DDC4

TIP PROJECT: U-3331

CONTRACT: C203458

See Sheet 1-A For Index of Sheets

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3331	1	

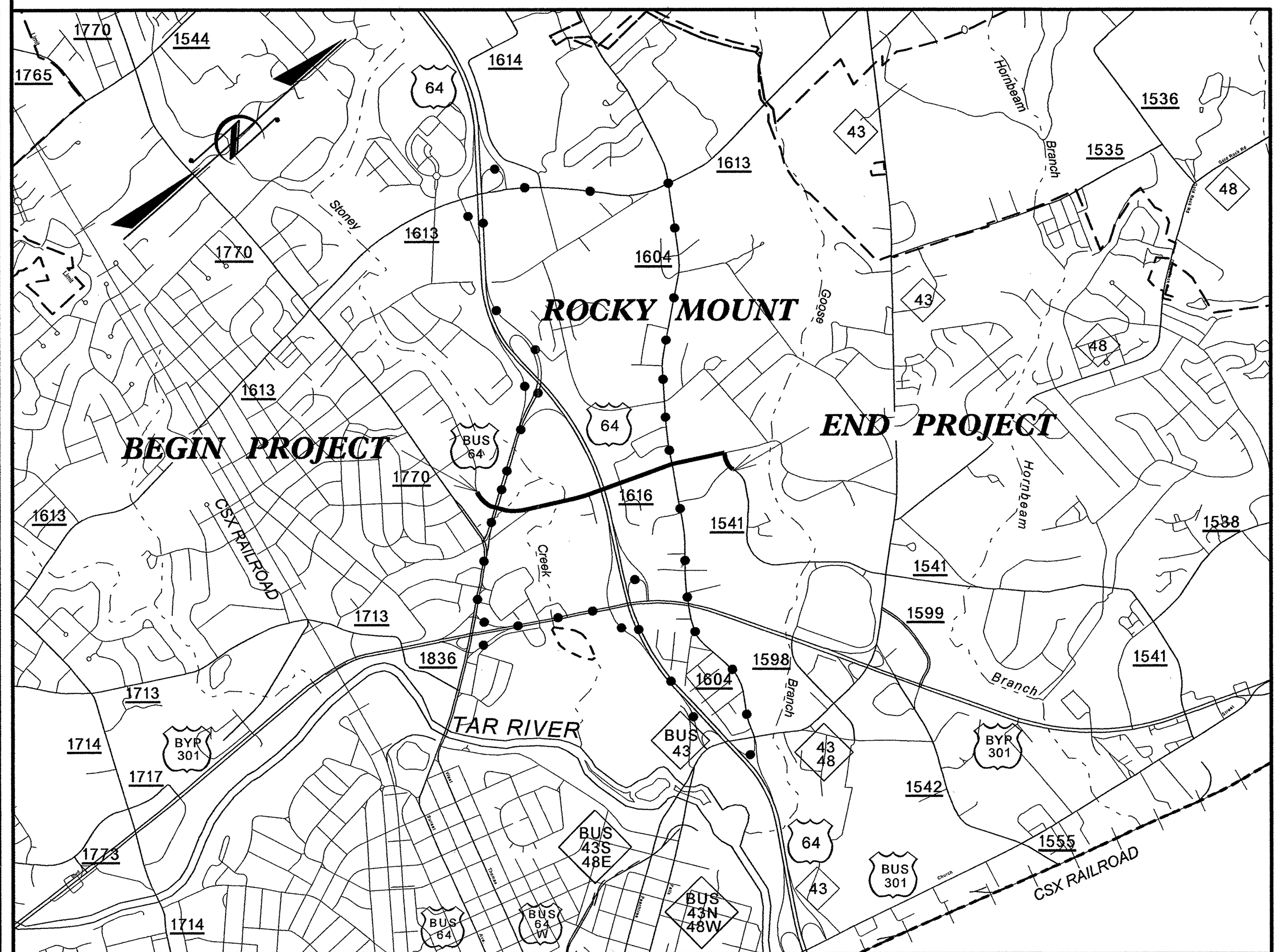
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34927.1.1	STP-1616(4)	PE
34927.2.2	STP-1616(4)	R/W&UTILITY
34927.3.FD2	STP-1616(7)	CONST

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NASH COUNTY

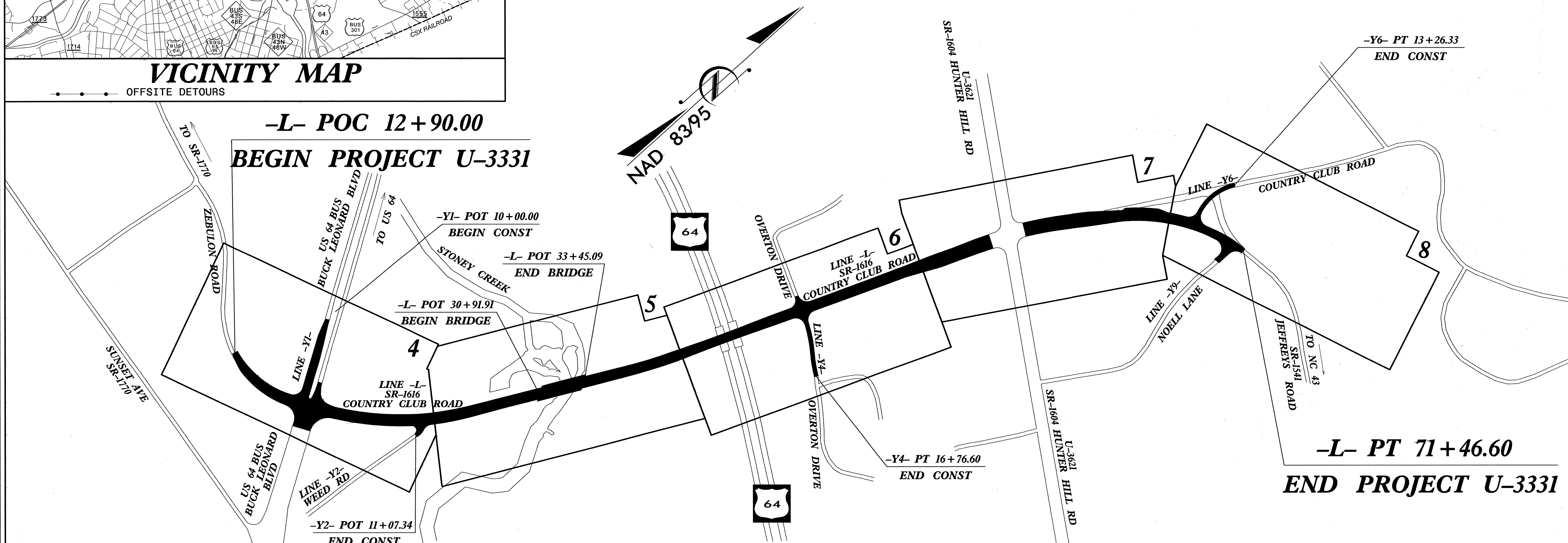
LOCATION: ROCKY MOUNT – SR-1616 (COUNTRY CLUB ROAD) FROM US 64 BUSINESS (BUCK LEONARD BLVD.) TO SR-1541 (JEFFREYS ROAD)

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



VICINITY MAP

•—•—• OFFSITE DETOURS



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 16800
ADT 2035 = 27200
K = 11 %
D = 55 %
T = 2 % *
V = 50 MPH

* TTST 1% DUAL 1%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3331 = 1.061 MILES
LENGTH STRUCTURE TIP PROJECT U-3331 = 0.048 MILES
TOTAL LENGTH TIP PROJECT U-3331 = 1.109 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS
Division 4 DDC
509 Ward Blvd., Wilson NC, 27895

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 28, 2013

LETTING DATE: JUNE 17, 2014

T.M. LITTLE, P.E.
PROJECT ENGINEER

J. C. CAULEY, PLS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 23090 ENGINEER AUDREY B. BURNETTE

SIGNATURE: P.E. 2014

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18537 ENGINEER TERRY P. PAGE

4/1/14

SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

31-MAR-2014 09:23
R:\Proj\u3331_ddc4_tsh.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3331	1-A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18537 ENGINEER JERRY W. PAGE
4/9/12

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2 THUR 2-B	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAIL
2-C	CONCRETE ISLAND DETAIL AND DRAINAGE DETAILS
2-D	DRY DETENTION BASIN DETAILS
2-E	OUTLET CONTROL STRUCTURE DETAIL
2-F	REBAR TRASH RACK DETAIL
2-G THRU 2-H	CURB RAMP DETAILS
2-I	DETAIL OF 2'-9"TO 2'-6"CURB AND GUTTER TRANSITION SECTION
2-J	DETAIL OF REINFORCED CONCRETE ENDWALL FOR 77"X52"CSPA
2-K	DETAIL FOR CONCRETE COLLAR FOR 77"X52"CSPA
2-L	STRUCTURE ANCHOR UNITS TYPE III
2-M	DETAIL FOR TEMPORARY CONTAINMENT OF CONTAMINATED SOIL
3-A THRU 3-E	SUMMARY OF DRAINAGE QUANTITIES
3-F	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, ASPHALT PAVEMENT REMOVAL SUMMARY, SUMMARY OF 48"CHAIN LINK FENCE, AND SUMMARY OF RIP RAP
3-G	PARCEL INDEX SHEET
4 THRU 9	PLAN & PROFILE SHEETS
TMP-1 THRU TMP- 26	TRANSPORTATION MANAGEMENT PLANS
PM-1 THRU PM-6	PAVEMENT MARKING PLANS
RF-1	REFORESTATION PLANS
EC-1 THRU EC-13	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-8	SIGNING PLANS
SIG-1 THRU SIG-30	SIGNAL PLANS
UC-1 THRU UC-11	UTILITIY CONSTRUCTION PLANS
UO-1 THRU UO-8	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-38	CROSS-SECTIONS
S-1 THRU S-36	STRUCTURE PLANS

GENERAL NOTES

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 07/30/12

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 III.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

SUBSURFACE DRAINS:

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

UNDERDRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' 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.

SUBSURFACE PLANS:

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

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CITY OF ROCKY MOUNT (WATER, GAS SANITARY SEWER, POWER), AT&T, CENTURYLINK, AND SUDDENLINK.

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

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

LIST OF STANDARDS DRAWINGS

2012 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, 2012 are applicable to this projectand by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.11	Reinforced Bridge Approach Fills - Sub Regional Tier
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
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
840.22	Frames and Wide 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
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.46	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
852.01	Concrete Islands
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.02	Guide for Rip Rap at Pipe Outlets

DOC4

12/05/11

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

PROJECT REFERENCE NO.	SHEET NO.
U-3331	1B

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (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
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?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 (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
U-3331	1-C
Location and Surveys	

SURVEY CONTROL SHEET U-3331

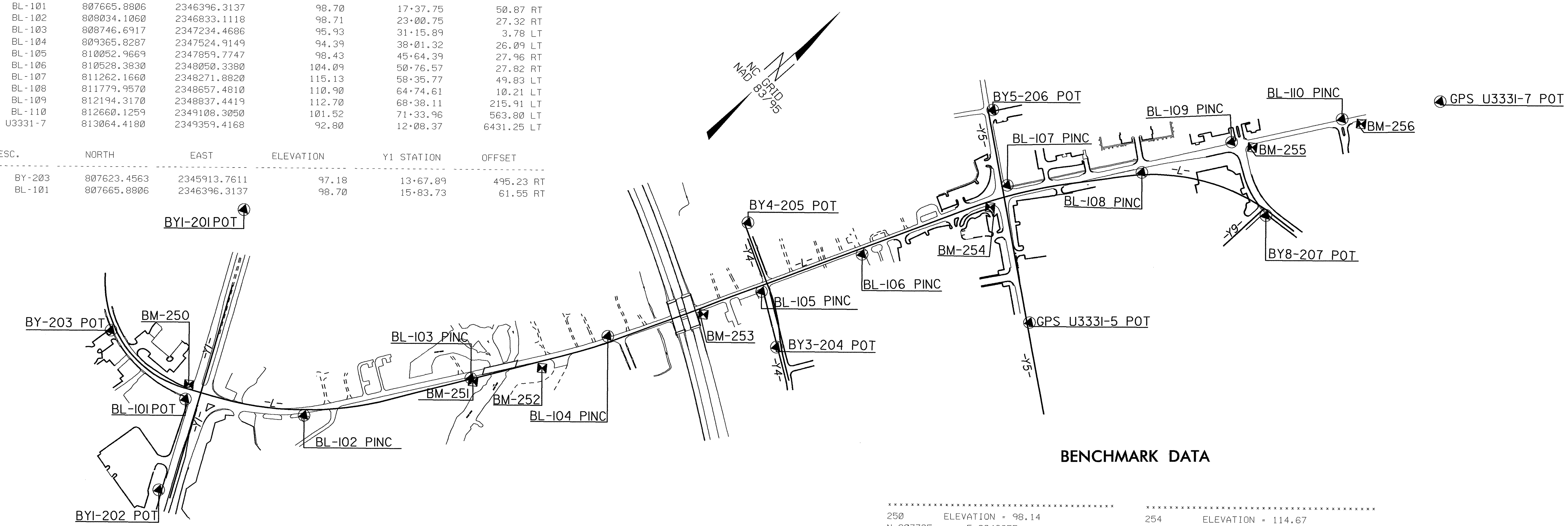
BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
101	BL-101	807665.8806	2346396.3137	98.70	17+37.75	50.87 RT
102	BL-102	808034.1060	2346833.1118	98.71	23+00.75	27.32 RT
103	BL-103	808746.6917	2347234.4686	95.93	31+15.89	3.78 LT
104	BL-104	809365.8287	2347524.9149	94.39	38+01.32	26.09 LT
105	BL-105	810052.9669	2347859.7747	98.43	45+64.39	27.96 RT
106	BL-106	810528.3830	2348050.3380	104.09	50+76.57	27.82 RT
107	BL-107	811262.1660	2348271.8820	115.13	58+35.77	49.83 LT
108	BL-108	811779.9570	2348657.4810	110.90	64+74.61	10.21 LT
109	BL-109	812194.3170	2348837.4419	112.70	68+38.11	215.91 LT
110	BL-110	812660.1259	2349108.3050	101.52	71+33.96	563.80 LT
7	GPS U3331-7	813064.4180	2349359.4168	92.80	12+08.37	6431.25 LT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
203	BY-203	807623.4563	2345913.7611	97.18	13+67.89	495.23 RT
A101	BL-101	807665.8806	2346396.3137	98.70	15+83.73	61.55 RT



BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
201	BY1-201	808477.7400	2345915.5253	98.28	OUTSIDE PROJECT LIMITS	
B101	BL-101	807665.8806	2346396.3137	98.70	15+83.73	61.55 RT
202	BY1-202	807280.0472	2346633.1950	97.93	20+36.48	61.05 RT

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
A105	BL-105	810052.9669	2347859.7747	98.43	13+26.51	38.71 RT
204	BY3-204	809929.5491	2348101.7087	98.97	16+05.85	22.29 RT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
205	BY4-205	810224.1925	2347573.5351	97.10	OUTSIDE PROJECT LIMITS	
B105	BL-105	810052.9669	2347859.7747	98.43	13+26.51	38.71 RT

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
206	BY5-206	811452.7880	2347957.3503	117.70	15+90.05	22.39 LT
A107	BL-107	811262.1660	2348271.8820	115.13	19+57.83	25.51 LT
5	GPS U3331-5	810904.2860	2348825.4650	107.84	26+16.88	11.95 LT

BY8

POINT	DESC.	NORTH	EAST	ELEVATION	Y9 STATION	OFFSET
A109	BL-109	812194.3170	2348837.4419	112.70	OUTSIDE PROJECT LIMITS	
207	BY8-207	812081.9523	2349205.7608	110.57	10+15.47	31.62 LT

BENCHMARK DATA

250 ELEVATION = 98.14
N 807725 E 2346355
L STATION 17+33.00 21 LEFT
BM 250 RR SPIKE IN UTILITY POLE

251 ELEVATION = 96.24
N 808743 E 2347253
L STATION 31+21.00 15 RIGHT
BM 251 RR SPIKE IN BASE OF 15" SWEET GUM

252 ELEVATION = 97.31
N 809031 E 2347426
L STATION 34+57.00 33 RIGHT
BM 252 RR SPIKE IN BASE OF 36" PINE

253 ELEVATION = 96.18
N 809775 E 2347752
L STATION 42+66.00 32 RIGHT
BM 253 RR SPIKE IN UTILITY POLE

254 ELEVATION = 114.67
N 811130 E 2348294
L STATION 57+27.00 27 RIGHT
BM 254 RR SPIKE IN UTILITY POLE

255 ELEVATION = 111.03
N 812250 E 2348922
L STATION 69+20.00 228 LEFT
BM 255 RR SPIKE IN UTILITY POLE

256 ELEVATION = 100.55
N 812711 E 2349186
L STATION 72+12.00 600 LEFT
BM 256 RR SPIKE IN UTILITY POLE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "GPS U4019-10"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 815621.325(ft) EASTING: 2343015.3240(ft)
ELEVATION: 154.04(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99995099
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS U4019-10" TO -L- STATION 10+00 IS
S 18° 52' 41.98 8282.0568
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   U3331_LS_CONTROL.TXT

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

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

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

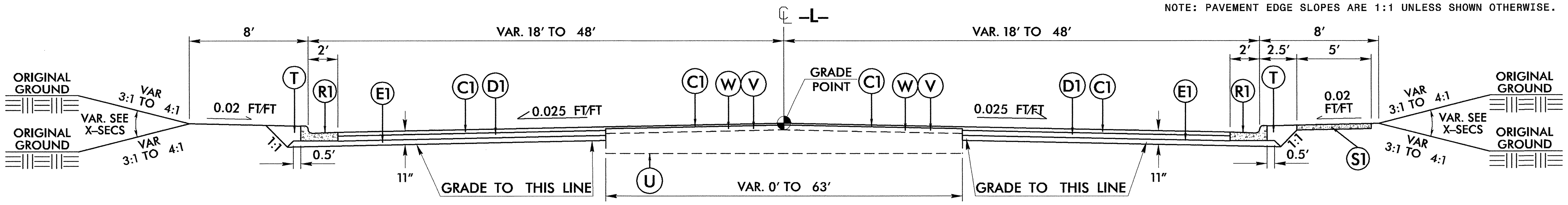
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18537 JERRY P. PAGE
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22033 CLARK S. MORRISON
4/2/14

PAVEMENT SCHEDULE

FINAL PAVEMENT DESIGN

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD. IN EACH OF TWO LAYERS.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 5.5" IN DEPTH OR LESS THAN 3" IN DEPTH.	R4	5" MONOLITHIC CONCRETE ISLAND
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD.	J	PROP. 6" AGGREGATE BASE COURSE.	S1	4" CONCRETE SIDEWALK.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" DEPTH.	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.	T	EARTH MATERIAL.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R1	2'-6" CONCRETE CURB AND GUTTER.	U	EXISTING PAVEMENT.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.	R2	1'-6" CONCRETE CURB AND GUTTER.	V	VARIABLE DEPTH MILLING (0-1.5")
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.	R3	2'-9" CONCRETE CURB AND GUTTER.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

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



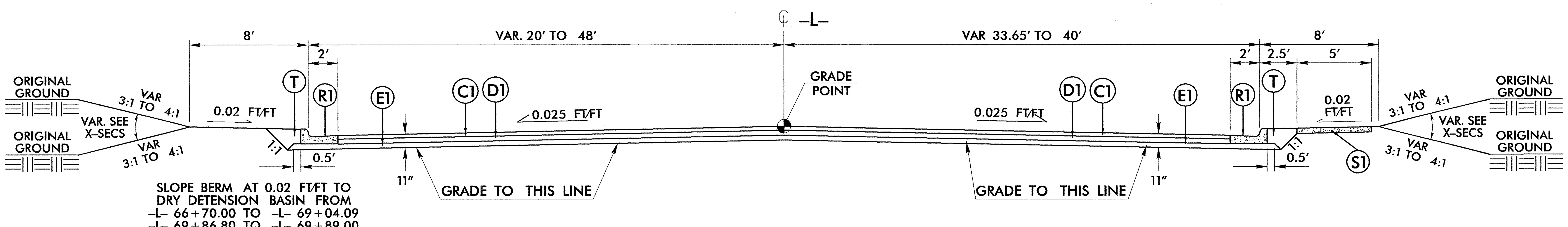
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA 12+90 TO -L- STA 17+45
-L- STA 18+45 TO -L- STA 22+75
-L- STA 38+97.05 TO -L- STA 49+16.22
-L- STA 53+38.26 TO -L- STA 55+04.39
-L- STA 60+30 TO -L- STA 65+56.13
-L- STA 70+20.06 TO -L- STA 71+46.60

NOTE ADD SIDEWALK LT SIDE
-L- STA 60+30 TO -L- STA 68+10

5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
SEE PLANS FOR LOCATIONS
-L- STA 14+50.00 TO -L- STA 16+88
-L- STA 18+92.00 TO -L- STA 22+75
-L- STA 39+55.85 TO -L- STA 44+30
-L- STA 46+66.22 TO -L- STA 49+16.22
-L- STA 53+38.26 TO -L- STA 55+90
-L- STA 60+05 TO -L- STA 65+56.13

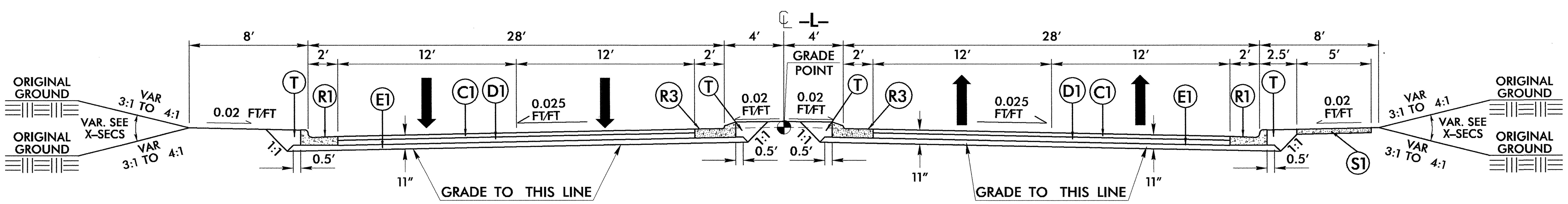


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA 22+75 TO -L- STA 25+16.29
-L- STA 28+00 TO -L- STA 30+91.91
-L- STA 33+45.09 TO -L- STA 35+00
-L- STA 65+56.13 TO -L- STA 69+04.09
-L- STA 69+86.80 TO -L- STA 70+20.06

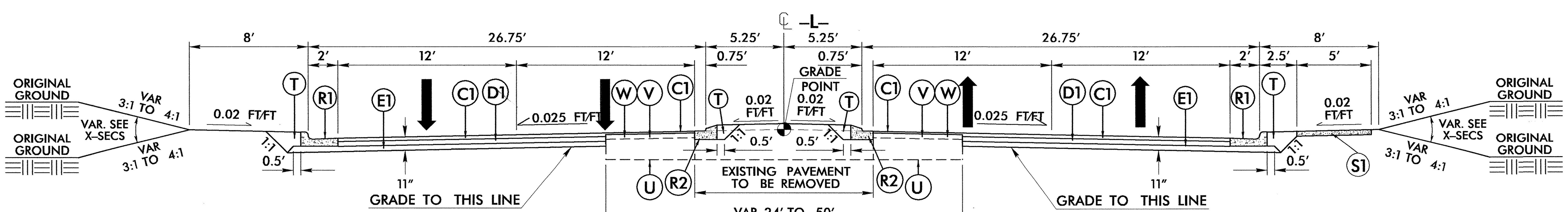
5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
SEE PLANS FOR LOCATIONS
-L- STA 22+75 TO -L- STA 25+16.98
-L- STA 65+56.13 TO -L- STA 67+86.59



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-L- STA 25+16.29 TO -L- STA 28+00.00
-L- STA 35+00.00 TO -L- STA 38+97.05

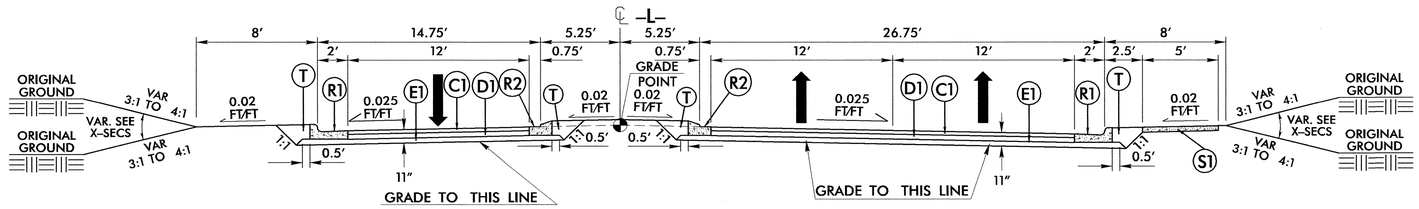


TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-L- STA 49+16.22 TO -L- STA 53+38.26

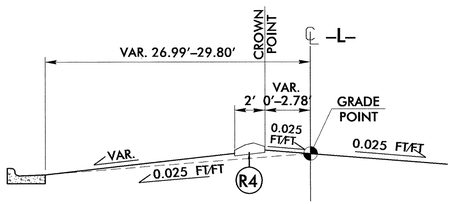
01-APR-2014 13:51
R:\Proj\u3331_ddc4_typ.dgn
$$$$USERNAME$$$$



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

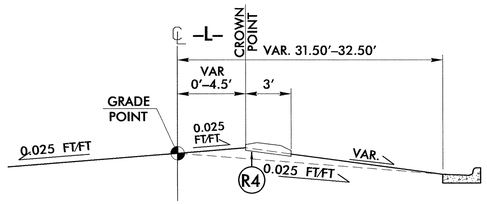
–L– STA 69+04.09 TO –L– STA 69+86.80



PARTIAL TYPICAL SECTION NO. 6

USE PARTIAL TYPICAL SECTION NO. 6 WITH TYPICAL SECTIONS 1

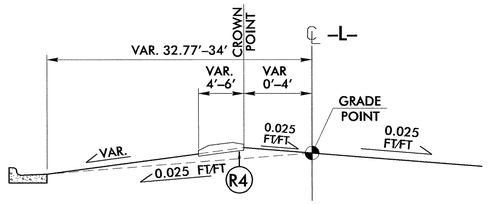
–L– STA 42+89.27 TO –L– STA 44+30.00



PARTIAL TYPICAL SECTION NO. 6A

USE PARTIAL TYPICAL SECTION NO. 6A WITH TYPICAL SECTIONS 1

–L– STA 46+66.22 TO –L– STA 49+16.22

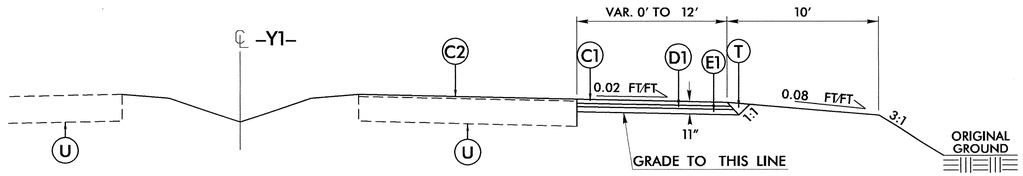


PARTIAL TYPICAL SECTION NO. 6B

USE PARTIAL TYPICAL SECTION NO. 6B WITH TYPICAL SECTIONS 1

–L– STA 53+38.26 TO –L– STA 57+20.00

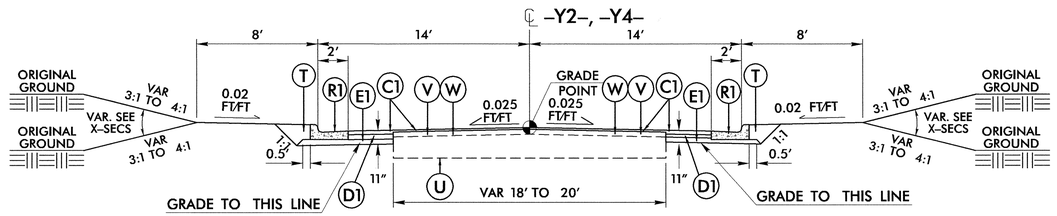
PARTIAL TYPICALS SHOWING SHIFTED CROWN POINTS



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

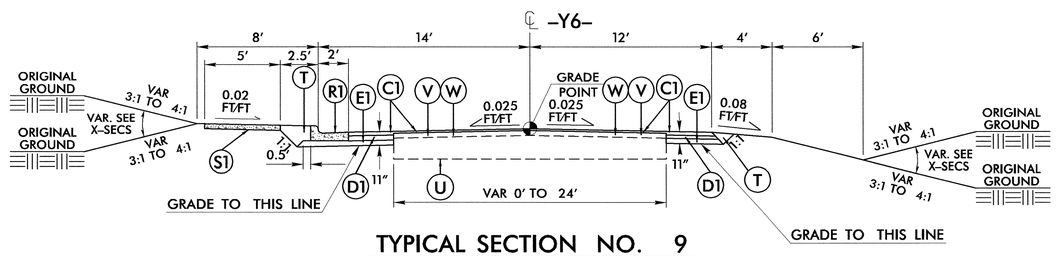
–Y1– STA 10+52.37 TO –Y1– 14+50



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

–Y2– STA 10+35 TO –Y2– 11+07.34
–Y4– STA 12+17.14 TO –Y4– STA 12+69
–Y4– STA 13+28 TO –Y4– STA 16+76.60



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

–Y6– STA 10+18 TO –Y6– STA 12+68

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18537 ENGINEER JERRY P. PAGE

4/1/14

PAVEMENT DESIGN ENGINEER

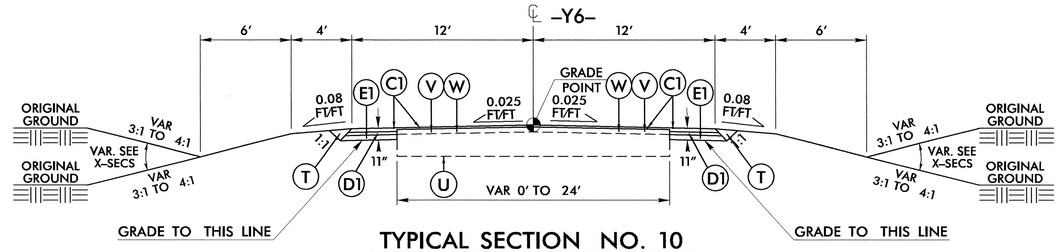
NORTH CAROLINA PROFESSIONAL SEAL 22866 ENGINEER CLARK M. MORRISON

4/2/14

PAVEMENT SCHEDULE

FINAL PAVEMENT DESIGN

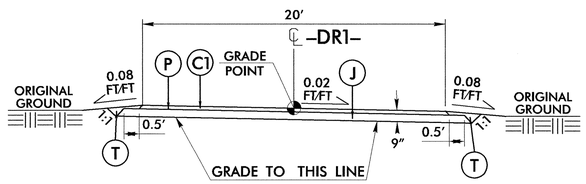
C1	3″ S9.5B
C2	1½″ S9.5B
C3	VAR. S9.5B
D1	4″ I19.0B
D2	VAR. I19.0B
E1	4″ B25.0B
E2	VAR. B25.0B
J	6″ ABC
P	PRIME COAT
R1	2′-6″ C & G
R2	1′-6″ C & G
R3	2′-9″ C & G
R4	ISLAND
S1	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10

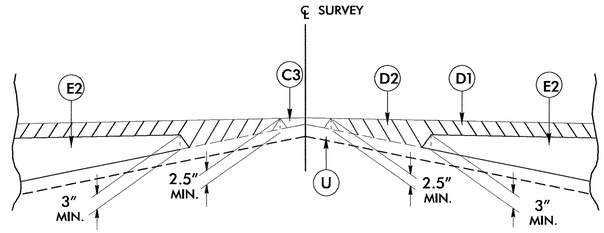
–Y6– STA 12+68 TO –Y6– STA 13+26.33



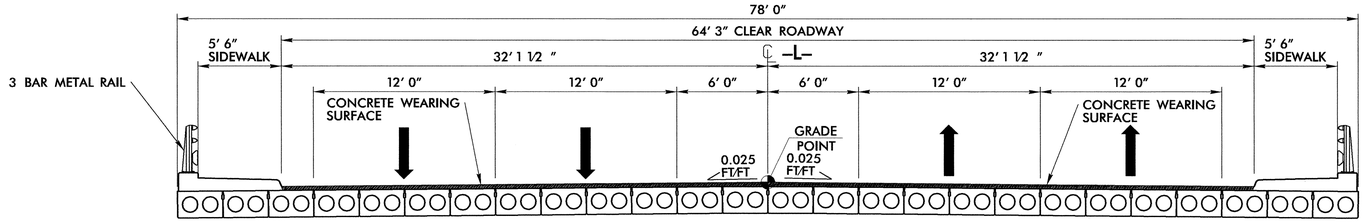
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

–L– STA 34+66 LT TO –L– STA 36+16 LT
(–DR1– STA 10+00 TO –DR1– STA 11+55)



Detail Showing Method of Wedging



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12

–L– STA 30+91.91 TO –L– STA 33+45.09

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2-B

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18537 ENGINEER JERRY P. PAGE
4/2/14

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22886 ENGINEER CLARK S. MORRISON
4/2/14

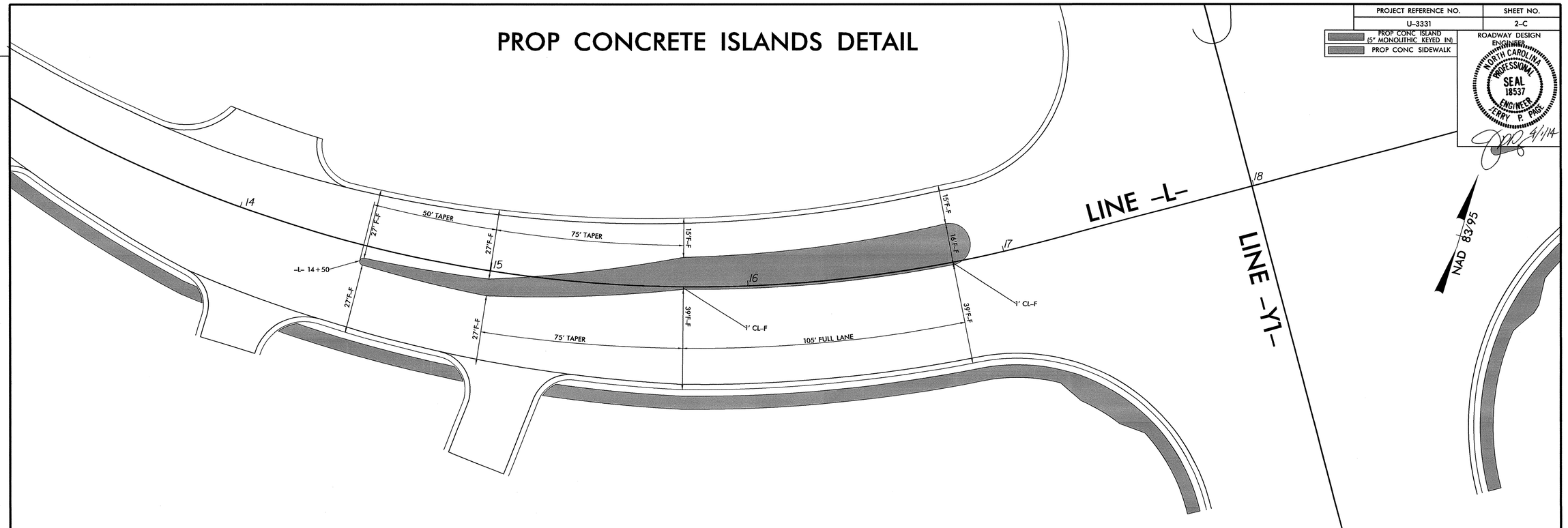
PAVEMENT SCHEDULE

FINAL PAVEMENT DESIGN

C1	3″ S9.5B
C2	1½″ S9.5B
C3	VAR. S9.5B
D1	4″ I19.0B
D2	VAR. I19.0B
E1	4″ B25.0B
E2	VAR. B25.0B
J	6″ ABC
P	PRIME COAT
R1	2′-6″ C & G
R2	1′-6″ C & G
R3	2′-9″ C & G
R4	ISLAND
S1	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

DDC4

PROP CONCRETE ISLANDS DETAIL



PROJECT REFERENCE NO.	SHEET NO.
U-3331	2-C

PROP CONC ISLAND (5" MONOLITHIC KEYED IN)

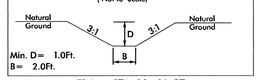
PROP CONC SIDEWALK

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18537 ENGINEER JERRY P PAGE
3/1/14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23090 ENGINEER AUDREY B. BURNETTE
3/31/2014

DRAINAGE DETAILS

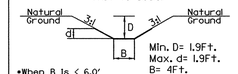
DETAIL A
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.0Ft.
B= 2.0Ft.

FROM STA. 38+16 RT
LENGTH = 300'
SLOPE = 0.3%
DDE = 340CY

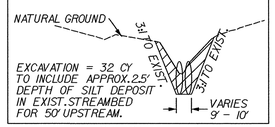
DETAIL B
DITCH CLEAN-OUT
(Not to Scale)



Min. D= 1.9Ft.
Max. d= 1.9Ft.
B= 4Ft.
*When B Is < 6.0'
Type of Liner= EXCELSIOR MATTING

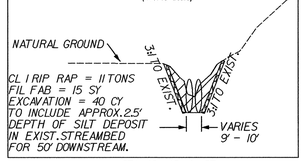
STA. 43+03 -L- RT
LENGTH=120'
SLOPE=0.5%
DDE=40CY

DETAIL C
INLET CHANNEL IMPROVEMENT
(Not to Scale)



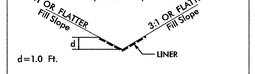
STA. 40+45 -L- LT

DETAIL D
OUTLET CHANNEL IMPROVEMENT
(Not to Scale)



STA. 40+45 -L- RT

DETAIL E
TOE PROTECTION
(Not to Scale)



Type of Liner= EXCELSIOR MATTING

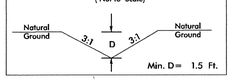
FROM STA. 62+39 TO STA. 64+49 -L-

DETAIL F
STANDARD BASE DITCH
(Not to Scale)

Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3Ft. to 5Ft. (match exist.)
*When B Is < 6.0'
Type of Liner= Concrete

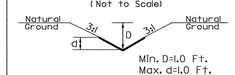
-Y6- STA. 15+28 TO 15+84 RT
LENGTH = 56'
SLOPE = 0.89%
CONC PAVED DITCH = 90SY
DDE = 10CY

DETAIL G
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 64+95 TO STA. 66+50 LT
DDE = 110CY

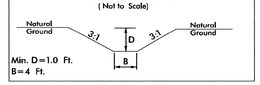
DETAIL H
STANDARD 'V' DITCH
(Not to Scale)



Type of Liner= EXCELSIOR MATTING

FROM STA. 66+50 TO STA. 67+50 LT

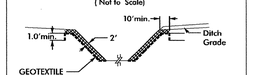
DETAIL I
STANDARD BASE DITCH
(Not to Scale)



Min. D=1.0 Ft.
B=4 Ft.

STA. 62+70 RT
LENGTH=430'
SLOPE
345' @ 0.3488%
85' @ 0.5206%
DDE=710CY

DETAIL J
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= GEOTEXTILE FABRIC
CL I Rip-Rap

STA. 38+16 RT
10' ALONG EXIST. STREAM BANKS
15 sy GEOTEXTILE FABRIC
14 tons CL I Rip-Rap

STA. 61+03 RT
10' ALONG EXIST. STREAM BANKS
15 sy GEOTEXTILE FABRIC
14 tons CL I Rip-Rap

DETAIL M
STREAM BANK STABILIZATION
(Not to Scale)

Type of Liner= CL II Rip-Rap, WGeotextile Fabric
South Bank: 116tons CL II Rip-Rap, 123sy Geotextile Fabric
North Bank: 64tons CL II Rip-Rap, 68sy Geotextile Fabric

STA. 32+12
STA. 33+15

REVISIONS

3/12/2014
R:\Hydraulics\CADD\PSH\U3331_DDC4_ISLAND_DETAIL.dgn
aburnette

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2D
R/W SHEET NO.	

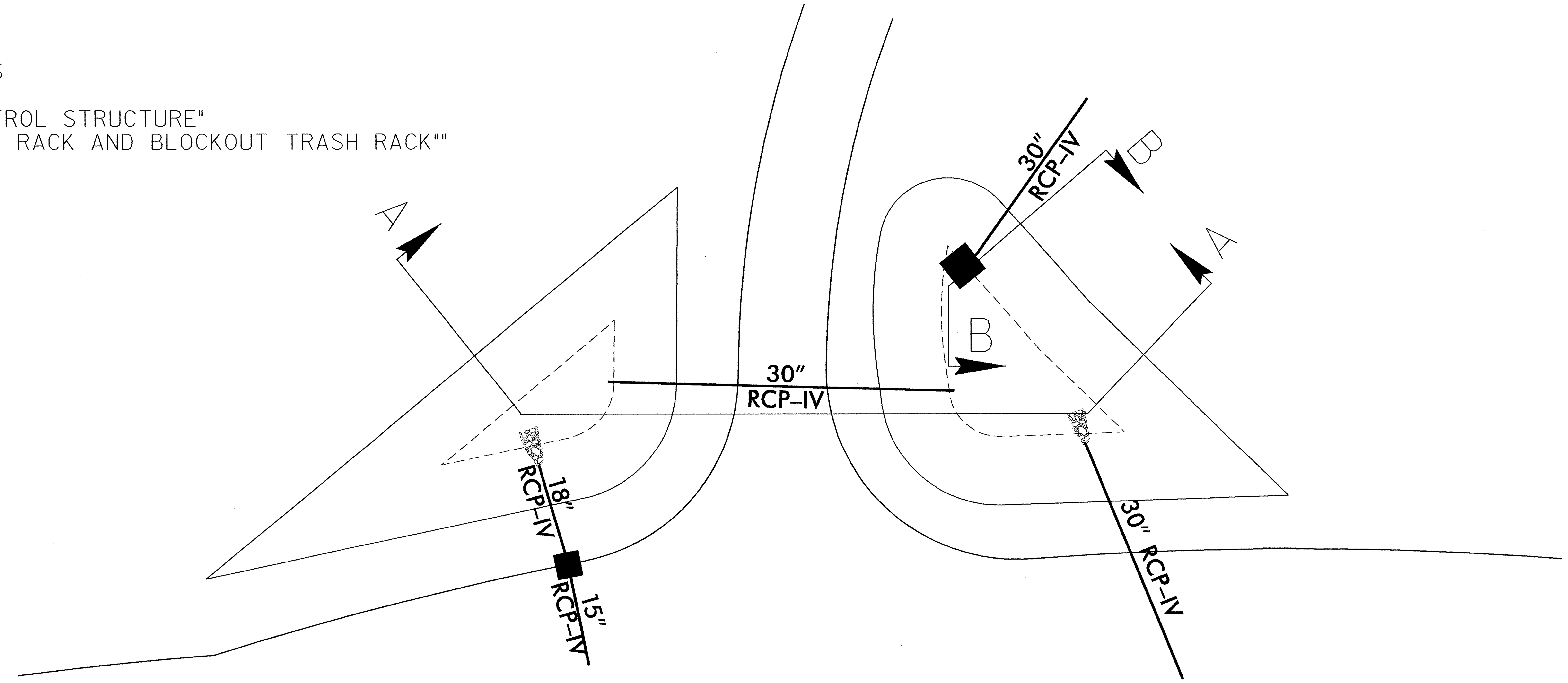
HYDRAULICS ENGINEER

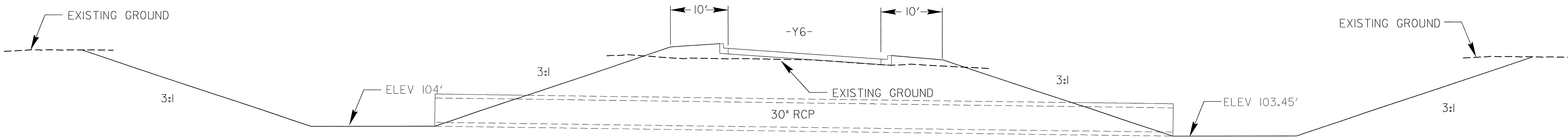
NORTH CAROLINA PROFESSIONAL SEAL 23090 ENGINEER AUDREY B. BURNETTE 3/31/2014

NOT TO SCALE

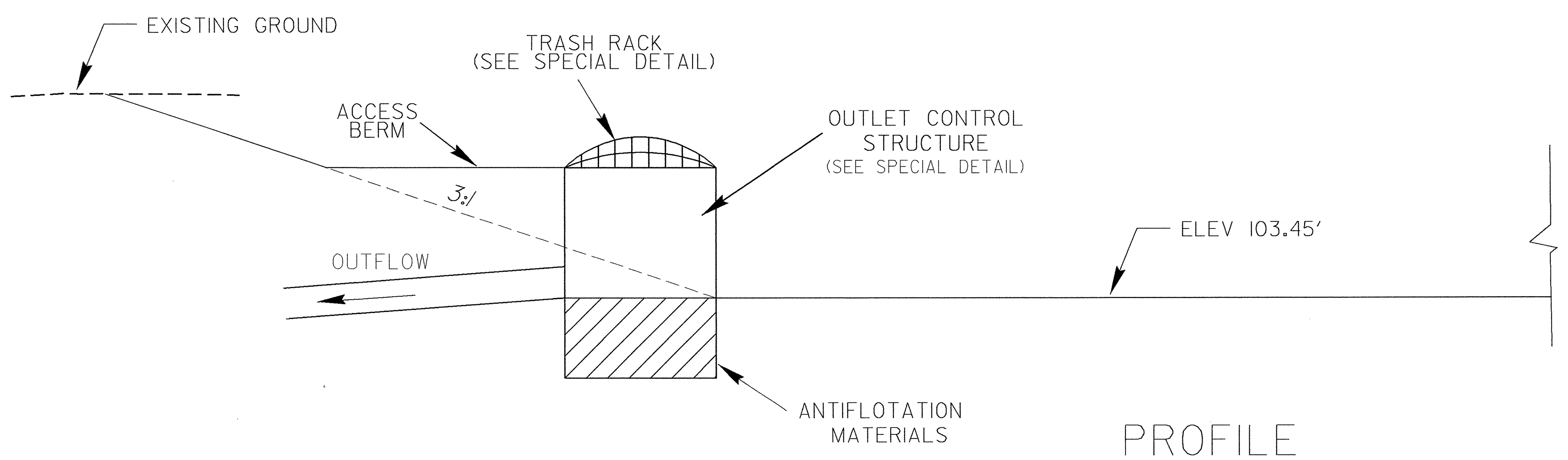
REFERENCED SPECIAL DETAILS

SEE SHEET 2E "OUTLET CONTROL STRUCTURE"
SEE SHEET 2F "REBAR TRASH RACK AND BLOCKOUT TRASH RACK""





PROFILE
SECTION A-A



PROFILE
SECTION B-B

DRY DETENTION
BASIN DETAILS

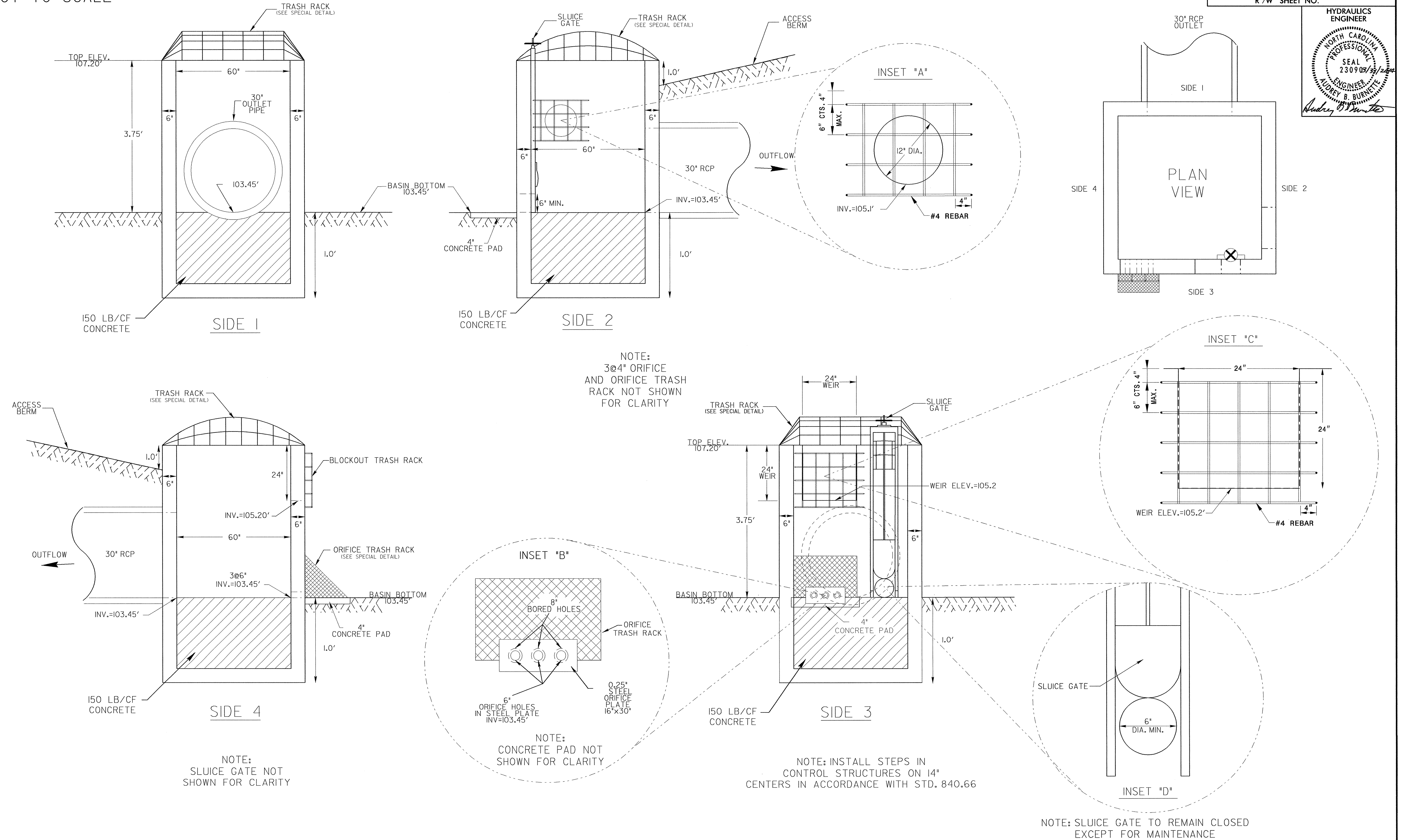
PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2E
R/W SHEET NO.	

NOT TO SCALE



OUTLET CONTROL STRUCTURE

BASIN DETAILS

PLANS PREPARED BY :

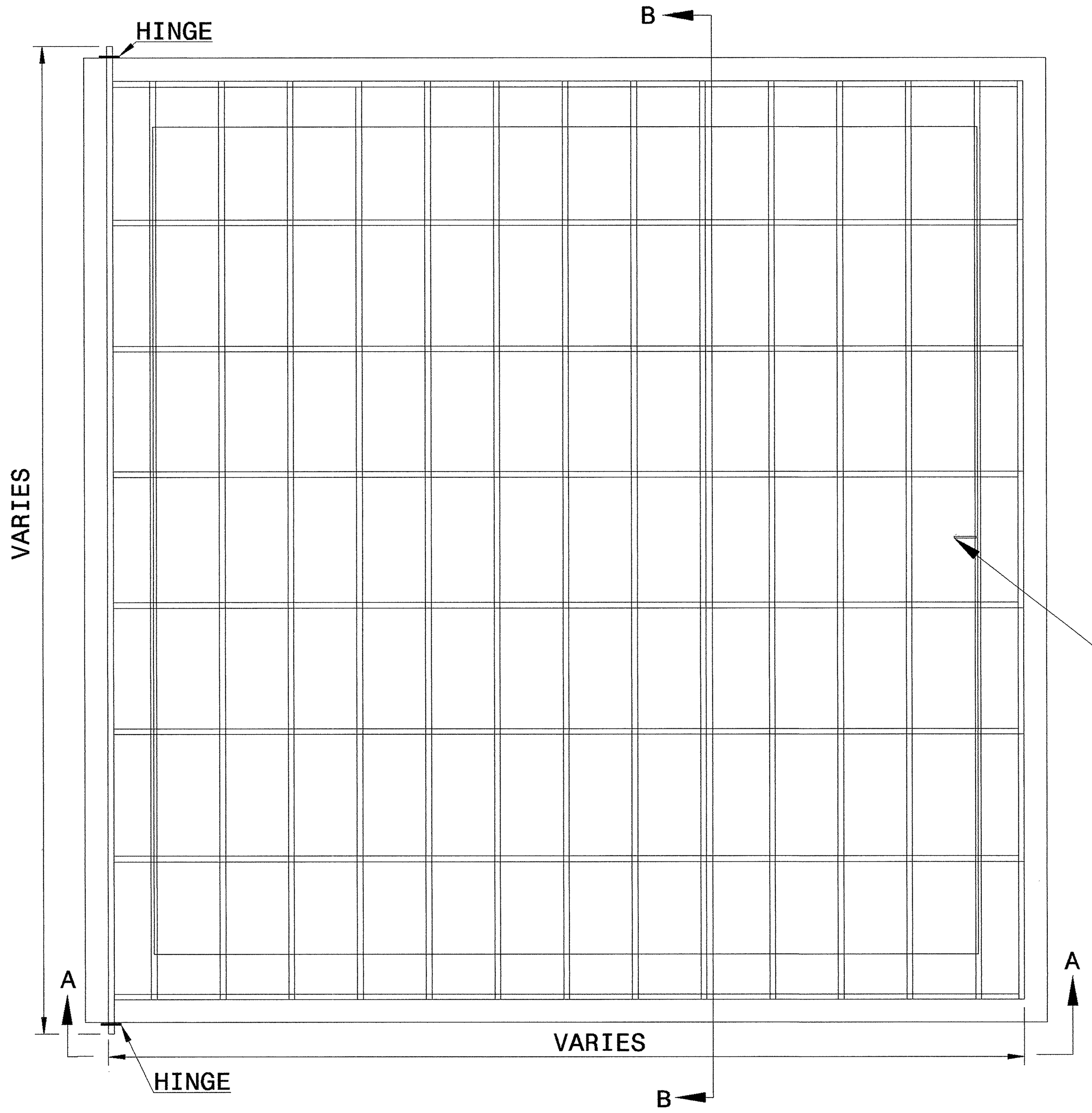
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2F
R/W SHEET NO.	

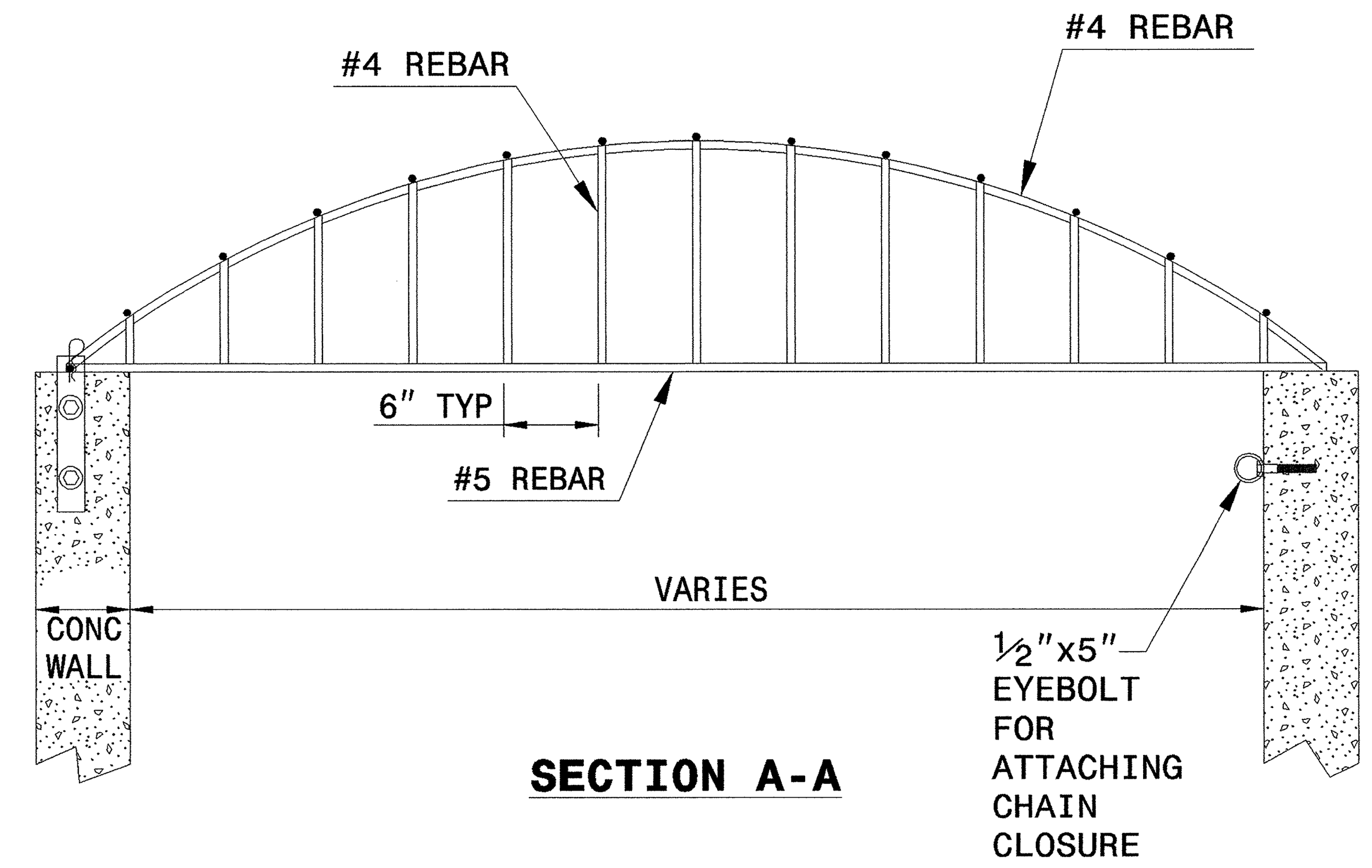
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 23090 ENGINEER AUDREY B. BURNETTE 3/31/2014

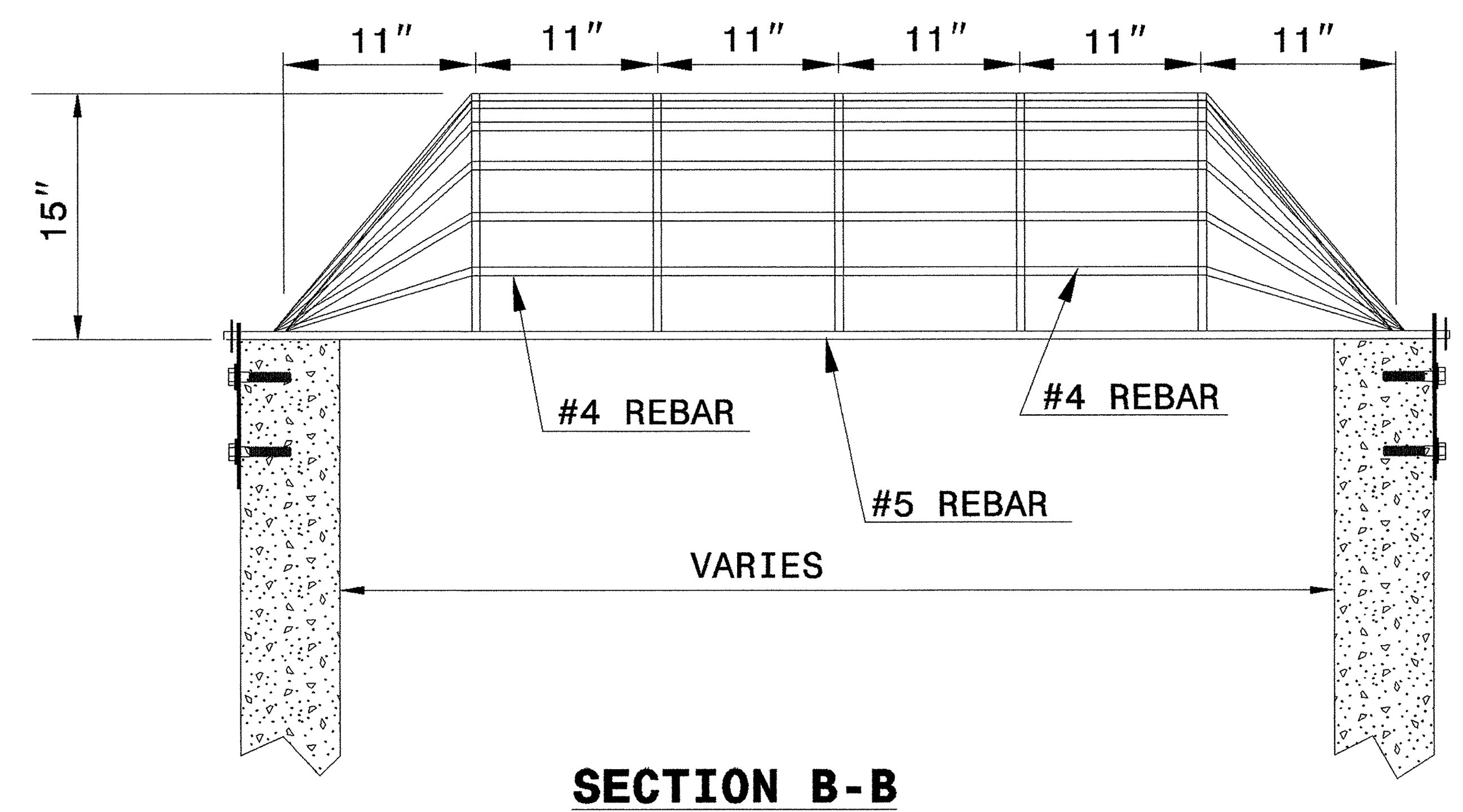
NOT TO SCALE



PLAN



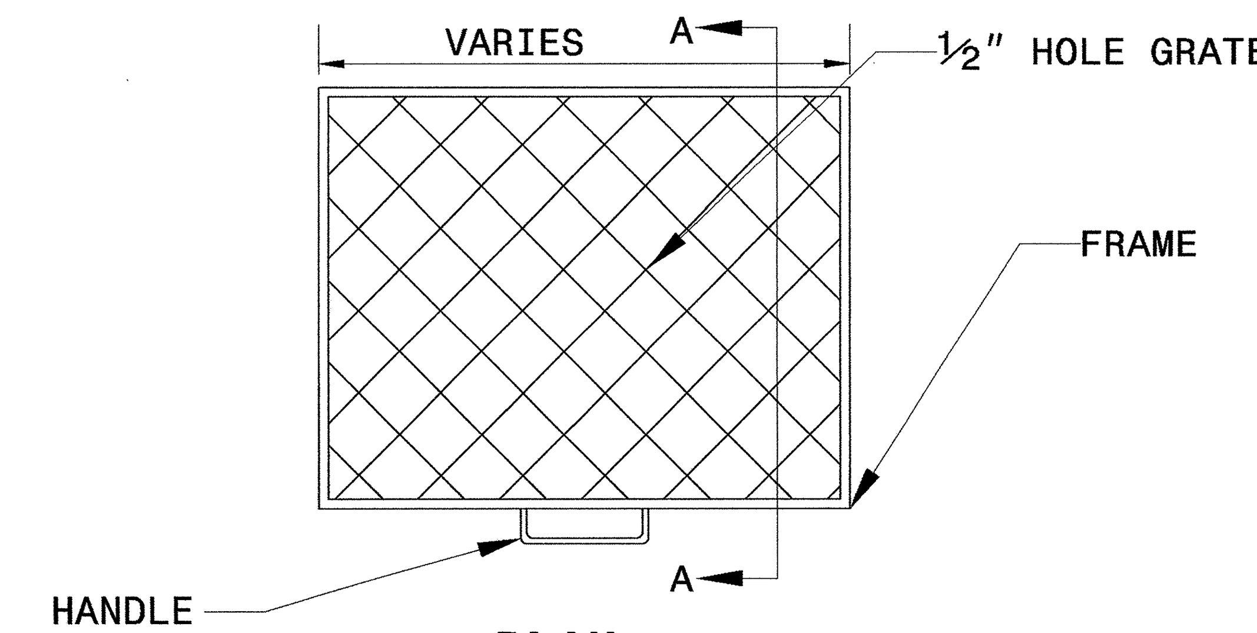
SECTION A-A



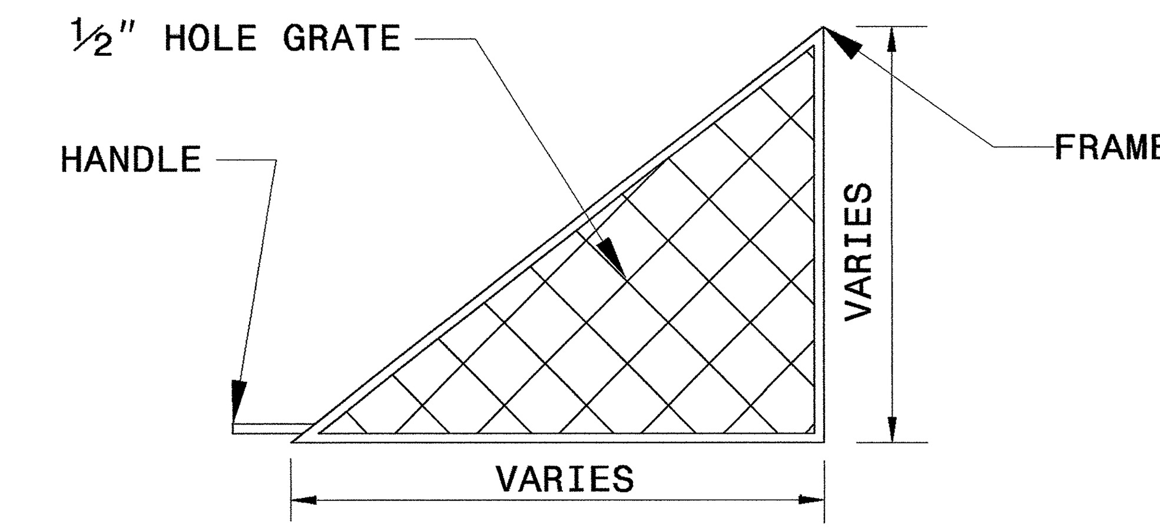
SECTION B-B

RISER TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A ¼" BEAD.
2. IF BOLTS ARE CHEMICALLY ANCHORED, REFER TO SECTION 420-13, ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, JANUARY 2012, FOR ANCHORING PROCEDURE. FIELD TESTING IS NOT REQUIRED.
3. EYEBOLT FOR CHAIN CLOSURE SHALL BE INSTALLED BY THE SAME METHOD AS THE HINGE PLATE BOLTS.
4. RACK AND HARDWARE SHALL BE REBAR AND GALVANIZED IN ACCORDANCE WITH ASTMA 153.

REBAR TRASH RACK



PLAN



SECTION A-A

ORFICE TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A ¼" BEAD.
2. IF BOLTS ARE CHEMICALLY ANCHORED, REFER TO SECTION 420-13, ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, JANUARY 2012, FOR ANCHORING PROCEDURE. FIELD TESTING IS NOT REQUIRED.
3. REMOVEABLE ORFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTMA 153.

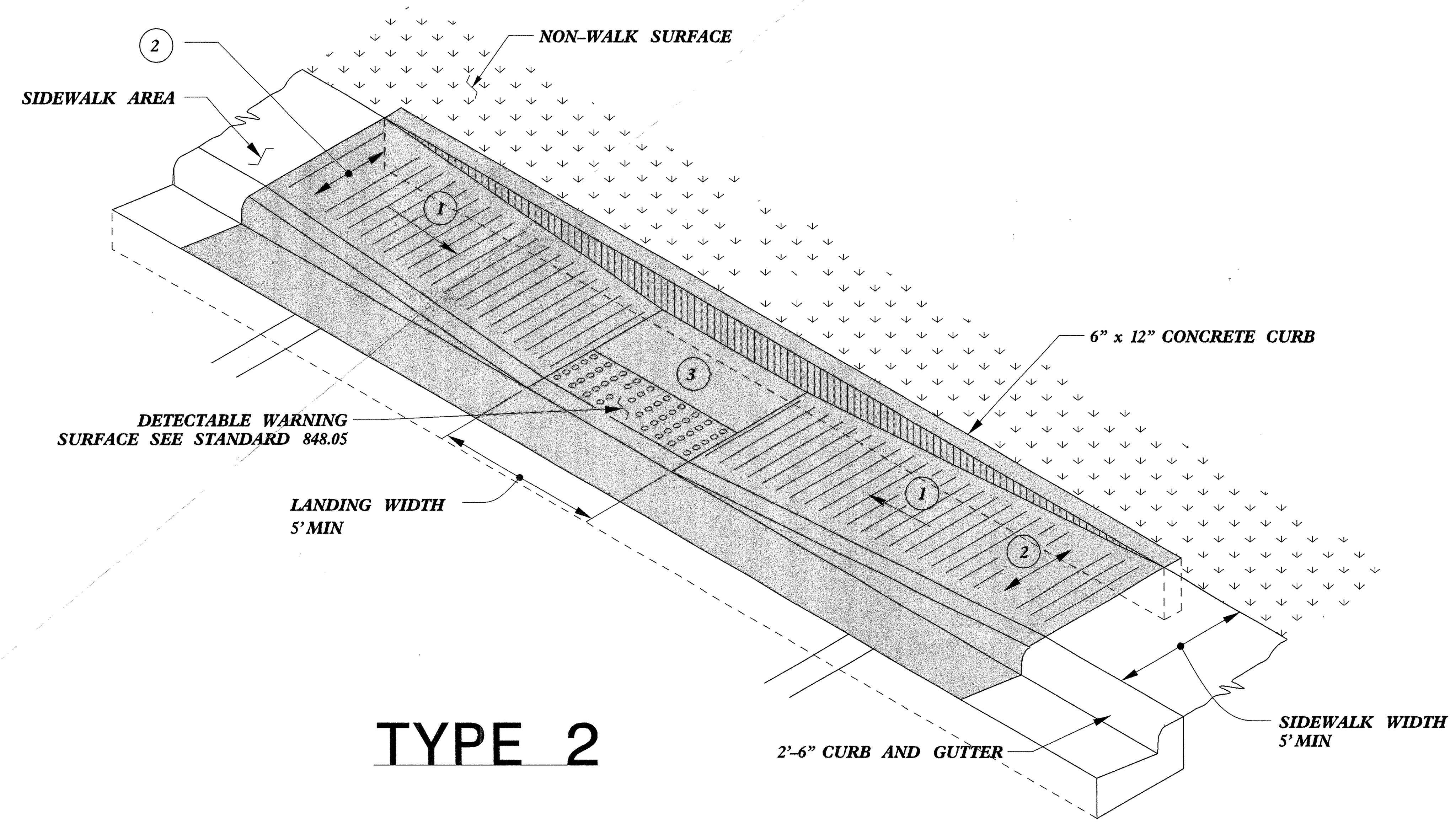
BLOCKOUT TRASH RACK

REBAR TRASH RACK AND BLOCKOUT TRASH RACK
DETAILS

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2-G

5/14/99



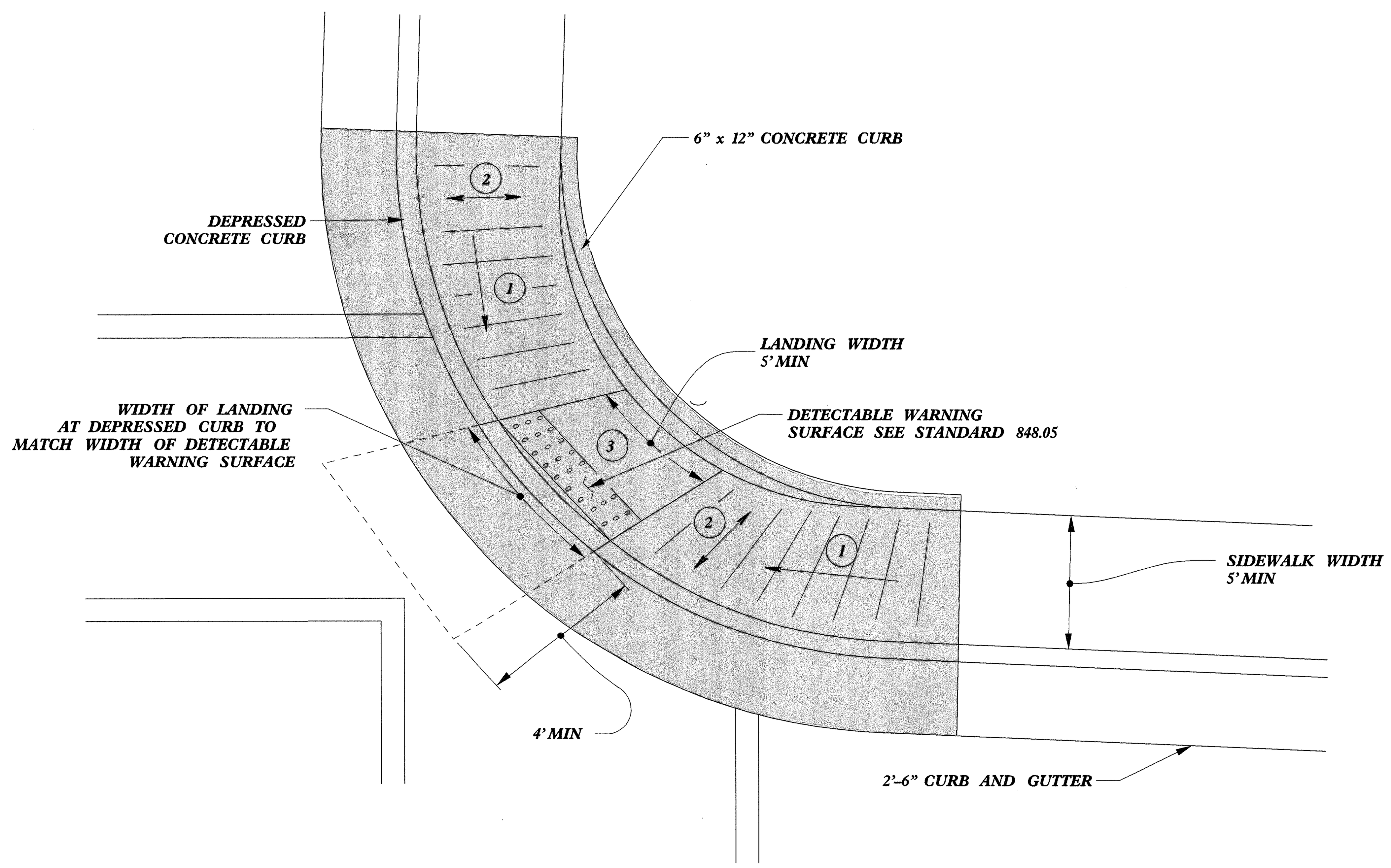
TYPE 2

PAY LIMITS FOR 1 CURB RAMP

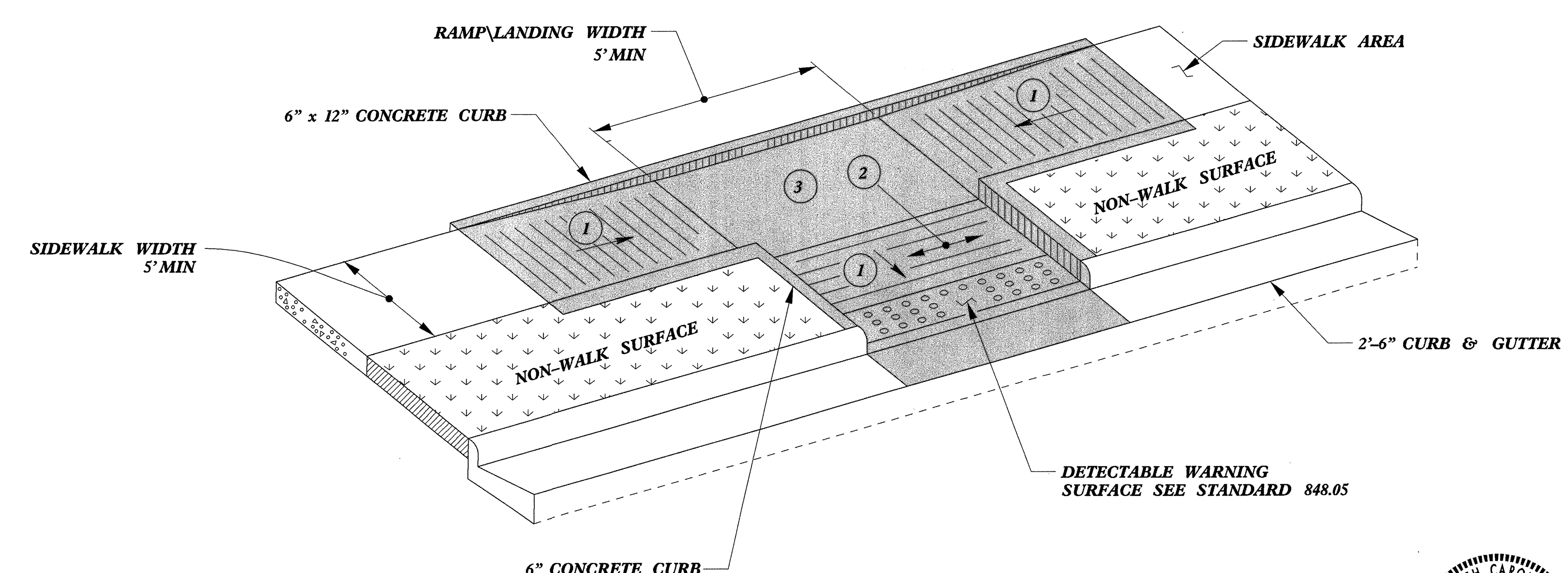
(1) *8.33% (12:1) MAX RAMP SLOPE*

(2) *CROSS SLOPE: 2.00%*

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



TYPE 2A



TYPE 3

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
3/18/14

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

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

CURB RAMPS

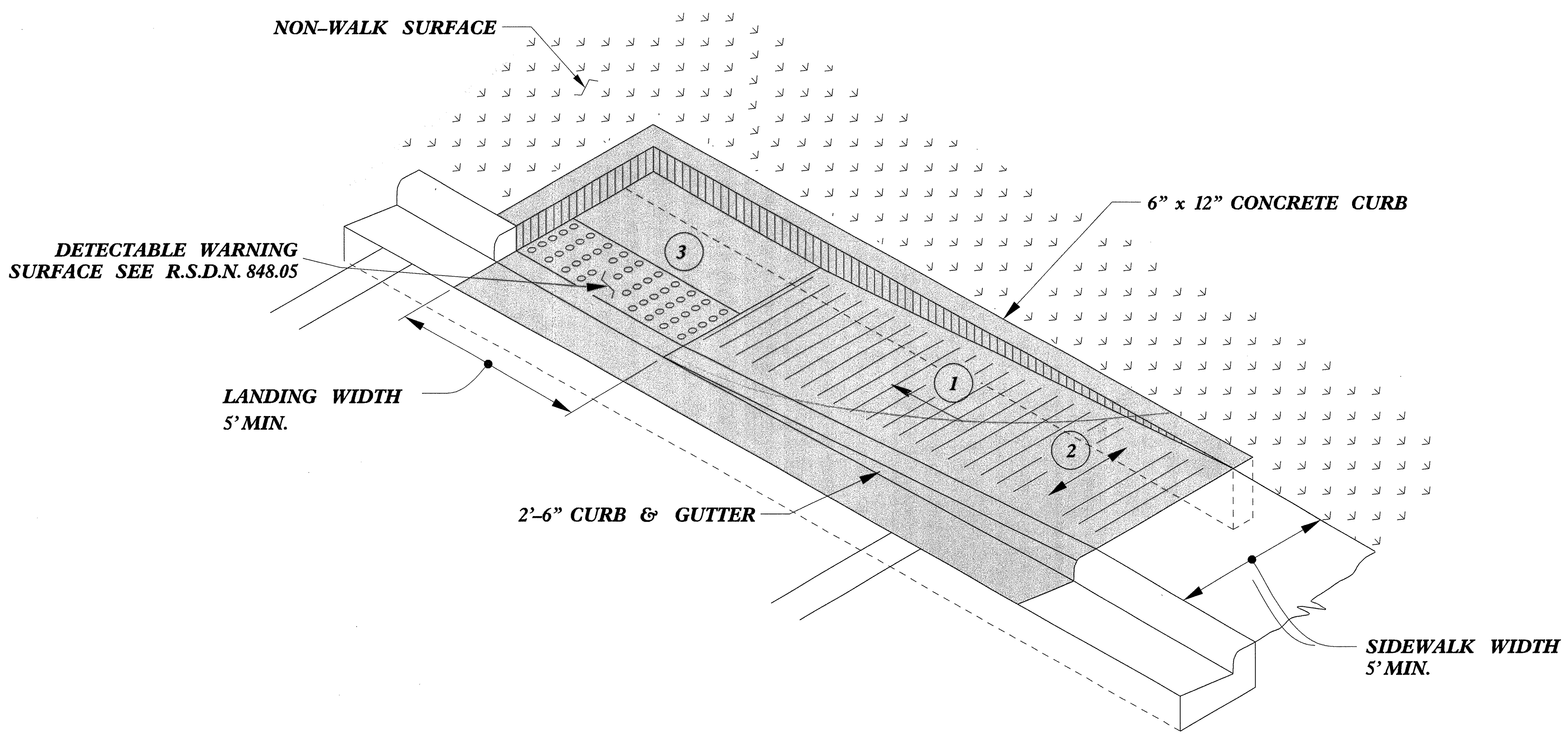
Parallel Ramps

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

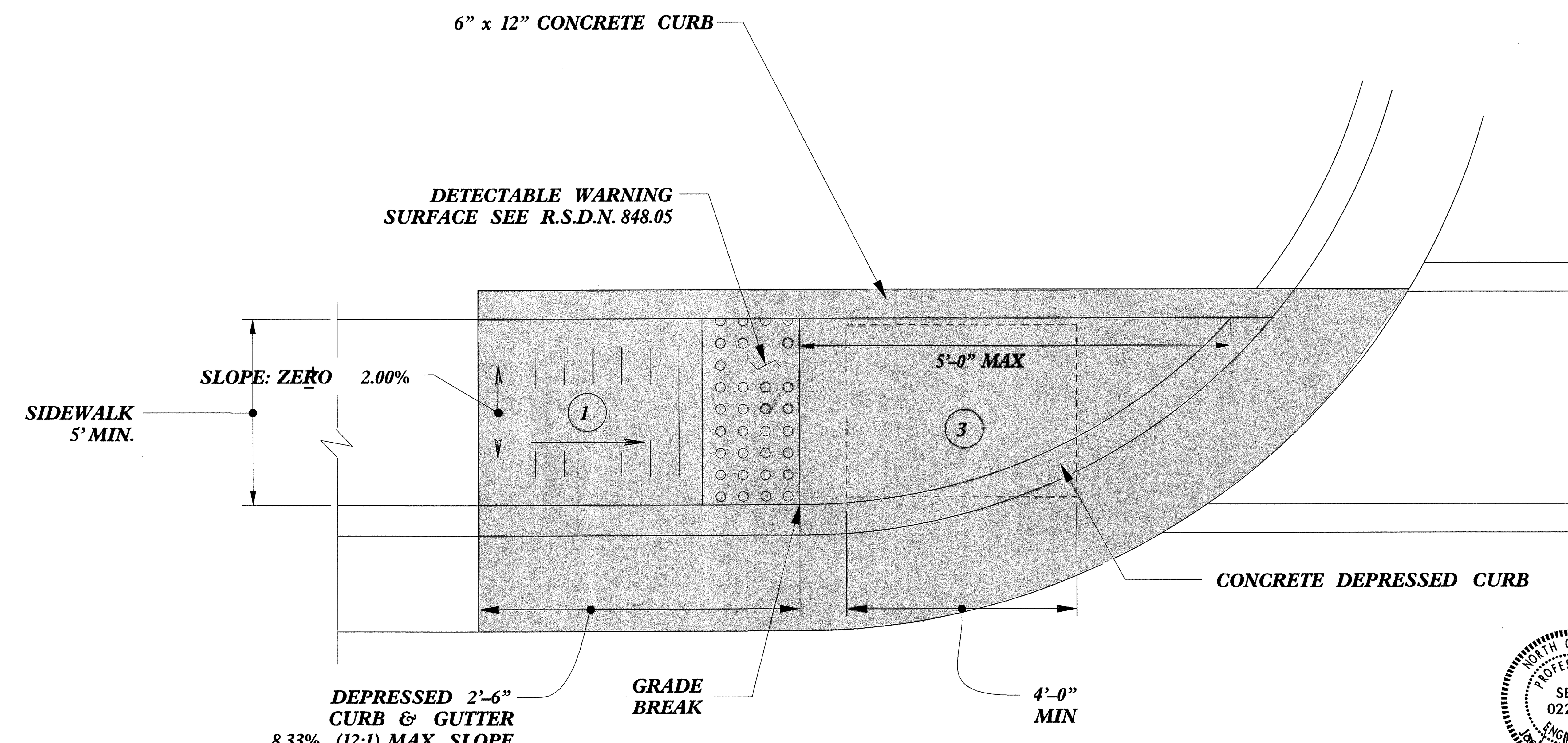
$$$$$$SYSTIME$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2-H

PAY LIMITS FOR 1 CURB RAMP



TYPE 1A



TYPE 1

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

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

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
3/18/14

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

CURB RAMPS

Directional Ramps

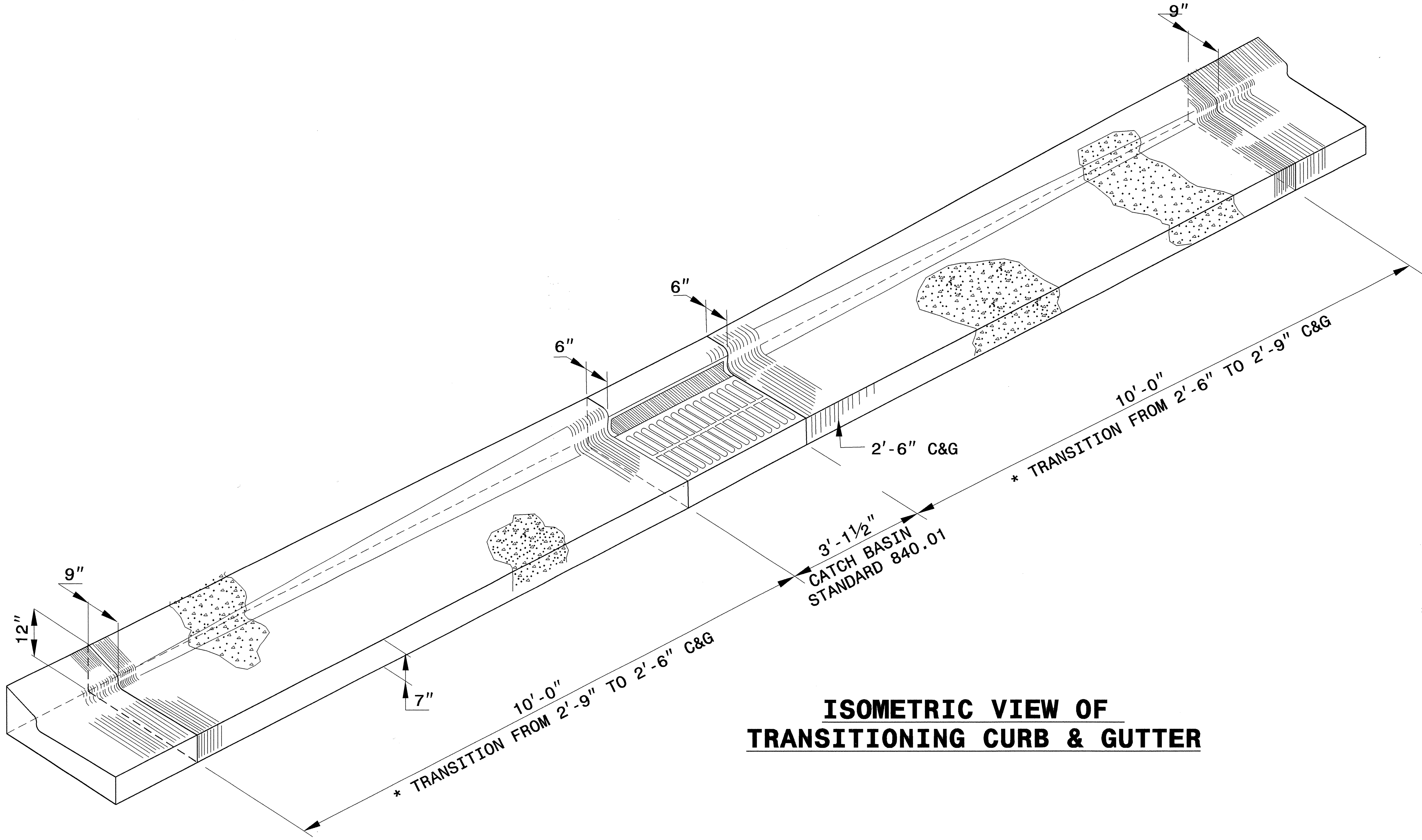
ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

5/14/99

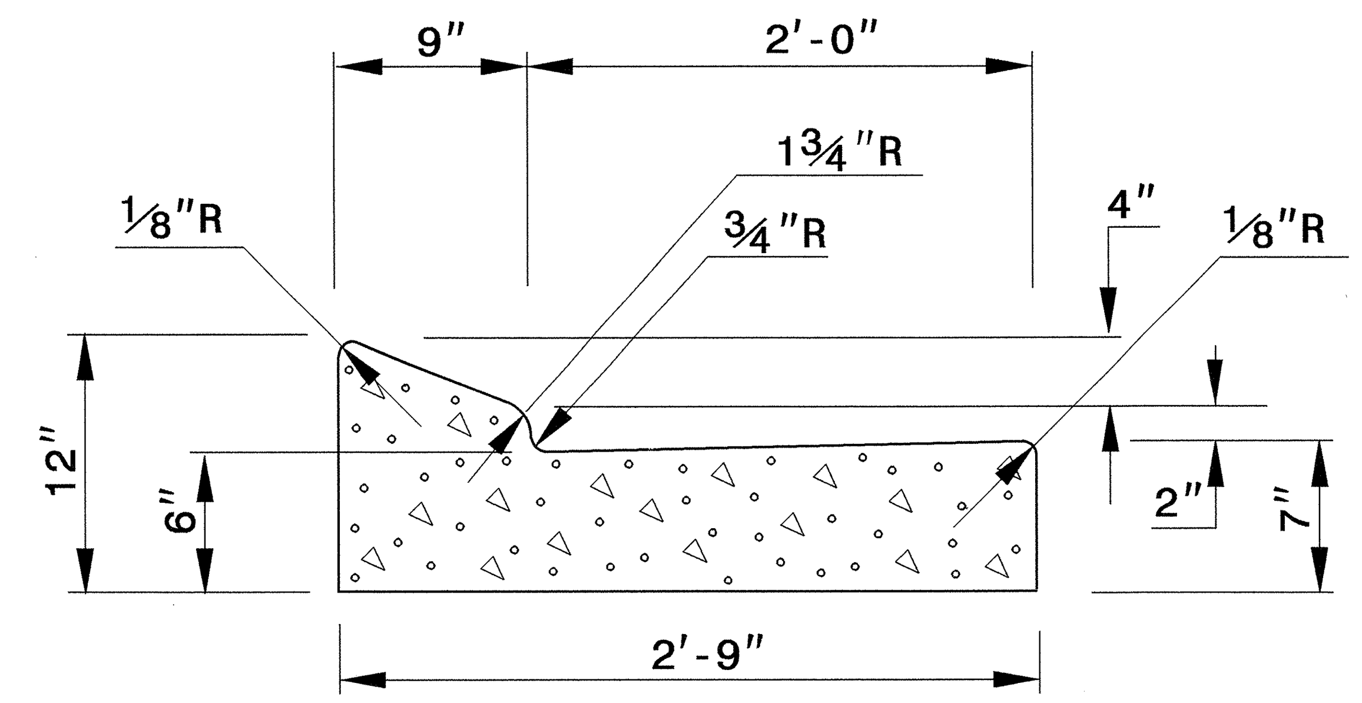
$$$$$SYSTIME$$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2-1

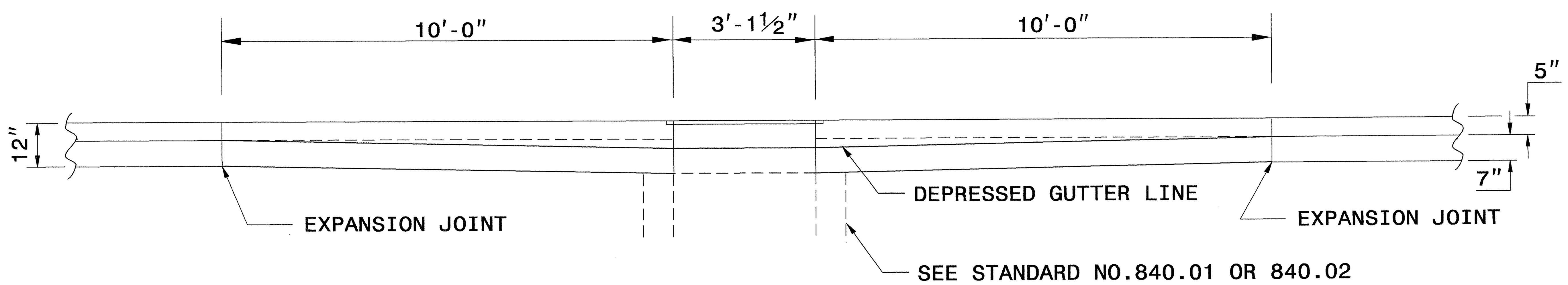
NOTE: SEE STD.DWG. 846.01 FOR 2'-6" CURB AND GUTTER INFORMATION.



ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER

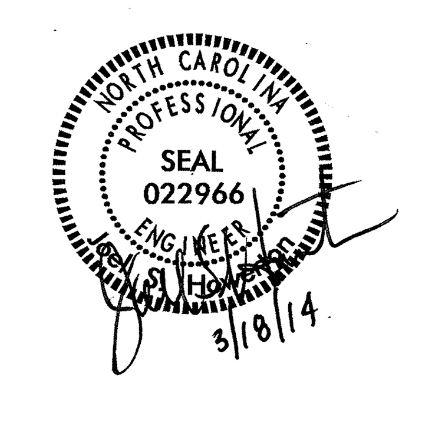


PROPOSED 2'-9" CURB & GUTTER



ELEVATION

* MAINTAIN THE EDGE OF PAVEMENT. TRANSITION THE CURB ALONG THE BACK OF THE CURB.

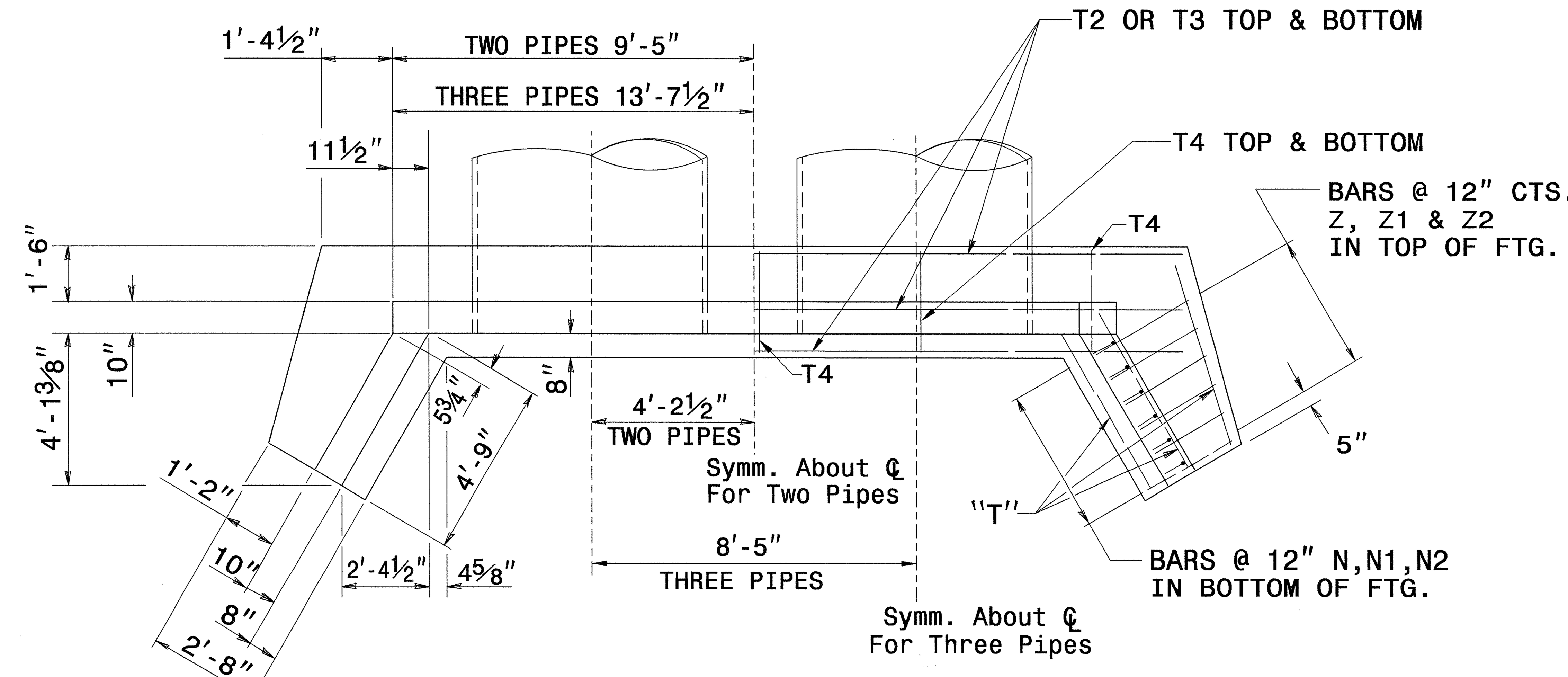


CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

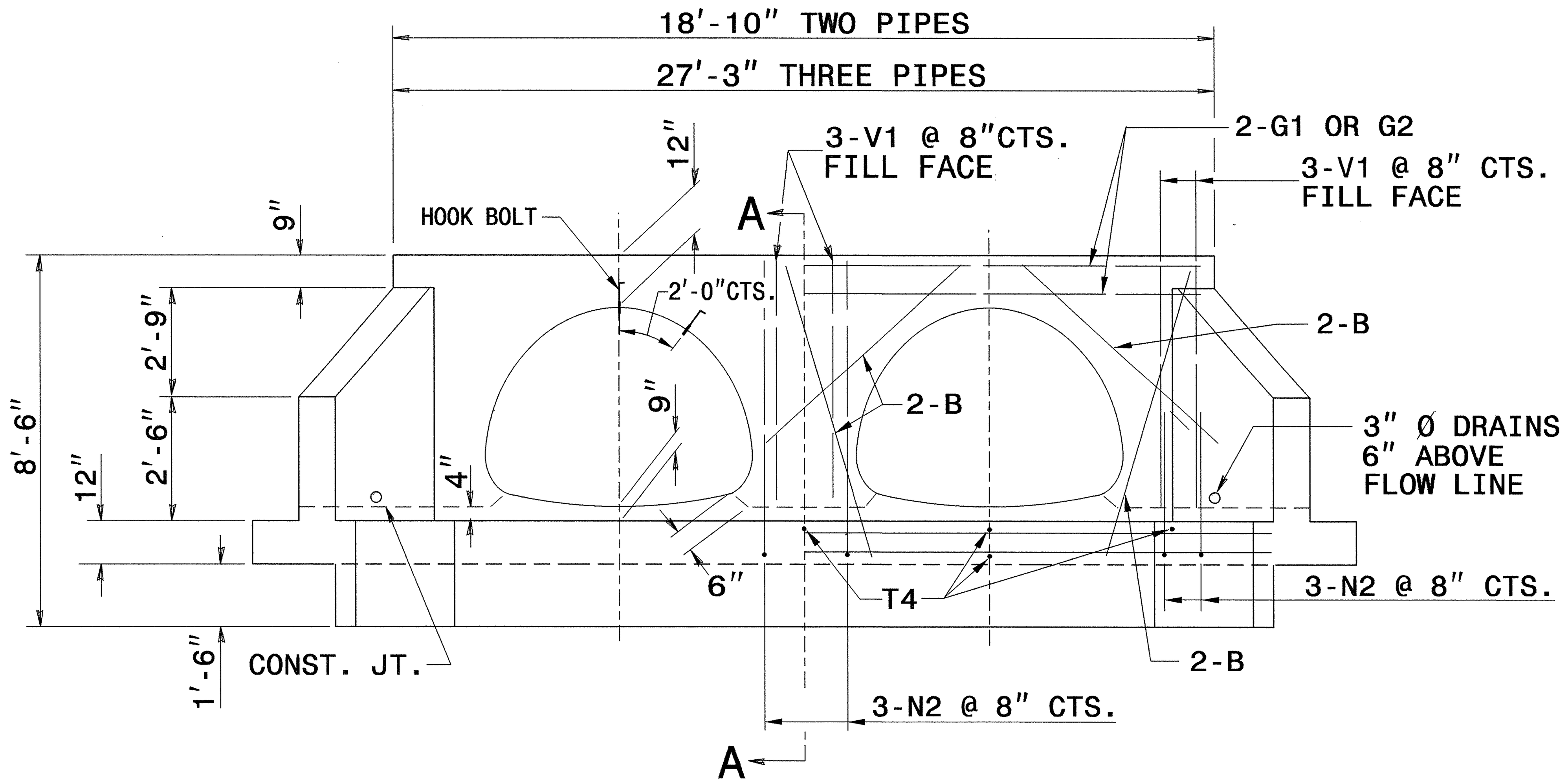
DETAIL OF 2'-9" TO 2'-6" CURB & GUTTER TRANSITION SECTION

ORIGINAL BY: ______ DATE: ______
MODIFIED BY: tspell DATE: july 14,2009
CHECKED BY: ______ DATE: ______
FILE SPEC.: s:eric/usr/details/stand/cgtranst.dgn

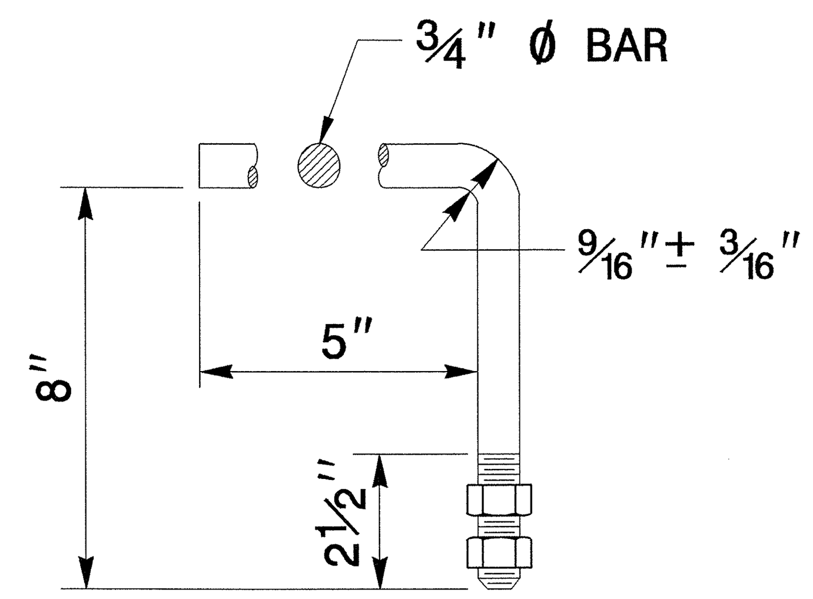
PROJECT REFERENCE NO.	SHEET NO.
U-3331	2-J



PLAN

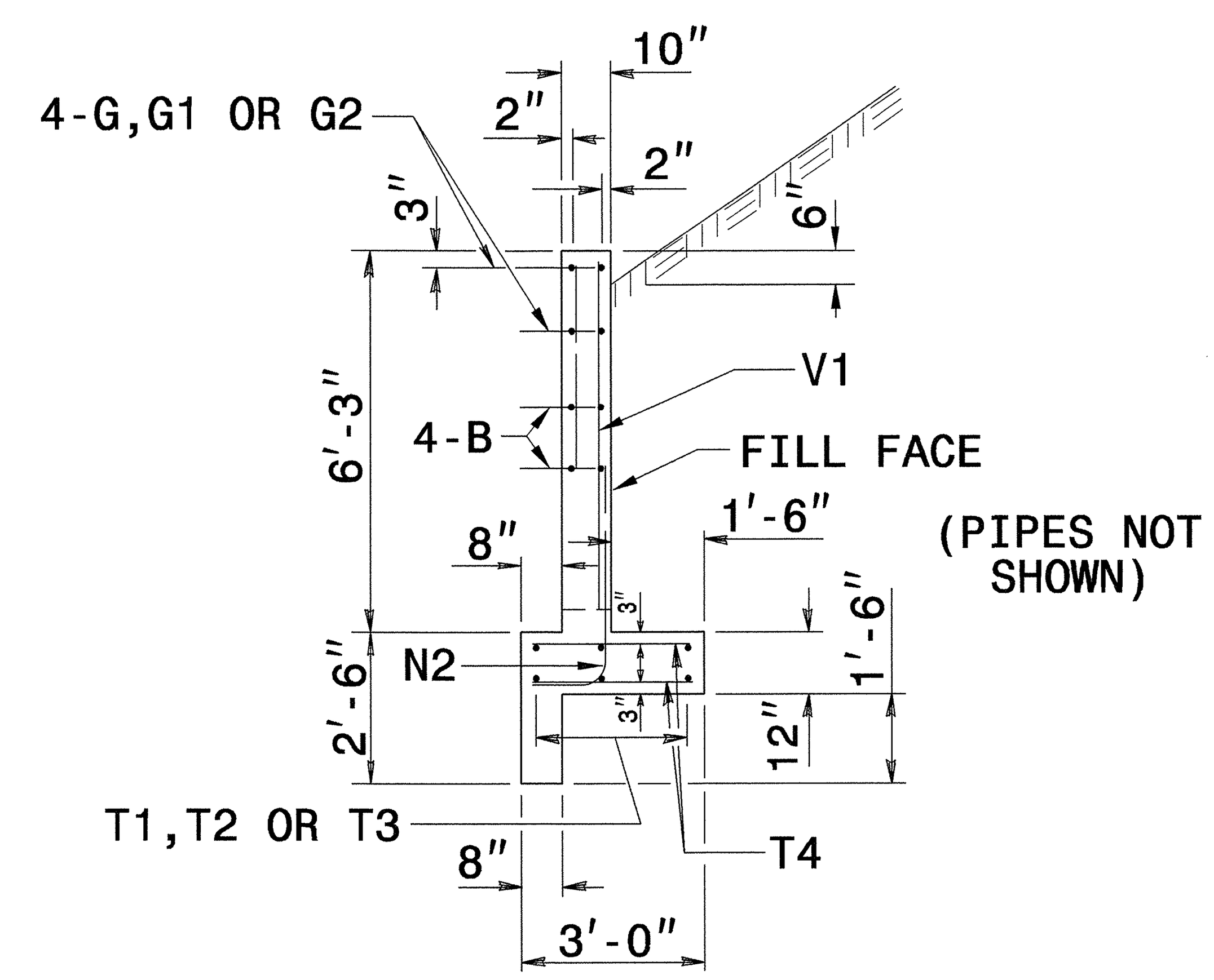


ELEVATION



HOOK BOLT

NOTE: CONSTRUCT HOOK BOLTS (ANCHORS) AT 2'-0" CTS. ALONG THE CIRCUMFERENCE OF THE 77"X 52" CSPA. EMBED THE HOOK BOLTS 8" DEPTH. THE GALVANIZED ¾" DIA. HOOK BOLTS MUST MEET ASTM A-307 OR ASTM A-836. BOTH BOLTS AND NUTS MUST BE IN ACCORDANCE WITH ASTM A-153 FOR GALVANIZING.



SECTION - AA

NOTES:

ALL CONCRETE TO BE CLASS "A".

ALL REINFORCING STEEL SHALL BE ASTMA615-GRADE 60.

ALL REINFORCING STEEL SHALL BE DEFORMED BARS. WHERE SPLICING OF REINFORCMENT IS NECESSARY, BARS ARE TO BE LAPPED 45 DIAMETERS. ALL DIMENSIONS RELATIVE TO REINFORCEMENT ARE TO CENTERS OF BARS.

THE FOOTING, CURTAIN WALL AND 4" OF WALL ARE TO BE POURED IN ONE OPERATION ALLOWING NO TIME FOR INITIAL SET TO TAKE PLACE BETWEEN THEM. THE REMAINING WALL SHALL THEN BE POURED IN ONE OPERATION.

ALL EXPOSED CORNERS ARE TO BE CHAMFERED 1".

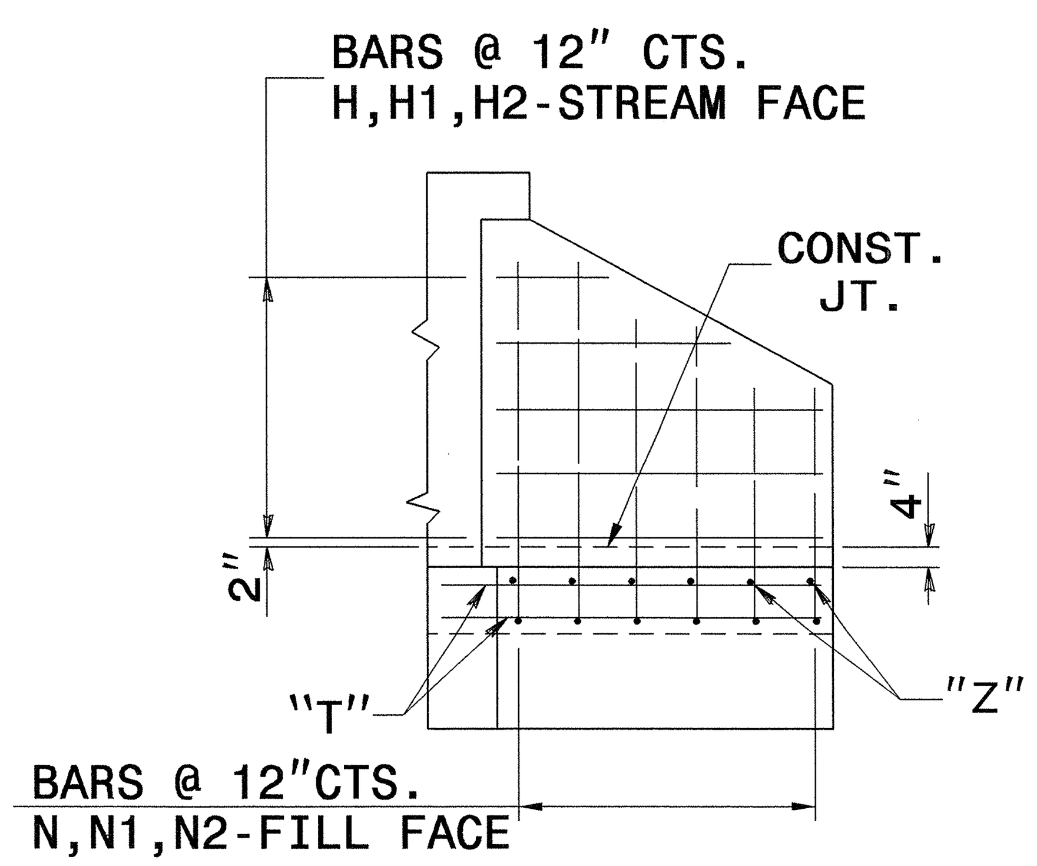
3" DIAMETER DRAINS SHALL BE PLACED IN WALL AS SHOWN AND BE 6" ABOVE NORMAL FLOW LINE.

ALL MATERIAL AND WORKMANSHIP AS PER N.C.DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

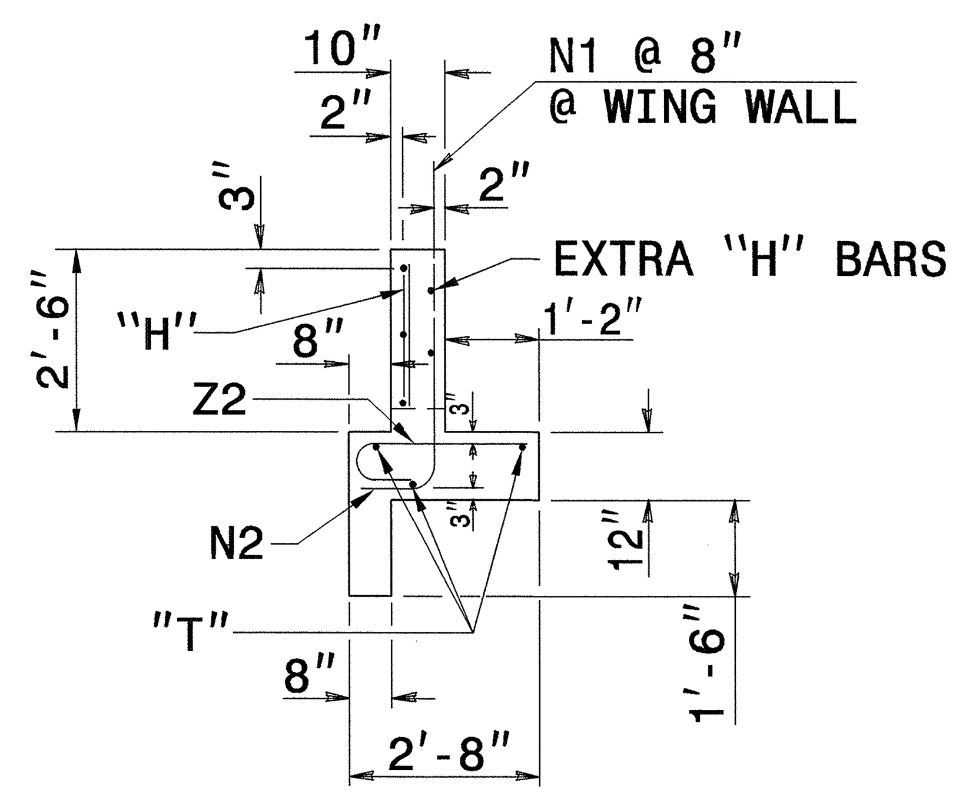
THE FOLLOWING EXTRA BARS ARE PROVIDED FOR HOLDING REINFORCING STEEL IN CORRECT POSITION IN WING: 4H-4V-6T

BILL OF MATERIAL FOR ENDWALL

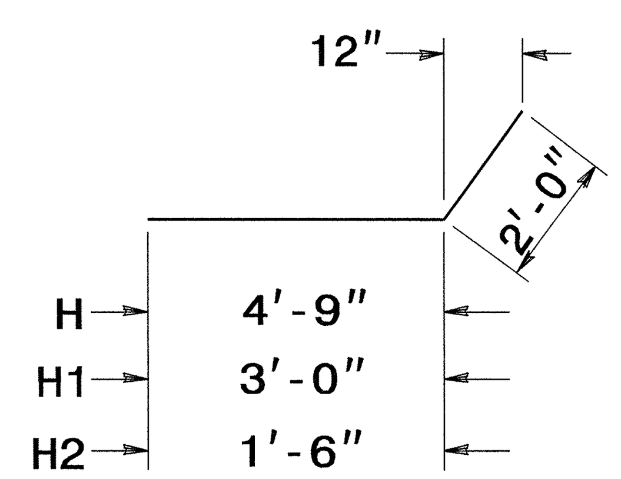
REINF. STEEL			1 PIPES		2 PIPES		3 PIPES	
BAR	SIZE	LENGTH	NO.	WEIGHT	NO.	WEIGHT	NO.	WEIGHT
B	#4	6'-2"	8	33	16	66	24	99
G	#5	10'-2"	4	42	-	-	-	-
G1	#5	18'-6"	-	-	4	77	-	-
G2	#5	14'-6"	-	-	-	-	8	121
H	#4	6'-9"	10	45	10	45	10	45
H1	#4	5'-0"	2	7	2	7	2	7
H2	#4	3'-6"	2	5	2	5	2	5
N	#4	6'-3"	2	8	2	8	2	8
N1	#4	5'-3"	4	14	4	14	4	14
N2	#4	4'-3"	10	28	13	37	16	45
T	#4	4'-6"	6	18	6	18	6	18
T1	#4	19'-0"	6	52	-	-	-	-
T2	#4	21'-3"	-	-	6	85	-	-
T3	#4	16'-0"	-	-	-	-	12	128
T4	#4	2'-9"	4	7	7	13	10	18
V	#4	3'-0"	4	8	4	8	4	8
V1	#4	5'-6"	6	22	9	33	12	44
Z	#4	4'-0"	4	11	4	11	4	11
Z1	#4	3'-9"	2	5	2	5	2	5
Z2	#4	3'-5"	4	9	4	9	4	9
REINF. STEEL LBS.				374		441		535
CON./R.C. CU. YDS			5.3		7.4		9.5	



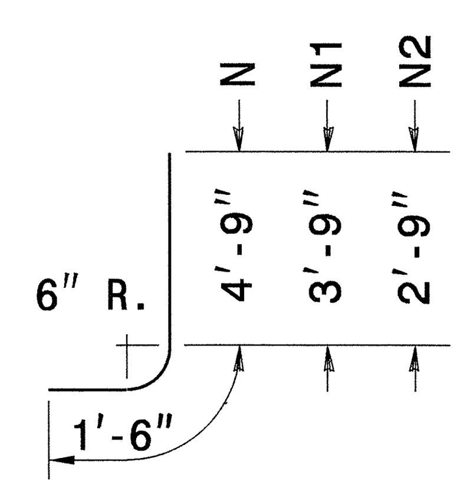
WING ELEVATION



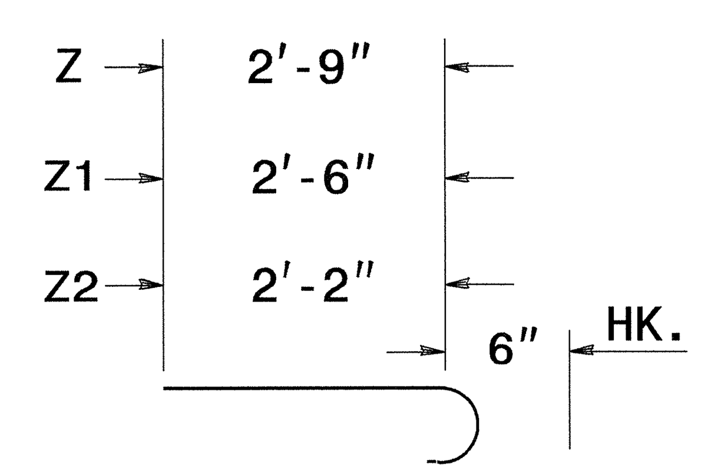
END OF WING



"H" BARS



"N" BARS

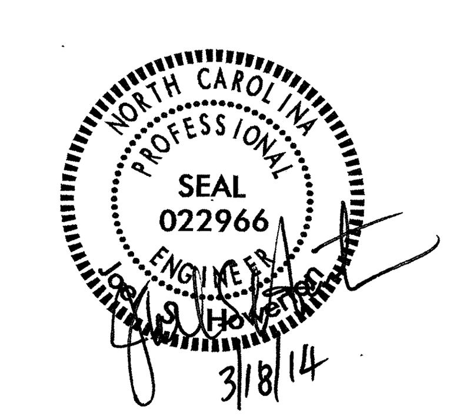


"Z" BARS

"H", "N", & "Z" BAR DIMENSIONS ARE OUT TO OUT.

DESIGN DATA

Specifications	A.A.S.H.T.O.
Steel in tension	20,000 LBS. PER SQ.IN.
Concrete in compression	1,200 LBS. PER SQ.IN.
Shear Class "A" Concrete	SEE A.A.S.H.T.O.
Equiv. fluid pressure of earth	30 LBS.PER CU. FT.

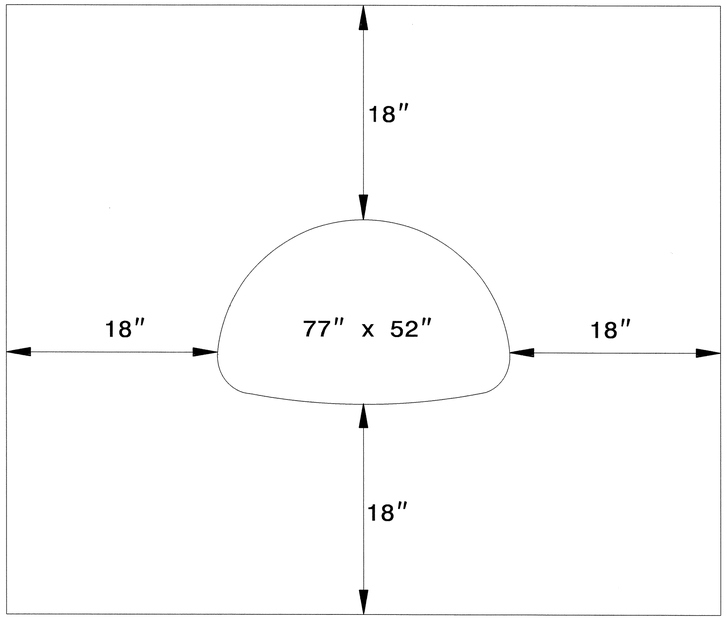


CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

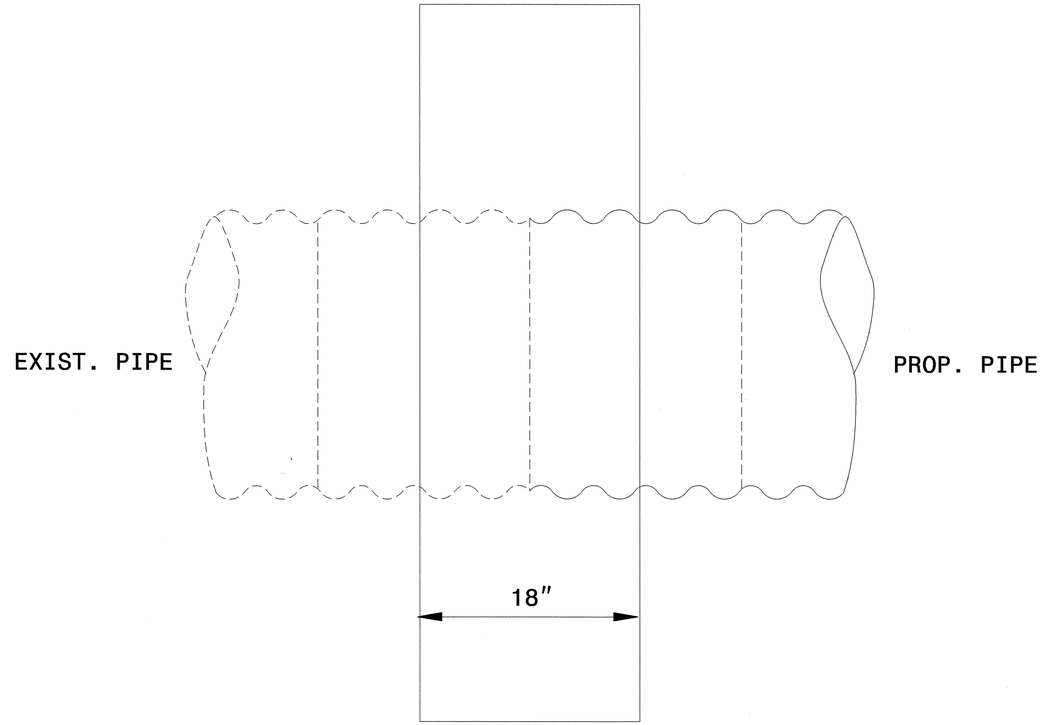
DETAIL OF REINFORCED CONCRETE ENDWALL FOR 77"X 52" (Pipe Arch)-90°

ORIGINAL BY: ______ DATE: ______
MODIFIED BY: T.S.Spell DATE: 8-19-04
CHECKED BY: ______ DATE: ______
FILE SPEC.: s:details/stand/endwpiparch73x55.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2-K



ELEVATION



SIDE ELEVATION

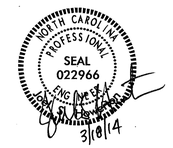
GENERAL NOTES:

USE PIPE COLLAR FOR EXTENDING EXISTING CONCRETE PIPE CULVERTS AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER. THIS INCLUDES EXTENDING EXISTING PIPES WITH PIPES OF DIFFERENT MATERIALS.

CONSTRUCT THE PIPE COLLAR WITH CLASS "B" OR BETTER CONCRETE.

OBSERVE ALL REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.

3.283 Cu Yd. Concrete

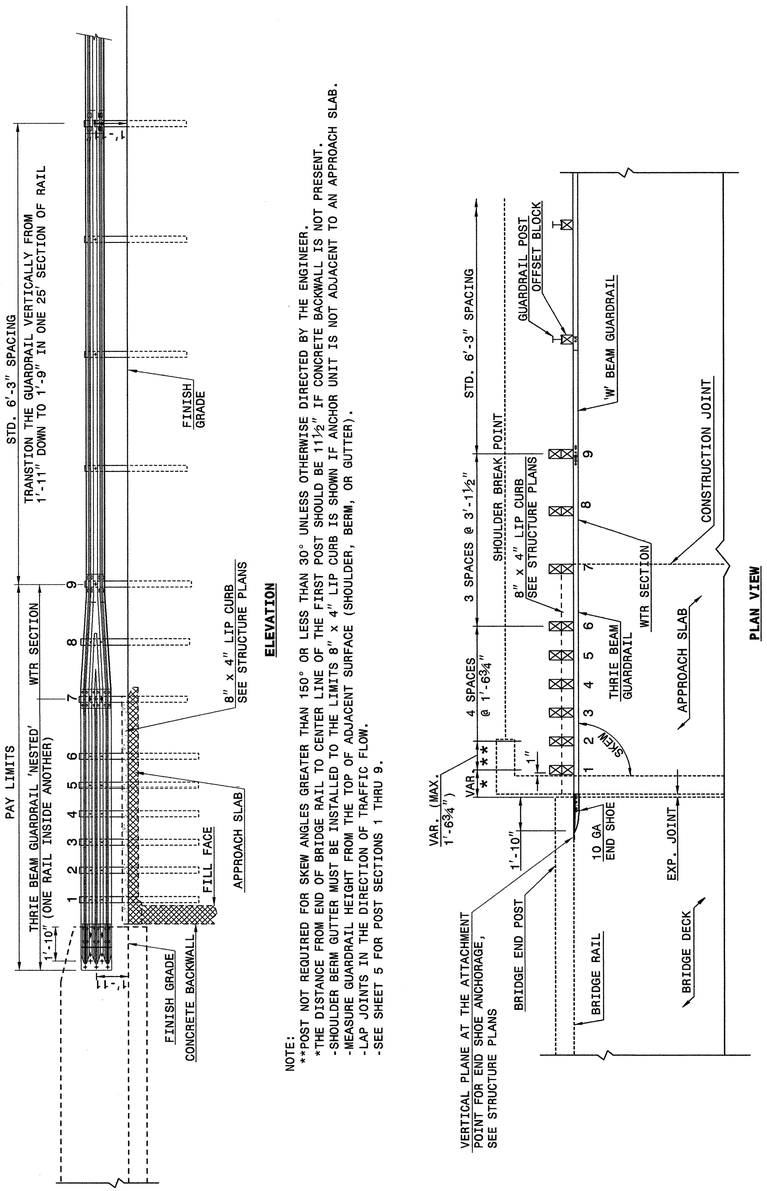


CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAIL OF CONCRETE COLLAR FOR 77"X 52" CSP

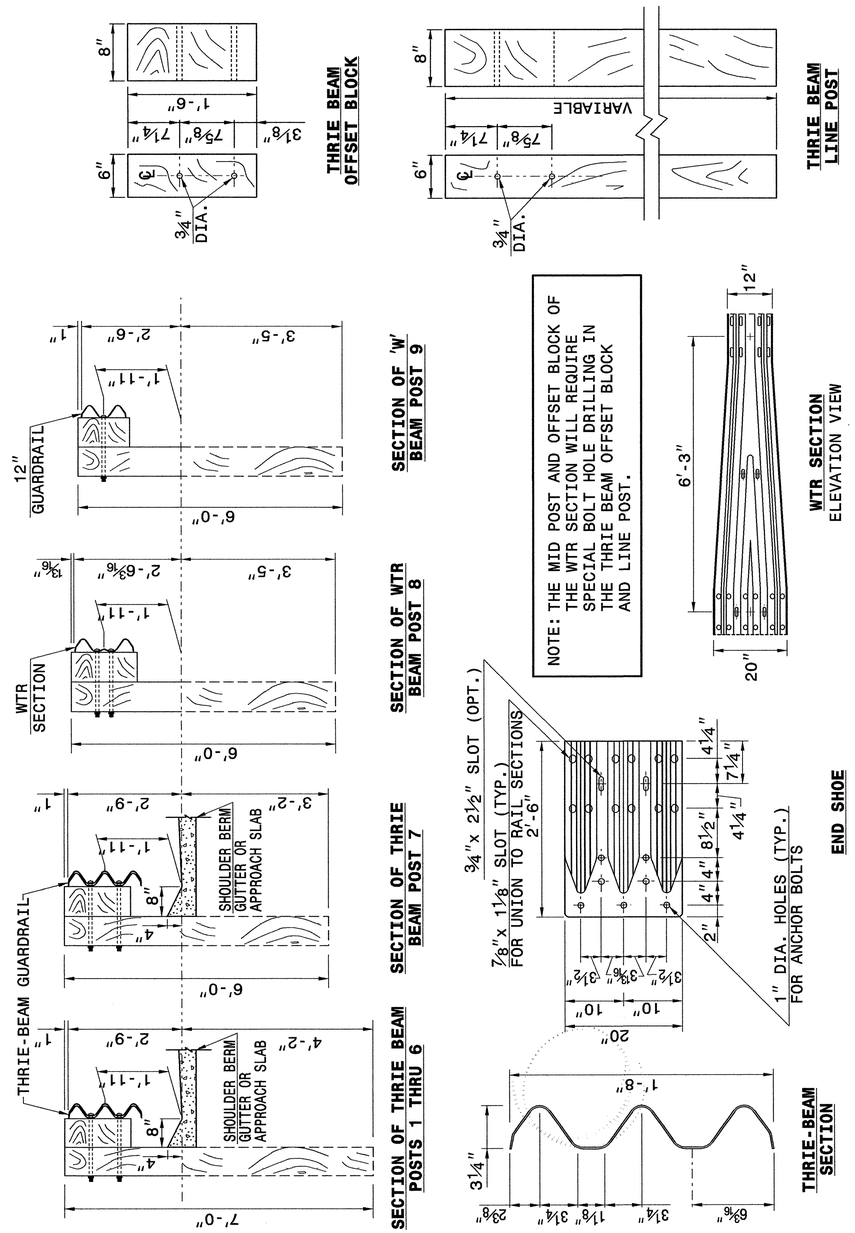
ORIGINAL BY: J Howerton DATE: 3-18-14
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: s:jhowerton/Arch Pipe Collar.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3331	2-L



NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER



NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER J. HOWERTON 4/8/14

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

SEE TITLE BLOCK

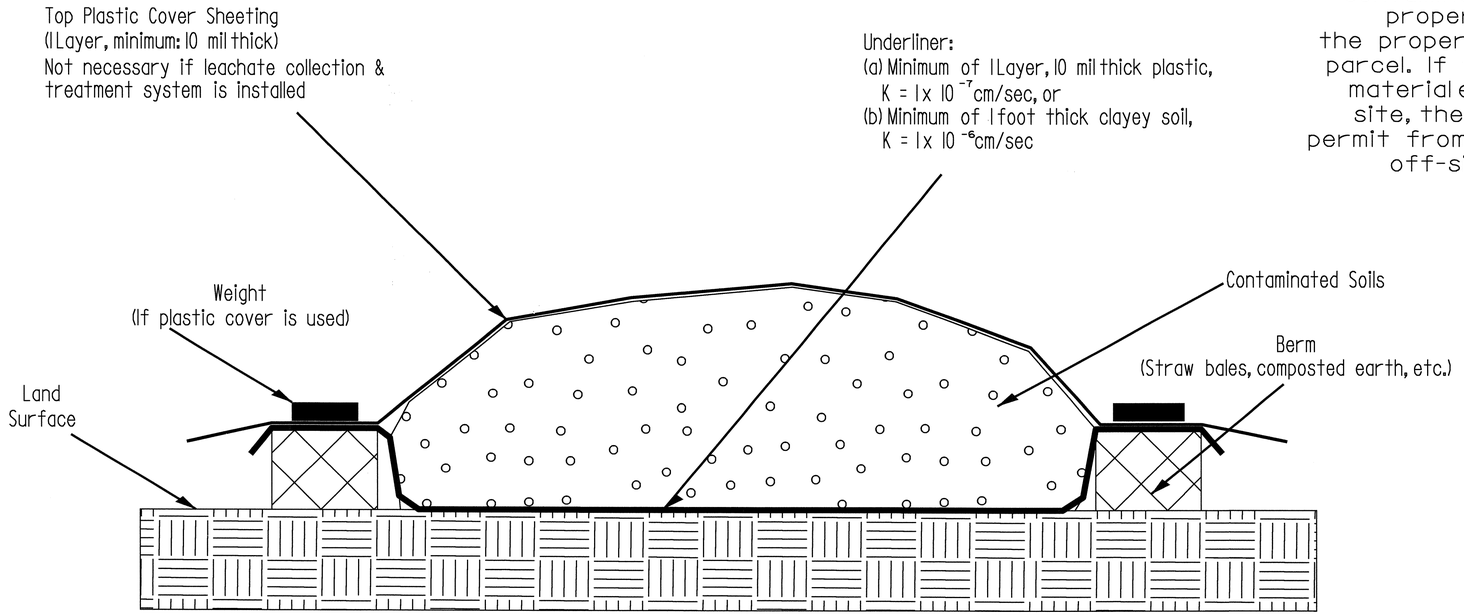
ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

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

PROJECT REFERENCE NO.	SHEET
U-3331	2-M

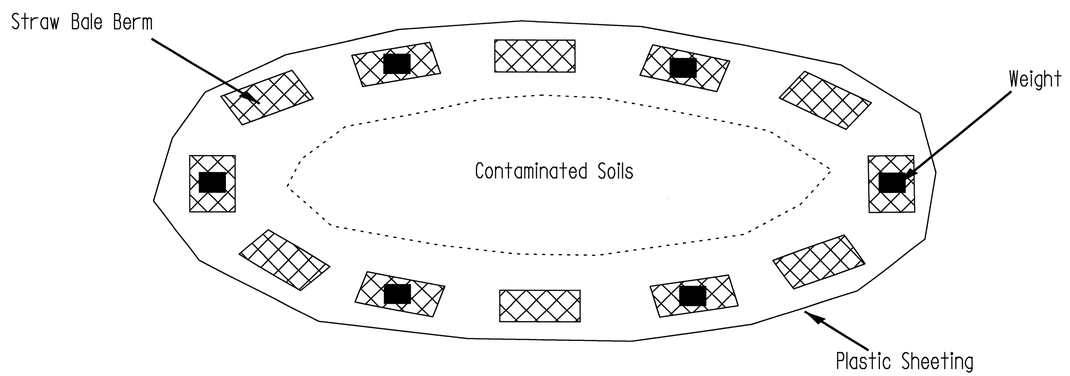
Detail for Temporary Containment of Contaminated Soil

Cross-Section View



NOTE:
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDENR UST Section for off-site temporary storage.

Map View



COMPUTED BY: D.R.ETHRIDGE DATE: 4/1/2014
CHECKED BY: DRE DATE: 4/1/2014

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3331	3-A

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)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
-L- 13+87.00	RT	421		97.80'	95.55'														
		421	420		95.55'	94.60'			116'										
-L- 14+92.00	RT	420		96.85'	94.60'														
		420	404		94.60'	93.40'			72'										
-L- 15+55.00	RT	404		95.65'	93.40'														
		404	402		93.40'	93.25'			24'										
-L- 15+55.00	RT	402		98.83'	93.25'														
-L- 14+52.00	LT	401		97.22'	93.72'														
		401	413		93.72'	93.62'													
-L- 14+70.00	RT	413		98.10'	93.62'														
		413	414		93.62'	93.37'													
-L- 15+55.00	RT	414		98.33'	93.37'														
		414	402		93.37'	93.25'													
		402	403		93.25'	92.70'													
-L- 17+16.00	RT	403		98.75'	91.17'														
		403	416		91.67'	92.00'				76'									
-L- 17+15.00	LT	416		97.56'	92.00'														
		416	415		92.00'	92.11'				20'									
-L- 17+05.00	LT	415			92.11'														
		416	418		92.25'	93.28'			52'										
-Y1- 14+54.00	RT	418		96.28'	93.28'														
		403	405		91.58'	91.70'													
-L- 17+36.50	RT	405		98.22'	91.70'														
		405	400		91.70'	91.90'				24'									
-L- 17+15.03	RT	400			91.90'														
-L- 19+58.00	RT	423			94.65'														
		423	422		94.65'	94.25'			56'										
-L- 20+13.00	RT	422		96.50'	94.25'														
		422	408		94.25'	93.15'			136'										
-L- 21+46.00	RT	408		97.35'	93.15'														
		408	409		93.15'	92.55'													
-L- 21+46.00	RT	409		96.25'	92.55'														
-L- 20+27.00	RT	407		96.89'	93.72'														
		407	409		93.72'	92.55'													
		409	410		92.55'	92.15'													
-L- 22+66.00	RT	410		95.63'	92.15'														
		410	411		92.15'	91.75'													
-L- 23+73.00	RT	411		95.08'	91.75'														
		411	412		91.75'	90.58'													
-L- 23+74.00	LT	412		93.58'	90.33'														
		412	501		90.33'	89.46'													
-L- 25+37.00	LT	501		92.71'	89.46'														
		501	502		89.46'	89.02'													
-L- 26+18.00	LT	502		92.27'	88.52'														
		502	503		88.52'	88.36'													
-L- 26+73.70	LT	503		92.19'	88.36'														
SHEET 3-A TOTAL									456'	120'									

STATION	FROM	TO	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
-L- 13+87.00	421																									
	421	420																								
-L- 14+92.00	420																									
	420	404																								
-L- 15+55.00	404																									
	404	402																								
-L- 15+55.00	402																									
-L- 14+52.00	401																									
	401	413																		36'						
-L- 14+70.00	413																									
	413	414																		84'						
-L- 15+55.00	414																									
	414	402																		36'						
	402	403																		172'						
-L- 17+16.00	403																									
	403	416																								
-L- 17+15.00	416																									
	416	415																								
-L- 17+05.00	415																									
	416	418																								
-Y1- 14+54.00	418																									
	403	405																				36'				
-L- 17+36.50	405																									
	405	400																								
-L- 17+15.03	400																									
-L- 19+58.00	423																									
	423	422																								
-L- 20+13.00	422																									
	422	408																								
-L- 21+46.00	408																									
	408	409																		40'						
-L- 21+46.00	409																									
-L- 20+27.00	407																									
	407	409																		120'						
	409	410																		120'						
-L- 22+66.00	410																									
	410	411																		108'						
-L- 23+73.00	411																									
	411	412																		40'						
-L- 23+74.00	412																									
	412	501																			160'					
-L- 25+37.00	501																									
	501	502																			80'					
-L- 26+18.00	502																									
	502	503																				56'				
-L- 26+73.70	503																									
SHEET 3-A TOTAL																				756'	240'	92'				

STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	GRATED D.I. TYPE "A" STD. 840.17 OR 840.26	FRAME WITH TWO WIDE SLOT SAG GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	CONV. EXIST. C.B. TO J.B.	T.B. PRECASTED D.I. STD. 840.14 AND 840.46	OUTLET CONTROL STRUCTURE SEE DETAIL ON SHEET 2-E	SLUICE GATE (6" OPENING)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 13+87.00	421				1									1	1													
	421	420																										
-L- 14+92.00	420				1									1	1													
	420	404																										
-L- 15+55.00	404				1									1	1													
	404	402																										
-L- 15+55.00	402				1	0.6'		1			1																	
-L- 14+52.00	401				1			1		1																		
	401	413																										
-L- 14+70.00	413				1										1							1						
	413	414																										
-L- 15+55.00	414				1										1							1						
	414	402																										
	402	403																										
-L- 17+16.00	403				1	2.6'													1	1							65'	REMOVE DRAINAGE STRUCTURE
	403	416																										
-L- 17+15.00	416				1	0.6'		1			1																29'	REMOVE DRAINAGE STRUCTURE
	416	415																										
-L- 17+05.00	415																											PIPE END
	416	418																										
-Y1- 14+54.00	418				1			1			1																	
	403	405																										
-L- 17+36.50	405				1	1.5'		1			1																	
	405	400																										
-L- 17+15.03	400																											PIPE END
-L- 19+58.00	423																											PIPE END
	423	422																										
-L- 20+13.00	422				1									1	1												40'	
	422	408																										
-L- 21+46.00	408				1									1	1												38'	
	408	409																										
-L- 21+46.00	409				1							1		1	1													
-L- 20+27.00	407				1							1		1	1													
	407	409																										
	409	410																										
-L- 22+66.00	410				1							1		1	1													
	410	411																										
-L- 23+73.00	411				1							1		1	1													
	411	412																										
-L- 23+74.00	412				1			1			1																	
	412	501																										
-L- 25+37.00	501				1			1			1																	
	501	502																										
-L- 26+18.00	502				1			1			1																	
	502	503																										
-L- 26+73.70	503				1			1	1																			
SHEET 3-A TOTAL					21	5.3		9	1	1	7	4		9	11				1	1		2					172'	

ABBREVIATIONS

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

COMPUTED BY: D.R.ETHRIDGE DATE: 4/1/2014
CHECKED BY: DRE DATE: 4/1/2014

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3331	3-B

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)

STATION	LOCATION (LT, RT, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	DRAINAGE PIPE THICKNESS OR GAUGE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	R.C. PIPE CLASS III	R.C. PIPE CLASS IV	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL LF. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A	LIN. FT. B	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	C.B. STD. 840.01 OR STD. 840.02	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	GRATED D.I. TYPE "A" STD. 840.17 OR 840.26	FRAME WITH TWO WIDE SLOT SAG GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	CONV. EXIST. C.B. TO J.B.	T.B. PRECASTED D.I. STD. 840.14 AND 840.46	OUTLET CONTROL STRUCTURE SEE DETAIL ON SHEET 2-E	SLUICE GATE (6" OPENING)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
		503	504		88.36'	88.26'							36'																							
-L- 27+10.00	LT	504		92.36'	88.26'											1		1		1																	
		504	506		88.26'	87.76'							160'																							
-L- 28+72.00	LT	506		93.08'	87.76'											1	0.3'	1		1																	
		506	508		89.00'	90.92'							180'																							
-L- 30+53.00	LT	508		93.92'	90.92'											1		1		1																	
-L- 25+18.00	RT	518		94.08'	91.08'											1		1			1		1													
		518	519		91.08'	90.66'							72'																							
-L- 25+90.00	RT	519		93.66'	90.66'											1		1			1		1													
		519	520		90.66'	89.77'							84'																							
-L- 26+73.70	RT	520		93.35'	89.77'											1		1	1				1													
		520	521		89.77'	90.43'							88'																							
-L- 27+60.00	RT	521		93.43'	90.43'											1		1		1			1													
		520	503		89.77'	89.11'							40'																							
-L- 28+72.00	LT	509			87.60'																															PIPE END
		509	506		87.60'	87.76'			44'																											
		506	505		89.00'	89.90'							64'																							
-L- 28+72.00	RT	505		93.40'	89.90'											1		1			1															
		505	507		89.90'	90.85'							168'																							
-L- 30+38.00	RT	507		93.85'	90.85'											1		1			1															
-L- 34+59.00	RT	522		95.52'	92.52'											1		1		1																	
		522	523		92.52'	92.12'							132'																							
-L- 35+91.00	RT	523		95.22'	92.12'											1		1		1																	
		523	526		92.12'	91.57'							28'																							
-L- 35+91.00	RT	526		94.57'	91.57'											1		1			1		1													
		526	527		91.57'	91.11'							72'																							
-L- 36+62.00	RT	527		94.11'	91.11'											1		1			1		1													
		527	528		91.11'	90.57'							52'																							
-L- 37+11.96	RT	528		94.01'	90.57'											1		1	1				1													
		528	529		90.57'	90.42'							52'																							
-L- 37+62.00	RT	529		94.11'	90.42'											1		1		1			1													
		529	530		90.42'	89.65'							68'																							
-L- 38+31.00	RT	530		94.53'	89.30'											1	0.2'	1		1			1												127'	REMOVE DRAINAGE STRUCTURE
-L- 35+52.00	LT	510		94.08'	91.08'											1		1		1															23'	
		510	511		91.08'	90.25'							100'																							
-L- 36+52.00	LT	511		93.25'	90.25'											1		1		1															16'	
		511	512		90.25'	90.05'							60'																							
-L- 37+11.96	LT	512		93.11'	89.86'											1		1	1																23'	
		512	513		89.86'	89.70'								56'																						
-L- 37+67.00	LT	513		93.23'	89.70'											1		1		1																
		513	515		89.70'	89.51'								64'																						
-L- 38+31.00	LT	515		93.63'	89.51'											1		1		1															59'	
-L- 38+30.00	LT	514		93.64'	91.39'											1																	1	1			
		514	515		91.39'	90.26'		16'																													
SHEET 3-B TOTAL								16'	44'				1260'	120'	196'	22	0.5	21	3	10	8	9	1	1											248'	

ABBREVIATIONS

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

COMPUTED BY: D.R.ETHRIDGE DATE: 4/1/2014
CHECKED BY: DRE DATE: 4/1/2014

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3331	3-C

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)

STATION	LOCATION (LT, RT, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
								DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) THICKNESS OR GAUGE											
515		515	530		89.51'	89.30'													
		530	517		89.30'	89.00'													
-L- 38+30.00	RT	517		95.28'	89.00'														
		517	516		89.00'	88.40'				24'									
-L- 38+16.00	RT	516			88.40'														
		517	602		89.25'	90.95'													
-L- 39+67.00	RT	602		95.22'	90.95'														
		602	601		90.95'	91.13'													
-L- 39+67.00	LT	601		94.63'	91.13'														
		602	603		90.95'	92.17'													
-L- 40+18.00	RT	603		95.17'	92.17'														
-L- 43+06.00	LT	607			91.15'														
		607	608		91.15'	91.05'					24'								
-L- 43+04.00	LT	608		96.44'	91.05'														
		608	609		91.05'	90.88'													
-L- 43+04.00	RT	609		96.44'	90.88'														
		609	610		90.88'	90.50'							28'						
-L- 43+03.00	RT	610			90.50'														
		609	615		90.90'	93.75'													
-L- 46+68.00	RT	615		99.06'	93.75'														
		615	618		95.50'	98.70'													
-L- 49+06.00	RT	618		101.73'	98.70'														
		618	619		98.70'	98.75'			16'										
-L- 49+06.00	RT	619		101.00'	98.75'														
		618	727		98.70'	103.02'													
-L- 52+56.00	RT	727		106.80'	103.02'														
-Y4- 12+45.00	RT	611		98.08'	94.61'														
		611	612		94.61'	94.50'													
-Y4- 12+45.00	LT	612		97.99'	94.50'														
		612	614		94.50'	94.35'			44'										
-L- 46+68.00	LT	614		99.06'	93.95'														
		614	613		94.10'	97.80'				20'									
-L- 46+60.00	LT	613			97.80'														
		614	615		93.95'	93.75'													
		614	617		94.45'	97.80'													
-L- 49+32.00	LT	617		102.05'	97.80'														
		617	616		99.05'	100.53'			12'										
-L- 49+32.00	LT	616		102.10'	100.53'														
		617	621		97.80'	101.42'													
-L- 52+35.00	LT	621		105.67'	101.42'														
		621	620		102.67'	104.75'			16'										
-L- 52+35.00	LT	620			104.75'														
		621	703		101.42'	106.35'													
-L- 55+10.00	LT	703		109.54'	106.35'														
-L- 59+81.00	RT	712		111.66'	108.17'														
SHEET 3-C TOTAL									88'	44'	24'		28'						

STATION	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"
	.064	.064	.064	.064	.079	.079	.109	.109
515								
530								
-L- 38+30.00 RT								
517								
-L- 38+16.00 RT								
517								
-L- 39+67.00 RT								
602								
-L- 39+67.00 LT								
602								
-L- 40+18.00 RT								
-L- 43+06.00 LT								
607								
-L- 43+04.00 LT								
608								
-L- 43+04.00 RT								
609								
-L- 43+03.00 RT								
609								
-L- 46+68.00 RT								
615								
-L- 49+06.00 RT								
618								
-L- 49+06.00 RT								
619								
-L- 52+56.00 RT								
-Y4- 12+45.00 RT								
611								
-Y4- 12+45.00 LT								
612								
-L- 46+68.00 LT								
614								
-L- 46+60.00 LT								
613								
614								
-L- 49+32.00 LT								
617								
-L- 49+32.00 LT								
616								
-L- 52+35.00 LT								
621								
-L- 52+35.00 LT								
620								
-L- 55+10.00 LT								
703								
-L- 59+81.00 RT								
SHEET 3-C TOTAL								

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"
515								
530								
-L- 38+30.00 RT								
517								
-L- 38+16.00 RT								
517								
-L- 39+67.00 RT								
602								
-L- 39+67.00 LT								
602								
-L- 40+18.00 RT								
-L- 43+06.00 LT								
607								
-L- 43+04.00 LT								
608								
-L- 43+04.00 RT								
609								
-L- 43+03.00 RT								
609								
-L- 46+68.00 RT								
615								
-L- 49+06.00 RT								
618								
-L- 49+06.00 RT								
619								
-L- 52+56.00 RT								
-Y4- 12+45.00 RT								
611								
-Y4- 12+45.00 LT								
612								
-L- 46+68.00 LT								
614								
-L- 46+60.00 LT								
613								
614								
-L- 49+32.00 LT								
617								
-L- 49+32.00 LT								
616								
-L- 52+35.00 LT								
621								
-L- 52+35.00 LT								
620								
-L- 55+10.00 LT								
703								
-L- 59+81.00 RT								
SHEET 3-C TOTAL								

STATION	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
515			36'					
530			32'					
-L- 38+30.00 RT								
517								
-L- 38+16.00 RT								
517		136'						
-L- 39+67.00 RT								
602		60'						
-L- 39+67.00 LT								
602		52'						
-L- 40+18.00 RT								
-L- 43+06.00 LT								
607								
-L- 43+04.00 LT								
608				60'				
-L- 43+04.00 RT								
609								
-L- 43+03.00 RT								
609						364'		
-L- 46+68.00 RT								
615		240'						
-L- 49+06.00 RT								
618								
-L- 49+06.00 RT								
619		352'						
-L- 52+56.00 RT								
-Y4- 12+45.00 RT								
611		44'						
-Y4- 12+45.00 LT								
612								
-L- 46+68.00 LT								
614						68'		
-L- 46+60.00 LT								
613					264'			
614								
-L- 49+32.00 LT								
617								
-L- 49+32.00 LT				304'				
616								
-L- 52+35.00 LT								
621								
-L- 52+35.00 LT			276'					
620								
-L- 55+10.00 LT								
703								
-L- 59+81.00 RT								
SHEET 3-C TOTAL		884'	344'	364'	264'	432'		

STATION	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. PER EACH (0' THRU 5.0')	A 5.0' THRU 10.0'	B 10.0' AND ABOVE	FRAME, GRATES, AND HOOD STANDARD 840.03 C.B. STD. 840.01 OR STD. 840.02	TYPE OF GRATE E	F	G
515									
530									
-L- 38+30.00 RT			1	1.3'		1			1
517									
-L- 38+16.00 RT									
517									
-L- 39+67.00 RT			1			1			1
602									
-L- 39+67.00 LT			1			1		1	
602									
-L- 40+18.00 RT			1			1			1
-L- 43+06.00 LT									
607									
-L- 43+04.00 LT			1	0.4'		1		1	
608									
-L- 43+04.00 RT			1	0.6'		1			1
609									
-L- 43+03.00 RT									
609									
-L- 46+68.00 RT			1	0.3'		1			1
615									
-L- 49+06.00 RT			1			1			1
618									
-L- 49+06.00 RT			1						
619									
-L- 52+56.00 RT									
-Y4- 12+45.00 RT			1			1	1		
611									
-Y4- 12+45.00 LT			1			1	1		
612									
-L- 46+68.00 LT			1	0.1'		1		1	
614									
-L- 46+60.00 LT									
613									
614									
-L- 49+32.00 LT			1			1		1	
617									
-L- 49+32.00 LT									
616									
-L- 52+35.00 LT			1			1		1	
621									
-L- 52+35.00 LT									
620									
-L- 55+10.00 LT									
703									
-L- 59+81.00 RT									
SHEET 3-C TOTAL			14	2.7		13	2	5	6

STATION	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	GRATED D.I. TYPE "A" STD. 840.17 OR 840.26	FRAME WITH TWO WIDE SLOT SAG GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	CONV. EXIST. C.B. TO J.B.	T.B. PRECASTED D.I. STD. 840.14 AND 840.46	OUTLET CONTROL STRUCTURE SEE DETAIL ON SHEET 2-E	SLUICE GATE (6" OPENING)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
515																	
530																	
-L- 38+30.00 RT																	
517																	
-L- 38+16.00 RT																196'	PIPE END
517																	
-L- 39+67.00 RT																	
602																	
-L- 39+67.00 LT																63'	
602																	
-L- 40+18.00 RT																	
-L- 43+06.00 LT																	PIPE END
607																	
-L- 43+04.00 LT																19'	
608																	
-L- 43+04.00 RT																96'	
609																	
-L- 43+03.00 RT																	PIPE END
609																	
-L- 46+68.00 RT																	
615																	
-L- 49+06.00 RT																12'	
618																	
-L- 49+06.00 RT																	
619																	
-L- 52+56.00 RT																51'	EXISTING CB
-Y4- 12+45.00 RT																173'	
611																	
-Y4- 12+45.00 LT																52'	
612																	
-L- 46+68.00 LT																15'	
614																	
-L- 46+60.00 LT																	PIPE END
613																	
614																	
-L- 49+32.00 LT																83'	
617																	
-L- 49+32.00 LT																	PIPE END
616																	
-L- 52+35.00 LT																73'	
621																	
-L- 52+35.00 LT																	PIPE END
620																	
-L- 55+10.00 LT																60'	EXISTING CB, REM DRAIN STRUCTURE
703																	
-L- 59+81.00 RT																	EXISTING CB
SHEET 3-C TOTAL																893'	

ABBREVIATIONS

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

COMPUTED BY: D.R.ETHRIDGE DATE: 4/1/2014
CHECKED BY: DRE DATE: 4/1/2014

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3331	3-D

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)

STATION	LOCATION (LT, RT, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	DRAINAGE PIPE THICKNESS OR GAUGE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	R.C. PIPE CLASS III	R.C. PIPE CLASS IV	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') PER EACH (0' THRU 5.0')	LIN. FT. A (5.0' THRU 10.0'	LIN. FT. B (10.0' AND ABOVE	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	C.B. STD. 840.01 OR STD. 840.02	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	GRATED D.I. TYPE "A" STD. 840.17 OR 840.26	FRAME WITH TWO WIDE SLOT SAG GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	CONV. EXIST. C.B. TO J.B.	T.B. PRECASTED D.I. STD. 840.14 AND 840.46	OUTLET CONTROL STRUCTURE SEE DETAIL ON SHEET 2-E	SLUICE GATE (6" OPENING)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
		712	743		108.17'	107.70'									64'																					
-L- 60+44.00	RT	743		111.55'	107.70'												1			1		1														116'	
		743	722		107.70'	107.20'							156'																								
-L- 62+00.00	RT	722		110.78'	106.52'												1			1	1														0.195		132'	
		722	723		106.52'	106.30'									68'																							
-L- 62+70.00	RT	723		111.03'	106.30'												1			1			1															
		723	745		106.30'	106.15'		40'																														
-L- 62+70.00	RT	745			106.15'																																PIPE END
-L- 60+66.00	RT	715		112.28'	109.11'												1										1									16'	REMOVE DRAINAGE STRUCTURES
		715	716		109.11'	108.69'								84'																						
-L- 61+50.00	RT	716		111.86'	108.69'												1						1		1	1										
		716	721		108.69'	107.80'								48'																						
-L- 62+00.00	RT	721		111.73'	107.80'												1						1		1	1										
		721	731		108.50'	108.64'								48'																						
-L- 62+48.00	RT	731		111.84'	108.64'												1						1		1	1										
		731	730		108.67'	108.92'								44'																						
-L- 62+90.96	RT	730		112.09'	108.92'												1						1		1	1										
-L- 60+97.00	LT	742		113.90'	111.65'												1								1	1									189'	
		742	736		111.65'	109.72'		96'																												
-L- 61+92.00	LT	736		113.12'	108.61'												1			1			1													REMOVE DRAINAGE STRUCTURE
		736	721		108.61'	107.80'									52'																					
		721	722		107.80'	107.00'									32'																					
		736	713		108.61'	108.67'			20'																											
-L- 62+07.96	LT	713		113.28'	108.67'												1			1	1															
		713	719		108.67'	108.73'									24'																					
-L- 62+30.31	LT	719		113.50'	108.73'												1			1	1															40'	REMOVE DRAINAGE STRUCTURE
		719	724		108.73'	109.38'			216'																											
-L- 64+42.75	LT	724		113.18'	109.38'												1													1						
		724	714		109.43'	109.60'		16'																													
-L- 64+58.65	LT	714		112.48'	109.60'												1			1	1															111'	
		714	741		109.60'	109.78'								24'																						
-L- 64+82.44	LT	741		112.78'	109.78'												1			1	1																
-L- 65+00.00	LT	732		112.32'	109.15'												1						1		1	1										
		732	733		109.15'	108.60'								112'																						
-L- 66+10.00	LT	733		111.77'	108.60'												1						1		1	1										
		733	813		108.60'	108.09'								104'																						
-L- 67+12.00	LT	813		111.26'	108.09'												1						1		1	1										
		813	814		108.09'	107.50'								72'																						
-L- 67+82.00	LT	814		110.91'	105.80'												1	0.1'					1		1	1										
		814	801		105.80'	105.97'								44'																						
-L- 67+88.00	RT	801		108.97'	105.97'												1			1		1														
		814	812		105.80'	105.70'								28'																						
-L- 67+82.00	LT	812		111.86'	105.70'												1	1.2'		1			1													
		812	817		105.70'	104.00'			36'																											
-L- 67+82.66	LT	817			104.00'																																PIPE END
-L- 69+22.03	LT	818			103.40'																																PIPE END
SHEET 3-D TOTAL								112'	36'	236'	40'			156'	608'	172'	68'		21	1.3		10	5	2	3	8		9	10		1			1			0.195		604'	

ABBREVIATIONS

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

COMPUTED BY: D.R.ETHRIDGE DATE: 4/1/2014
CHECKED BY: DRE DATE: 4/1/2014

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3331	3-E

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
		818	804		103.40'	103.95'													
-L- 69+86.00	RT	804		108.22'	103.95'														
		804	805		103.95'	104.05'													
-L- 69+95.00	RT	805		108.20'	104.05'														
		805	806		104.05'	107.20'					76'								
-L- 70+39.00	RT	806		111.10'	107.20'														
		806	807		107.20'	107.35'													
-L- 70+79.75	RT	807		111.10'	107.35'														
-L- 71+46.00	RT	810		109.53'	105.80'														
		810	809		105.80'	105.65'													
-L- 71+46.04	LT	809		109.77'	105.65'														
		809	808		105.65'	105.60'				12'									
-L- 71+47.00	LT	808		109.90'	105.60'														
		808	803		105.60'	104.80'				184'									
-Y6- 11+40.00	RT	803		108.90'	103.66'														
		803	819		106.23'	108.00'					56'								
-Y6- 10+60.86	RT	819			108.00'														
		803	802		103.66'	103.25'					132'								
-Y6- 12+33.00	RT	802		110.50'	103.15'														
-L- 68+45.29	LT	820		107.20'	103.35'														
-L- 68+93.00	LT	815		107.50'	103.45'														
		815	802		103.45'	103.15'						100'							
		802	816		103.15'	102.85'						72'							
-Y6- 13+11.00	RT	816		108.20'	102.85'														
		816	811		102.85'	102.00'						216'							
-L- 70+70.43	LT	811			102.00'														
-Y4- 15+11.00	LT	622			91.00'														
		622	623		91.00'	90.90'													
-Y4- 15+13.00	LT	623		97.31'	90.90'														
		623	624		90.90'	90.60'													
-Y4- 15+15.50	RT	624		97.31'	90.60'														
		624	625		90.60'	90.48'									16'				
-Y4- 15+18.10	RT	625		97.67'	90.48'														
-L- 40+45.00	RT	605																	
-L- 40+45.00	LT	606																	
SHEET 3-E TOTAL										196'	264'	388'			16'				
SHEET 3-A TOTAL									456'	120'									
SHEET 3-B TOTAL									16'		44'								
SHEET 3-C TOTAL									88'	44'	24'		28'						
SHEET 3-D TOTAL									112'	36'	236'	40'							
SHEET 3-E TOTAL										196'	264'	388'			16'				
PROJECT TOTALS									672'	396'	568'	428'	28'		16'				
SAY																			

STATION / STRUCTURE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	77"X52" CSP	REINFORCED ENDWALLS CSP (CU. YARDS)
818–804																					104'					
804–805																				8'						
806–807																				36'						
810–809																			36'							
-L- 68+45.29 LT 820																					96'					
622–623																12'										
623–624																								28'		
-L- 40+45.00 RT 605																									32'	7.4
-L- 40+45.00 LT 606																									48'	7.4
SHEET 3-E TOTAL																12'			36'	44'	200'			28'	80'	14.8
SHEET 3-A TOTAL																		756'	240'	92'						
SHEET 3-B TOTAL																		1260'	120'	196'						
SHEET 3-C TOTAL																		884'	344'	364'	264'	432'				
SHEET 3-D TOTAL												156'						608'		172'	68'					
SHEET 3-E TOTAL																12'			36'	44'	200'			28'	80'	14.8
PROJECT TOTALS												156'				12'		3508'	740'	868'	532'	432'		28'	80'	14.8

STATION / STRUCTURE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	GRATED D.I. TYPE "A" STD. 840.17 OR 840.26	FRAME WITH TWO WIDE SLOT SAG GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	CONV. EXIST. C.B. TO J.B.	T.B. PRECASTED D.I. STD. 840.14 AND 840.46	OUTLET CONTROL STRUCTURE SEE DETAIL ON SHEET 2-E	SLUICE GATE (6" OPENING)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 69+86.00 RT 804			1			1		1																	114'	REMOVE DRAINAGE STRUCTURE
-L- 69+95.00 RT 805			1			1	1																			
-L- 70+39.00 RT 806			1			1			1																	REMOVE DRAINAGE STRUCTURE
-L- 70+79.75 RT 807			1			1		1																		
-L- 71+46.00 RT 810			1			1			1																	
-L- 71+46.04 LT 809			1			1		1																		
-L- 71+47.00 LT 808			1									1	1													
-Y6- 11+40.00 RT 803			1	0.2'										1	1										52'	REMOVE DRAINAGE STRUCTURES
-Y6- 10+60.86 RT 819																									105'	PIPE END, REM DRAIN STRUCTURE
-Y6- 12+33.00 RT 802			1	2.3'										1	1										130'	
-L- 68+93.00 LT 815			1																		1	1				
-Y6- 13+11.00 RT 816			1	0.4'										1	1										156'	
-L- 70+70.43 LT 811																										PIPE END
-Y4- 15+11.00 LT 622	6.0																									
-Y4- 15+13.00 LT 623			1	1.4'		1	1																			REMOVE DRAINAGE STRUCTURE
-Y4- 15+15.50 RT 624			1	1.7'		1	1																		49'	
-Y4- 15+18.10 RT 625				2.2'															1							
-L- 40+45.00 RT 605																								6.5660		EXTEND DOUBLE PIPE LINE
-L- 40+45.00 LT 606																								6.5660		EXTEND DOUBLE PIPE LINE
SHEET 3-E TOTAL	6.0		13	8.2'		8	3	3	2			1	1	3	3				1		1	1		13.1320	606'	
SHEET 3-A TOTAL			21	5.3'		9	1	1	7	4		9	11				1	1		2					172'	
SHEET 3-B TOTAL			22	0.5'		21	3	10	8		9	1	1												248'	
SHEET 3-C TOTAL			14	2.7'		13	2	5	6			1	1												893'	
SHEET 3-D TOTAL			21	1.3'		10	5	2	3	8		9	10			1				1			0.195		604'	
SHEET 3-E TOTAL	6.0		13	8.2'		8	3	3	2			1	1	3	3				1		1	1		13.1320	606'	
PROJECT TOTALS	6		91	18		61	14	21	26	12	9	21	24	3	3	1	1	1	1	3	1	1	0.195	13.132	2523'	
SAY	6			18																			1	14		

COMPUTED BY:	D.R.E.	DATE:	4/1/2014
CHECKED BY:	D.R.E.	DATE:	4/1/2014

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
GUARDRAIL SUMMARY

PROJECT REFERENCE NO.	SHEET NO.
U-3331	3-F

"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

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	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	TYPE-III	G	NG				
-L-	28+44.50	30+69.50	RT.	225.00			30+69.50	30+69.50									1						1						
-L-	33+67.50	35+92.50	LT.	225.00			33+67.50	33+67.50									1						1						
			SUBTOTAL	450.00													2						2						
	GRAU 350	2@50'	100.00																										
	TYPE III	2@18.75'	37.50																										
	TOTAL DEDUCTIONS			-137.50																									
			TOTAL	312.50													2						2						
ADDITIONAL GUARDRAIL POSTS			10	EA.																									

SUMMARY OF 48" CHAIN LINK FENCE

STATION TO STATION	FABRIC L.F.	LINE POSTS	TERMINAL POSTS
-L- 66+52 TO -Y6- 11+54	521.00	45	8
-Y6- 11+42 TO -L- 10+15	396.00	34	6
TOTAL	917	79	14
SAY	917	79	14

REMOVAL OF EXISTING ASPHALT PAVEMENT

STATION TO STATION			LOC	SQUARE YARDS
L	17+93	18+17	LT	84
L	18+53	20+06	RT	130
L	20+65	31+87	CL	2757
L	33+36	38+97	CL	1494
L	63+49	64+61	LT	68
L	64+85	68+62	LT	1454
L	67+42	68+35	LT	210
L	68+56	69+58	LT	414
L	68+79	71+38	LT	982
L	69+21	69+81	LT	67
Y1	13+90	14+80	CL	84
Y2	9+95	10+50	LT	178
Y4	13+40	16+77	RT	488
TOTAL				8410
SAY				8500

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD/UD	750
				TOTAL LF:	750

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

SUMMARY OF EARTHWORK

Volumes in Cubic Yards

STATION TO STATION				Uncl. Excav.	Undercut	Embank +%	Borrow	Waste
L	12+90.00	TO	18+00.00	364		975	702	91
Y1	11+00.00	TO	16+70.05	125		1100	1007	32
			SUBTOTAL	489		2075	1709	123
L	18+00.00	TO	30+91.91 BEGIN BRIDGE	4346		5277	2018	1087
Y2	10+50.00	TO	11+07.34	36		82	55	9
			SUBTOTAL	4382		5359	2073	1096
L	33+45.09 END BRIDGE	TO	46+00.00	2256		2734	1042	564
			SUBTOTAL	2256		2734	1042	564
L	46+00.00	TO	55+50.00	443		870	538	111
Y4	12+17.14	TO	16+76.60	247		267	82	62
			SUBTOTAL	690		1137	620	173
L	60+00.00	TO	71+46.60	1914		2004	569	479
Y6	10+34.07	TO	13+26.33	123		105	13	31
			SUBTOTAL	2037		2109	582	510
TOTAL				9854		13414	6026	2466
PROJECT TOTAL				9854		13414	6026	2466
ESTIMATE TO REPLACE TOPSOIL ON BORROW PIT							301	
GRAND TOTAL				9854		13414	6327	2466
SAY				9900			6400	

ESTIMATED UNDERCUT EXCAVATION – 1000 CY
ESTIMATED SHALLOW UNDERCUT – 1000 CY

SUMMARY OF RIP RAP

LINE	STATION	RIP RAP, CLASS II TONS	RIP RAP, CLASS I TONS	RIP RAP, CLASS B TONS	GEOTEXTILE FOR DRAINAGE SY
L	28+72			3	11
L	38+16			3	10
L	43+03			11	28
L	62+70			8	21
L	67+83			2	7
Y6	10+81			5	16
Y6	10+92			5	16
L	69+22			5	16
L	38+16		14		15
L	40+45		11		15
L	61+03		14		15
L	32+11	116			123
L	33+17	64			68
TOTAL		180	39	42	361
SAY		180	40	50	365

PROJECT REFERENCE NO.	SHEET NO.
U-3331	3-G

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL NO.	SHEET NO.	PROPERTY OWNERS NAMES
1	4	GOODWILL COMM FOUNDATION INC.
2	4	MCDONALDS REAL ESTATE COMPANY
3	4	BRANCH BANKING TRUST COMPANY
4	4	LRC ROCKY MOUNT INVESTORS LLC
5	4	AMERICAN STORAGE,LLC.
6	4	JOHN L. COLE
7	4	CITY OF ROCKY MOUNT (FEMA)
9	4	MARVIN C. SHERROD,JR.
10	4	WARREN PROPERTIES ROCKY MOUNT NC LLC
11	4,5	WARREN PROPERTIES ROCKY MOUNT NC LLC
12	4,5	JAMES BOYD WARREN
13	4,5	RDG REAL ESTATE LLC
14	5	RDG REAL ESTATE LLC
15	5	LOYAL ORDER OF THE MOOSE, INC.
16	5	CITY OF ROCKY MOUNT (FEMA)
17	5	A. DONALD STALLINGS et al
18	5	CITY OF ROCKY MOUNT (FEMA)
19	5	JOHN H. HIGH
20	5	A. DONALD STALLINGS et al
21	5	FIRST BAPTIST CHURCH OF ROCKY MOUNT
22	5	SUNSET CO.
23	5,6	CITY OF ROCKY MOUNT (FEMA)
24	5,6	FIRST BAPTIST CHURCH OF ROCKY MOUNT
25	5,6	CITY OF ROCKY MOUNT (FEMA)
26	6	CITY OF ROCKY MOUNT (FEMA)
27	6	JESSE B. OVERTON et al
28	6	CITY OF ROCKY MOUNT (FEMA)
29	6	DONALD L. WILLIAMS
30	6	OAKWOOD PROPERTIES, LLC
31	6	M.C. SHERROD
32	6	MOMEYER PROPERTIES LLC
33	6	MICHAEL D. BULLARD
34	6	ANGELYN C. EZZELL
35	6	OAKWOOD PROPERTIES, LLC
36	6,7	WILLIAM CRYSTAL BROWN
37	7	GWENDOLYN L. TAYLOR PATRICIO
38	7	CENTURA BANK INC.

PARCEL NO.	SHEET NO.	PROPERTY OWNERS NAMES
39	7	RBH ASSOCIATES LLC
40	7	COVENANT HOMES,INC.
41	7,8	BODDIE-NOELL ENTERPRISES,INC.
42	8	NASH COMMUNITY HEALTH SERVICES
43	6	MONTEY M. EVANS & SANDRA W. EVANS
44	6	MARK A. LANCASTER, JR

LINE -L-			LINE -Y2-
PI Sta 11+05.48	PI Sta 14+83.08	PI Sta 22+96.36	PI Sta 10+61.36
Δ = 21° 57' 10.0" (LT)	Δ = 55° 36' 51.0" (LT)	Δ = 30° 44' 56.0" (LT)	Δ = 60° 11' 08.0" (RT)
D = 10° 32' 07.1"	D = 11° 00' 00.0"	D = 3° 34' 51.6"	D = 76° 23' 39.7"
L = 208.37'	L = 505.58'	L = 858.67'	L = 78.78'
T = 105.48'	T = 274.71'	T = 439.95'	T = 43.46'
R = 543.85'	R = 520.87'	R = 1,600.00'	R = 75.00'
	SE=0.02	SE=0.03	
		RUNOFF = 135'	

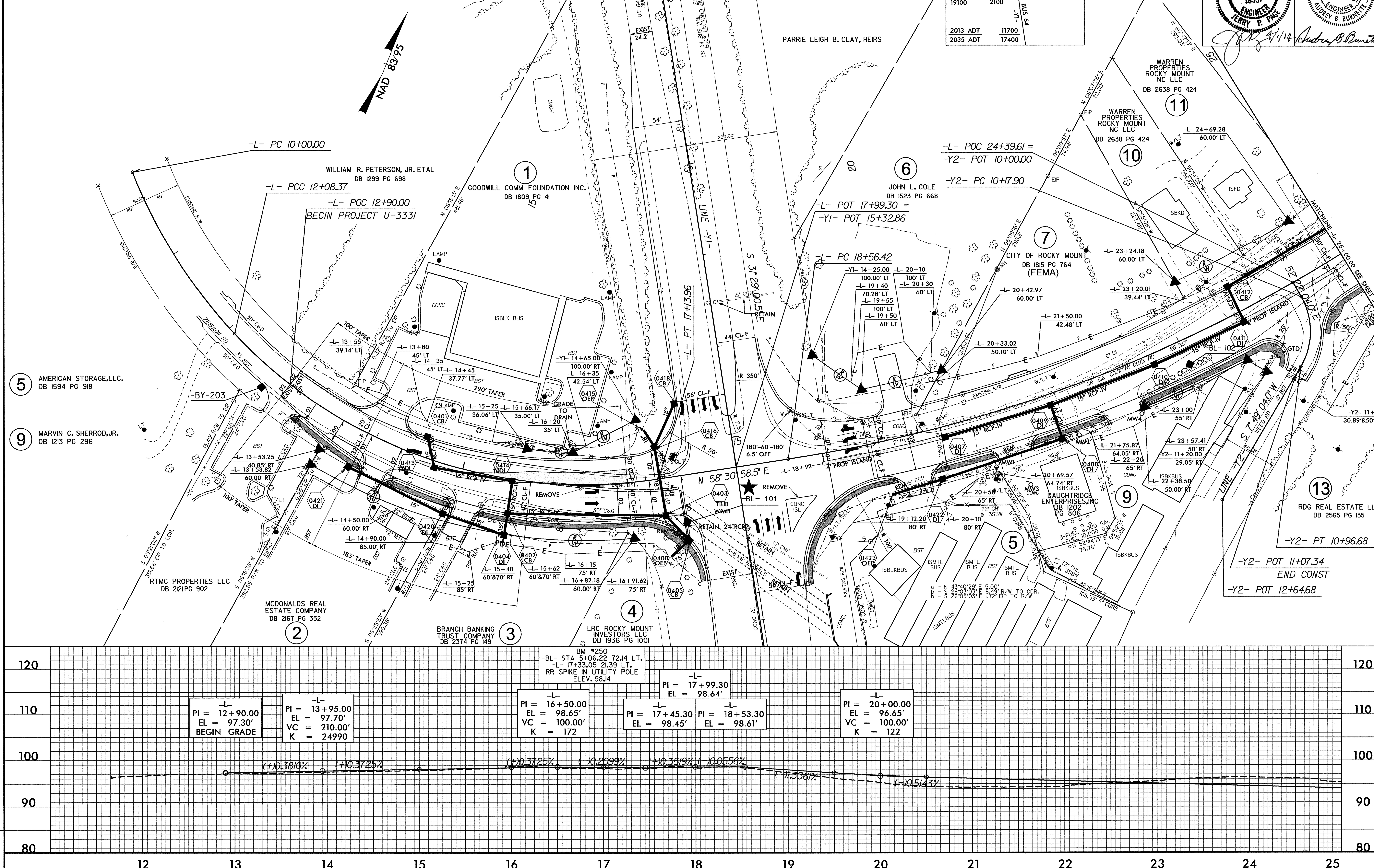
10300 / 14900	-Y1- BUS 64		
ZEBULON ROAD -L-	4100 / 5700	3300 / 4600	SR1616
11800 / 19100	1700 / 2100	7100 / 10700	16400 / 26600
2013 ADT / 2035 ADT	11700 / 17400	-Y1- BUS 64	

★	TRAFFIC SIGNAL
	PROP CONC ISLAND (5" MONOLITHIC KEYED IN)
	PROP CONC SIDEWALK
FOR -Y1- PROFILE, SEE SHEET NO. 09	
FOR -Y2- PROFILE, SEE SHEET NO. 09	
SEE PMP PLANS FOR CURB RAMP LOCATIONS	

PROJECT REFERENCE NO.	SHEET NO.
U-3331	04
R/W SHEET NO.	04

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18537 ENGINEER JERRY P. PAGE — 4/1/14

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 23090 ENGINEER AUDREY B. BURNETTE — 3/31/2014



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PROJECT REFERENCE NO.	SHEET NO.
U-3331	05
RW SHEET NO.	05

PROP CONC ISLAND
PROP CONC SIDEWALK
BRIDGE APPROACH SLAB
CLASS B RAP RIP & GEOTEXTILE FOR DRAINAGE SEE SHEET 3-F FOR QUANTITIES
SEE PMP PLANS FOR CURB RAMP LOCATIONS

SEE S-1 THUR S-36 FOR STRUCTURE PLANS

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18537 ENGINEER JERRY P. PAGE
4/1/14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23090 ENGINEER ANDREW B. BURNETTE
3/31/2014

3 BAR METAL RAIL
TYPE-III
5.5'SIDEWALK
64.25' CLEAR ROADWAY
12' 12' 12' 12'
5.5'SIDEWALK
TYPE-III
3 BAR METAL RAIL
-L- POT 30+91.91 BEGIN BRIDGE
-L- POT 33+45.09 END BRIDGE

NAD 83/95

LINE -DRI-
PI Sta 11+35.44
Δ = 89°15'23.0" (RT)
D = 2°86'28" 44.0"
L = 311.16'
T = 197.4'
R = 20.00'

-DRI- POT 10+00.00
-DRI- PC 11+15.70
-DRI- PT 11+46.85

-L- PC 35+66.09
-L- POC 36+05.02 =
-DRI- POT 11+88.87
-L- POT 33+45.09 END BRIDGE

-L- PT 27+15.09
-L- PT 38+75.48

-BL- 103
-BL- 104

SR 1616 COUNTRY CLUB RD
N 27°46'02.5" E
GRAU 350
MATCHLINE -L- 25+00.00 SEE SHEET 4
MATCHLINE -L- 39+00.00 SEE SHEET 6

(12) JAMES BOYD WARREN DB 2181 PG 461
(13) RDG REAL ESTATE LLC DB 2565 PG 135
(14) RDG REAL ESTATE LLC DB 2565 PG 135
(15) LOYAL ORDER OF THE MOOSE, INC. DB 789 PG 581.
(16) (FEMA) CITY OF ROCKY MOUNT DB 1760 PG 52
(17) A. DONALD STALLINGS et al DB 1697 PG 569
(18) (FEMA) CITY OF ROCKY MOUNT DB 1877 PG 1070
(19) JOHN H. HIGH DB 1388 PG 264 DB 1330 PG 380
(20) A. DONALD STALLINGS et al DB 1697 PG 569
(21) FIRST BAPTIST CHURCH OF ROCKY MOUNT DB 2433 PG 977
(22) SUNSET CO. DB 1235 PG 905
(23) CITY OF ROCKY MOUNT DB 1760 PG 60 (FEMA)

PAVED DRIVE SEE TYPICAL SECTION NO. 10 SHEET 2B
STANDARD BASE DITCH SEE DETAIL A SHEET 2-C
ARMOR EXIST. STREAM EMBANKMENT WITH CLASS I RIPRAP SEE DETAIL J SHEET 2-C
BANK STABILIZATION SEE DETAIL M SHEET 2-C

PI Sta 37+20.92
Δ = 5°54'32.4" (LT)
D = 1°54'35.5"
L = 309.39'
T = 154.83'
R = 3,000.00'
SE=0.025(RC)
RUNOFF= 112.5

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 11,800	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 99.3	FT
BASE DISCHARGE	= 14,000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 100.8	FT
OVERTOPPING DISCHARGE	= 4,815	CFS
OVERTOPPING FREQUENCY	= 10	YRS
OVERTOPPING ELEVATION	= 93.7	FT
	=	FT
DATE OF SURVEY	= 06/2008	
W.S. ELEVATION AT DATE OF SURVEY	= DRY	FT

BM #251
-BL- STA 18+93.61 18.62 RT.
-L- 31+21.21 14.62 RT
RR SPIKE IN BASE OF 15" SWEET GUM
ELEV. 96.24

BM #252
-BL- STA 22+28.18 52.16 RT.
-L- 34+56.96 32.74 RT.
RR SPIKE IN BASE OF 36" PINE
ELEV. 97.31

EXIST. BRIDGE AND PIERS TO BE REMOVED

BRIDGE @ STA 32+18.5 -L-
5 SPAN 21" CORE SLAB
SKEW 120°
LENGTH=253'-2 1/8"

-L-
PI = 26+70.00
EL = 93.20'
VC = 130.00'
K = 134

-L-
PI = 34+10.00
EL = 96.60'
VC = 110.00'
K = 74

-L-
PI = 36+90.00
EL = 93.70'
VC = 220.00'
K = 128

(-)0.5143% (+)0.4589% (+)0.4589% (-)1.0345% (-)1.0345% (+)0.6902%

120 110 100 90 80 70

25 26 27 28 29 30 31 32 33 34 35 36 37 38 39

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DDC4

	PROJECT REFERENCE NO.	SHEET NO.
PROP CONC ISLAND	U-3331	06
PROP CONC SIDEWALK	R/W SHEET NO.	06
FOR -Y4- PROFILE, SEE SHEET NO. 09		
CLASS B RAP RIP & GEOTEXTILE FOR DRAINAGE SEE SHEET 3-F FOR QUANTITIES		
SEE PMP PLANS FOR CURB RAMP LOCATIONS		

CITY OF ROCKY MOUNT DB 1811 PG 21 (FEMA) 25

CITY OF ROCKY MOUNT DB 1795 PG 566

CITY OF ROCKY MOUNT DB 1761 PG 152 (FEMA) 26

CITY OF ROCKY MOUNT DB 1763 PG 377 (FEMA) 28

DONALD L. WILLIAMS DB 1021 PG 261 29

M.C. SHERROD DB 2134 PG 119 31

MOMEYER PROPERTIES LLC DB 2582 PG 450 32

MICHAEL D. BULLARD DB 1713 PG 896 33

ANGELYN C. EZZELL DB 905 PG 446 DB 927 PG 82 34

WILLIAM CRYSTAL BROWN 36

FIRST BAPTIST CHURCH OF ROCKY MOUNT DB 2433 PG 977 24

CITY OF ROCKY MOUNT DB 1760 PG 60 23

JESSE B. OVERTON et al (LANDLORD) STONEY CREEK VOLUNTEER FIRE DEPARTMENT (TENANT) DB 962 PG 129 27

OAKWOOD PROPERTIES, LLC DB 2084 PG 606 30

OAKWOOD PROPERTIES, LLC DB 2084 PG 606 35

OAKWOOD PROPERTIES LLC

MONTEY M. EVANS & SANDRA W. EVANS 43

MARK A. LANCASTER, JR 44

INLET CHANNEL IMPROVEMENT SEE DETAIL C SHEET 2-C

OUTLET CHANNEL IMPROVEMENT SEE DETAIL D SHEET 2-C

DITCH CLEAN OUT SEE DETAIL B SHEET 2-C

MATCHLINE -L- 39+00.00 SEE SHEET 5

MATCHLINE -L- 53+00.00 SEE SHEET 7

-L- POT 46+02.88 = -Y4- POT 12+98.86 = -Y4- PC 13+36.86

-Y4- PRC 15+48.31

-Y4- PT 16+76.60 END CONST

-Y4- POT 17+71.60

-BL- 105

-BL- 106

-BY3- 204

NAD 83/95

LINE -Y4-

PI Sta 16+12.61
Δ = 9° 48' 00.6" (LT)
D = 7° 38' 22.0"
L = 128.28'
T = 64.30'
R = 750.00'

PI Sta 14+43.29
Δ = 16° 09' 14.3" (RT)
D = 7° 38' 22.0"
L = 211.46'
T = 106.43'
R = 750.00'

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18537 ENGINEER JERRY P. PAGE
4/1/14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23090 ENGINEER AUDREY B. BURNETTE
3/31/2014

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE (2)-77" X 52" CSP

DRAINAGE AREA	= 467	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 850	CFS
DESIGN HW ELEVATION	= 95.7	FT
100 YEAR DISCHARGE	= 1000	CFS
100 YEAR HW ELEVATION	= 96.1	FT
OVERTOPPING FREQUENCY	= <2	YRS
OVERTOPPING DISCHARGE	= 185	CFS
OVERTOPPING ELEVATION	= 94.2	FT

BM #253
-BL- STA 30+40.26 25.19 RT.
-L- 42+66.20 31.73 RT.
RR SPIKE IN UTILITY POLE
ELEV. 96.18

-L-
PI = 40+30.00
EL = 96.05'
VC = 50.00'
K = 263

-L-
PI = 45+10.00
EL = 98.45'
VC = 100.00'
K = 170

-L-
PI = 48+50.00
EL = 102.15'
VC = 50.00'
K = 483

(+)0.6902% (+)0.5000% (2)77" X 52" CSP (+)0.5000% (+)1.0682% (+)1.0682% (+)1.1917%

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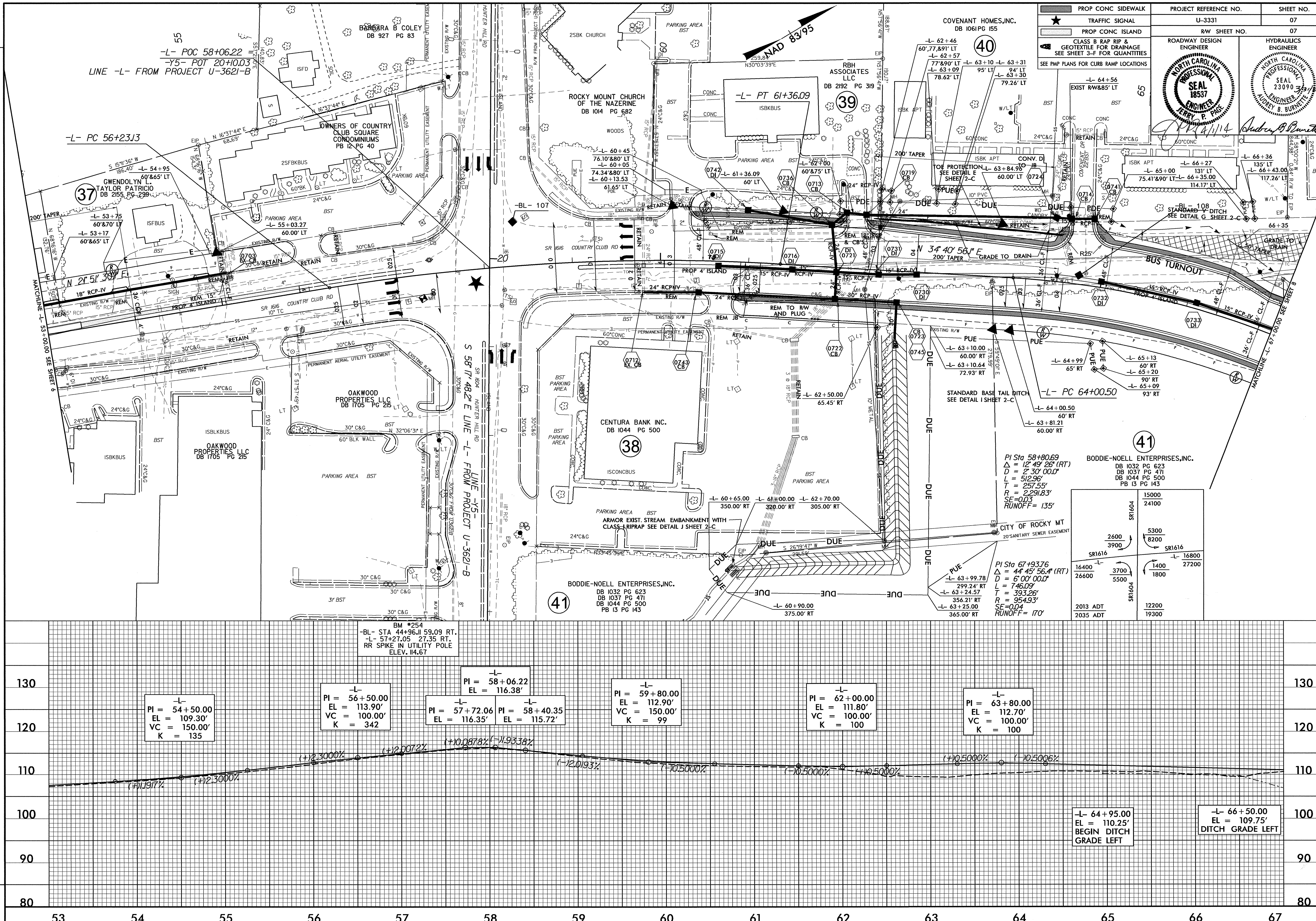

PROJECT REFERENCE NO. U-3331
SHEET NO. 07
R/W SHEET NO. 07
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18537 ENGINEER JERRY P. PAGE
NORTH CAROLINA PROFESSIONAL SEAL 23090 ENGINEER AUDREY B. BURNETTE
PROP CONC SIDEWALK
TRAFFIC SIGNAL
PROP CONC ISLAND
CLASS B RAP RIP & GEOTEXTILE FOR DRAINAGE SEE SHEET 3-F FOR QUANTITIES
SEE PMP PLANS FOR CURB RAMP LOCATIONS
NAD 83/95
-L- POC 58+06.22
-Y5- POT 20+10.03
LINE -L- FROM PROJECT U-3621-B
-L- PC 56+23.13
-L- PT 61+36.09
-L- PC 64+00.50
S 58°17'48.2" E LINE -L- FROM PROJECT U-3621-B
BARBARA B COLEY DB 927 PG 83
OWNERS OF COUNTRY CLUB SQUARE CONDOMINIUMS PB 12 PG 40
GWENDOLYN L. TAYLOR PATRICIO DB 2155 PG 299
ROCKY MOUNT CHURCH OF THE NAZERINE DB 1014 PG 682
RBH ASSOCIATES LLC DB 2192 PG 319
COVENANT HOMES, INC. DB 1061 PG 155
OAKWOOD PROPERTIES LLC DB 1705 PG 215
CENTURA BANK INC. DB 1044 PG 500
BODDIE-NOELL ENTERPRISES, INC. DB 1032 PG 623 DB 1037 PG 471 DB 1044 PG 500 PB 13 PG 143
SR 1616 COUNTRY CLUB RD
SR 1604 HUNTER HILL RD
BUS TURNOUT
PI Sta 58+80.69 Δ = 12° 49' 26" (RT) D = 2° 30' 00.0" L = 512.96' T = 257.55' R = 2,291.83' SE=0.03 RUNOFF= 135'
PI Sta 67+93.76 Δ = 44° 45' 56.4" (RT) D = 6° 00' 00.0" L = 746.09' T = 393.26' R = 954.93' SE=0.04 RUNOFF= 170'
2013 ADT
2035 ADT
BM #254 -BL- STA 44+96.11 59.09 RT. -L- 57+27.05 27.35 RT. RR SPIKE IN UTILITY POLE ELEV. 114.67
-L- PI = 54+50.00 EL = 109.30' VC = 150.00' K = 135
-L- PI = 56+50.00 EL = 113.90' VC = 100.00' K = 342
-L- PI = 57+72.06 EL = 116.35'
-L- PI = 58+06.22 EL = 116.38'
-L- PI = 58+40.35 EL = 115.72'
-L- PI = 59+80.00 EL = 112.90' VC = 150.00' K = 99
-L- PI = 62+00.00 EL = 111.80' VC = 100.00' K = 100
-L- PI = 63+80.00 EL = 112.70' VC = 100.00' K = 100
-L- 64+95.00 EL = 110.25' BEGIN DITCH GRADE LEFT
-L- 66+50.00 EL = 109.75' DITCH GRADE LEFT
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31-MAR-2014 09:24

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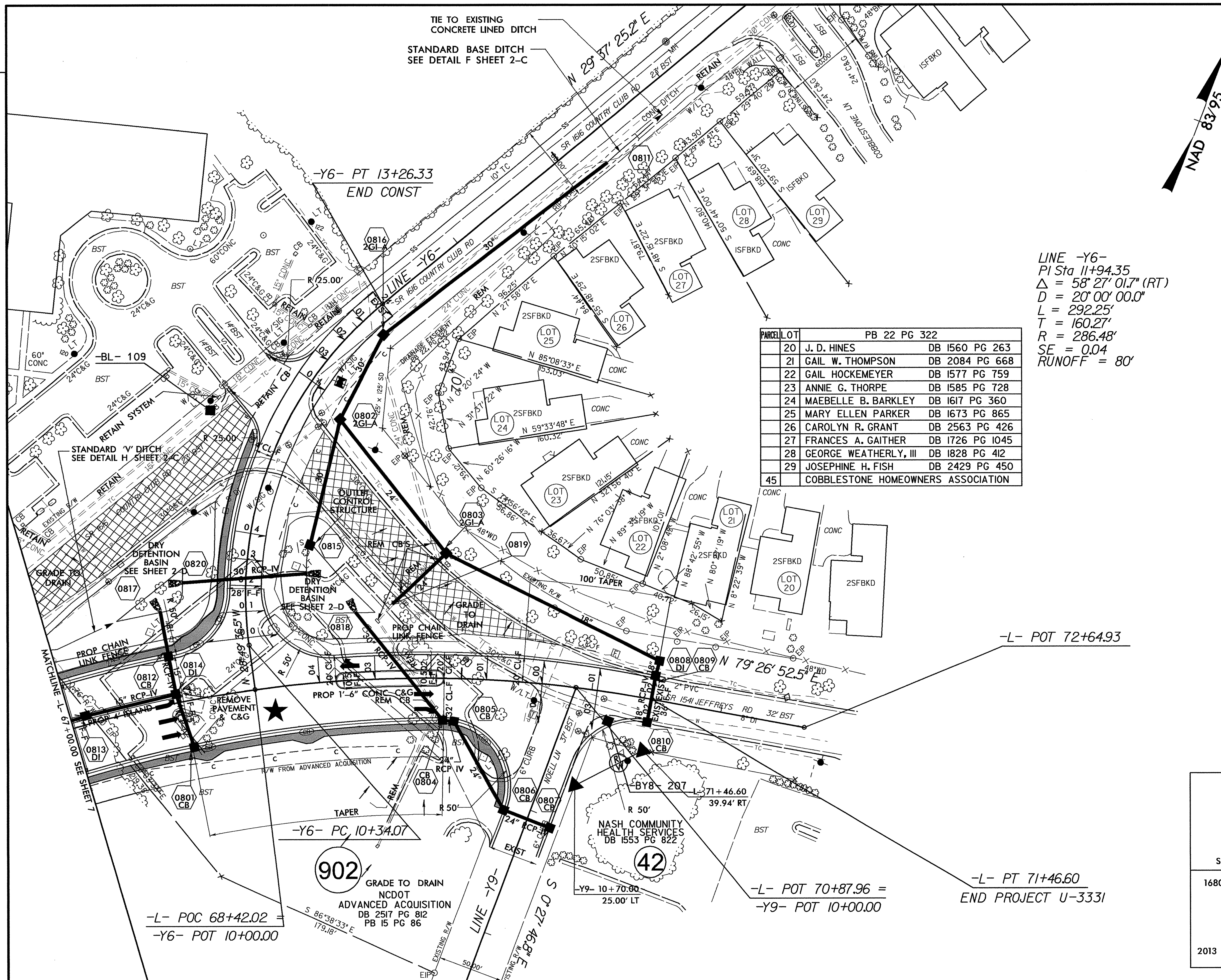
★	TRAFFIC SIGNAL
(grey fill)	PROP CONC SIDEWALK
FOR -Y6- PROFILE, SEE SHEET NO. 09	
(light fill)	PROP CONC ISLAND
(symbol)	CLASS B RAP RIP & GEOTEXTILE FOR DRAINAGE SEE SHEET 3-F FOR QUANTITIES
SEE PMP PLANS FOR CURB RAMP LOCATIONS	

PROJECT REFERENCE NO.	SHEET NO.
U-3331	08
R/W SHEET NO.	08

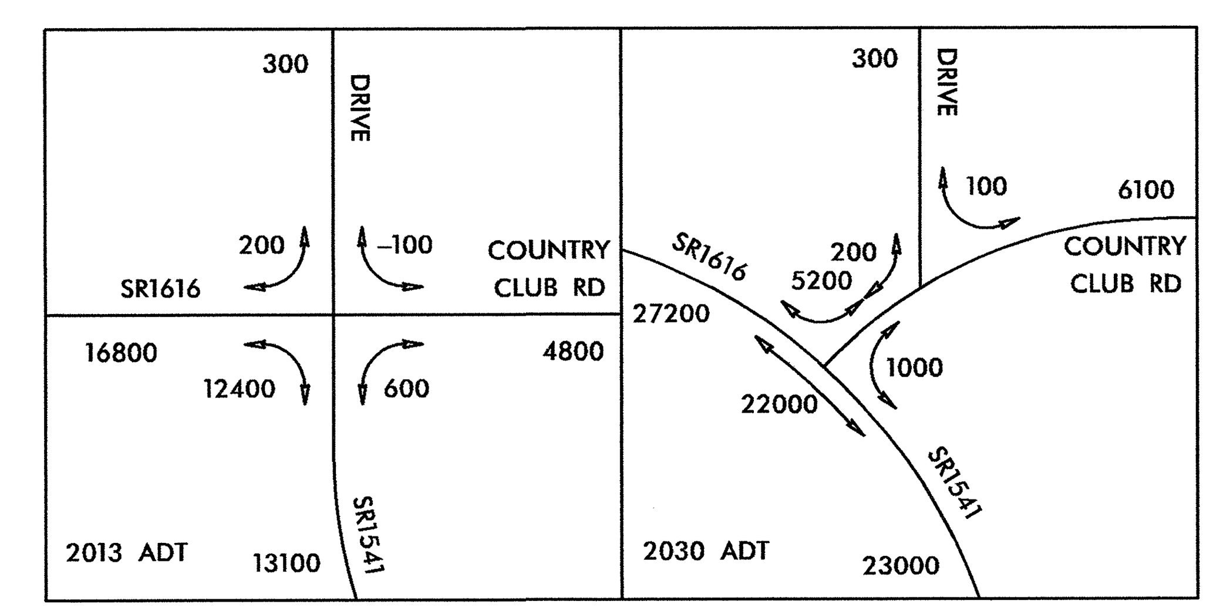
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18537 JERRY P. PAGE — 4/1/14

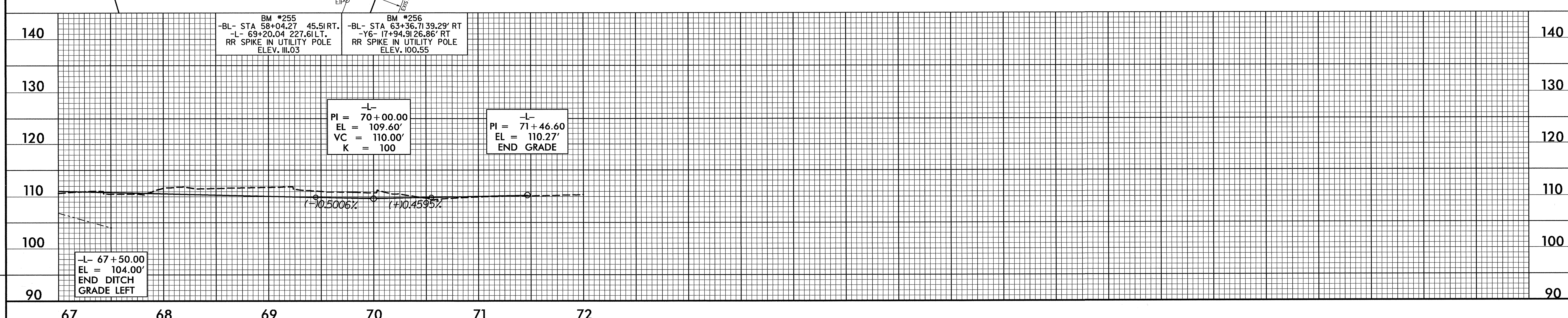
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23090 AUDREY B. BURNETTE — 3/31/2014



PARCEL	LOT	PB 22 PG 322	
	20	J. D. HINES	DB 1560 PG 263
	21	GAIL W. THOMPSON	DB 2084 PG 668
	22	GAIL HOCKEMEYER	DB 1577 PG 759
	23	ANNIE G. THORPE	DB 1585 PG 728
	24	MAEBELLE B. BARKLEY	DB 1617 PG 360
	25	MARY ELLEN PARKER	DB 1673 PG 865
	26	CAROLYN R. GRANT	DB 2563 PG 426
	27	FRANCES A. GAITHER	DB 1726 PG 1045
	28	GEORGE WEATHERLY, III	DB 1828 PG 412
	29	JOSEPHINE H. FISH	DB 2429 PG 450
45		COBBLESTONE HOMEOWNERS ASSOCIATION	

LINE -Y6-
PI Sta 11+94.35
Δ = 58° 27' 01.7" (RT)
D = 20° 00' 00.0"
L = 292.25'
T = 160.27'
R = 286.48'
SE = 0.04
RUNOFF = 80'





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PROJECT REFERENCE NO.	SHEET NO.
U-3331	09
R/W SHEET NO.	09

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18537 ENGINEER JERRY P. PASE

9/1/14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 23090 ENGINEER AUDREY B. BURNETTE

3/31/2014

Audrey B. Burnette

REVISIONS

LINE –Y1–

LINE –Y2–

–Y2–
PI = 10+00.00
EL = 94.39′
BEGIN GRADE

–Y2–
PI = 10+38.25
EL = 95.54′

–Y2–
PI = 10+52.50
EL = 95.97′
VC = 28.50′
K = 9

–Y2–
PI = 11+40.00
EL = 95.95′
VC = 50.00′
K = 168

–Y2–
PI = 12+50.00
EL = 95.60′
END GRADE

(+)3.0064%
(+)0.0210%
(–)0.3182%

LINE –DR1–

–DR1–
PI = 10+00.00
EL = 96.15′
BEGIN GRADE

–DR1–
PI = 10+60.00
EL = 96.00′
VC = 50.00′
K = 27

–DR1–
PI = 11+58.87
EL = 93.86′

–DR1–
PI = 11+88.87
EL = 94.61′
END GRADE

(–)0.2500%
(–)2.1645%
(+)2.5004%

LINE –Y4–

–Y4–
PI = 11+40.00
EL = 98.95′
BEGIN GRADE

–Y4–
PI = 12+25.00
EL = 98.70′
VC = 50.00′
K = 156

–Y4–
PI = 12+98.86
EL = 99.46′

–Y4–
PI = 12+68.86
EL = 98.71′

–Y4–
PI = 13+28.86
EL = 98.72′

–Y4–
PI = 15+55.25
EL = 97.60′
VC = 110.00′
K = 28

–Y4–
PI = 16+76.60
EL = 101.80′
END GRADE

(–)0.2941%
(+)0.0260%
(+)2.5083%
(–)2.4797%
(–)0.4953%
(–)0.4953%
(+)3.4621%

LINE –Y6–

–Y6–
PI = 10+00.00
EL = 110.39′
BEGIN GRADE

–Y6–
PI = 10+30.00
EL = 111.59′

–Y6–
PI = 12+21.05
EL = 113.00′
VC = 250.00′
K = 79

–Y6–
PI = 14+20.00
EL = 108.20′
END GRADE

(+)4.0000%
(+)0.7383%
(+)0.7383%
(–)2.4122%