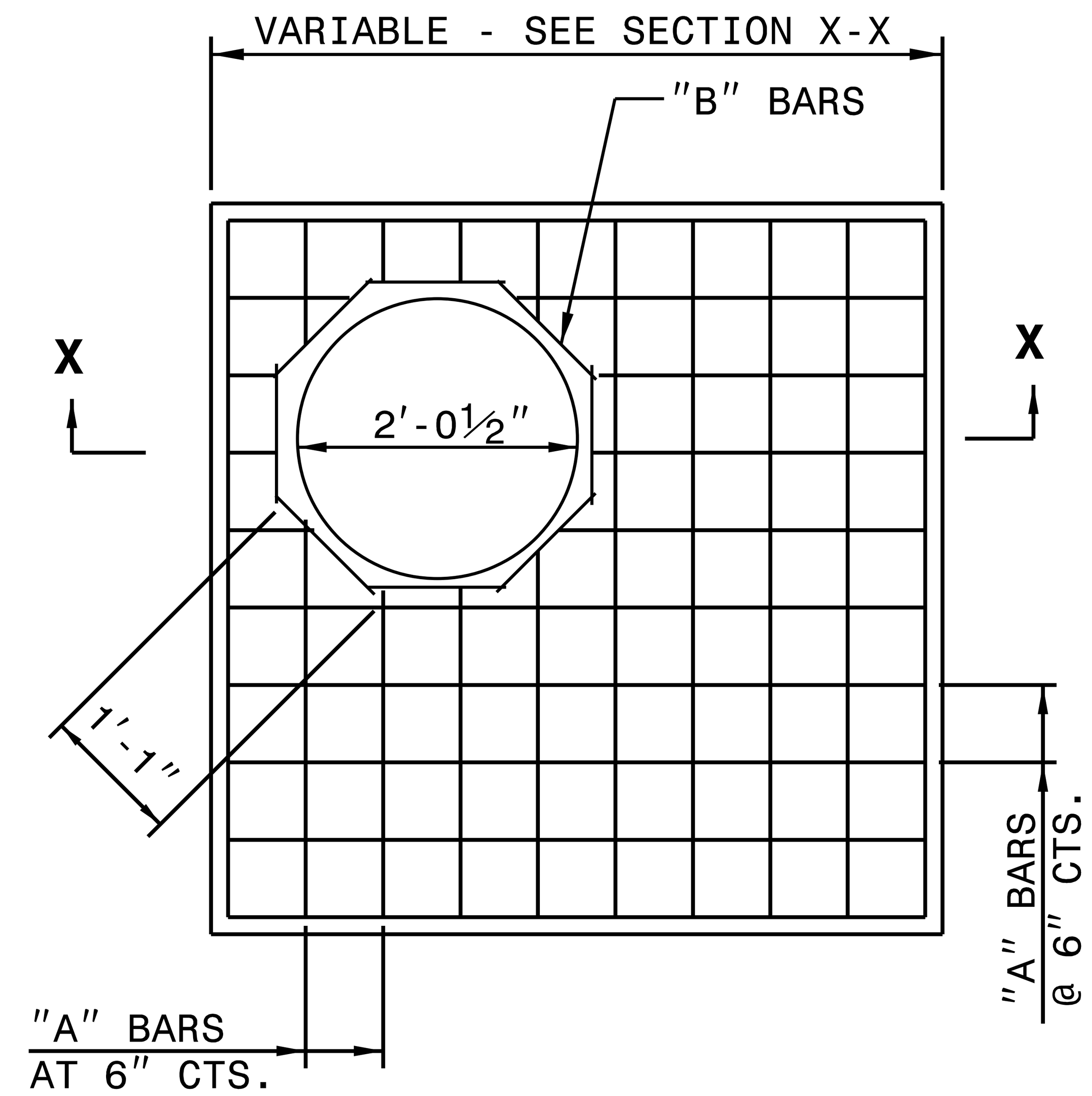
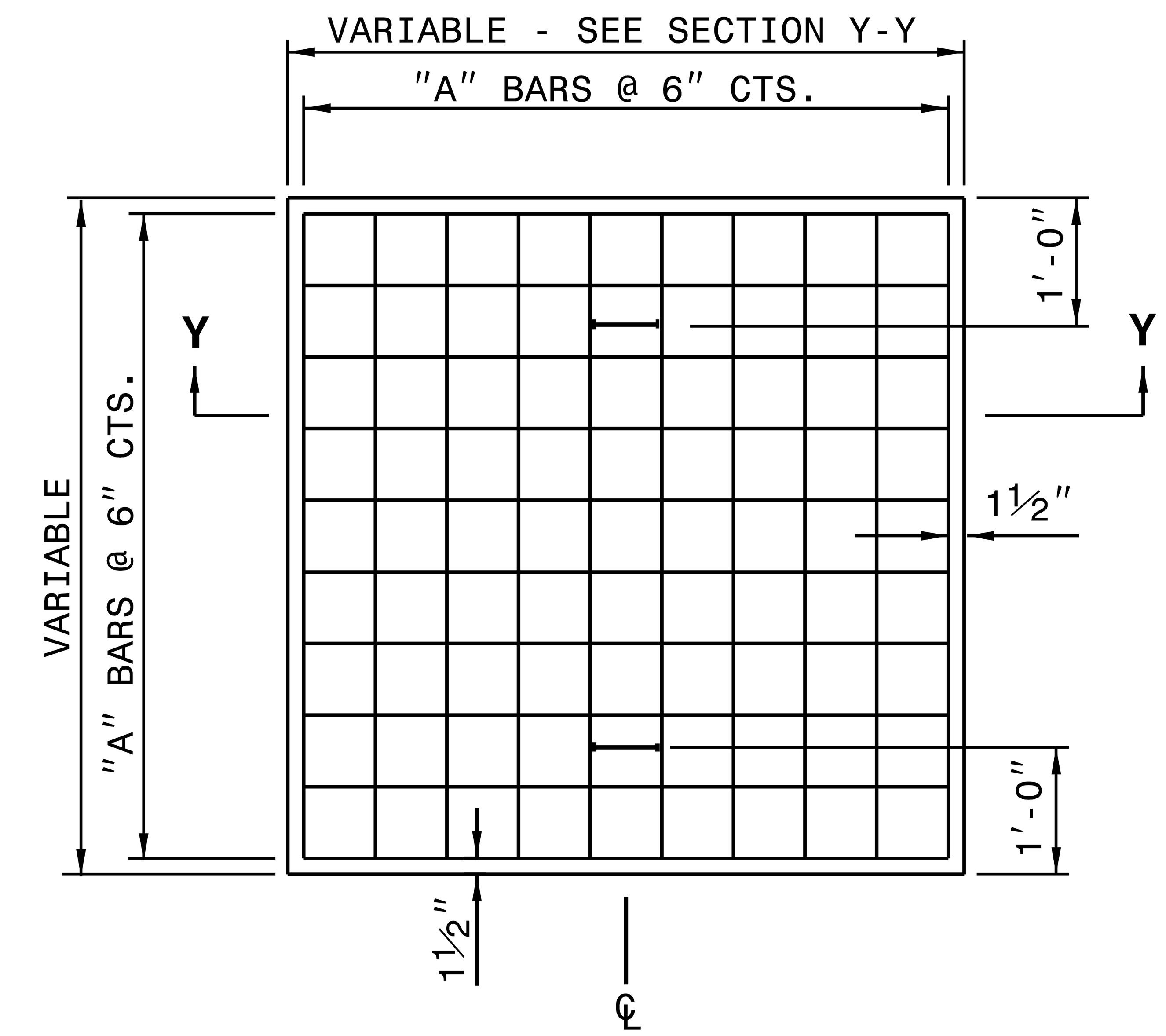


PLAN



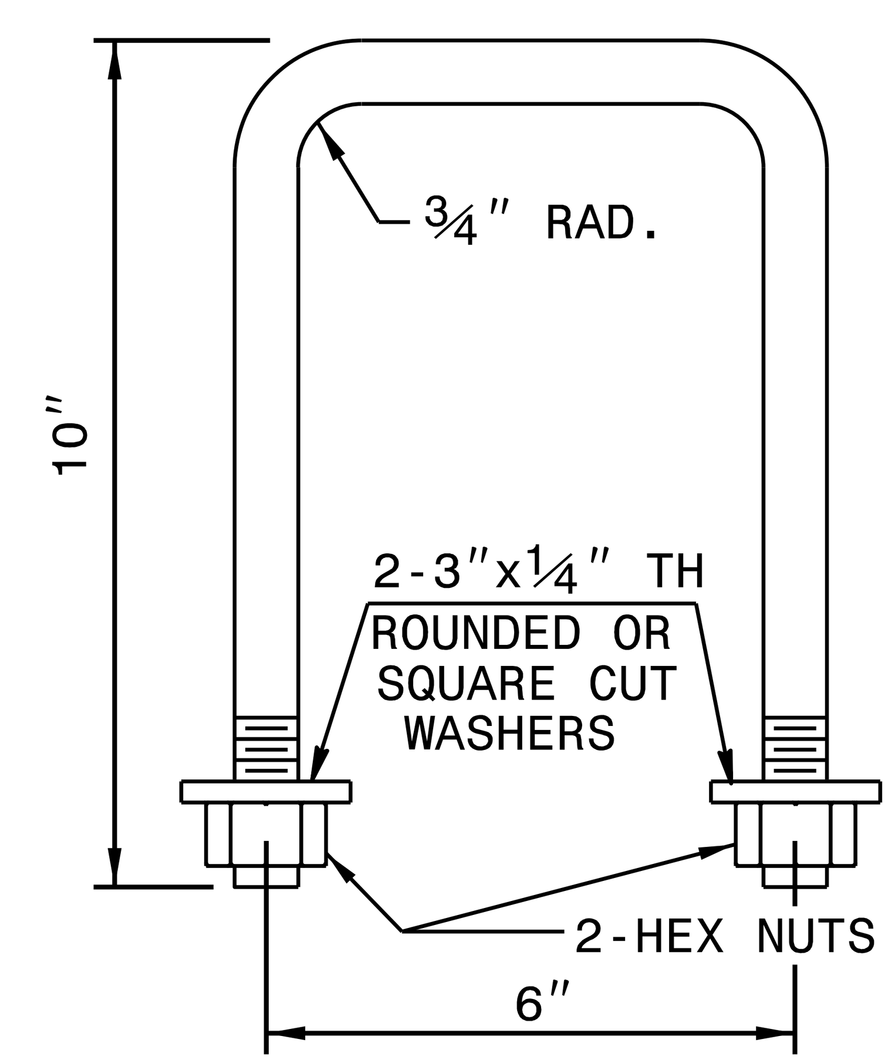
PLAN

GENERAL NOTES:

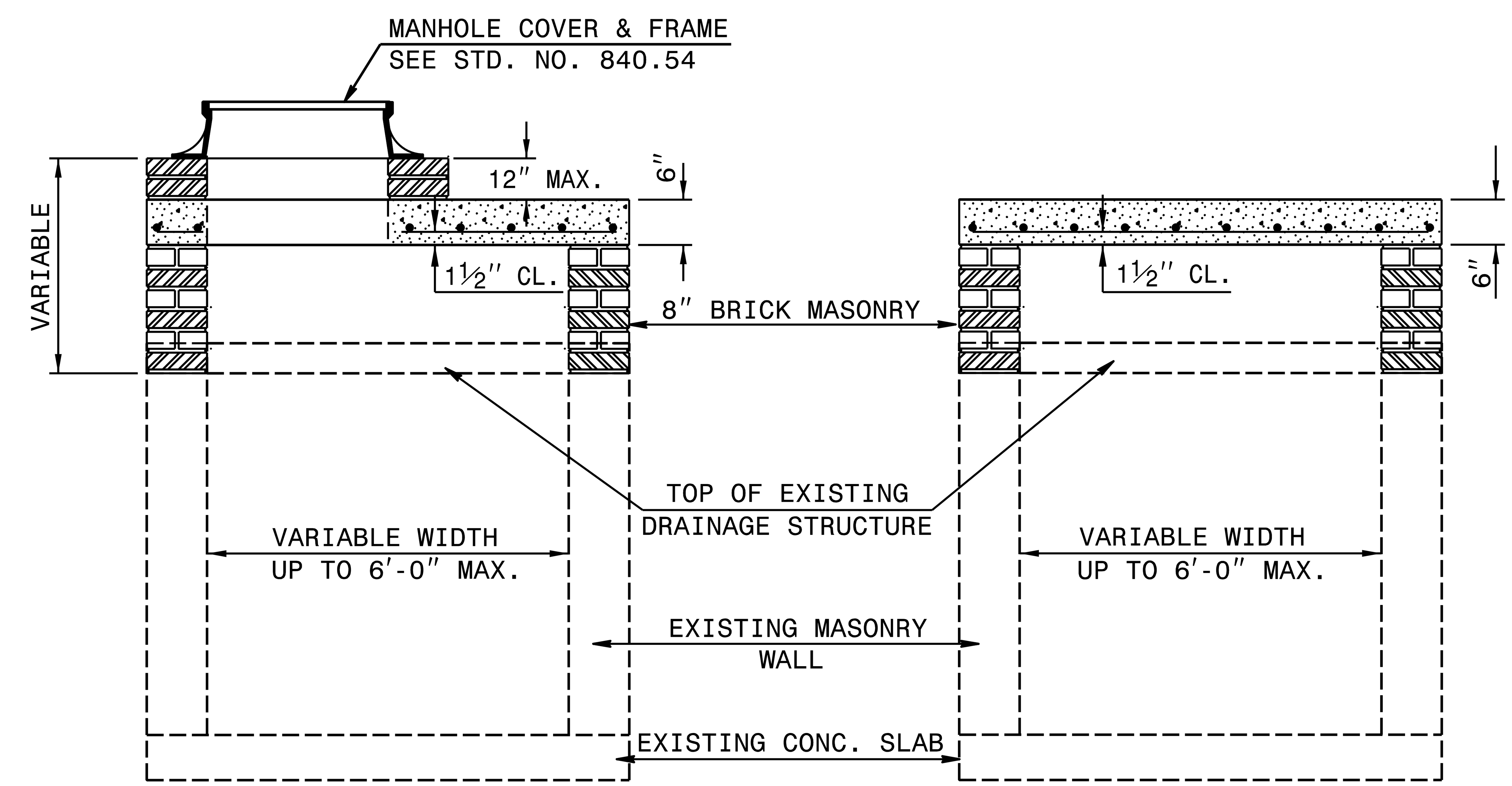
CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

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

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.



DETAIL OF HANDLE



SECTION X-X

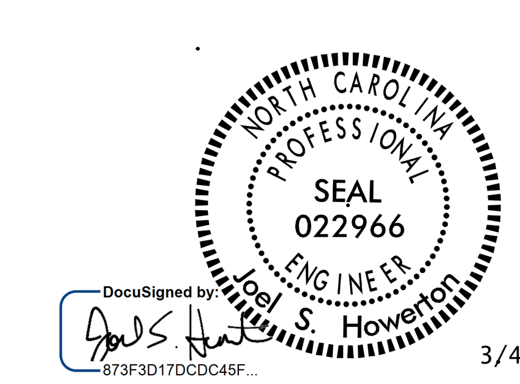
SECTION Y-Y

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.



3/4/2019

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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

DocuSign Envelope ID: 4DFAF242-0ABB-43D9-9D7F-D26FF7F13F11

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2C-3

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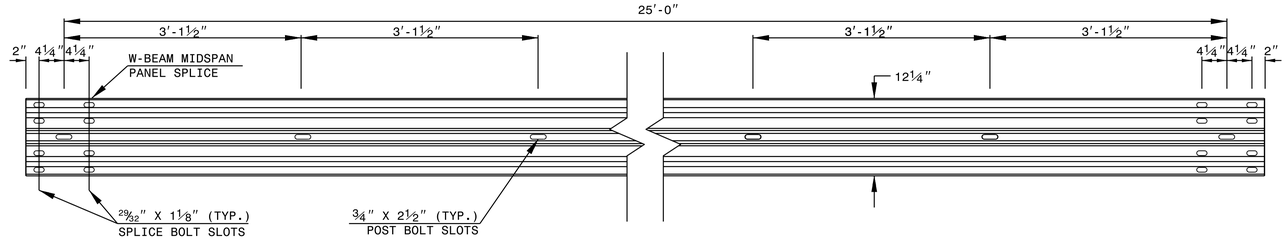
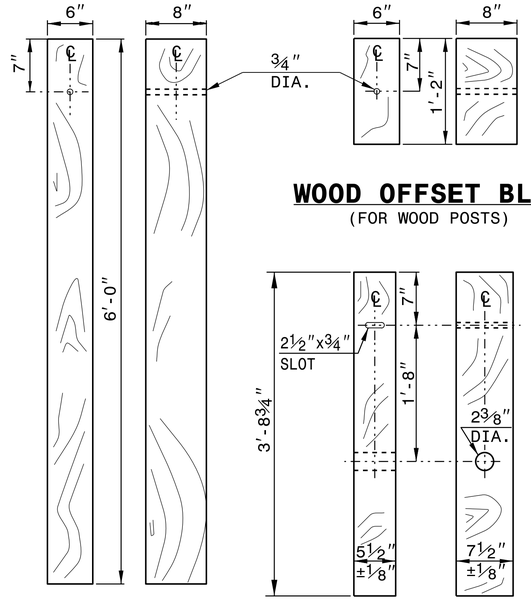
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



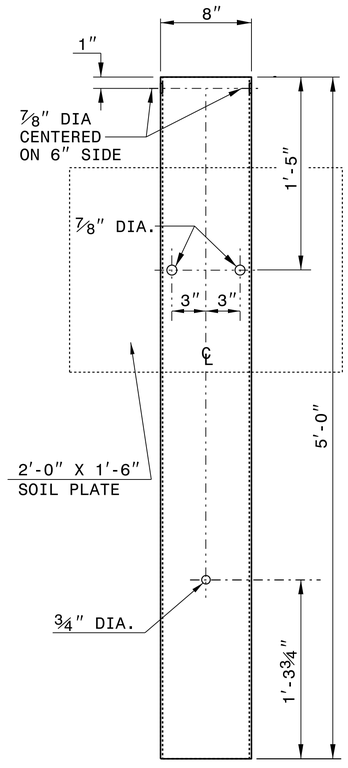
STANDARD W-BEAM GUARDRAIL



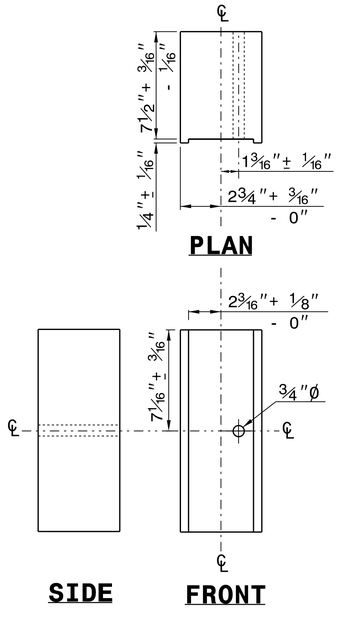
STANDARD LINE POST

SHORT WOOD BREAKAWAY POST

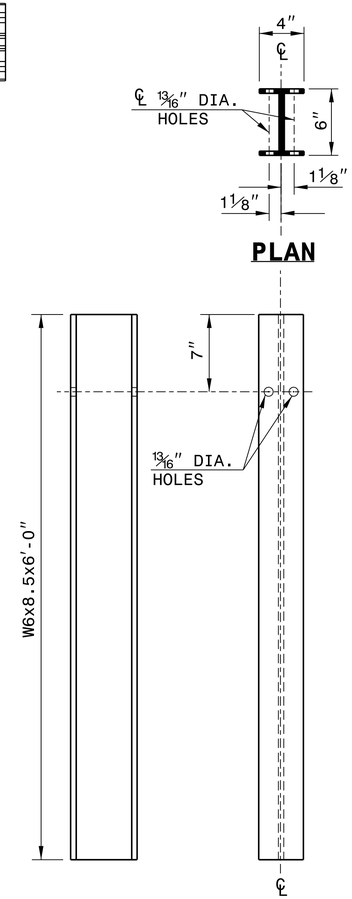
WOOD OFFSET BLOCK
(FOR WOOD POSTS)



STEEL TUBE
TS 6"x8"x0.1875"



ROUTED OFFSET BLOCK



"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWERTON

DocuSigned by: 87F3F3D17DCDC45F...

3/4/2019

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

SEE TITLE BLOCK

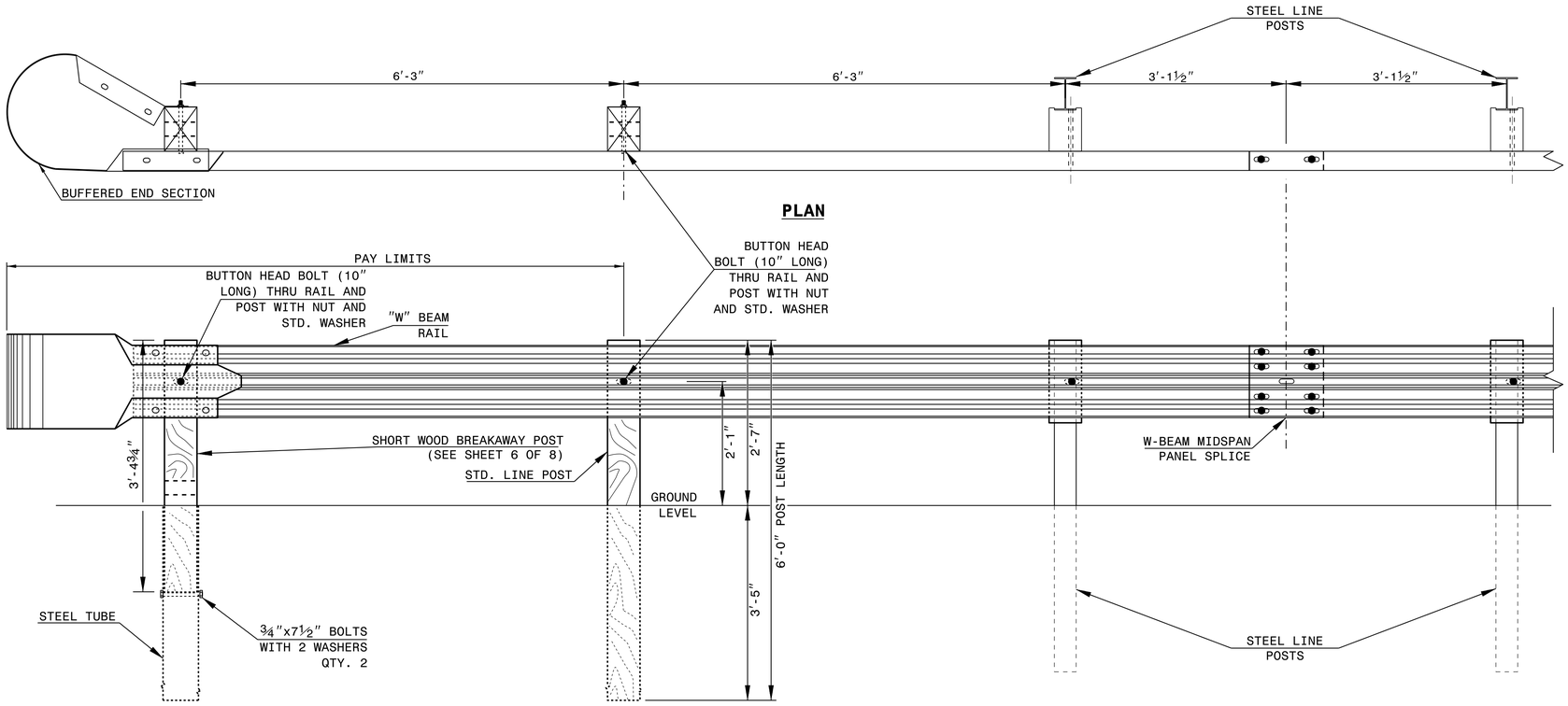
ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2C-4

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY

A.T.-1 SYSTEM

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWERTON

DocuSigned by:
673F3D170CDC45F...
3/4/2019

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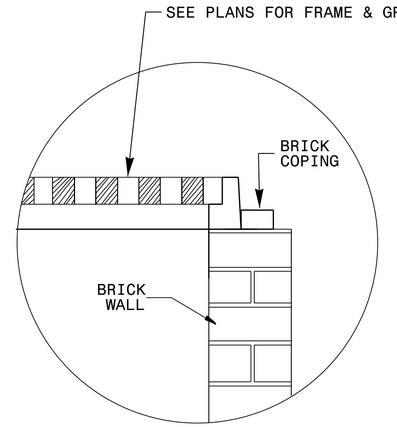
A.T.-1 SYSTEM

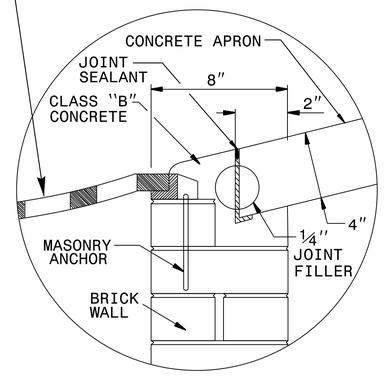
ORIGINAL BY: _____ DATE: _____
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2C-5



GRATE PLACEMENT DETAIL

FOR DROP INLETS



GRATE PLACEMENT DETAIL

FOR GRATED DROP INLETS

GENERAL NOTES:

-CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

-USE CLASS B CONCRETE.

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

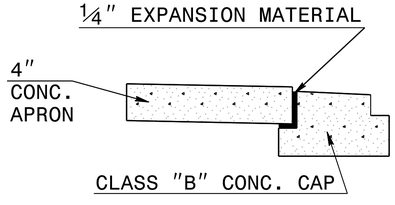
-JUMBO CONCRETE BRICK WILL BE PERMITTED. 4″ CONCRETE BRICK OR 8″ SOLID CONCRETE BLOCK ARE REQUIRED FOR DRAINAGE STRUCTURE.

-INCLUDE 18″ CONCRETE APRON IN UNIT PRICE BID PER EACH, CONVERT EXISTING CATCH BASIN TO DROP INLET.

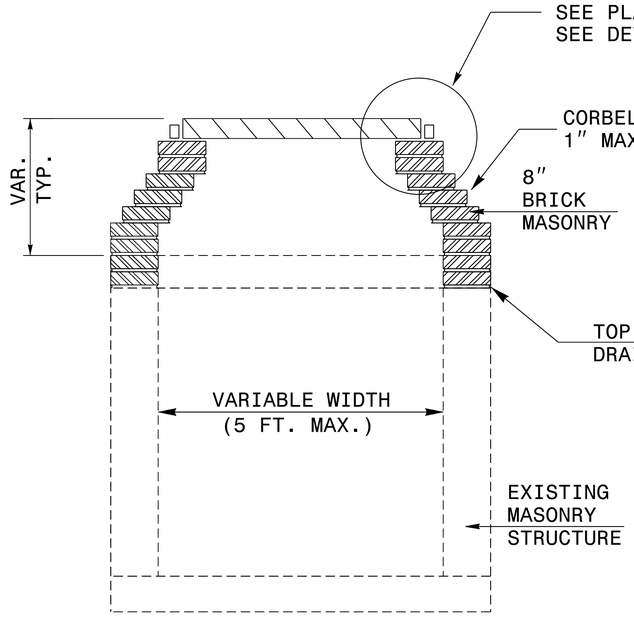
-SPECIAL DESIGN IS REQUIRED FOR USE UNDER PAVEMENT.

-CONFIRM DIMENSIONS ON EACH INDIVIDUAL FRAME & GRATE PROPOSAL.

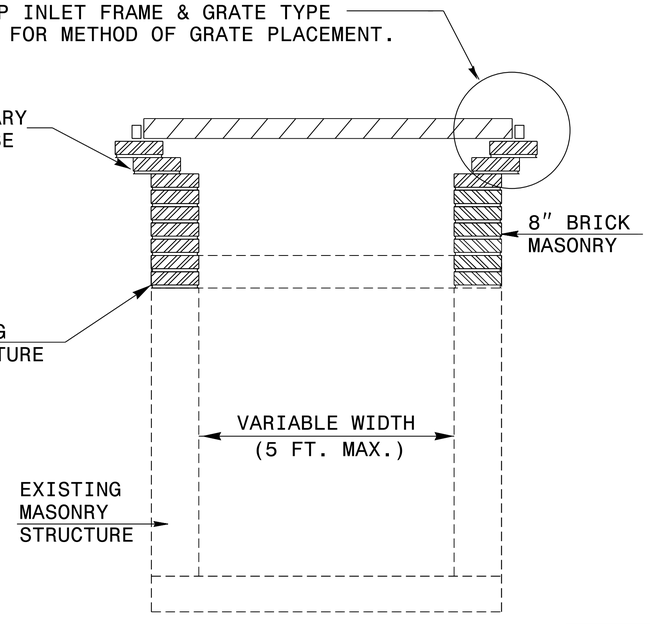
-SEE STD. DRAWING 840.25 FOR MASONRY ANCHORAGE.



EXPANSION JOINT DETAIL



TYPICAL SECTION



TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: 873F3D17DCDC45F...

3/4/2019

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CONTRACT STANDARDS AND DEVELOPMENT UNIT

Office 919-707-6950 FAX 919-250-4119

DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DI OR 2-GI

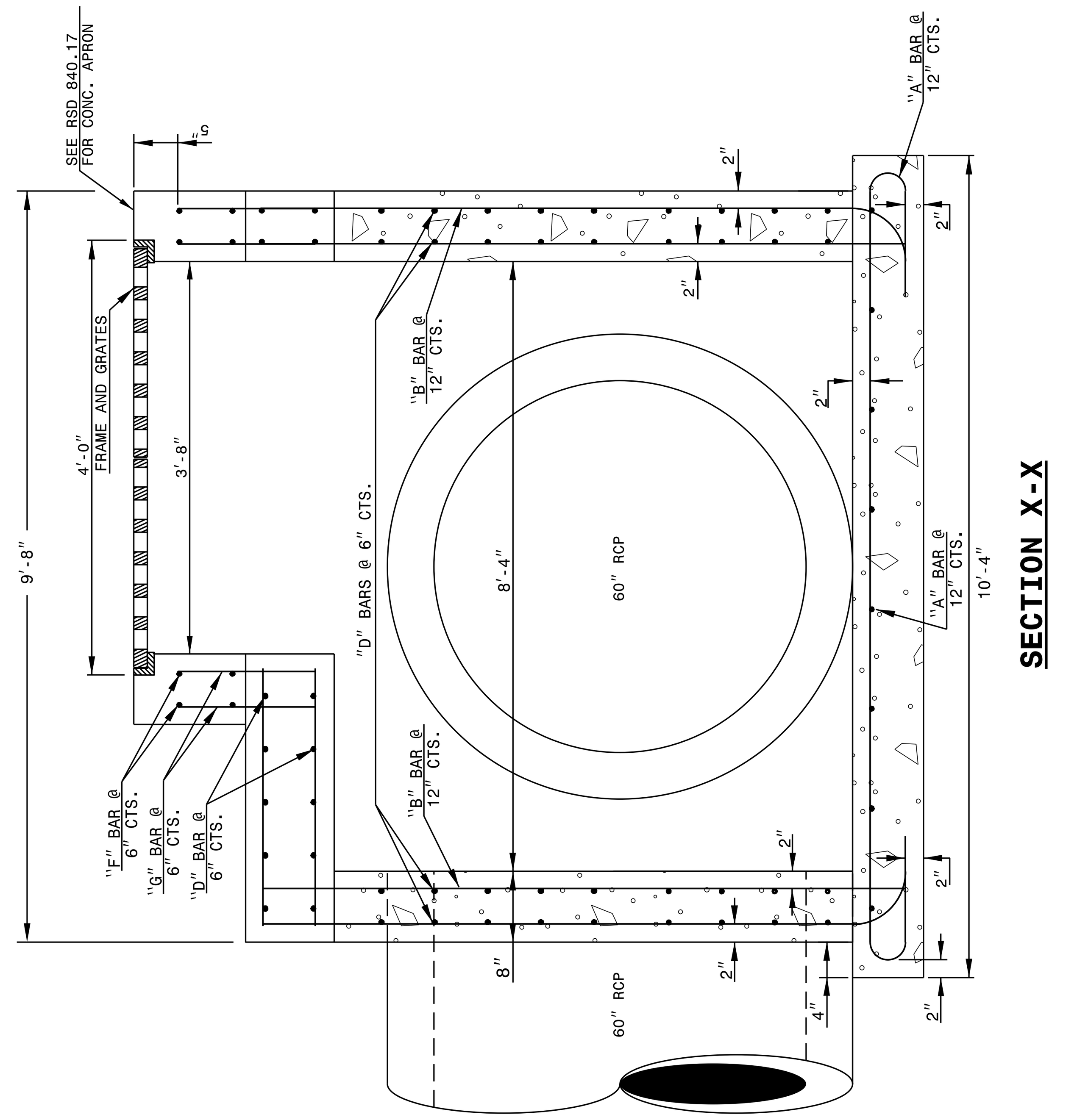
ORIGINAL BY:	T.S.S.	DATE:	NOV.1997
MODIFIED BY:	T.S.S.	DATE:	FEB.2000
CHECKED BY:		DATE:	
FILE SPEC.:	s:usr/details/stand/cbtodi02.dgn		

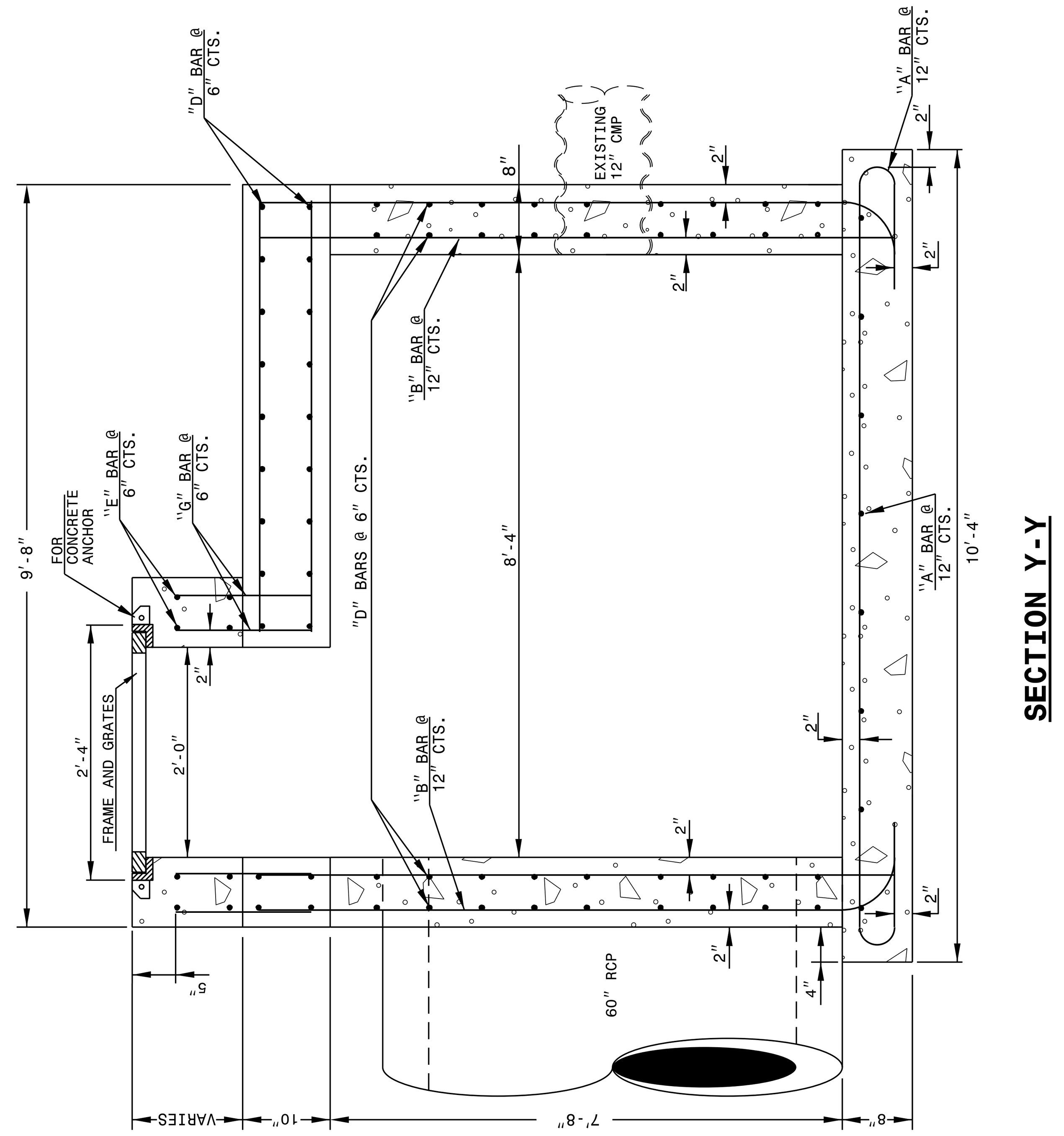
26-JUN-2017 10:39
S:\Contracts\Special Details\jhowerton\Convert CB or JB to DI.dgn
jhowerton AT CSD-292595

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2C-6

DRAWING NOT TO SCALE

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR TRAFFIC BEARING DROP INLET FOR FRAME AND GRATES
SHEET 1 OF 2 840D35





GENERAL NOTES:
- CHAMFER ALL EXPOSED CONCRETE CORNERS 3".
- USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
- IF PIPES ARE SET IN THE BASE, FOLLOW CONSTRUCTION PROCEDURES SHOWN BY STD. DWG. 840.00.
- PRECAST UNITS MADE OF CLASS "AA" CONCRETE MAY BE USED IN LIEU CAST IN PLACE CONCRETE.
- REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.
- PROVIDE DROP INLETS OVER 3'-6" DEEP WITH STEPS AS DIRECTED BY STD. DWG. 840.66.
- FRAME AND GRATES SHALL BE SEPARATE CONTRACT ITEM.

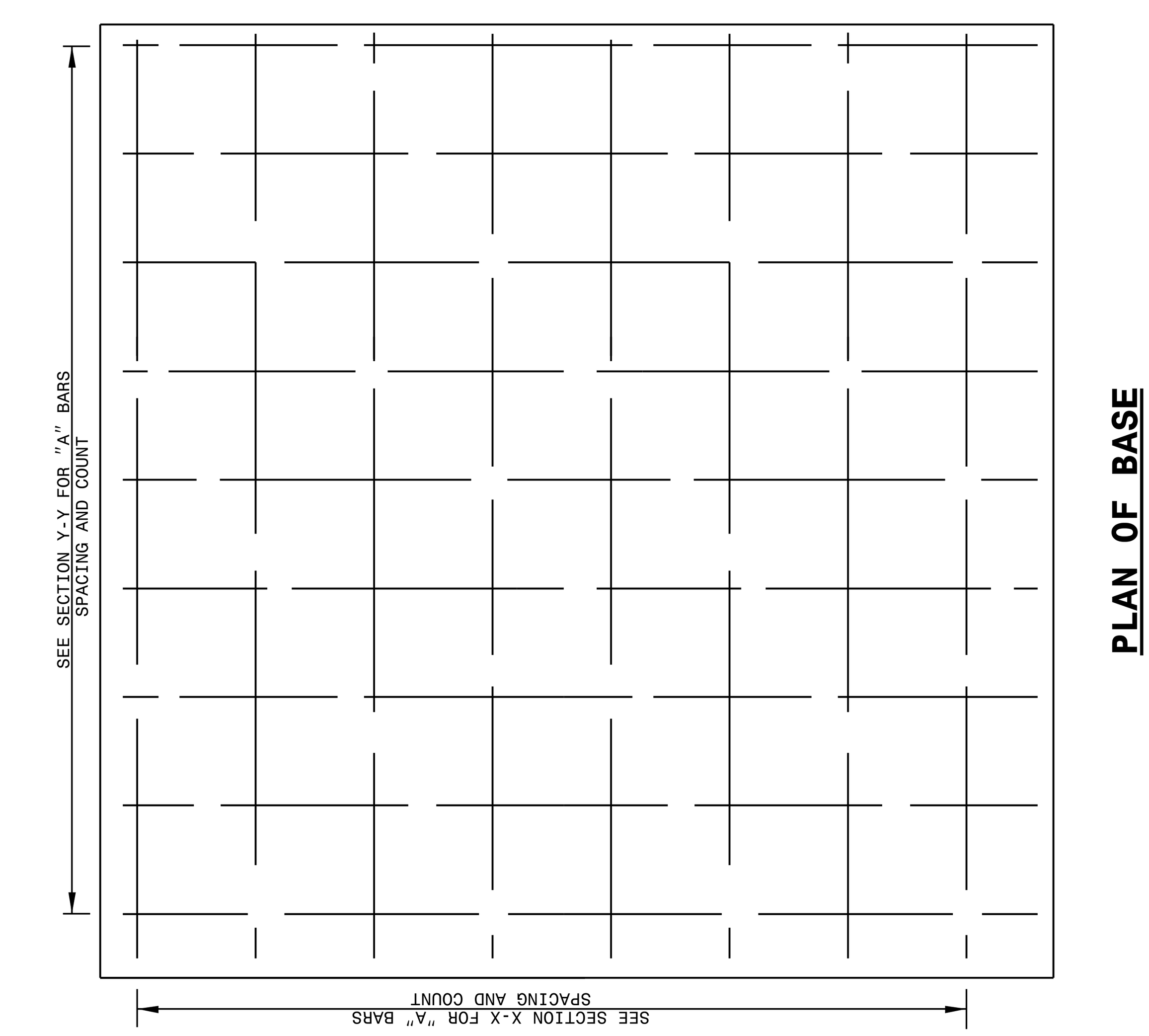
NOTES:
- HORIZONTAL AND VERTICAL DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGN REQUIRE.
- ALL ADJUSTMENTS ARE TO BE MADE AS DIRECTED BY THE ENGINEER.

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

ENGLISH DETAIL DRAWING FOR **TRAFFIC BEARING DROP INLET** FOR FRAME AND GRATES

SHEET 1 OF 2 **840D35**

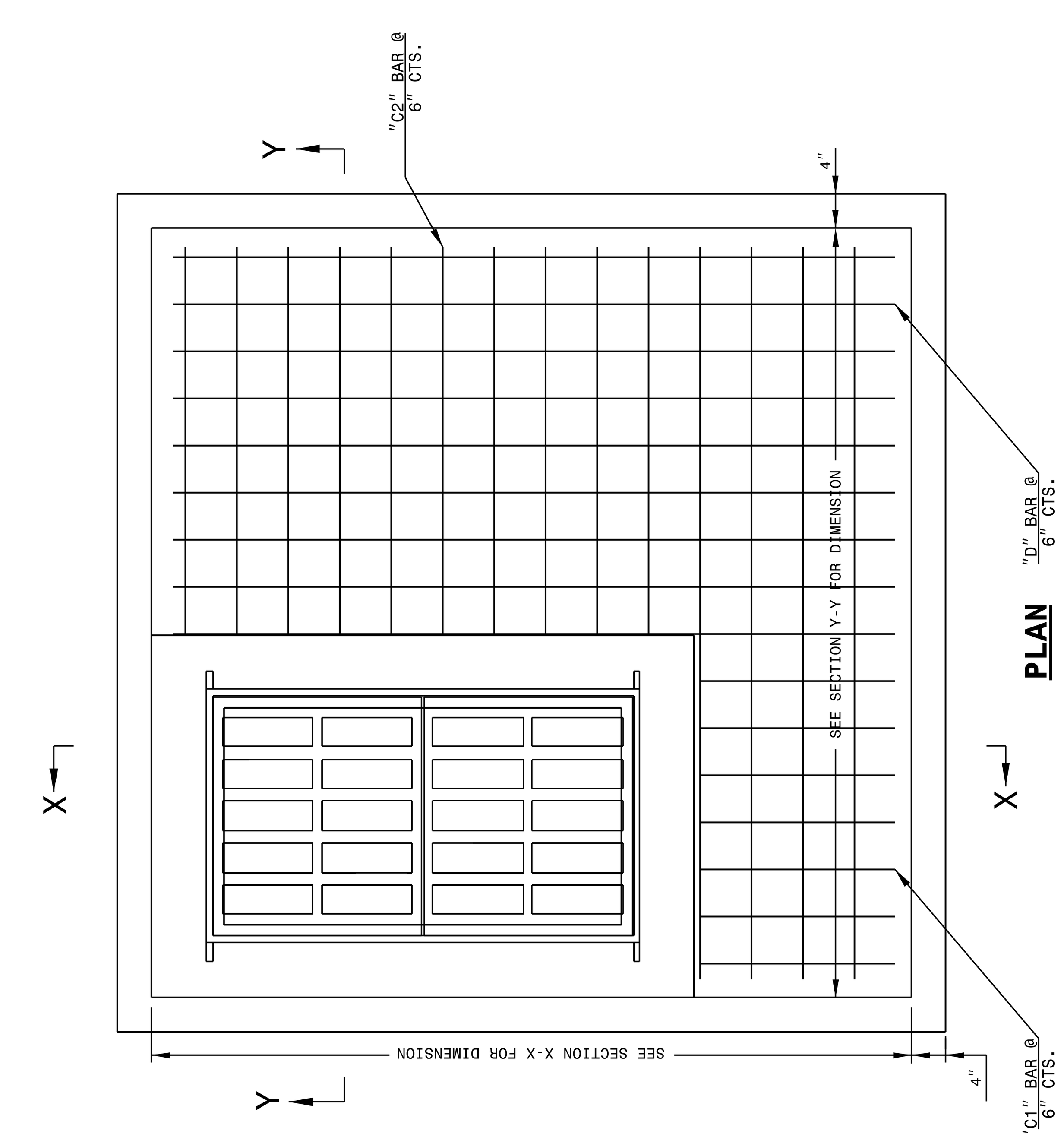
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR TRAFFIC BEARING DROP INLET FOR FRAME AND GRATES
SHEET 2 OF 2 840D35

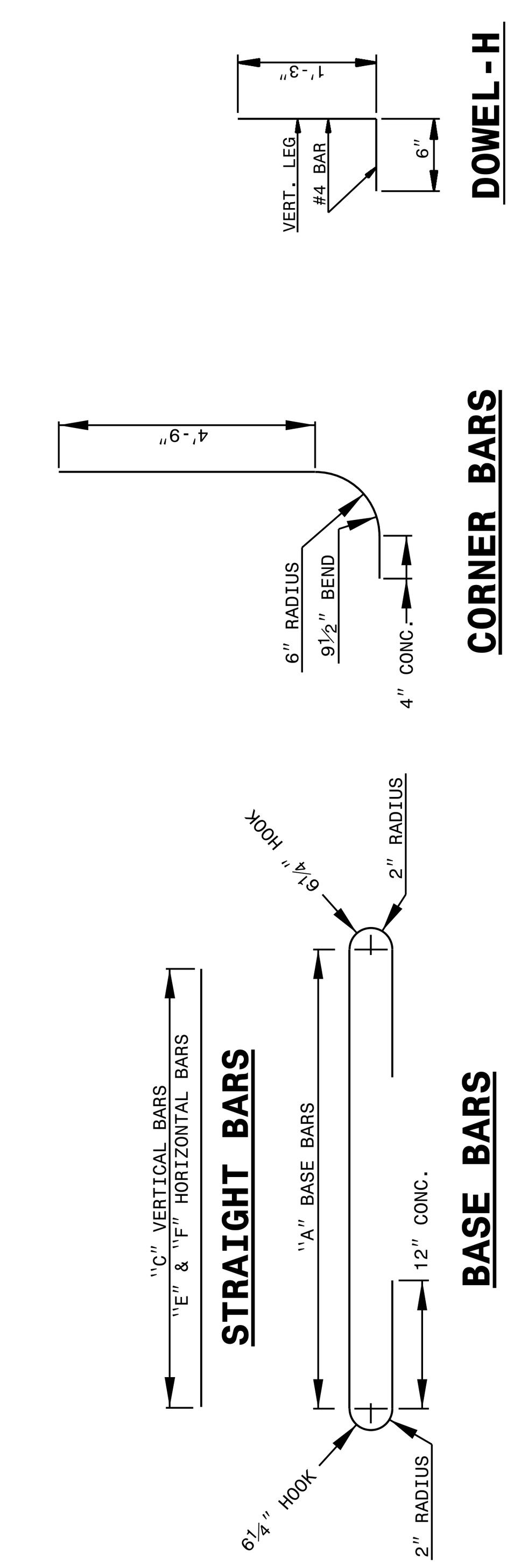


BILL OF MATERIALS

BAR	SIZE	LENGTH	QUANTITY	WEIGHT
A	#5	13"-0"	20	271
B	#5	8'-10"	68	626
C1	#5	5'-4"	12	67
C2	#5	6'-8"	18	125
D	#5	9'-4"	168	1635
E	#5	4'-8"	8	39
F	#5	3'-0"	8	25
G	#5	1'-8"	42	73
REINF. STEEL (TOTAL WEIGHT LBS.)				2861
CONCRETE TOTAL (CU.YDS.)				12.47
NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES				

FOR EVERY 1 FOOT OF RISER USE 0.41 CU.YDS CONCRETE AND 390 LBS STEEL.

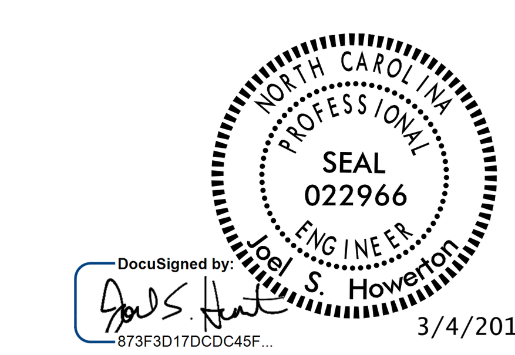




STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR **TRAFFIC BEARING DROP INLET** FOR FRAME AND GRATES

SHEET 2 OF 2 **840D35**



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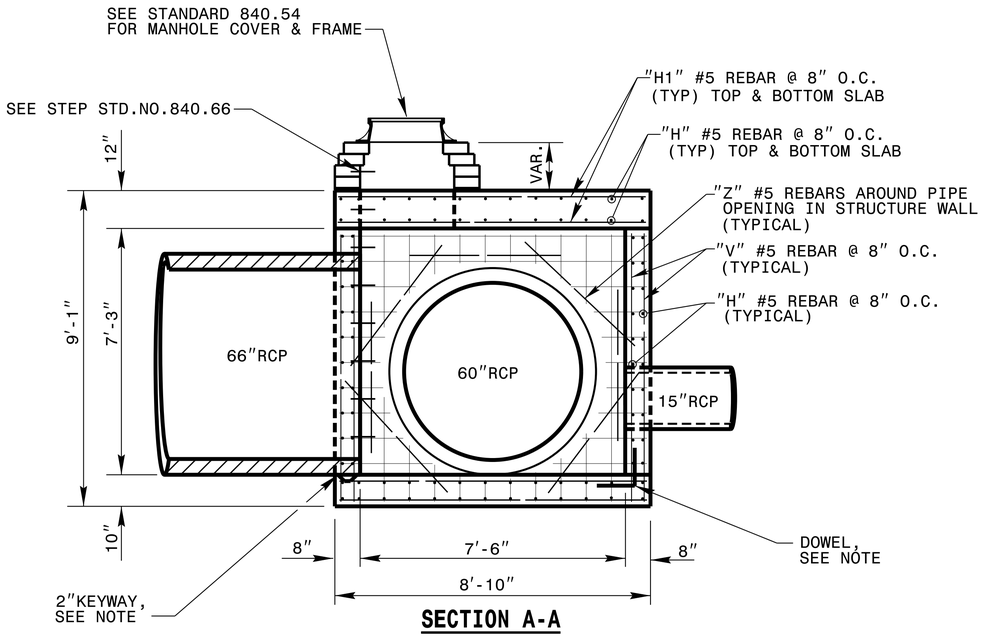
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: K. KEMPF DATE: 02-25-2019
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: s:details\kkempf\english\R5735_840d35_60_TB2GI.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2C-7



SECTION A-A

GENERAL NOTES:

USE CLASS "AA" CONCRETE THROUGHOUT.

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

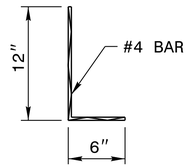
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

INSTALL MANHOLE IN POSITION AS DIRECTED BY THE ENGINEER. CUT AND BEND ALL REBAR CROSSING THIS OPENING TO ALLOW 2" MINIMUM CONCRETE COVERAGE.

CHAMFER ALL EXPOSED CORNERS 1".

2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.



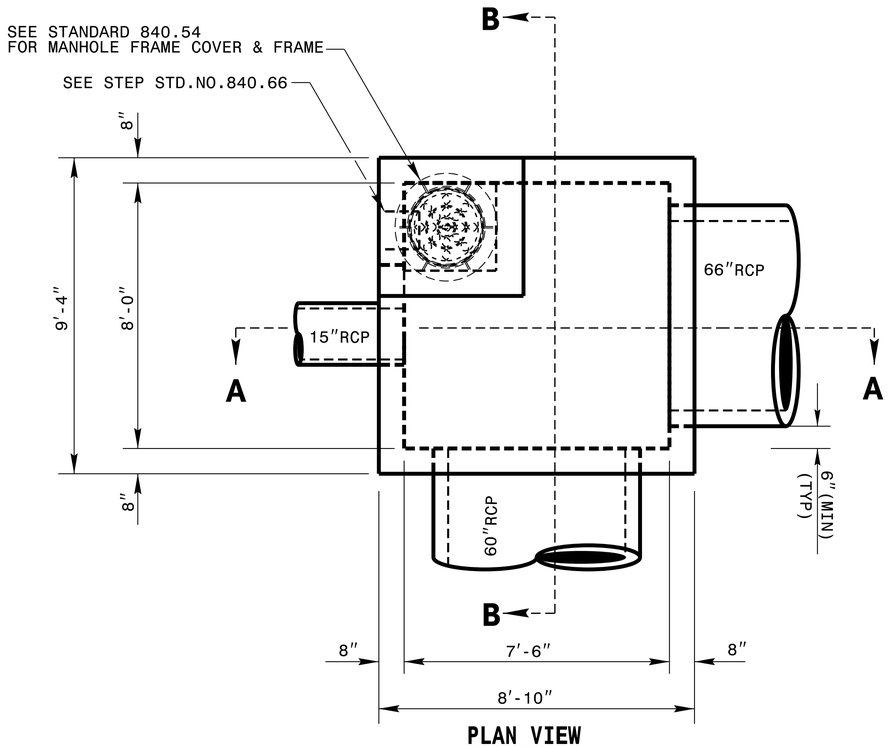
DOWEL

BILL OF MATERIALS

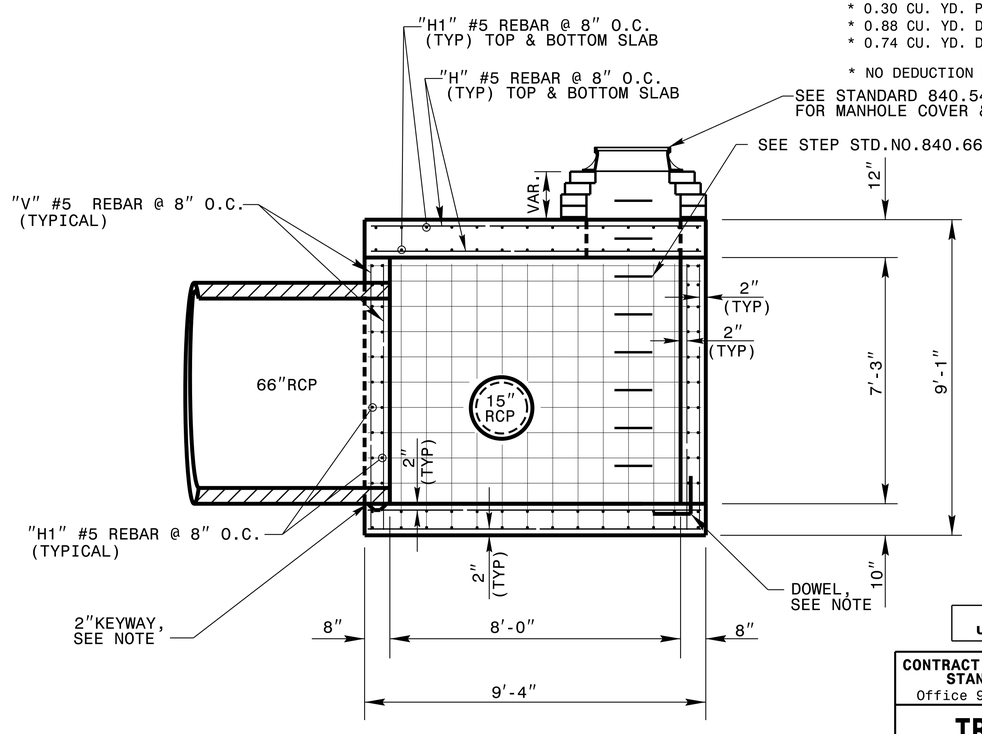
BAR	NO.	SIZE	LENGTH	WEIGHT
H	100	#5	9'-0"	939
H1	100	#5	8'-6"	887
V	104	#5	7'-9"	841
Z	14	#5	4'-0"	59
TOTAL REINF. STEEL (LBS.)				2726
TOTAL CL."AA" CONC.(CU.YDS.)				10.8

* 0.30 CU. YD. PER FOOT OF RISER HEIGHT
* 0.88 CU. YD. DEDUCTION FOR 1-66" RC PIPE
* 0.74 CU. YD. DEDUCTION FOR 1-60" RC PIPE

* NO DEDUCTION HAS BEEN MADE FOR PIPES



PLAN VIEW



SECTION B-B

NORTH CAROLINA PROFESSIONAL SEAL 022946 ENGINEER
DocuSigned by: [signature] 3/4/2019
973F3D17CDC45F...

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

TRAFFIC BEARING JUNCTION BOX

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: kkempf DATE: 02/28/19
CHECKED BY: _____ DATE: _____
FILE SPEC.: detail/kkempf/english/R5735_60tb2gi.dgn

01-MAR-2019 14:44
S:\Contracts\Contracts\Special Details\kkempf\english\R5735_840D35_60tb2gi.dgn
kkempf
AT CSD-292596

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-5735	2D-1
R/W SHEET NO.	

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER

DocuSigned by: Karen Hefner 8E3552047D81492... 4/4/2019

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MI Engineering, Pllc.
1015 Schaub Drive
Suite 100
Raleigh, 27606
NC License: P-0671

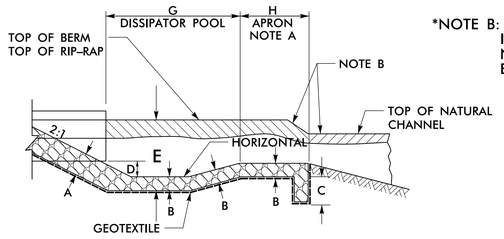
DETAIL H

RIP–RAPPED ENERGY DISSIPATOR BASIN

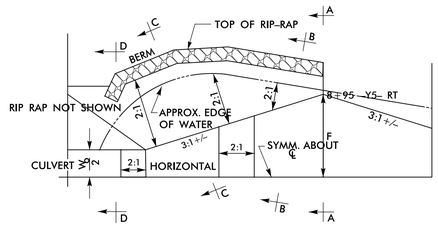
*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A) = SPECIFIED VELOCITY.

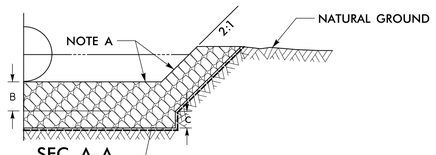
*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

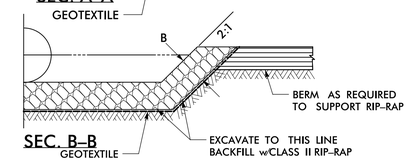
℄ SECTION

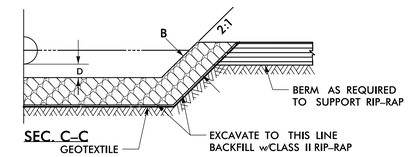


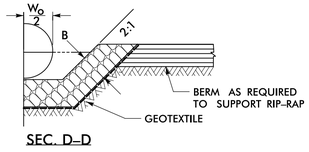
HALF PLAN











NOTE:
Wo = DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE–ARCH CULVERTS

DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	3.5′							
B	2.5′							
C	2.0′							
D	2.0′							
E	6.0′							
F	10′							
G	20′							
H	10′							

BASIN #	LOCATION (AT OUTLET)
1	STRUCTURE 912
2	
3	
4	
5	
6	
7	
8	

*ALL DIMENSIONS APPROXIMATE IN FT.

5/05

FROM STA. 8+95 –Y5– RT
(APPROXIMATELY 105′ NORTH OF 10+00 –Y5–)

PROJECT REFERENCE NO.	SHEET NO.
R-5735	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

SUMMARY OF EARTHWORK
IN CUBIC YARDS

STATION	STATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBANKMENT +%	BORROW	WASTE
-L- STA. 27+80.00	-L- STA. 59+00.00	2,718	108	6,365	3,647	108
-L- STA. 59+00.00	-L- STA. 90+50.00	2,682		1,992		690
-Y1A- STA. 38+00.00	-Y1A- STA. 40+50.00	164				164
-Y3- STA. 10+12.00	-Y3- STA. 13+50	67		12,731	12,664	
-Y3- STA. 14+16.20	-Y3- STA. 15+40.00	115		75	0	
SUBTOTAL		5,746	108	21,162	16,310	1,002
-DR1- STA. 10+12.00	-DR1- STA. 10+85.00	20		523	503	
-Y5- STA. 9+50.00	-Y5- STA. 13+50.00	228		2		226
SUBTOTAL		248		525	503	225
TOTAL		5,994	108	21,687	16,813	1,227
REDUCTION OF UNSUIT. UNCLASS. EXCAVATION		50				50
MATERIAL FOR SHOULDER CONSTRUCTION						
LOSS DUE TO CLEARING & GRUBBING						
ADDITIONAL UNDERCUT CONTINGENCY			700	805	805	700
GRADE POINT UNDERCUT			50	58	58	50
WASTE IN LIEU OF BORROW					-1,119	-1,119
PROJECT TOTAL		6,044	858	22,549	16,556	908
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					828	
GRAND TOTAL		6,044	858	22,549	17,383	908
SAY		**6,100**	**900**		**17,500**	

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING ASPHALT PAVEMENT WILL BE PAID FOR AS THE CONTRACT LUMP SUM PRICE FOR "GRADING".

EST. DDE = 80 CUBIC YARDS
EST. SHALLOW UNDERCUT 200 CUBIC YARDS
SELECT GRANULAR MATERIAL EST. 1,000 CY

MILLING OF ASPHALT PAVEMENT 3.0" DEPTH

LINE	STATION TO STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
	3" MILLING				
-Y5-	9+17 TO 11+77	RT			119.23
-Y5-	12+47 TO 13+58	RT			49.29
-Y5-	9+17 TO 13+58	LT			190.22
-Y1A-	37+94 TO 39+29	RT			66.01
-Y1A-	39+47 TO 40+60	RT			62.64
-Y1A-	37+94 TO 40+61	LT			120.97
-L-	86+50 TO 90+96	RT			298.00
-L-	75+40 TO 81+30	LT			263.00
-Y5-	9+17 TO 13+58	LT/RT			2038.22
-Y1A-	9+36 TO 40+50	LT/RT			6954.07
				Subtotal	10161.65
				SAY	10170.00

MILLING OF ASPHALT PAVEMENT 5.5" DEPTH

LINE	STATION TO STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
	5.5" MILLING				
-L-	28+00 TO 38+00	LT/RT	1000.00	33.00	3666.67
				SAY	**3700.00**

MILLING OF ASPHALT PAVEMENT 7" DEPTH

LINE	STATION TO STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
	7" MILLING				
-L-	38+00 TO 58+00	LT	2000.00	11.00	2444.44
-L-	68+50 TO 92+00	LT	2350.00	11.00	2872.22
-L-	38+00 TO 48+00	LT	1000.00	11.00	1222.22
-L-	68+50 TO 92+00	LT	2350.00	11.00	2872.22
-L-	38+00 TO 58+00	CL	2000.00	11.00	2444.44
-L-	68+50 TO 92+00	CL	2350.00	11.00	2872.22
-L-	28+00 TO 92+00	RT	6400.00	22.00	15644.44
				Subtotal	30372.22
				SAY	**30380.00**

MILLING OF ASPHALT PAVEMENT 10" DEPTH

LINE	STATION TO STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
	10" MILLING				
-L-	58+00 TO 68+50	LT	1050.00	11.00	1283.33
-L-	48+00 TO 68+50	LT	2050.00	11.00	2505.56
-L-	58+00 TO 68+50	CL	1050.00	11.00	1283.33
				Subtotal	5072.22
				SAY	**5080.00**

REMOVAL OF EXISTING ASPHALT PAVEMENT

LINE	STATION	STATION	LOCATION	AREA	SQUARE YARDS
-L-	27+80	29+27	LT	1014	113
-L-	27+80	29+24	RT	746	83
-L-	29+55	31+96	RT	699	78
-L-	30+04	30+44	LT	23	3
-L-	32+61	33+38	RT	12	1
-L-	33+74	33+89	RT	39	4
-L-	34+21	35+09	RT	492	55
-L-	35+36	35+58	RT	13	1
-L-	41+78	42+06	RT	17	2
-L-	43+31	43+83	RT	158	18
-L-	44+46	44+95	RT	150	17
-L-	45+37	45+54	RT	28	3
-L-	46+02	46+61	RT	145	16
-L-	47+20	47+58	RT	70	8
-L-	48+28	48+60	LT	113	13
-L-	48+34	48+57	RT	47	5
-L-	48+97	49+70	RT	164	18
-L-	48+95	50+04	LT	613	68
-L-	50+08	50+58	RT	134	15
-L-	50+57	53+58	LT	3615	402
-L-	50+94	52+74	RT	683	76
-L-	53+04	59+51	RT	2615	291
-L-	59+77	60+19	RT	85	9
-L-	61+22	63+15	RT	445	49
-L-	63+46	65+08	RT	411	46
-L-	65+77	67+17	RT	284	32
-L-	67+39	72+92	RT	950	106
-L-	73+33	84+64	RT	2330	259
-L-	75+40	81+30	LT	8487	943
-L-	88+50	90+87	RT	410	46
				TOTAL	2,777
				SAY	**2,780**

COMPUTED BY:	Justin Blackman	DATE:	10/20/2017
CHECKED BY:	Terry Harris, PE	DATE:	10/20/2017

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
R-5735	3B-2

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU TL-3	XIII	AT-1	VI MOD	B-77			G	NG				
-L-	31+00.00	34+00.00	LT	300.00			32+00.00	33+00.00			50	50	1	1			2										228		
-L-	58+40.65	60+35.50	LT	168.75	62.5			58+40.65				50		1			1		1										
			SUBTOTAL	468.75	62.50												3		1								228.00		
		ANCHOR UNIT DEDUCTION																											
		GREU TL-3: 3 @ 50.00 = 150.00																											
		AT-1: 1 @ 6.25 = 6.25																											
		TOTAL		156.25																									
			TOTAL	312.50	62.5												3		1								228.00		
			SAY	**325.00**																									
		ADDITIONAL GUARDRAIL POST		10 EA																									

COMPUTED BY:	Karen Hefner, PE	DATE:	09/15/2017
CHECKED BY:	Andrew Nottingham, PE	DATE:	09/15/2017

CARYLTBUCKNER1

PROJECT NO.	SHEET NO.
R-5735	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 / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE 12 (.064)	C. S. PIPE 15 (.064)	C. S. PIPE 18 (.064)	C. S. PIPE 24 (.064)	C. S. PIPE	C. S. PIPE 30 (.079)	C. S. PIPE	C. S. PIPE	C. S. PIPE 36 (.079)	C. S. PIPE	C. S. PIPE	C. S. PIPE 42 (.109)	C. S. PIPE 48 (.109)	R. C. PIPE CLASS IV 12	R. C. PIPE CLASS IV 15	R. C. PIPE CLASS IV 18	R. C. PIPE CLASS IV 24	R. C. PIPE CLASS IV 30	R. C. PIPE CLASS IV 36	R. C. PIPE CLASS IV 42	R. C. PIPE CLASS IV 48
L 28+74	0 CL	0401		1690.5																								
		0401	0403		1686.3	1684.3																	52					
L 29+00	62 RT	0402																										
L 28+74	52 RT	0403		1686.5																								
		0403	0413		1684.3	1682.3																	36					
L 29+12	52 RT	0413		1685.3																								
		0413	0404		1682.3	1682.0																	44					
L 29+59	47 RT	0404		1686.0																								
		0404	0405		1682.0	1678.0	0.4																176					
L 31+40	34 RT	0405		1681.8																								
		0405	0407		1678.0	1674.4	0.8																112					
L 31+40	51 RT	0406		1680.1																								
		0406	0405		1678.2	1678.0																20						
L 32+53	34 RT	0407		1677.6																								
		0407	0501		1674.4	1666.0	1.0																116					
L 32+53	49 RT	0408		1677.3																								
		0408	0407		1675.4	1674.4																16						
L 31+47	91 LT	0409																										
		0409	0411		1665.0	1657.8	3.5																	136				
L 32+80	89 LT	0410																										
		0410	0411		1658.0	1657.8																		12				
L 32+80	76 LT	0411		1670.0																								
L 33+04	81 LT	0500		1665.7																								
		0500	0411		1662.1	1657.8																24						
L 33+68	34 RT	0501		1669.3																								
		0501	0503		1665.5	1665.0																		72				
L 33+69	42 RT	0502																										
		0502	0501		1667.9	1666.0				8																		
L 34+40	34 RT	0503		1669.8																								
		0503	0505		1665.0	1659.2	0.4																	116				
L 34+39	47 RT	0504		1670.9																								
		0504	0503		1668.7	1666.8			16																			
L 35+56	34 RT	0505		1662.9																								
		0505	0506		1659.2	1652.0	0.5																	116				
L 36+70	34 RT	0506		1655.7																								
		0506	0507		1651.5	1651.0																			16			
L 36+70	47 RT	0507		1655.8																								
		0507	0508		1650.5	1642.0																			108			
L 37+80	50 RT	0508		1647.2																								
		0508	0509		1642.0	1635.2																			140			
L 39+20	50 RT	0509		1640.4																								
		0509	0510		1635.2	1629.1																			80			
L 39+98	47 RT	0510		1634.4																								
		0510	0511		1629.1	1618.5																			140			
L 45+63	70 RT	0514																										
		0514	0515		1610.5	1608.2	1.2									28												
L 34+00	34 LT	0516		1671.9																								
		0516	0517		1668.9	1649.8																300						
L 37+00	34 LT	0517		1653.8																								
		0517	0518		1649.8	1641.2																152						
SHEET TOTALS									16	8						28						512	536	452	484			

STRUCTURE FROM	STRUCTURE TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 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 D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05
0401														
0401	0403													
0402														
0403					1									
0403	0413													
0413														
0413	0404													
0404					1									
0404	0405													
0405					1			1		1				
0405	0407													
0406					1									
0406	0405													
0407					1			1		1				
0407	0501													
0408					1									
0408	0407													
0409		1.500												
0409	0411													
0410														
0410	0411													
0411					1	5.0	2.2							
0500					1									
0500	0411													
0501					1			1		1				
0501	0503													
0502														
0502	0501													
0503					1			1		1				
0503	0505													
0504					1									
0504	0503													
0505					1			1		1				
0505	0506													
0506					1			1		1				
0506	0507													
0507					1	0.3								
0507	0508													
0508					1	0.2								
0508	0509													
0509					1	0.2								
0509	0510													
0510					1	0.3								
0510	0511													
0514		2.800												
0514	0515													
0516					1			1			1			
0516	0517													
0517					1			1			1			
0517	0518													
SHEET TOTALS		4.300			19	6.0	2.2	8		6	2			

STRUCTURE FROM	STRUCTURE TO	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	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. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33
0401																				
0401	0403																			
0402																				
0403							1							1						
0403	0413																			
0413																				
0413	0404																			
0404							1							1						
0404	0405																			
0405																				
0405	0407																			
0406								1						1						
0406	0405																			
0407																				
0407	0501																			
0408								1						1						
0408	0407																			
0409																				
0409	0411																			
0410																				
0410	0411																			
0411																			1	
0500																			1	
0500	0411																			
0501																				
0501	0503																			
0502																				
0502	0501																			
0503																				
0503	0505																			
0504				1	1															
0504	0503																			
0505																				
0505	0506																			
0506																				
0506	0507																			
0507							1							1						
0507	0508																			
0508								1						1						
0508	0509																			
0509							1							1						
0509	0510																			
0510							1							1						
0510	0511																			
0514																				
0514	0515																			
0516																				
0516	0517																			
0517																				
0517	0518																			
SHEET TOTALS				1	1		5	3						8					2	

STRUCTURE FROM	STRUCTURE TO	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	24" CURED-IN-PLACE PIPE	30" CURED-IN-PLACE PIPE	BERM DITCH OUTLET STD. 850.10 OR STD. 850.11, S.Y	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B. SEE SHEET 2C-2	CONVERT EXISTING C.B. TO D.I. SEE SHEET 2C-5	CONVERT EXISTING D.I. TO J.B. SEE SHEET 2C-2	ADJUSTMENT OF MANHOLES	ADJUST C.B.	ADJUST D.I.	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
0401																	1	5				FILL 18" CMP
0401	0403																					
0402																						RETAIN STUB OUT
0403																						
0403	0413																					
0413											1			1							224	REMOVE 18" CMP
0413	0404																					
0404																						
0404	0405																					
0405																						
0405	0407																					
0406																						
0406	0405																					
0407																						
0407	0501																					
0408																					224	REMOVE 18" CMP
0408	0407																					
0409																						
0409	0411																					
0410																						OUTLET
0410	0411																					
0411																					25	REMOVE 15" HDPE, SLAB LID
0500											1											
0500	0411																					
0501																						
0501	0503																					
0502																			0.4465			
0502	0501																					
0503																						
0503	0505																					
0504																						
0504	0503																					
0505																						
0505	0506																					
0506																						
0506	0507																					
0507																						
0507	0508																					
0508																					407	REMOVE 24" CMP
0508	0509																					
0509																						
0509	0510																					
0510																					224	REMOVE 24" CMP & 12" CMP
0510	0511																					
0514																					90	REMOVE 18" CMP
0514	0515																					
0516																						
0516	0517																					
0517																						
0517	0518																					
SHEET TOTALS											2			1			1	5	0.4465		1194	

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

CARYLTBUCKNER1

COMPUTED BY: Karen Hefner, PE DATE: 09/15/2017

CHECKED BY: Andrew Nottingham, PE DATE: 09/15/2017

PROJECT NO.	SHEET NO.
R-5735	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)

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

QUANTITIES FOR DRAINAGE STRUCTURES — NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)

LINE & STATION (SIZE)	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE 12	C. S. PIPE 15	C. S. PIPE 18	C. S. PIPE 24		C. S. PIPE 30			C. S. PIPE 36			C. S. PIPE 42	C. S. PIPE 48	R. C. PIPE CLASS IV 12	R. C. PIPE CLASS IV 15	R. C. PIPE CLASS IV 18	R. C. PIPE CLASS IV 24	R. C. PIPE CLASS IV 30	R. C. PIPE CLASS IV 36	R. C. PIPE CLASS IV 42	R. C. PIPE CLASS IV 48	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	A 0' THRU 5' EACH	A 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 D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	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. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	24" CURED-IN-PLACE PIPE	30" CURED-IN-PLACE PIPE	BERM DITCH OUTLET STD. 850.10 OR STD. 850.11, S.Y.	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B. SEE SHEET 2C-2	CONVERT EXISTING C.B. TO D.I. SEE SHEET 2C-5	CONVERT EXISTING D.I. TO J.B. SEE SHEET 2C-2	ADJUSTMENT OF MANHOLES	ADJUST C.B.	ADJUST D.I.	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
THICKNESS OR GAUGE									.064	.064	.064	.064		.079			.079			.109	.109																																																													
L 38+50	34	LT	0518		1644.2																												1			1			1																																										
			0518	0525		1641.2	1637.8			32																																																																									
L 41+40	55	RT	0540		1623.8																																												1						1																													
			0540	0511		1621.8	1621.0																16																																																													
L 41+00	61	LT	0519																											3.400																																																						
			0519	0511		1625.0	1619.8	0.4																		104																																																													
L 41+67	34	LT	0520		1626.4																												1			1			1																																									16				FILL 24" CMP
			0520	0523		1623.4	1619.8																84																																																													
L 44+00	56	LT	0521	0522		1625.8	1614.4			24																																																												11													
L 44+00	34	LT	0522		1617.4																												1			1			1																																													
			0522	0524		1614.4	1609.9	0.7															164																																																													
L 42+50	34	LT	0523		1622.8																												1			1			1																																													
			0523	0522		1619.8	1614.4	0.3															152																																																													
L 45+62	34	LT	0524		1612.9																												1			1			1																																													
			0524	0611		1609.9	1607.1	1.5																140																																																												
L 47+30	47	RT	0635		1611.9																												1												1	1																																								
			0635	0601		1609.4	1609.0																	28																																																												
L 47+55	47	RT	0601		1611.5																												1												1	1																																								
			0601	0602		1609.0	1605.8	1.0																108																																																												
L 48+61	47	RT	0602		1608.3																												1												1	1																																								
			0602	0603		1605.3	1601.1	1.3																	100																																																											
L 49+57	49	RT	0603		1605.8																												1														1								1																												
			0603	0604		1601.1	1600.1	0.5																	100																																																											
L 50+53	44	RT	0604		1606.6																												1	1.5											1	1																																								
			0604	0605		1600.1	1595.1	0.5																	240																																																											
L 52+88	45	RT	0605		1600.0																												1	0.4													1								1																							5				
			0605	0606		1594.6	1592.4	0.3																		216																																																										
L 55+00	34	RT	0606		1596.6																												1			1		1																																													
			0606	0608		1592.4	1588.8	0.5																		204																																																										
L 55+00	45	RT	0607		1596.9																												1															1							1																												
			0607	0606		1594.2	1593.6																12																																																													
L 57+00	34	RT	0608		1593.1																												1			1		1																																													
			0608	0633		1588.8	1587.1	0.5																		100																																																										
L 57+00	45	RT	0609		1593.4																												1															1							1																												
			0609	0608		1590.7	1590.1																12																																																													
L 59+45	34	RT	0610		1588.8																												1			1		1																																													
			0610	0624		1584.5	1584.0	0.6																		72																																																										
L 47+00	34	LT	0611		1610.3																												1			1			1																																													
			0611	0613		1607.1	1605.0	0.8																140																																																												
L 48+39	34	LT	0613		1608.2																												1			1			1																																												40	REMOVE 15" CMP
			0613	0614		1604.5	1602.5	1.4																	112																																																											
L 49+50	34	LT	0614		1606.3																												1			1			1																																													
			0614	0616		1602.5	1599.1	0.4																	196																																																											
L 50+37	47	LT	0615		1603.0																												1												1	1																																								
			0615	0628		1599.7	1599.2				12																																																																											
L 50+46	54	LT	0628																																																																															0.3990			
L 51+45	34	LT	0616		1602.9																												1			1			1																																													
			0616	0618		1599.1	1595.6	0.5																	200																																																											
L 52+95	42	LT	0617		1600.2																												1			1			1																																											0.065	23	REMOVE 18" CMP
			0617	0619		1597.2	1595.4																52																																																													
							SHEET TOTALS			56	12												492	416	948	592	104			3.400			22	1.9		13		3	10						5	5	2	2	1						5															11									21	0.3990	0.065	63	

COMPUTED BY:	Karen Hefner, PE	DATE:	09/15/2017
CHECKED BY:	Andrew Nottingham, PE	DATE:	09/15/2017

CARYLTBUCKNER1

PROJECT NO.	SHEET NO.
R-5735	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	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)		30 (.079)			36 (.079)			42 (.109)	48 (.109)	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48
L 53+45	34 LT	0618		1599.3																								
		0618	0620		1595.0	1594.5	0.7																	60				
L 53+45	42 LT	0619		1598.4																								
		0619	0618		1595.4	1595.3																8						
L 54+05	34 LT	0620		1598.3																								
		0620	0621		1594.5	1592.9	0.7																	96				
L 55+00	34 LT	0621		1596.6																								
		0621	0622		1592.9	1590.4	0.8																	140				
L 56+39	34 LT	0622		1594.2																								
		0622	0623		1590.4	1587.7	0.8																	160				
L 57+95	34 LT	0623		1591.4																								
		0623	0624		1587.7	1585.0	0.8																	152				
L 59+45	34 LT	0624		1588.8																								
		0624	0741		1583.8	1579.2																				160		
L 60+11.5	35 RT	0625		1587.9																								
		0625	0747		1584.7	1582.2																	80					
L 52+88	55 RT	0626																										
		0626	0605		EX.	1595.1	1.3															12						
L 59+45	47 RT	0627		1588.8																								
		0627	0610		1586.5	1585.8																16						
L 48+39	49 LT	0632		1607.8																								
		0632	0613		1605.5	1605.0																16						
L 58+00	34 RT	0633		1591.3																								
		0633	0610		1587.1	1584.5	0.6																		148			
L 63+00	46 RT	0700		1584.7																								
		0700	0728		1581.7	1579.5																	48					
L 63+45	46 RT	0701		1584.1																								
		0701	0728		1581.2	1580.5															12							
L 65+00	47 RT	0702		1581.8																								
		0702	0704		1578.8	1574.9																	212					
L 67+10	48 RT	0703		1577.8																								
		0703	0704		1575.6	1575.1																16						
L 67+10	34 RT	0704		1578.1																								
		0704	0706		1574.9	1573.8	0.3																104					
L 68+10	44 RT	0705		1576.5																								
		0705	0706		1574.3	1574.1																12						
L 68+10	34 RT	0706		1577.1																								
		0706	0707		1573.8	1572.9	0.5																92					
L 69+00	34 RT	0707		1576.1																								
		0707	0709		1572.9	1571.1	0.6																176					
L 69+00	44 RT	0708		1575.5																								
		0708	0707		1573.3	1573.1																12						
L 70+75	34 RT	0709		1574.3																								
		0709	0710		1571.1	1568.9	0.8																212					
L 72+83	48 RT	0711																										
		0711	0710		1567.5	1567.0	0.7						16															
L 63+25	59 LT	0712		1582.7																								
		0712	0713		1579.5	1579.3																28						
L 61+05	45 LT	0741		1585.9																								
		0741	0730		1578.7	1578.0																					112	
SHEET TOTALS													16								12	120	924	608	148	160	112	

STRUCTURE FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 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	
0618					1			1			1	
0618	0620											
0619					1			1			1	
0619	0618											
0620					1			1			1	
0620	0621											
0621					1			1			1	
0621	0622											
0622					1			1			1	
0622	0623											
0623					1			1			1	
0623	0624											
0624					1			1			1	
0624	0741											
0625					1			1		1		
0625	0747											
0626												
0626	0605											
0627					1							
0627	0610											
0632					1							
0632	0613											
0633					1			1		1		
0633	0610											
0700					1							
0700	0728											
0701					1							
0701	0728											
0702					1							
0702	0704											
0703					1							
0703	0704											
0704					1			1		1		
0704	0706											
0705					1							
0705	0706											
0706					1			1		1		
0706	0707											
0707					1			1		1		
0707	0709											
0708					1							
0708	0707											
0709					1			1		1		
0709	0710											
0711												
0711	0710											
0712					1							
0712	0713											
0741					1			1	1			
0741	0730											
SHEET TOTALS					23			14	1	6	7	

STRUCTURE FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	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. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30
0618																				
0618	0620																			
0619																				
0619	0618																			
0620																				
0620	0621																			
0621																				
0621	0622																			
0622																				
0622	0623																			
0623																				
0623	0624																			
0624																				
0624	0741																			
0625																				
0625	0747																			
0626																				
0626	0605																			
0627						1	1													
0627	0610																			
0632						1	1													
0632	0613																			
0633																				
0633	0610																			
0700										1						1				
0700	0728																			
0701																			1	30
0701	0728																			
0702										1						1				
0702	0704																			
0703						1	1													
0703	0704																			
0704																				
0704	0706																			
0705						1	1													
0705	0706																			
0706																				
0706	0707																			
0707																				
0707	0709																			
0708						1	1													
0708	0707																			
0709																				
0709	0710																			
0711																				
0711	0710																			
0712						1	1													
0712	0713																			
0741																				
0741	0730																			
SHEET TOTALS						6	6			2						2			1	30

STRUCTURE FROM	TO	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	24" CURED-IN-PLACE PIPE	30" CURED-IN-PLACE PIPE	BERM DITCH OUTLET STD. 850.10 OR STD. 850.11, S.Y.	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B. SEE SHEET 2C-2	CONVERT EXISTING C.B. TO D.I. SEE SHEET 2C-5	CONVERT EXISTING D.I. TO J.B. SEE SHEET 2C-2	ADJUSTMENT OF MANHOLES	ADJUST C.B.	ADJUST D.I.	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
0618																								
0618	0620																							
0619																								
0619	0618																							
0620																								
0620	0621																							
0621																								
0621	0622																							
0622																								
0622	0623																							
0623																								
0623	0624																							
0624																							18	REMOVE 18" CMP
0624	0741																							
0625																								
0625	0747																							
0626																					0.3990			
0626	0605																							
0627																								
0627	0610																							
0632																						0.045		
0632	0613																							
0633																								
0633	0610																							
0700																								
0700	0728																							
0701																								
0701	0728																							
0702																								
0702	0704																							
0703																							57	REMOVE 15" CMP
0703	0704																							
0704																								
0704	0706																							
0705																								
0705	0706																							
0706																								
0706	0707																							
0707																								
0707	0709																							
0708																								
0708	0707																							
0709																								
0709	0710																							
0711																								
0711	0710																							
0712																								
0712	0713																							
0741																								
0741	0730																							
SHEET TOTALS																					0.3990	0.045	75	

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

CARYLTBUCKNER1

COMPUTED BY: Karen Hefner, PE DATE: 09/15/2017

CHECKED BY: Andrew Nottingham, PE DATE: 09/15/2017

PROJECT NO.	SHEET NO.
R-5735	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 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | C. S. PIPE 12 SIZE | 15 SIZE | 18 SIZE | 24 SIZE | 30 SIZE | 36 SIZE | 42 SIZE | 48 SIZE | C. S. PIPE THICKNESS OR GAUGE | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH | A 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 D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | 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. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | DRIVEWAY D.I. STD. 840.30 | FRAME W/ GRATE FOR DRIVEWAY STD. 840.30 | J.B. STD. 840.31 OR STD. 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | 24" CURED-IN-PLACE PIPE | 30" CURED-IN-PLACE PIPE | BERM DITCH OUTLET STD. 850.10 OR STD. 850.11, S.V | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO J.B. SEE SHEET 2C-2 | CONVERT EXISTING C.B. TO D.I. SEE SHEET 2C-5 | CONVERT EXISTING D.I. TO J.B. SEE SHEET 2C-2 | ADJUSTMENT OF MANHOLES | ADJUST C.B. | ADJUST D.I. | 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 |
|---|---|---

CARYL.TBUCKNER1

COMPUTED BY: Karen Hefner, PE DATE: 09/15/2017

CHECKED BY: Andrew Nottingham, PE DATE: 09/15/2017

PROJECT NO.	SHEET NO.
R-5735	3D-5

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	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE
SIZE								
THICKNESS OR GAUGE					FT.	FT.	FT.	%
Y3 14+47	2	RT	0745		1588.0			
			0745	0760		1583.6	1583.5	
Y3 14+57	63	LT	0748		1591.3			
			0748	0744		1586.6	1584.9	
Y3 14+30	29	LT	0746		1587.1			
			0746	0747		1583.0	1582.2	
L 73+45	47	RT	0801		1571.0			
			0801	0800		1568.8	1568.5	0.8
L 75+20	48	RT	0803		1568.4			
			0803	0802		1565.3	1565.1	
L 77+26	48	RT	0805		1565.5			
			0805	0804		1563.3	1563.1	
L 80+16	48	RT	0807		1561.7			
			0807	0808		1559.5	1559.4	
L 82+00	46	RT	0809		1558.4			
			0809	0810		1556.0	1555.8	
L 83+12	46	RT	0811		1556.9			
			0811	0812		1553.6	1553.5	
L 83+85	46	RT	0813		1556.0			
			0813	0814		1553.2	1553.0	
L 81+40	42	LT	0817		1561.1			
			0817	0818		1558.1	1554.9	
L 83+00	42	LT	0818		1557.9			
			0818	0820		1554.9	1552.7	
L 84+00	34	LT	0819		1555.9			
			0819	0821		1552.5	1550.5	
L 84+00	42	LT	0820		1555.7			
			0820	0819		1552.7	1552.5	
L 85+00	37	LT	0821		1554.2			
			0821	0824		1550.5	1549.5	
L 85+00	45	LT	0822		1553.8			
			0822	0821		1550.8	1550.5	
L 84+60	48	RT	0825		1556.9			
			0825	0826		1552.8	1552.6	
L 85+82	49	RT	0828		1557.3			
			0828	0827		1555.1	1549.0	
L 85+00	48	RT	0829		1556.8			
			0829	0825		1554.5	1552.8	
L 85+82	12	RT	0823		1552.7			
			0823	0827		1549.5	1549.0	
L 87+37	5	RT	0900		1551.7			
L 90+56	0	CL	0902		1550.0			
L 90+88	60	RT	0903		1552.7			
L 91+70	72	RT	0904		1552.3			
L 87+37	50	RT	0913		1554.6			
L 88+50	2	RT	0916		1551.4			
			0916	0917		1548.2	1547.7	
L 89+50	2	RT	0917		1550.9			
			0917	0920		1547.7	1547.2	
Y5 11+20	17	RT	0919					
SHEET TOTALS								

C. S. PIPE

12	15	18	24		30			36			42	48
.064	.064	.064	.064		.079			.079			.109	.109

CARYLTBUCKNER1

COMPUTED BY: Karen Hefner, PE DATE: 09/15/2017

CHECKED BY: Andrew Nottingham, PE DATE: 09/15/2017

PROJECT NO.	SHEET NO.
R-5735	3D-6

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 / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE 12 .064	15 .064	18 .064	24 .064		30 .079			36 .079			42 .109	48 .109	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48
		0919	0918		EX.	1533.0																12						
L 90+00	2 RT	0920		1550.3																								
		0920	0902		1547.2	1546.8																56						
Y5 10+50	6 RT	0922		1538.3																								
		0922	0910		1535.1	1534.5																24						
Y5 11+18	11 LT	0921		1540.1																								
Y1A 39+51	31 RT	0925		1540.9																								
		0925	0926		1537.9	1536.0																40						
Y1A 39+15	22 RT	0926		1539.5																								
		0926	0929		1536.0	1535.5																28						
Y1A 39+15	11 RT	0928																										
		0928	0926		1536.3	1536.0																12						
Y1A 38+87	21 RT	0929																										
Y1A 38+50	19 RT	0930		1541.8																								
		0930	0929		1538.8	1536.8																36						
Y1A 39+60	22 RT	0931		1541.3																								
		0931	0925		1538.3	1537.9																16						
SHEET TOTALS																						224						
PROJECT TOTALS									84	20			16			28					12	2360	2464	2024	1224	264	1280	

FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 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 D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	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
0919	0918																				
0920					1								1				1	1			
0920	0902																				
0922					1								1				1	1			
0922	0910																				
0921					1	1.1							1				1	1			
0925					1			1		1											
0925	0926																				
0926					1			1		1											
0926	0929																				
0928																					
0928	0926																				
0929																					
0930					1			1		1											
0930	0929																				
0931					1			1			1										
0931	0925																				
SHEET TOTALS					7	1.1		4		3	1		3				3	3			
PROJECT TOTALS		7.700			120	28.1		69	1	21	47		8				32	32	2	7	6

FROM	TO	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	24" CURED-IN-PLACE PIPE	30" CURED-IN-PLACE PIPE	BERM DITCH OUTLET STD. 850.10 OR STD. 850.11, S.Y.	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B. SEE SHEET 2C-2	CONVERT EXISTING C.B. TO D.I. SEE SHEET 2C-5	CONVERT EXISTING D.I. TO J.B. SEE SHEET 2C-2	ADJUSTMENT OF MANHOLES	ADJUST C.B.	ADJUST D.I.	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
0919	0918																																	
0920																																		
0920	0902																																	
0922																																		
0922	0910																																	
0921																																		
0925																																	36	REMOVE 12" CMP
0925	0926																																	
0926																																		
0926	0929																																	
0928																															0.3990			
0928	0926																																	
0929																											1						21	REMOVE 15" CMP
0930																																		
0930	0929																																	
0931																																		
0931	0925																																	
SHEET TOTALS																											1				0.3990		57	
PROJECT TOTALS							15			1	30	5							180	142	11		5		1	1	1	2	1	39	2.0425	0.547	1702	

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

COMPUTED BY: Karen Hefner, PE DATE: 09/15/2017

CHECKED BY: Andrew Nottingham, PE DATE: 09/15/2017

CARYLTBUCKNER1

PROJECT NO.	SHEET NO.
R-5735	3D-7

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	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	R. C. PIPE CLASS IV 54	R. C. PIPE CLASS IV 60	R. C. PIPE CLASS IV 66	R. C. PIPE CLASS V 72	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	SPECIAL C.B. STD. 840D02 SEE SHEET 2C-1	GRATE TYPE F	GRATE TYPE G	60" CURED-IN-PLACE PIPE	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	J.B. STD. 840.31 OR STD. 840.32	STEEL FRAME AND GRATE STD. 840.37	M.H. FRAME AND COVER STD. 840.54	FLOWABLE FILL CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 41+35	36	RT	0511		1632.4									4.366							1		1				
			0511	0512		1616.5	1615.4		148																		
L 42+84	31	RT	0512		1622.8									4.129							1		1			140	REMOVE 12" RCP
			0512	0513		1615.4	1614.3	0.4	116																		
L 43+97.47	33	RT	0513		1619.7									4.214							1		1				
			0513	0515		1614.3	1606.7	0.4	172																		
L 45+67	44	RT	0515		1614.1									4.856							1		1				
			0515	0600		1606.2	1600.9	0.4		88																	
L 46+53	53	RT	0600		1610.7									5.990				124	1	1							
L 47+05	64	LT	0612		1608.6									5.389							1		1				
L 59+54	51	LT	0630		1585.0									5.661							1		1				
			0630	0631		1576.3	1575.9	0.6		16																	
L 59+51	64	LT	0631										5.600														
Y3 11+28	76	RT	0751										7.100														
			0751	0750		1572.9	1568.8					140															
Y3 11+14	62	LT	0750		1584.2									9.778					1	1							
L 72+85	34	RT	0710		1572.1									1.893	1	1											
			0710	0800		1564.9	1564.2		60																		
L 73+45	34	RT	0800		1571.5									1.806	1	1											
			0800	0802		1564.2	1560.9		176																		
L 75+20	34	RT	0802		1568.1									1.826	1	1											
			0802	0804		1560.9	1559.5		200																		
L 77+26	34	RT	0804		1566.8									1.819	1	1										276	REMOVE 15" CMP
			0804	0806		1559.5	1558.1	0.3	128																		
L 78+58	34	RT	0806		1565.4									1.891	1	1											
			0806	0808		1558.1	1555.3	0.3	156																		
L 80+16	34	RT	0808		1562.5									1.826	1	1										284	REMOVE 15" CMP
			0808	0810		1555.3	1551.5	0.3	180																		
L 82+00	34	RT	0810		1558.8									1.855	1	1											
			0810	0812		1551.5	1549.2	0.3	112																		
L 83+12	34	RT	0812		1556.5									2.021	1	1								4			FILL 18" CMP
			0812	0814		1548.7	1548.3			76																	
L 83+85	34	RT	0814		1556.0									1.865	1	1											
			0814	0815		1548.3	1548.1			24																	
L 84+05	34	RT	0815		1555.9									1.901	1	1											
			0815	0826		1548.1	1547.9			56																	
L 86+28	34	RT	0816		1555.1									12.110								1					SEE DETAIL SHEET 2C-6
			0816	0824		1546.0	1543.8			80																	
L 86+25	41	LT	0824		1552.8									10.535									1		0.065	22	REMOVE 18" CMP, SEE DETAIL SHEET 2C-7
			0824	0905		1543.5	1539.2				112																
L 84+60	35	RT	0826		1555.6									1.865	1	1											
			0826	0827		1547.9	1547.0			124																	
L 85+82	40	RT	0827		1555.1									1.958	1	1											
			0827	0816		1547.0	1546.0			48																	
L 87+37	42	LT	0905		1552.2									2.957	1		1								0.116		
			0905	0906		1539.2	1538.5				164																
L 89+00	42	LT	0906		1551.4									3.014	1		1										
			0906	0907		1538.5	1537.5				116																
L 90+15	67	LT	0907		1550.8									2.975	1		1								0.182		
			0907	0908		1537.5	1536.5				96																
SHEET TOTALS									1448	512	488	140	12.700	98.500	15	12	3	124	2	2	6	1	7	4	0.363	722	

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

COMPUTED BY:	Karen Hefner, PE	DATE:	09/15/2017
CHECKED BY:	Andrew Nottingham, PE	DATE:	09/15/2017

PROJECT NO.	SHEET NO.
R-5735	3D-8

CARYLTBUCKNER1

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 / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
Y5 13+57	27 RT	0908		1546.5			
		0908	0909		1536.5	1535.8	
Y5 12+77	26 RT	0909		1543.7			
		0909	0918		1535.8	1532.0	
Y5 10+50	28 RT	0910		1538.3			
		0910	0915		1530.1	1526.2	
Y5 9+19	27 RT	0915		1534.4			
		0915	0912		1526.2	1525.8	
Y5 8+98	50 RT	0912		1532.3			
Y5 11+20	29 RT	0918		1540.3			
		0918	0910		1532.0	1530.1	

R. C. PIPE CLASS IV

LINE & STATION	FROM	TO	12	15	18	24	30	36	42	48	54	60	66	72	78	84	
Y5 13+57	0908																
	0908	0909											80				
Y5 12+77	0909																
	0909	0918											160				
Y5 10+50	0910																
	0910	0915											136				
Y5 9+19	0915																
	0915	0912											32				
Y5 8+98	0912																
Y5 11+20	0918																
	0918	0910											76				
SHEET TOTALS													484				
PROJECT TOTALS										1448	512	972					

R. C. PIPE CLASS V

LINE & STATION	12	15	18	24	30	36	42	48	54	60	66	72	78	84
SHEET TOTALS														
PROJECT TOTALS												140		

LINE & STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	SPECIAL C.B. STD. 840D02 SEE SHEET 2C-1	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
Y5 13+57	0908				2.399				1			1	
	0908	0909											
Y5 12+77	0909				1.958				1			1	
	0909	0918											
Y5 10+50	0910				1.980				1			1	
	0910	0915											
Y5 9+19	0915				2.016				1			1	
	0915	0912											
Y5 8+98	0912			6.300									
Y5 11+20	0918				1.991				1			1	
	0918	0910											
SHEET TOTALS				6.300	10.344				5			5	
PROJECT TOTALS				19.000	108.844				20		12	8	

LINE & STATION	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	60" CURED-IN-PLACE PIPE	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	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. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29		ADJUST M.H.	J.B. STD. 840.31 OR STD. 840.32	T.B.G.D.I. STD. 840.36	T.B.J.B. STD. 840.34	STEEL FRAME AND GRATE STD. 840.37	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	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
Y5 10+50																												0.045	206	REMOVE 15" CMP
SHEET TOTALS																												0.045	206	
PROJECT TOTALS			124				2								2					6			1		7	4		0.408	928	

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

COMPUTED BY: Paul Weaver DATE: 9/21/17
CHECKED BY: _____ DATE: _____

(2-16-16)

PROJECT NO.	SHEET NO.
R-5735	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY					200	380	500	0	0
			TOTAL CY/TONS/SY:		200	380	500*	0	0

ASU = Aggregate Subgrade, AST = Aggregate Stabilization
***Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.**

12/06/07

PROJECT REFERENCE NO.	SHEET NO.
R-5735	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1		NOT USED
2	4,5	HACKNEY-CAROLINA COMPANY
3	5	SOUTHERN CENTERS, LLC
4	5	GREAT OAK NC OWNER, LLC
5	5	CHARLIE J. HUGHES
6	5	MARVIN RAPER
7	5	ALBERICO GARCIA-AGUILAR
8	5	EDWARD R. NITZSCHE
9	5	EVAMARIA MURPHY, LLC
10	5	BC MACHINING, LLC
11	6	SHEPARD OF THE MOUNTAINS CHURCH, INC
12	6	NEW HAPPY GARDEN CHINESE RESTAURANT OF MURPHY, INC.
13	6	LIM BROTHERS, LLC
14	6,7	CARLTON VAN HORN
15	7	DUNCAN OIL COMPANY
16	7	TOWN OF MURPHY BOARD OF ALCOHOLIC BEVERAGE CONTROL
17	7	WELLS & WEST COMMERCIAL PROPERTIES, LLC
18	7	RANDY DOCKERY
19	7	VASHI INVESTMENTS, INC.
20	7	CAROLINA BUGGIES
21	7	CHEROKEE COUNTY CHAMBER OF COMMERCE, INC.
22	7	RA GODFREY PROPERTIES, LLC
23	7,8	WELLS & WEST COMMERCIAL PROPERTIES
24	7,8	RA GODFREY PROPERTIES, LLC
25	8	WILLIAM R. WELLS
26	8	DAVID R. HATCHER
27	8	PEOPLES BANK OF EAST TENNESEE
28	8	STEPHEN DICKEY
29	8	NANCY MILLS BAUGUSS
30	8	RAY-MAR, LLC
31	8,9	THE TOWN OF MURPHY
32	8,9	ALMA RITZ
33	8,9	JONATHAN DAVID DICKEY
34	9	McDONALD'S CORPORATION
35	9	ALAN M. MERCER
36	9	TENNESSEE VALLEY AUTHORITY
37	6	MARTHA MCHAN
38	7	STEPHEN L. COCKERHAM

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PROJECT REFERENCE NO.	SHEET NO.
R-5735	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER
DocuSigned by: 1087D11E87FF8435... 4/4/2019

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEBNER
DocuSigned by: 8E3552047D81492... 4/4/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker Engineering, Inc. — Michael Baker INTERNATIONAL — 8000 Regency Pkwy Suite 600 Cary, NC 27518 NC License: P-1084

MI Engineering, PLLC — 1011 Schaub Drive Suite 100 Raleigh, 27606 NC License: P-0871

REVISIONS 8/17/99

-Y1-		
PI Sta 21+80.73	PI Sta 25+42.59	PI Sta 27+68.52
Δ = 13° 04' 42.6" (LT)	Δ = 24° 33' 52.7" (RT)	Δ = 5° 30' 53.0" (LT)
D = 5° 13' 59.0"	D = 11° 08' 49.3"	D = 5° 58' 05.9"
L = 249.92'	L = 220.37'	L = 92.40'
T = 125.51'	T = 111.90'	T = 46.24'
R = 1,094.88'	R = 514.00'	R = 960.00'

NAD 83 2011

BEGIN TIP PROJECT R-5735
-L- POC Sta. 27+80.00

SEE SHEET 5 -L- STA. 33+00.00

MATCH LINE -L- STA. 33+00.00

FOR -L- PROFILE SEE SHEET 10
FOR CURB & GUTTER AND ISLAND DETAILS, SEE SHEET 2B-1

-L-		
PIs Sta 21+85.19	PI Sta 26+77.70	PIs Sta 31+15.76
Θs = 5° 15' 00.0"	Δ = 26° 58' 20.2" (RT)	Θs = 3° 09' 00.0"
Ls = 300.00'	D = 3° 30' 00.0"	Ls = 180.00'
LT = 200.09'	L = 770.64'	LT = 120.02'
ST = 100.08'	T = 392.60'	ST = 60.02'
	R = 1,637.02'	
	Ds = 50 mph	
	SE = 0.04	
	RUNOFF = 90'	

DETAIL J
TOE PROTECTION
(Not to Scale)

d = 1.0Ft.
Type of Liner = CL B Rip-Rap
Est. 96 Tons
Est. 273 SY

FROM STA. 29+75 TO STA. 32+50 -L- RT

DETAIL C
TOE PROTECTION
(Not to Scale)

d = 2.0Ft.
Type of Liner = CL I Rip-Rap
Est. 150 Tons
Est. 180 SY

FROM STA. 31+50 TO STA. 33+00 -L- LT

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PROJECT REFERENCE NO.	SHEET NO.
R-5735	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER — 4/4/2019	NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER — 4/4/2019

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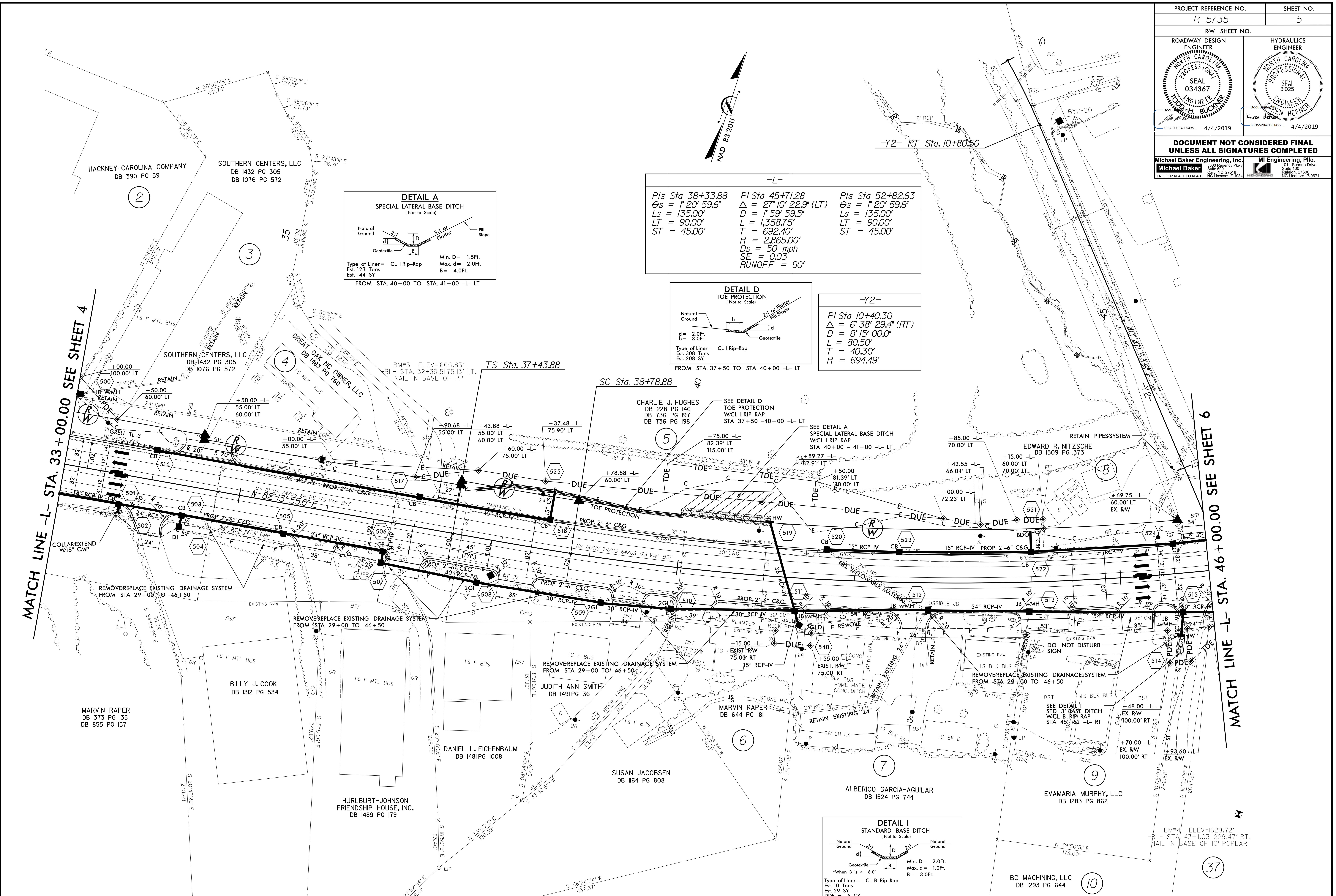
MI Engineering, Pllc. — 1911 Schaub Drive Suite 100 Raleigh, 27606 NC License: P-0671



FOR -L- PROFILE SEE SHEET 10

FOR CURB & GUTTER AND ISLAND DETAILS, SEE SHEET 2B-1

15-MAR-2019 15:55
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PROJECT REFERENCE NO.	SHEET NO.
R-57.35	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER
DocuSigned by: 1087011E67F8435...
4/4/2019

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HETNER
DocuSigned by: 8E3552047D81492...
4/4/2019

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Michael Baker INTERNATIONAL
8000 Regency Pkwy Suite 600 Cary, NC 27518
NC License: P-1084

MI Engineering, PLLC
1011 Schaub Drive Suite 100 Raleigh, 27606
NC License: P-0671

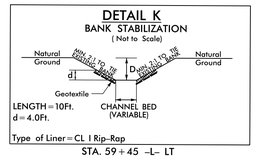
8/17/99

REVISIONS

MATCH LINE –L– STA. 46+00.00 SEE SHEET 5

MATCH LINE –L– STA. 59+75.00 SEE SHEET 7

DETAIL K
BANK STABILIZATION
(Not to Scale)



Type of Liner = CL I Rip-Rap
STA. 59+45 –L– LT
EST. = 10 TONS CL I RIP RAP
EST. = 30 SY GEOTEXTILE

NAD 83/2011

–L–		
PIs Sta 38+33.88	PI Sta 45+71.28	PIs Sta 52+82.63
Θs = 1° 20' 59.6"	Δ = 27° 10' 22.9" (LT)	Θs = 1° 20' 59.6"
Ls = 135.00'	D = 1° 59' 59.5"	Ls = 135.00'
LT = 90.00'	L = 1,358.75'	LT = 90.00'
ST = 45.00'	T = 692.40'	ST = 45.00'
	R = 2,865.00'	
	Ds = 50 mph	
	SE = 0.03	
	RUNOFF = 90'	

–YIA–
PI Sta 8+23.67
Δ = 24° 03' 08.5" (LT)
D = 7° 44' 33.6"
L = 310.65'
T = 157.65'
R = 740.00'
Ds = 40 mph

–YIA– POT Sta. 6+25.00
–YIA– PC Sta. 6+66.02
N 85° 23' 42.8" E

SHEPHERD OF THE MOUNTAINS CHURCH, INC., ET AL
DB 1464 PG 570
DB 1464 PG 578

EOU, LLC
DB 900 PG 204

MARVIN RAPER
DB 1349 PG 510

RUTH GIBSON
DB 1389 PG 99

ANSSI HORSTI
DB 794 PG 128

BM#12 ELEV=1612.75'
–BYIA– STA. 5+00.00
S 61°21'47.58" 284.41'
NAIL IN BASE OF 34" OAK

BM#5 ELEV=1589.61'
–BL– STA. 54+81.13 24.71' LT.
NAIL IN BASE OF PP

SHEPHERD OF THE MOUNTAINS CHURCH, INC., ET AL
DB 1464 PG 578

–L– POC 46+20.46 = –Y2– POT 16+23.45

CS Sta. 52+37.63
ST Sta. 53+72.63

WESTERN CHEROKEE PROPERTIES, LLC
DB 1504 PG 254

WH CAPITAL, LLC
DB 1286 PG 1078

CARLTON VAN HORN
DB 466 PG 115

NEW HAPPY GARDEN CHINESE RESTAURANT OF MURPHY, INC.
DB 1389 PG 712

LIM BROTHERS, LLC
DB 1318 PG 782

EUGENE FARLEY
DB 1290 PG 456
DB 1075 PG 351

SEE DETAIL K
BANK STABILIZATION
CL I RIP RAP
STA 59+45 –L– LT

DO NOT DISTURB SIGN

REMOVE 18"CMP & DRAINAGE SYSTEM

REMOVE OTCB

RETAIN EXIST 60" CMP LINE WITH CURED IN PLACE LINER

COLLAR/EXTEND W/18" CMP

REMOVE 12' 18"CMP

REMOVE STR

FILL W/FLOWABLE MATERIAL

REMOVE/REPLACE

REMOVE CONC DITCH

COLLAR/EXTEND W/15" RCP

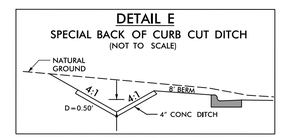
BEGIN 5' SIDEWALK –L– 53+68.79

SEE DETAIL E
SPECIAL BACK OF CURB CUT DITCH
STA 53+50 – 57+00 –L– RT

PROP. 5' SIDEWALK

DAVID MICHAEL TURPIN
DB 1372 PG 61

DETAIL E
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



FROM STA. 53+50 TO STA. 57+00 –L– RT

FOR –L– PROFILE SEE SHEET 11
FOR CURB & GUTTER AND ISLAND DETAILS, SEE SHEETS 2B–1 AND 2B–2

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PROJECT REFERENCE NO.	SHEET NO.
R-5735	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034367 TODD H. BUCKNER — 4/4/2019

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31025 KAREN HEFNER — 4/4/2019

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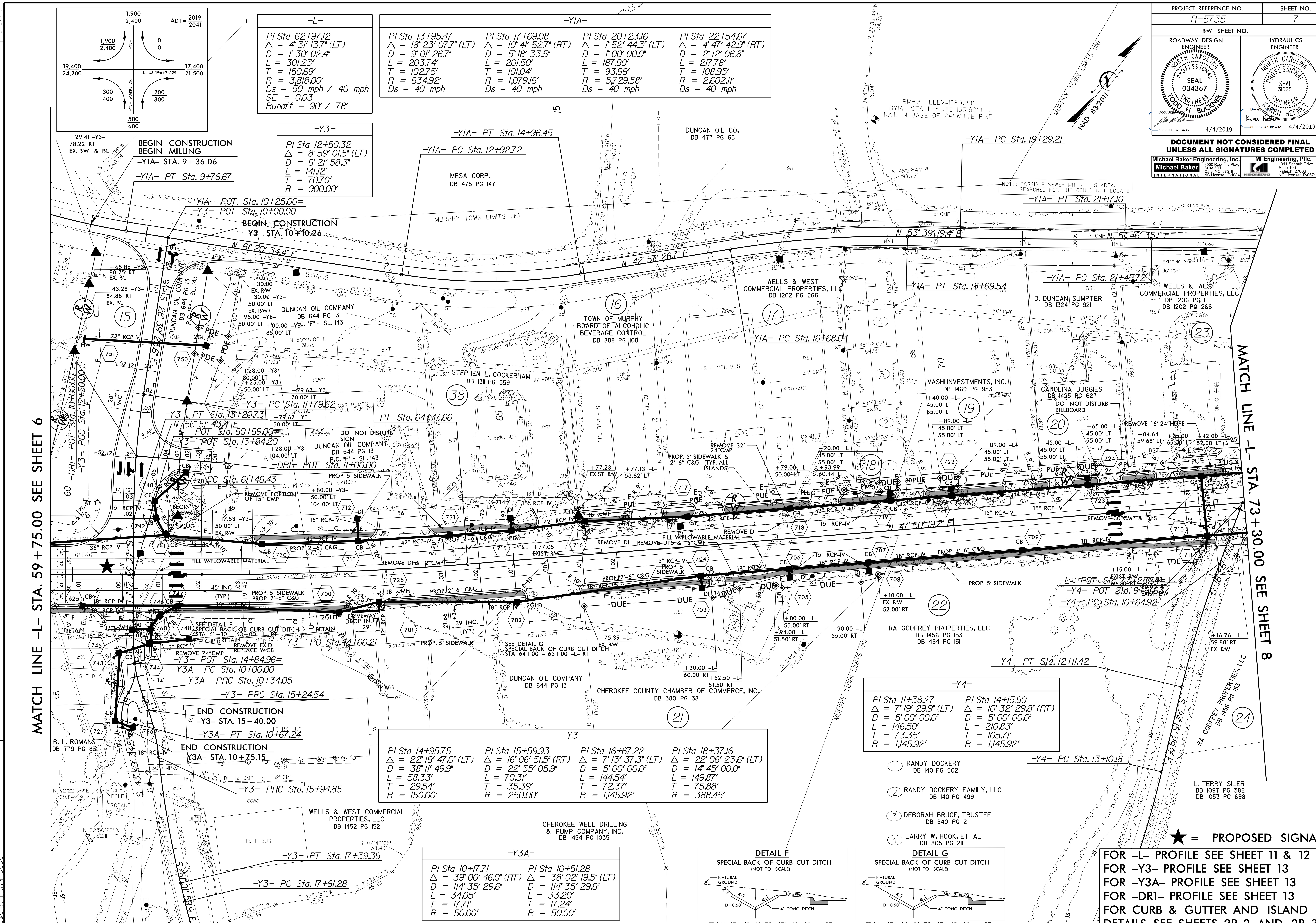
MI Engineering, Pllc. 1011 Schaub Drive Suite 100 Raleigh, 27606 NC License: P-0671



-L-

PI Sta 62+97.12
Δ = 4° 31' 13.7" (LT)
D = 1° 30' 02.4"
L = 301.23'
T = 150.69'
R = 3,818.00'
Ds = 50 mph / 40 mph
SE = 0.03
Runoff = 90' / 78'

-Y1A-

PI Sta 13+95.47	PI Sta 17+69.08	PI Sta 20+23.16	PI Sta 22+54.67
Δ = 18° 23' 07.7" (LT)	Δ = 10° 41' 52.7" (RT)	Δ = 1° 52' 44.3" (LT)	Δ = 4° 47' 42.9" (RT)
D = 9° 01' 26.7"	D = 5° 18' 33.5"	D = 1° 00' 00.0"	D = 2° 12' 06.8"
L = 203.74'	L = 201.50'	L = 187.90'	L = 217.78'
T = 102.75'	T = 101.04'	T = 93.96'	T = 108.95'
R = 634.92'	R = 1,079.16'	R = 5,729.58'	R = 2,602.11'
Ds = 40 mph	Ds = 40 mph	Ds = 40 mph	Ds = 40 mph

-Y3-

PI Sta 12+50.32
Δ = 8° 59' 01.5" (LT)
D = 6° 21' 58.3"
L = 141.12'
T = 70.70'
R = 900.00'

-Y3-

PI Sta 14+95.75	PI Sta 15+59.93	PI Sta 16+67.22	PI Sta 18+37.16
Δ = 22° 16' 47.0" (LT)	Δ = 16° 06' 51.5" (RT)	Δ = 7° 13' 37.3" (LT)	Δ = 22° 06' 23.6" (LT)
D = 38° 11' 49.9"	D = 22° 55' 05.9"	D = 5° 00' 00.0"	D = 14° 45' 00.0"
L = 58.33'	L = 70.31'	L = 144.54'	L = 149.87'
T = 29.54'	T = 35.39'	T = 72.37'	T = 75.88'
R = 150.00'	R = 250.00'	R = 1,145.92'	R = 388.45'

-Y4-

PI Sta 11+38.27	PI Sta 14+15.90
Δ = 7° 19' 29.9" (LT)	Δ = 10° 32' 29.8" (RT)
D = 5° 00' 00.0"	D = 5° 00' 00.0"
L = 146.50'	L = 210.83'
T = 73.35'	T = 105.71'
R = 1,145.92'	R = 1,145.92'

-Y3A-

PI Sta 10+17.71	PI Sta 10+51.28
Δ = 39° 00' 46.0" (RT)	Δ = 38° 02' 19.5" (LT)
D = 114° 35' 29.6"	D = 114° 35' 29.6"
L = 34.05'	L = 33.20'
T = 17.71'	T = 17.24'
R = 50.00'	R = 50.00'

1. RANDY DOCKERY DB 1401 PG 502
2. RANDY DOCKERY FAMILY, LLC DB 1401 PG 499
3. DEBORAH BRUCE, TRUSTEE DB 940 PG 2
4. LARRY W. HOOK, ET AL DB 805 PG 211

★ = PROPOSED SIGNAL

DETAIL F — SPECIAL BACK OF CURB CUT DITCH (NOT TO SCALE) — FROM STA. 61+10 TO STA. 63+00 -L- RT

DETAIL G — SPECIAL BACK OF CURB CUT DITCH (NOT TO SCALE) — FROM STA. 64+00 TO STA. 65+00 -L- RT

FOR -L- PROFILE SEE SHEET 11 & 12
FOR -Y3- PROFILE SEE SHEET 13
FOR -Y3A- PROFILE SEE SHEET 13
FOR -DR1- PROFILE SEE SHEET 13
FOR CURB & GUTTER AND ISLAND DETAILS, SEE SHEETS 2B-2 AND 2B-3

PROJECT REFERENCE NO.	SHEET NO.
R-5735	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034367 TODD H. BUCKNER — DocuSigned by: 1087011E67F6435... 4/4/2019

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31025 KAREN HEFNER — DocuSigned by: Karen Hefner 8E3552047D81492... 4/4/2019

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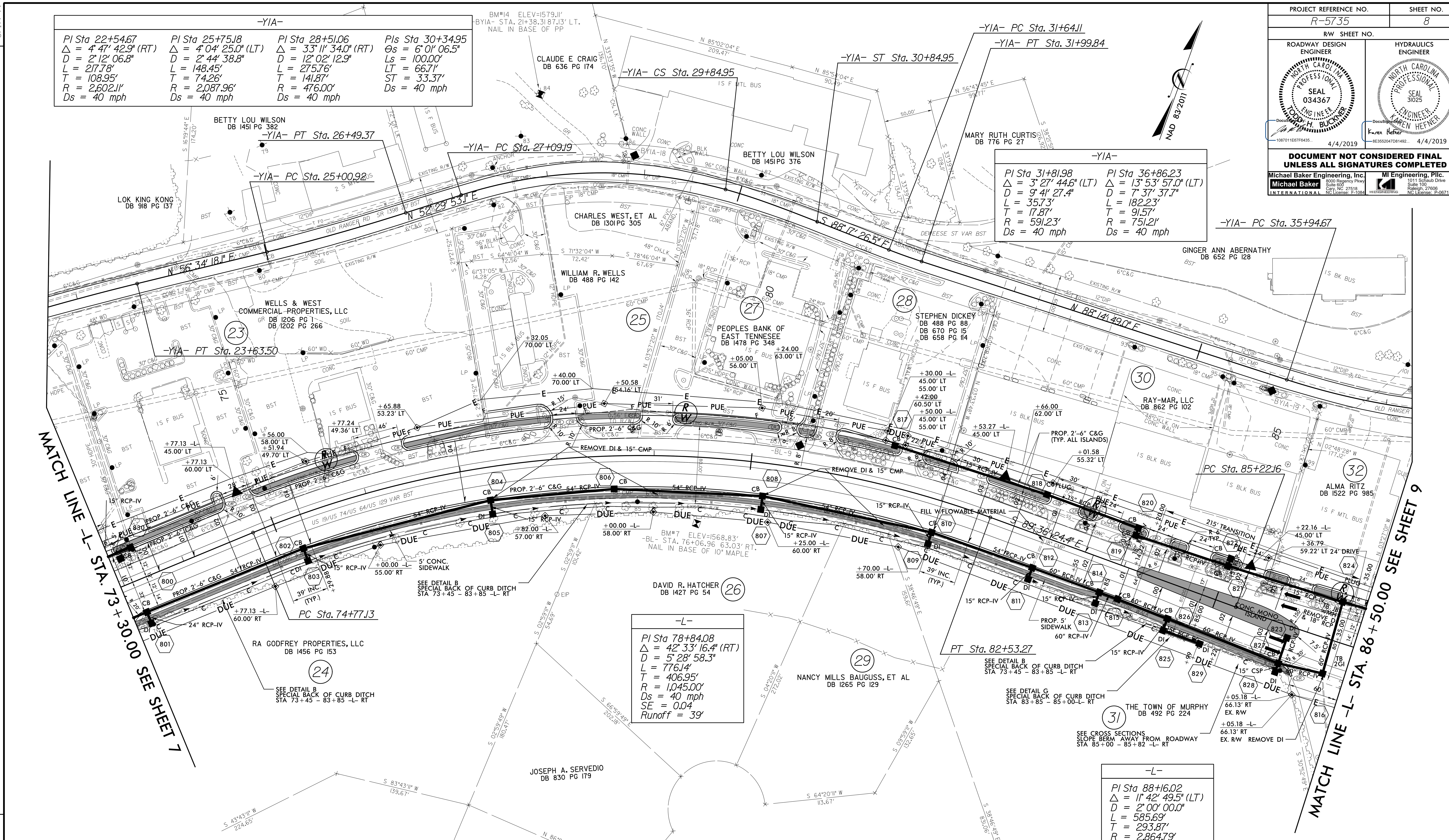
MI Engineering, Pllc. — 1011 Schaub Drive Suite 100 Raleigh, 27606 NC License: P-0671

-YIA-

PI Sta 22+54.67	PI Sta 25+75.18	PI Sta 28+51.06	PIs Sta 30+34.95
Δ = 4° 47′ 42.9″ (RT)	Δ = 4° 04′ 25.0″ (LT)	Δ = 33° 11′ 34.0″ (RT)	θs = 6° 01′ 06.5″
D = 2° 12′ 06.8″	D = 2° 44′ 38.8″	D = 12° 02′ 12.9″	Ls = 100.00′
L = 217.78′	L = 148.45′	L = 275.76′	LT = 66.71′
T = 108.95′	T = 74.26′	T = 141.87′	ST = 33.37′
R = 2,602.11′	R = 2,087.96′	R = 476.00′	Ds = 40 mph
Ds = 40 mph	Ds = 40 mph	Ds = 40 mph	

-YIA-

PI Sta 31+81.98	PI Sta 36+86.23
Δ = 3° 27′ 44.6″ (LT)	Δ = 13° 53′ 57.0″ (LT)
D = 9° 41′ 27.4″	D = 7° 37′ 37.7″
L = 35.73′	L = 182.23′
T = 17.87′	T = 91.57′
R = 591.23′	R = 751.21′
Ds = 40 mph	Ds = 40 mph



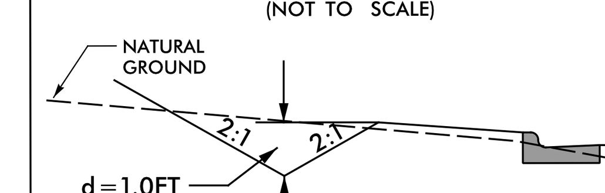
-L-

PI Sta 78+84.08
Δ = 42° 33′ 16.4″ (RT)
D = 5° 28′ 58.3″
L = 776.14′
T = 406.95′
R = 1,045.00′
Ds = 40 mph
SE = 0.04
Runoff = 39′

-L-

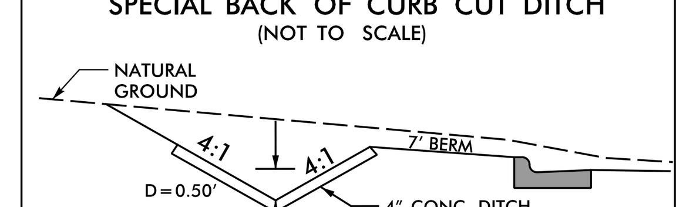
PI Sta 88+16.02
Δ = 11° 42′ 49.5″ (LT)
D = 2° 00′ 00.0″
L = 585.69′
T = 293.87′
R = 2,864.79′
Ds = 40 mph
SE = 0.03
Runoff = 39′

DETAIL B
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



FROM STA. 73+45 TO STA. 83+85 -L- RT

DETAIL G
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



FROM STA. 83+85 TO STA. 85+00 -L- RT

FOR -L- PROFILE SEE SHEET 12
FOR CURB & GUTTER AND ISLAND DETAILS, SEE SHEETS 2B-2 AND 2B-3

PROJECT REFERENCE NO.	SHEET NO.
R-5735	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER
DocuSigned by: 1087011E67F5435...
4/4/2019

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER
DocuSigned by: 8E3552047D81492...
4/4/2019

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MI Engineering, PLLC
1011 Schaub Drive Suite 100 Raleigh, 27606 NC License: P-0671

REVISIONS

8/17/99

-Y5- PT Sta. 7+88.03

TENNESSEE VALLEY AUTHORITY NO DEED FOUND

BEGIN CONSTRUCTION -Y5- STA. 9+17.00

-Y5- PC Sta. 9+41.94

-Y5- PT Sta. 10+25.56

S 10° 43' 03.9" E

-Y5- PC Sta. 10+68.48

-Y5- PT Sta. 12+04.60

-Y5- POT Sta. 12+12.19

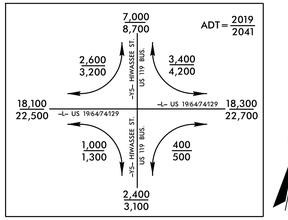
-Y1A- POT Sta. 40+81.86

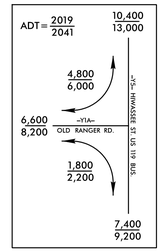
-Y1A-

PI Sta 36+86.23	PI Sta 38+62.12	PI Sta 40+20.59
△ = 13° 53' 57.0" (LT)	△ = 7° 46' 24.9" (RT)	△ = 19° 58' 13.0" (LT)
D = 7° 37' 37.7"	D = 8° 59' 08.2"	D = 22° 55' 05.9"
L = 182.23'	L = 86.51'	L = 87.14'
T = 91.57'	T = 43.32'	T = 44.01'
R = 751.21'	R = 637.64'	R = 250.00'
Ds = 40 mph	Ds = 40 mph	Ds = 40 mph

-Y5-

PI Sta 11+37.02	PI Sta 9+83.87	PI Sta 7+28.55
△ = 16° 35' 37.1" (LT)	△ = 10° 38' 50.5" (LT)	△ = 6° 49' 26.9" (RT)
D = 12° 11' 26.1"	D = 12° 43' 56.6"	D = 5° 43' 46.5"
L = 136.12'	L = 83.62'	L = 119.10'
T = 68.54'	T = 41.93'	T = 59.62'
R = 470.00'	R = 450.00'	R = 1,000.00'





-Y1A- PT Sta. 37+76.90

-Y1A- PC Sta. 39+76.58

-Y1A- PT Sta. 40+63.71

-Y1A- ST Sta. 39+05.31

N 62° 09' 03.9" E

-Y1A- ST Sta. 38+18.80

-L- POT Sta. 91+15.88

-Y5- POT Sta. 15+29.63

-L- PT Sta. 91+07.84

END CONSTRUCTION -Y5- POT Sta. 16+17.92

-Y5- PC Sta. 16+71.40

END TIP PROJECT R-5735 -L- POT Sta. 92+00.00

MATCH LINE -L- STA. 86+50.00 SEE SHEET 8

-L-

PI Sta 88+16.02
△ = 11° 42' 49.5" (LT)
D = 2° 00' 00.0"
L = 585.69'
T = 293.87'
R = 2,864.79'
Ds = 40 mph
SE = 0.03
Runoff = 39'

-Y5-

PI Sta 17+98.52
△ = 5° 54' 43.9" (RT)
D = 2° 19' 39.1"
L = 254.01'
T = 127.12'
R = 2,461.65'

FIRST BAPTIST CHURCH OF MURPHY DB 359 PG 8

TENNESSEE VALLEY AUTHORITY (NO DEED FOUND)

KING FLEA MARKET PROPERTIES, LLC DB 1507 PG 553

U.S. DEPT. OF AGRICULTURE (FOREST SERVICE) (NO DEED FOUND)

THE TOWN OF MURPHY DB 492 PG 224

HAYWOOD SAVINGS AND LOAN ASSOC. DB 469 PG 179

McDONALDS CORPORATION DB 432 PG 64 DB 474 PG 57

ALAN M. MERCER DB 444 PG 91

JONATHAN DAVID DICKEY DB 925 PG 6

BM#15 ELEV=1536.79' -BYIA- STA. 33+74.36 267.70' LT. NAIL IN BASE OF PP

BM#8 ELEV=1559.86' -BL- STA. 89+08.85 66.20' LT. NAIL IN BASE OF 18" DBL. SWEET GUM

TO ANDREWS

= REVISED SIGNAL

FOR -L- PROFILE SEE SHEET 12
FOR CURB & GUTTER AND ISLAND DETAILS, SEE SHEET 2B-3

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-5735	10

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER

DocuSigned by: 1087011E67F6435...

4/4/2019

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAREN HEFNER

DocuSigned by: BE3552047D81492...

4/4/2019

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MI Engineering, Pllc. — 1011 Schaub Drive Suite 100 Raleigh, 27606 NC License: P-0671

-L-

PI = 27+95.00
EL = 1,711.94'
VC = 1,525'
K = 142
DS > 55 MPH

(+)4.4000%

(-)6.3200%

BEGIN EXISTING VERTICAL CURVE
STA: 20+32.50
EL = 1,673.39'

EXISTING GROUND

PROPOSED GRADE

EXISTING GROUND

BEGIN GRADE
-L- STA: 27+80.00
EL = 1691.64'

1,700 1,690 1,680 1,670 1,660 1,650 1,640

20 21 22 23 24 25 26 27 28 29 30 31 32 33

FOR -L- PLAN SEE SHEET 4

-L-

LEFT DITCH

1,680 1,670 1,660 1,650 1,640 1,630 1,620 1,610 1,600 1,590

EXISTING GROUND

PROPOSED UNDERCUT FOR EMBANKMENT SLOPE

PI = 40+40.00
EL = 1,630.00

(-)5.0000%

PI = 41+00.00
EL = 1,625.00

PI = 42+60.00
EL = 1,619.35'
VC = 760'
K = 167
DS > 65 MPH

(-)6.3200%

(-)11.7600%

PROPOSED GRADE

FOR -L- PLAN SEE SHEET 5

33 34 35 36 37 38 39 40 41 42 43 44 45 46

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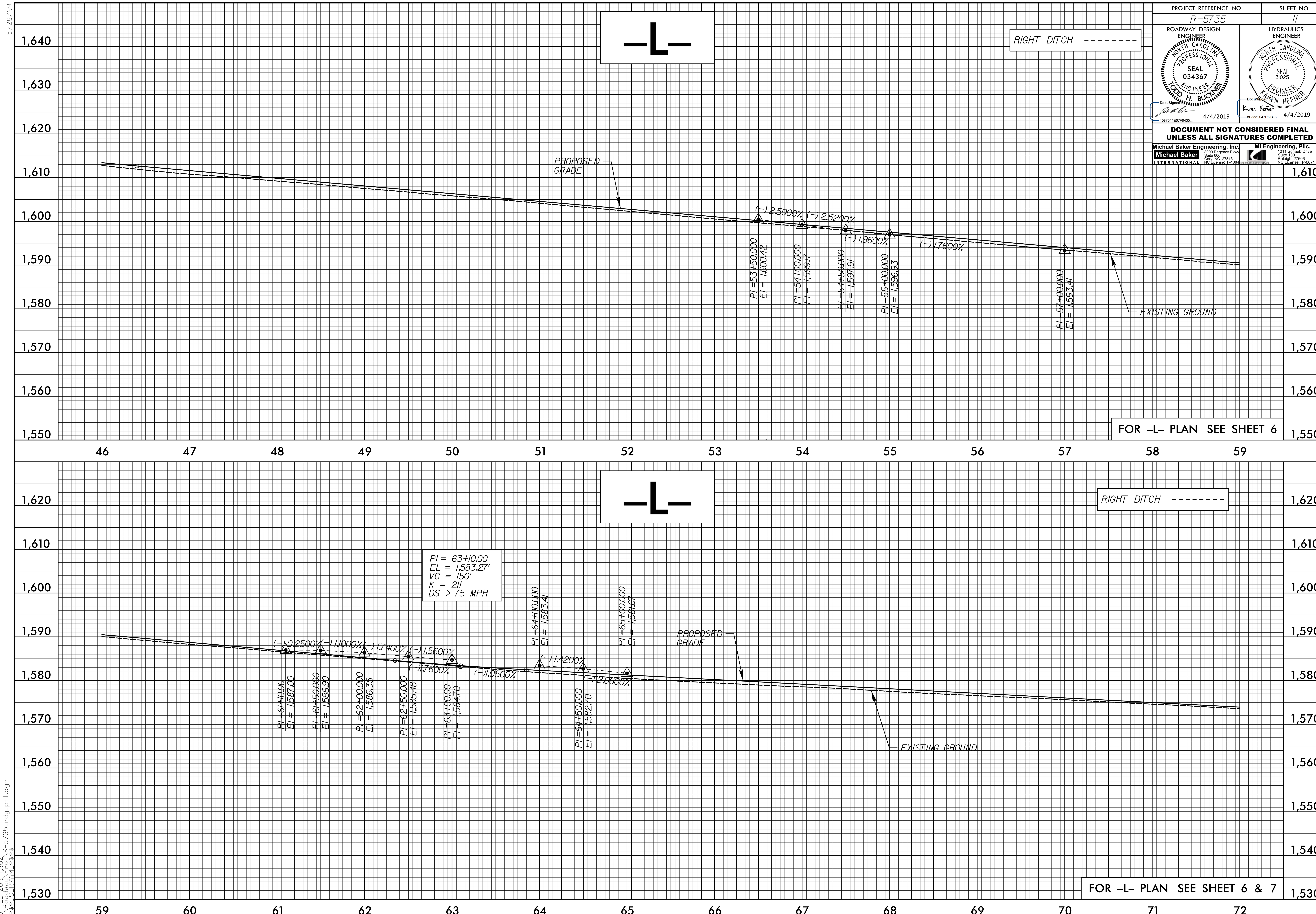

5/28/99

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-5735	12

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER TODD H. BUCKNER
DocuSigned by: 4/4/2019
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HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31025 ENGINEER KAITLYN HEFNER
DocuSigned by: 4/4/2019
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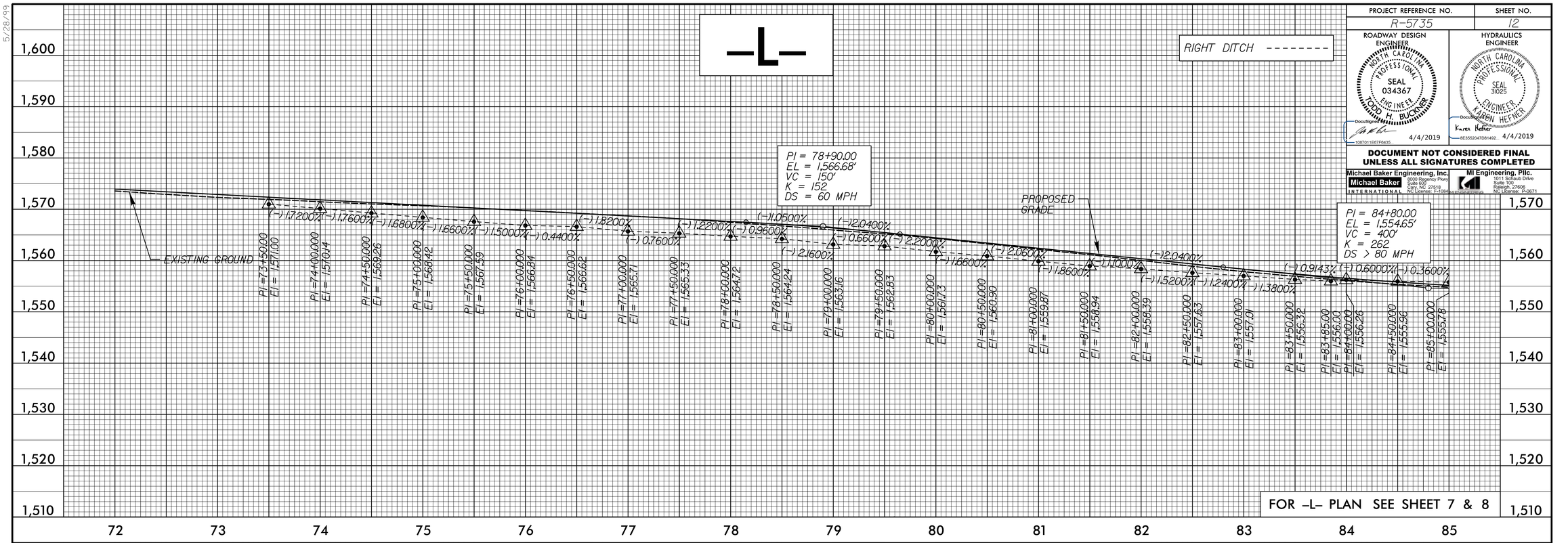

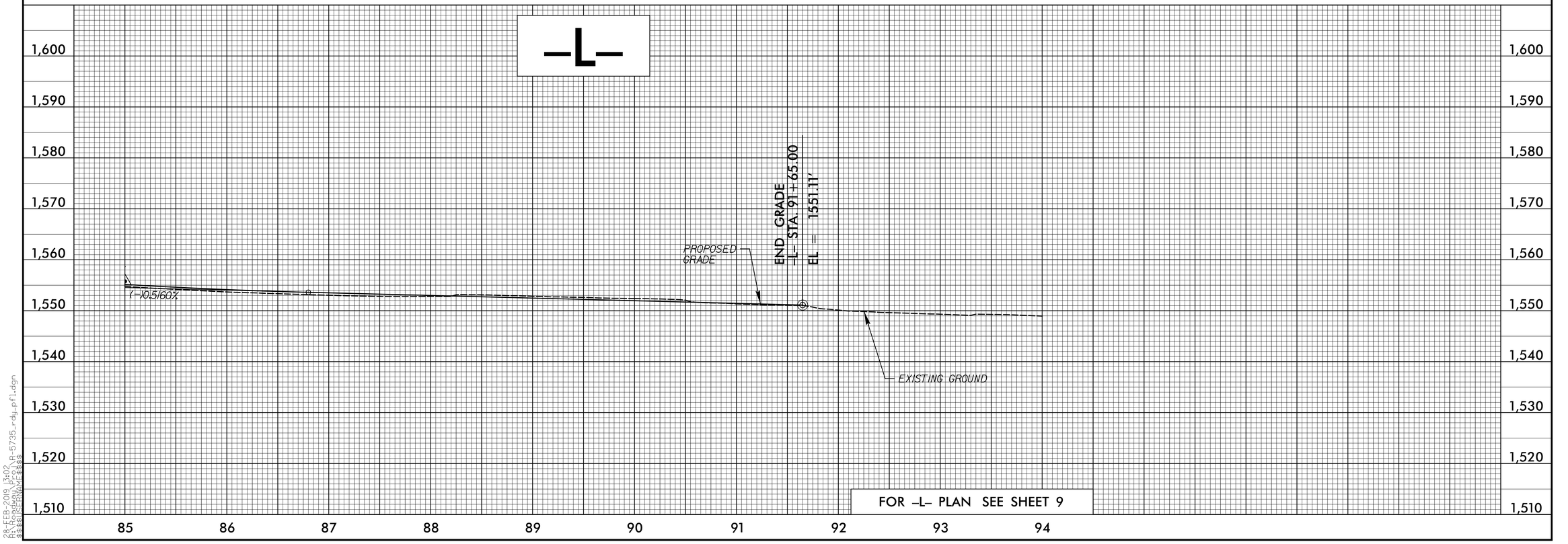

PROJECT REFERENCE NO.	SHEET NO.
R-5735	13

ROADWAY DESIGN ENGINEER — SEAL 034367 — TODD H. BUCKNER — 4/4/2019

HYDRAULICS ENGINEER — SEAL 31025 — KAREN HEFNER — 4/4/2019

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