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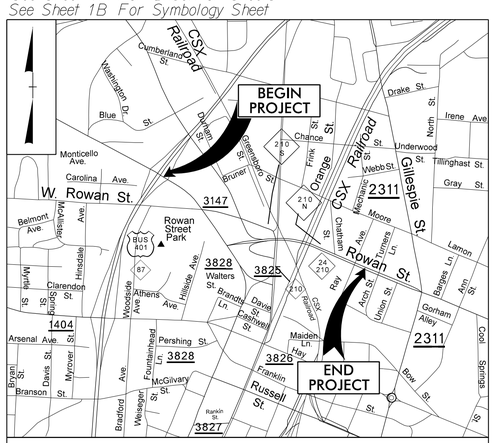
09/08/09

TIP PROJECT: B-4490

CONTRACT: C203659

See Sheet 1A For Index of Sheets
See Sheet 1B For Symbology Sheet



VICINITY MAP

NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

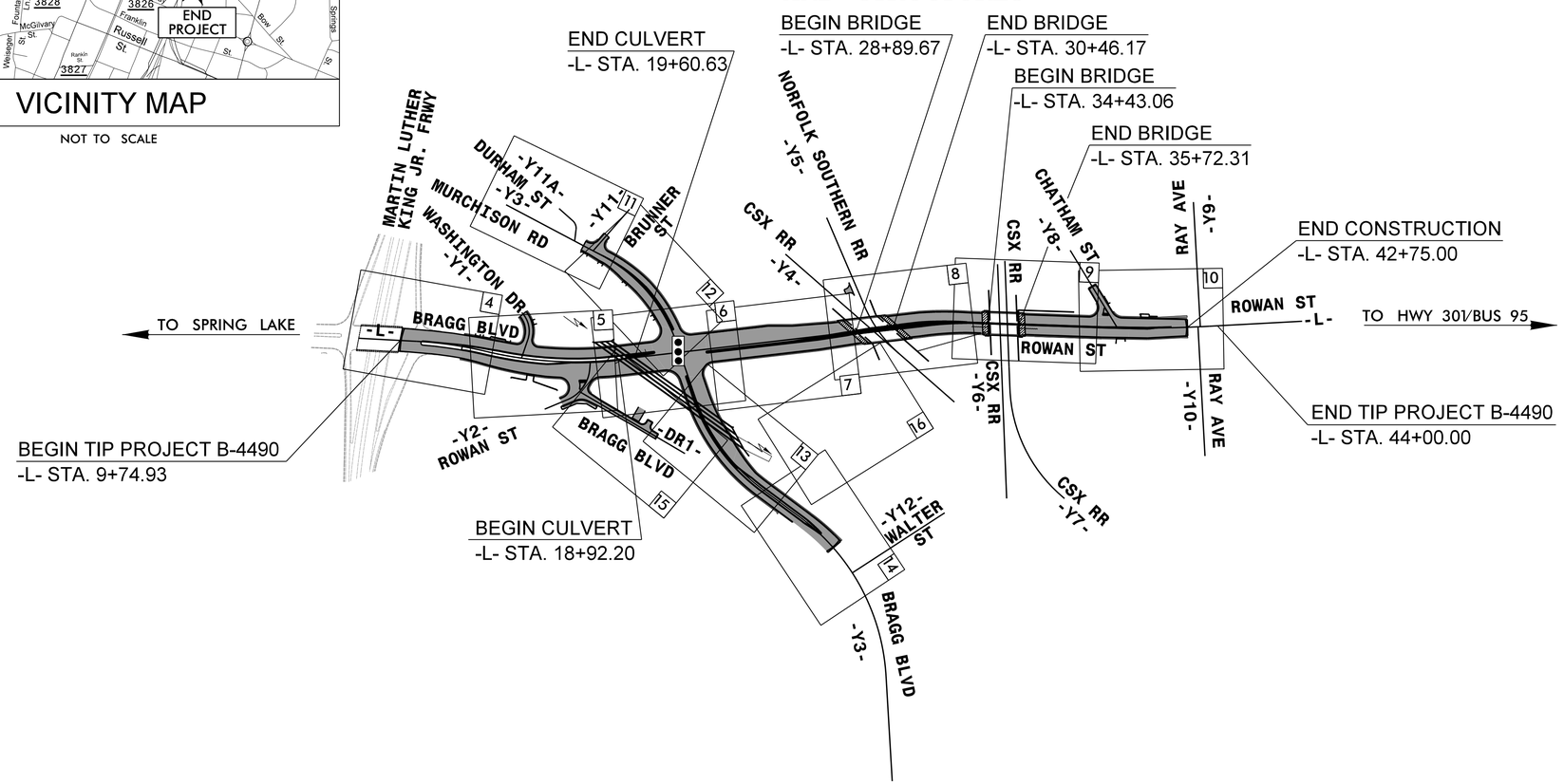
CUMBERLAND COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4490	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33727.1.1	BRNHS–0024(24)	P.E.
33727.2.FS1	BRNHS–0024(24)	RW
33727.2.FSU1	BRNHS–0024(24)	UTILITIES
33727.3.FS1	BRNHS–0024(24)	CONST.

LOCATION: BRIDGE NO. 116 OVER CSX RAILROAD, NORFOLK SOUTHERN RAILROAD, AND HILLSBORO STREET ON NC/24–210 (ROWAN STREET)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, RETAINING WALLS AND STRUCTURES



DESIGN EXCEPTIONS REQUIRED FOR MAXIMUM GRADE, SAG VERTICAL CURVE K, VERTICAL STOPPING SIGHT DISTANCE, AND SUPERELEVATION.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 20 10 0 20 40

PROFILE (HORIZONTAL): 20 10 0 20 40

PROFILE (VERTICAL): 4 2 0 4 8

DESIGN DATA

ADT 2015 = 34,813
ADT 2035 = 47,596
DHV = 10 %
D = 55 %
T = 3 % *
V = 40 MPH
(* TTST 1% + DUAL 2%)
FUNC CLASS = URBAN PRINCIPAL ARTERIAL STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4490 = 0.582 MILES
LENGTH STRUCTURE TIP PROJECT B–4490 = 0.067 MILES
TOTAL LENGTH TIP PROJECT B–4490 = 0.649 MILES

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 31, 2013

LETTING DATE:
JULY 19, 2016

TIM HAYES, PE
PROJECT ENGINEER

ERIC MISAK
PROJECT DESIGN ENGINEER

NCDOT CONTACT: REKHA V. PATEL, PE

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 039785 ENGINEER GREGORY A. FREEMAN JR.
DocuSigned by: Greg A. Freeman
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES
DocuSigned by: Tim Hayes
SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

3:40:36 PM
R:\B4490\Roadway\Proj\B4490_rdy_tsh.dgn
6/3/2016

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4490	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES

DocuSigned by: Jim Hayes 5/2/2016
3861351E178740D...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

INDEX OF SHEETS:

SHEET NUMBER	SHEET DESCRIPTION
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARDS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-2	SURVEY CONTROL SHEET B-4490
1D-1	CENTERLINE COORDINATE LIST
2A-1	PAVEMENT SCHEDULE, WEDGING DETAIL AND MILLING DETAILS
2A-2 THRU 2A-5	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-2	DETAIL SHOWING BRIDGE IN RELATION TO PAVEMENT
2B-3	DETAIL SHOWING PAVEMENT REMOVAL
2C-1	DETAIL TO CONVERT EXISTING DI, CB, OTCB OR GI TO JUNCTION BOX
2C-2	DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DI OR 2-GI
2C-3	DETAIL GUARDRAIL ANCHOR UNIT, TYPE III
2C-4	CURB RAMPS
2C-5	DETAIL OF SPECIAL CATCH BASIN
2C-6	DETAIL OF 2'-9" TO 2'-6" CURB & GUTTER TRANSITION SECTION
2C-7	DETAIL RETAINING WALL WROUGHT IRON FENCE
2C-8	COAL COMBUSTION PRODUCT PLACEMENT DETAIL
2G-1	EMBANKMENT STABILIZATION DETAILS AT BRIDGE APPROACHES
2G-2 THRU 2G-4	STANDARD TEMPORARY WALL
2H-1	STOCKPILE CONTAINMENT DETAIL
3B-1	ROADWAY SUMMARY (EARTHWORK, GUARDRAIL, PAVEMENT REMOVAL AND BREAKING EXISTING ASPHALT PAVEMENT)
3D-1 THRU 3D-6	DRAINAGE SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 16	PLAN SHEETS
17 THRU 25	PROFILE SHEETS
TMP-1 THRU TMP-32	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP- 4	PAVEMENT MARKING PLANS
EC-1 THRU EC- 35	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-6	SIGNING PLANS
SIG-1 THRU SCP-6	SIGNAL PLANS
UC-1 THRU UC-21	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-14	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION INDEX OF SHEETS
X-1B	CROSS-SECTIONS SUMMARY SHEET
X-1 THRU X-35	CROSS-SECTIONS
C-1 THRU C-18	CULVERT PLANS
S-1 THRU S- 84	STRUCTURE PLANS
W-1 THRU W-11	RETAINING WALL PLANS

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

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 project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
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
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands
852.10	Median Construction - with Curb and Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

GENERAL NOTES:

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

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.

SIDE ROADS:

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

UNDERDRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON 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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

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 Piedmont Natural Gas, Century Link,

Level 3, PWC- Distribution & transmission Power, Time Warner Cable, MCNC,

PWC Water & Sewer, PWC - Communications Fiber

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

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

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
B-4490	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — 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
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

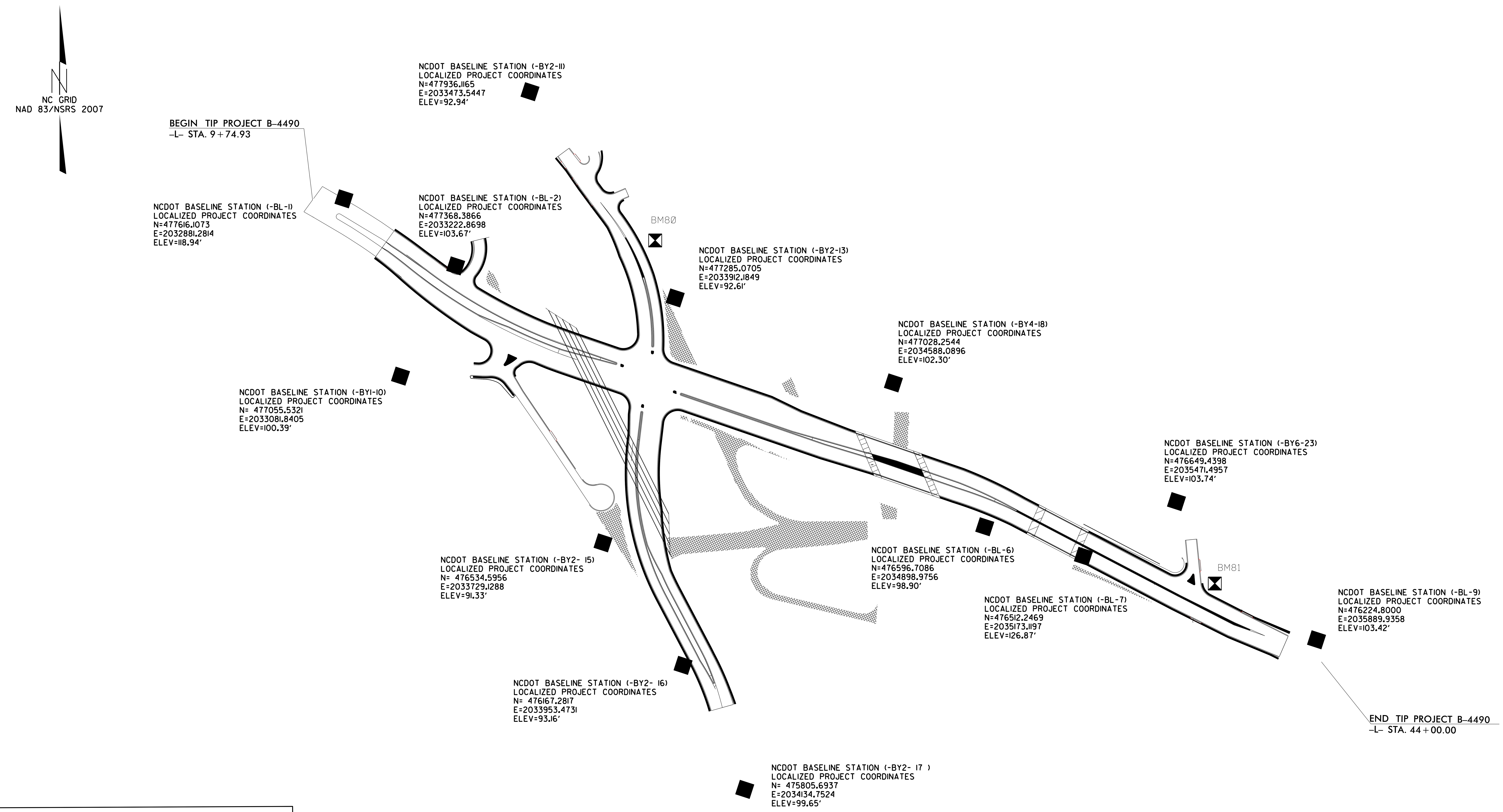
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
B-4490	IC-1
Location and Surveys	

SURVEY CONTROL SHEET B–4490



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "VANDER RM3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 464925.950(ft) EASTING: 2069182.420(ft)
ELEVATION: 151.824(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999878975
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "VANDER RM3" TO -L- STATION 9+74.93 IS
N 70° 47' 56.76" W 38,517.89'
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 NCDOT PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4490_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.

⊚ *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.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

SURVEY CONTROL SHEET B–4490

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4490 BL-1	477616.1073	2032881.2814	118.94	10+29.16	55.14 LT
2	B4490 BL-2	477368.3866	2033222.8698	103.67	14+45.52	44.78 LT
3	B4490 BL-3	477087.3452	2033476.3033	94.80	17+99.86	80.06 RT
4	B4490 BL-4	476889.8717	2034005.2624	94.20	23+59.50	91.47 RT
5	B4490 BL-5	476702.5842	2034612.2877	101.23	29+94.43	70.93 RT
6	B4490 BL-6	476596.7086	2034898.9756	98.90	33+08.21	68.94 RT
7	B4490 BL-7	476512.2469	2035173.1197	126.87	35+92.75	17.45 RT
8	B4490 BL-8	476361.6800	2035555.6653	105.78	40+01.93	25.94 LT
9	B4490 BL-9	476224.8000	2035889.9358	103.42	43+65.34	40.66 LT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
25	B4490 BL-3	477087.3452	2033476.3033	94.80	10+67.02	41.02 LT
10	B4490 BY1-10	477055.5321	2033081.8405	100.39	14+43.59	26.62 LT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
11	B4490 BY2-11	477936.1165	2033473.5447	92.94	OUTSIDE PROJECT LIMITS	
12	B4490 BY2-12	477650.6777	2033676.4645	92.75	13+45.31	26.12 LT
13	B4490 BY2-13	477285.0705	2033912.1849	92.61	17+56.05	76.17 LT
14	B4490 BL-4	476889.8717	2034005.2624	94.20	21+18.60	185.29 LT
15	B4490 BY2-15	476534.5956	2033729.1288	91.33	24+72.57	105.96 RT
16	B4490 BY2-16	476167.2817	2033953.4731	93.16	28+79.78	52.23 RT
17	B4490 BY2-17	475805.6937	2034134.7524	99.65	32+80.08	40.36 LT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
18	B4490 BY4-18	477028.2544	2034588.0896	102.30	12+59.51	33.10 RT
26	B4490 BL-5	476702.5842	2034612.2877	101.23	15+79.16	24.35 RT

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y6 STATION	OFFSET
27	B4490 BL-6	476596.7086	2034898.9756	98.90	13+04.87	186.12 RT
20	P4901 BL-5	476544.3649	2035050.0389	100.54	12+92.86	26.69 RT
21	P4901 BL-6	476141.3844	2034889.7808	98.94	17+26.34	13.57 RT

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	Y8 STATION	OFFSET
23	B4490 BY6-23	476649.4398	2035471.4957	103.74	10+72.19	24.55 RT
28	B4490 BL-8	476361.6800	2035555.6653	105.78	13+66.87	30.73 LT

BM80 ELEVATION = 93.57
N 477462 E 2033833
L STATION 20+10.00 394 LEFT
RR SPIKE IN BASE OF 30" GUM

BM81 ELEVATION = 106.57
N 476398 E 2035550
L STATION 39+81.00 56 LEFT
RR SPIKE IN BASE OF 18" HARDWOOD

FINAL ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	16+40.00	-83.32	477303.1347	2033401.8547
L	13+80.11	-64.85	477421.9754	2033183.8823
L	36+00.71	-69.50	476585.5812	2035220.5091
L	41+57.00	-45.36	476312.1609	2035702.7327
L	37+74.01	-69.50	476505.1825	2035374.0345
L	15+50.00	92.03	477195.9060	2033236.4266
L	14+40.00	65.60	477281.4680	2033154.6158
L	14+58.00	92.00	477249.0073	2033154.9212
L	16+55.00	-110.00	477320.1053	2033426.8032
L	19+00.00	-110.00	477229.9677	2033636.3908
L	25+44.38	-115.00	477024.9065	2034247.2896
L	25+94.45	-120.00	477013.3331	2034296.2589
L	31+65.00	-160.00	476864.6356	2034850.5973
L	33+14.00	-150.00	476791.4221	2034999.2672
L	27+65.53	-140.00	476976.5438	2034464.5338
L	27+38.41	-120.00	476966.4632	2034432.3789
L	34+52.72	-150.00	476725.5483	2035126.7564
L	40+02.00	-54.00	476386.7162	2035568.3295

FINAL ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	12+88.78	55.69	477387.3666	2033231.0505

FINAL ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+72.00	-33.00	477037.1052	2033358.0894
Y2	12+34.00	-30.00	477041.1975	2033290.9679
Y2	12+34.00	-25.20	477045.9944	2033291.2190

FINAL ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	18+27.06	108.17	477195.2380	2033737.2533
Y3	17+75.00	46.00	477247.0899	2033794.4771
Y3	12+15.00	46.00	477712.5569	2033540.9894
Y3	12+14.91	29.29	477722.5630	2033554.3746
Y3	27+90.00	-46.06	476291.6626	2033999.3187
Y3	26+60.18	-46.00	476406.3518	2033938.9912
Y3	21+63.30	125.33	476881.9136	2033691.5492
Y3	12+14.94	-29.94	477757.7611	2033602.0052
Y3	14+52.13	46.00	477521.9112	2033681.9994

FINAL ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	12+85.00	29.82	477002.6461	2034590.2544
Y5	13+75.67	-29.59	476909.4723	2034645.6548
Y5	12+95.00	45.00	476993.3206	2034574.6555
Y5	12+95.00	75.61	476994.6556	2034544.0698

FINAL ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	13+07.00	-24.70	476420.6556	2035543.7408

FINAL ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y11A	10+16.29	16.52	477781.8328	2033633.5435

FINAL ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	31+90.00	-163.00	476857.8103	2034877.7985
L	32+08.00	-161.00	476848.7128	2034895.8138
L	32+08.00	-155.29	476843.3980	2034893.7230
L	31+90.00	-157.08	476852.2727	2034875.7019
L	35+73.00	-126.00	476648.4884	2035222.1725
L	36+10.00	-137.00	476641.0683	2035260.0532
L	36+13.00	-117.00	476621.9590	2035253.4324
L	35+82.00	-107.65	476628.0568	2035221.6322

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	477581.7353	2032829.2282
PC	10+43.71	477560.7523	2032867.5728
PRC	13+35.01	477398.4870	2033109.0112
PT	18+96.87	477126.9812	2033597.6144
PC	31+47.54	476719.8024	2034780.1475
PT	33+58.66	476636.3049	2034973.8389
PC	39+18.45	476376.6074	2035469.7447
PT	43+65.43	476187.2083	2035874.4493
POT	47+53.43	476038.6127	2036232.8671

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	477077.8587	2033388.7138
POT	15+10.61	476654.2733	2033673.8392

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	477614.1271	2033271.2087
PC	11+42.00	477478.9987	2033314.8587
PT	12+63.89	477366.1359	2033288.2303
POT	13+44.99	477308.2434	2033231.4339

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	477171.0043	2033484.0101
PC	10+33.95	477141.8853	2033466.5609
PT	11+96.43	477069.1925	2033330.0517
POT	16+71.08	477094.0067	2032856.0575

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	477912.7667	2033450.1210
PC	14+52.13	477549.2655	2033718.9824
PT	19+42.48	477086.5064	2033841.9106
PC	21+83.04	476847.6036	2033813.6976
PT	26+64.16	476381.6304	2033900.0070
PC	28+62.64	476205.9330	2033992.3376
PT	36+39.24	475454.5919	2034028.0959
POT	40+78.45	475048.1498	2033861.6276

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	477223.1645	2034411.2859
POT	19+36.77	476361.8344	2034779.5866

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	477286.0770	2034632.4800
PC	14+01.74	476884.7171	2034614.9567
PT	16+47.98	476644.4886	2034658.7250

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	476802.4811	2035190.9425
POT	19+78.18	475904.8950	2034802.1199

Y7

TYPE	STATION	NORTH	EAST
POT	10+00.00	476801.5980	2035224.2460
PC	15+35.42	476310.1158	2035011.8325
PT	20+39.40	475819.8981	2035011.0925
POT	20+60.66	475800.3524	2035019.4700

Y8

TYPE	STATION	NORTH	EAST
POT	10+00.00	476723.7039	2035488.7772
POT	13+78.06	476347.5025	2035526.1914

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	476683.0745	2036039.2390
POT	15+21.03	476201.5306	2035840.2622

Y10

TYPE	STATION	NORTH	EAST
POT	10+00.00	476205.3888	2035831.1725
POT	15+39.49	475707.0327	2035624.5603

Y11

TYPE	STATION	NORTH	EAST
POT	10+00.00	477673.4391	2033906.7180
POT	12+31.02	477582.6525	2033694.2879

Y11A

TYPE	STATION	NORTH	EAST
POT	10+00.00	477803.2029	2033642.5866
PC	10+77.92	477731.2000	2033672.3636
PT	11+16.38	477694.3512	2033669.0905
POT	11+65.79	477652.7321	2033642.4539

Y12

TYPE	STATION	NORTH	EAST
POT	10+00.00	475962.8152	2034543.3030
POT	14+59.67	475903.8941	2034087.4263

NOTE: DRAWING NOT TO SCALE

5/28/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	8+00.00	477677.7455	2032653.7795
2	L	9+00.00	477629.7399	2032741.5039
3	L	10+00.00	477581.7353	2032829.2282
4	L	11+00.00	477532.8677	2032916.4671
5	L	12+00.00	477479.1544	2033000.7975
6	L	13+00.00	477420.2788	2033081.6084
7	L	14+00.00	477358.5183	2033160.2494
8	L	15+00.00	477301.1668	2033242.1491
9	L	16+00.00	477249.0428	2033327.4710
10	L	17+00.00	477202.3496	2033415.8820
11	L	18+00.00	477161.2698	2033507.0367
12	L	19+00.00	477125.9607	2033600.5783
13	L	20+00.00	477093.4038	2033695.1302
14	L	21+00.00	477060.8470	2033789.6820
15	L	22+00.00	477028.2902	2033884.2339
16	L	23+00.00	476995.7334	2033978.7857
17	L	24+00.00	476963.1766	2034073.3376
18	L	25+00.00	476930.6198	2034167.8895
19	L	26+00.00	476898.0629	2034262.4413
20	L	27+00.00	476865.5061	2034356.9932
21	L	28+00.00	476832.9493	2034451.5450
22	L	29+00.00	476800.3925	2034546.0969
23	L	30+00.00	476767.8357	2034640.6487
24	L	31+00.00	476735.2789	2034735.2006
25	L	32+00.00	476701.7967	2034829.4209
26	L	33+00.00	476662.4215	2034921.3194
27	L	34+00.00	476617.1261	2035010.4620
28	L	35+00.00	476570.7341	2035099.0497
29	L	36+00.00	476524.3422	2035187.6375
30	L	37+00.00	476477.9503	2035276.2252
31	L	38+00.00	476431.5584	2035364.8130
32	L	39+00.00	476385.1665	2035453.4007
33	L	40+00.00	476339.3654	2035542.2938
34	L	41+00.00	476295.3207	2035632.0699
35	L	42+00.00	476253.0803	2035722.7088
36	L	43+00.00	476212.6610	2035814.1743
37	L	44+00.00	476173.9684	2035906.3844
38	L	45+00.00	476135.6706	2035998.7601
39	L	46+00.00	476097.3727	2036091.1358
40	L	47+00.00	476059.0749	2036183.5116
41	L	47+53.43	476038.6127	2036232.8671
42	Y1	10+00.00	477614.1271	2033271.2087
43	Y1	11+00.00	477518.9686	2033301.9474
44	Y1	12+00.00	477421.7302	2033317.9273
45	Y1	13+00.00	477340.3606	2033262.9431
46	Y1	13+44.99	477308.2434	2033231.4339
47	Y2	10+00.00	477171.0043	2033484.0101
48	Y2	11+00.00	477094.3951	2033421.4206
49	Y2	12+00.00	477069.3790	2033326.4898
50	Y2	13+00.00	477074.6069	2033226.6265
51	Y2	14+00.00	477079.8349	2033126.7633
52	Y2	15+00.00	477085.0629	2033026.9000
53	Y2	16+00.00	477090.2908	2032927.0368
54	Y2	16+71.08	477094.0067	2032856.0575
55	Y3	10+00.00	477912.7667	2033450.1210
56	Y3	11+00.00	477832.3688	2033509.5868
57	Y3	12+00.00	477751.9709	2033569.0526
58	Y3	13+00.00	477671.5730	2033628.5184
59	Y3	14+00.00	477591.1751	2033687.9842
60	Y3	15+00.00	477509.7642	2033746.0076
61	Y3	16+00.00	477421.4431	2033792.6944
62	Y3	17+00.00	477327.0108	2033825.2955
63	Y3	18+00.00	477228.6980	2033843.0408
64	Y3	19+00.00	477128.8271	2033845.5110
65	Y3	20+00.00	477029.3845	2033835.1648
66	Y3	21+00.00	476930.0746	2033823.4369
67	Y3	22+00.00	476830.7449	2033811.8876
68	Y3	23+00.00	476730.8673	2033808.5050
69	Y3	24+00.00	476631.3472	2033817.6010
70	Y3	25+00.00	476533.7376	2033839.0336
71	Y3	26+00.00	476439.5617	2033872.4685
72	Y3	27+00.00	476349.9051	2033916.6789
73	Y3	28+00.00	476261.3839	2033963.1977
74	Y3	29+00.00	476172.5077	2034009.0173
75	Y3	30+00.00	476079.9026	2034046.6174
76	Y3	31+00.00	475983.6655	2034073.5973
77	Y3	32+00.00	475885.0102	2034089.6166
78	Y3	33+00.00	475785.1809	2034094.4733
79	Y3	34+00.00	475685.4365	2034088.1062

Point #	Chain	Station	Northing (Y)	Easting (X)
80	Y3	35+00.00	475587.0349	2034070.5955
81	Y3	36+00.00	475491.2172	2034042.1622
82	Y3	37+00.00	475398.3622	2034005.0657
83	Y3	38+00.00	475305.8232	2033967.1641
84	Y3	39+00.00	475213.2842	2033929.2625
85	Y3	40+00.00	475120.7452	2033891.3609
86	Y3	40+78.45	475048.1498	2033861.6276
87	Y4	10+00.00	477223.1645	2034411.2859
88	Y4	11+00.00	477131.2175	2034450.6020
89	Y4	12+00.00	477039.2705	2034489.9181
90	Y4	13+00.00	476947.3236	2034529.2342
91	Y4	14+00.00	476855.3766	2034568.5503
92	Y4	15+00.00	476763.4296	2034607.8663
93	Y4	16+00.00	476671.4827	2034647.1824
94	Y4	17+00.00	476579.5357	2034686.4985
95	Y4	18+00.00	476487.5887	2034725.8146
96	Y4	19+00.00	476395.6418	2034765.1307
97	Y4	19+36.77	476361.8344	2034779.5866
98	Y5	10+00.00	477286.0770	2034632.4800
99	Y5	11+00.00	477186.1722	2034628.1182
100	Y5	12+00.00	477086.2673	2034623.7564
101	Y5	13+00.00	476986.3625	2034619.3946
102	Y5	14+00.00	476886.4577	2034615.0327
103	Y5	15+00.00	476786.6924	2034619.4389
104	Y5	16+00.00	476689.3679	2034641.8091
105	Y5	16+47.98	476644.4886	2034658.7250
106	Y6	10+00.00	476802.4811	2035190.9425
107	Y6	11+00.00	476710.7206	2035151.1931
108	Y6	12+00.00	476618.9601	2035111.4436
109	Y6	13+00.00	476527.1997	2035071.6942
110	Y6	14+00.00	476435.4392	2035031.9448
111	Y6	15+00.00	476343.6788	2034992.1953
112	Y6	16+00.00	476251.9183	2034952.4459
113	Y6	17+00.00	476160.1578	2034912.6964
114	Y6	18+00.00	476068.3974	2034872.9470
115	Y6	19+00.00	475976.6369	2034833.1975
116	Y6	19+78.18	475904.8950	2034802.1199
117	Y7	10+00.00	476801.5980	2035224.2460
118	Y7	11+00.00	476709.8042	2035184.5736
119	Y7	12+00.00	476618.0103	2035144.9013
120	Y7	13+00.00	476526.2165	2035105.2290
121	Y7	14+00.00	476434.4227	2035065.5566
122	Y7	15+00.00	476342.6289	2035025.8843
123	Y7	16+00.00	476249.6091	2034989.3428
124	Y7	17+00.00	476152.1939	2034967.2378
125	Y7	18+00.00	476052.4933	2034961.0637
126	Y7	19+00.00	475953.0951	2034970.9809
127	Y7	20+00.00	475856.5797	2034996.7319
128	Y7	20+60.66	475800.3524	2035019.4700
129	Y8	10+00.00	476723.7039	2035488.7772
130	Y8	11+00.00	476624.1948	2035498.6737
131	Y8	12+00.00	476524.6857	2035508.5701
132	Y8	13+00.00	476425.1766	2035518.4665
133	Y8	13+78.06	476347.5025	2035526.1914
134	Y9	10+00.00	476683.0745	2036039.2390
135	Y9	11+00.00	476590.6536	2036001.0502
136	Y9	12+00.00	476498.2328	2035962.8613
137	Y9	13+00.00	476405.8119	2035924.6725
138	Y9	14+00.00	476313.3911	2035886.4836
139	Y9	15+00.00	476220.9703	2035848.2948
140	Y9	15+21.03	476201.5306	2035840.2622
141	Y10	10+00.00	476205.3888	2035831.1725
142	Y10	11+00.00	476113.0131	2035792.8747
143	Y10	12+00.00	476020.6374	2035754.5768
144	Y10	13+00.00	475928.2616	2035716.2790
145	Y10	14+00.00	475835.8859	2035677.9812
146	Y10	15+00.00	475743.5102	2035639.6834
147	Y10	15+39.49	475707.0327	2035624.5603
148	Y11	10+00.00	477673.4391	2033906.7180
149	Y11	11+00.00	477634.1404	2033814.7636
150	Y11	12+00.00	477594.8417	2033722.8092
151	Y11	12+31.02	477582.6525	2033694.2879
152	Y11A	10+00.00	477803.2029	2033642.5866

Point #	Chain	Station	Northing (Y)	Easting (X)
153	Y11A	11+00.00	477709.5433	2033674.8893
154	Y11A	11+65.79	477652.7321	2033642.4539
155	Y12	10+00.00	475962.8152	2034543.3030
156	Y12	11+00.00	475949.9970	2034444.1279
157	Y12	12+00.00	475937.1789	2034344.9529
158	Y12	13+00.00	475924.3607	2034245.7778
159	Y12	14+00.00	475911.5425	2034146.6027
160	Y12	14+59.67	475903.8941	2034087.4263
161	DR1	10+00.00	477077.8587	2033388.7138
162	DR1	11+00.00	476994.9017	2033444.5541
163	DR1	12+00.00	476911.9447	2033500.3944
164	DR1	13+00.00	476828.9878	2033556.2347
165	DR1	14+00.00	476746.0308	2033612.0750
166	DR1	15+00.00	476663.0738	2033667.9153
167	DR1	15+10.61	476654.2733	2033673.8392

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

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

PROJECT REFERENCE NO.	SHEET NO.
B-4490	ID-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES

DocuSigned by: Jim Hayes 5/2/2016
3861351E178740D

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

9:13:48 AM B4490_rdy_ID-1.dgn 5/11/2016

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2A-1

ROADWAY DESIGN ENGINEER — SEAL 19563, TIMOTHY SCOTT HAYES, NORTH CAROLINA PROFESSIONAL ENGINEER

PAVEMENT DESIGN ENGINEER — SEAL 022896, CLARK S. MORRISON, NORTH CAROLINA PROFESSIONAL ENGINEER

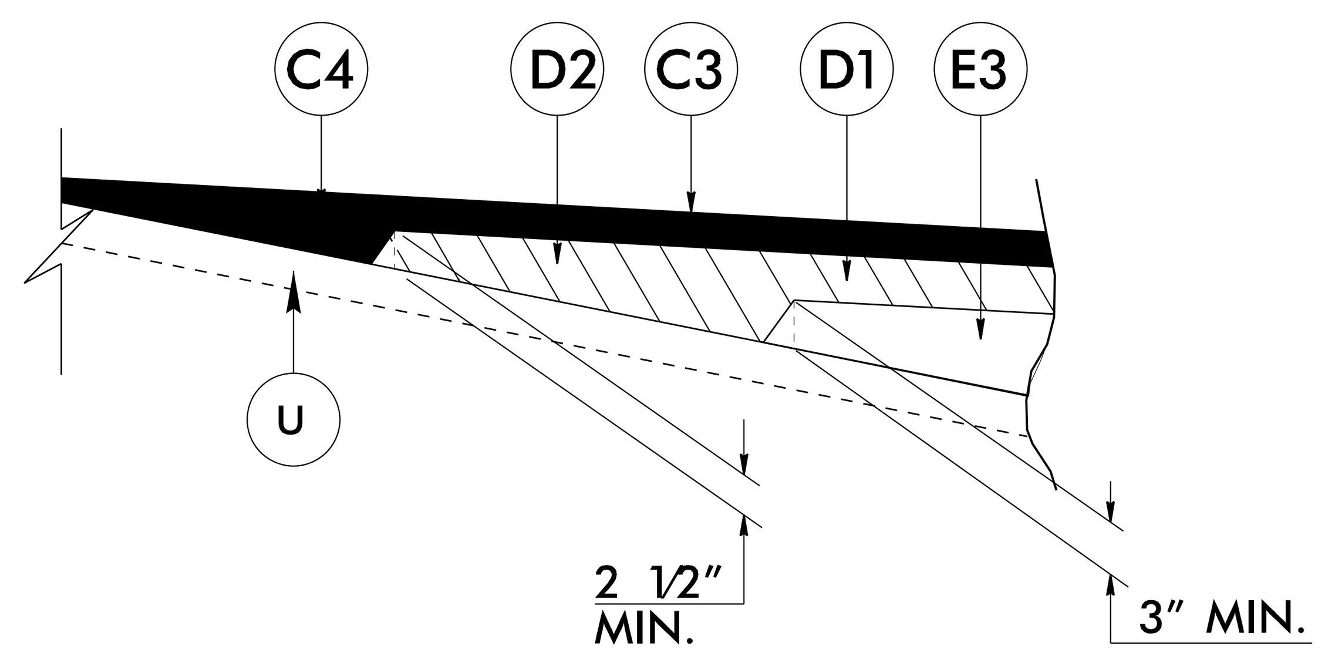
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

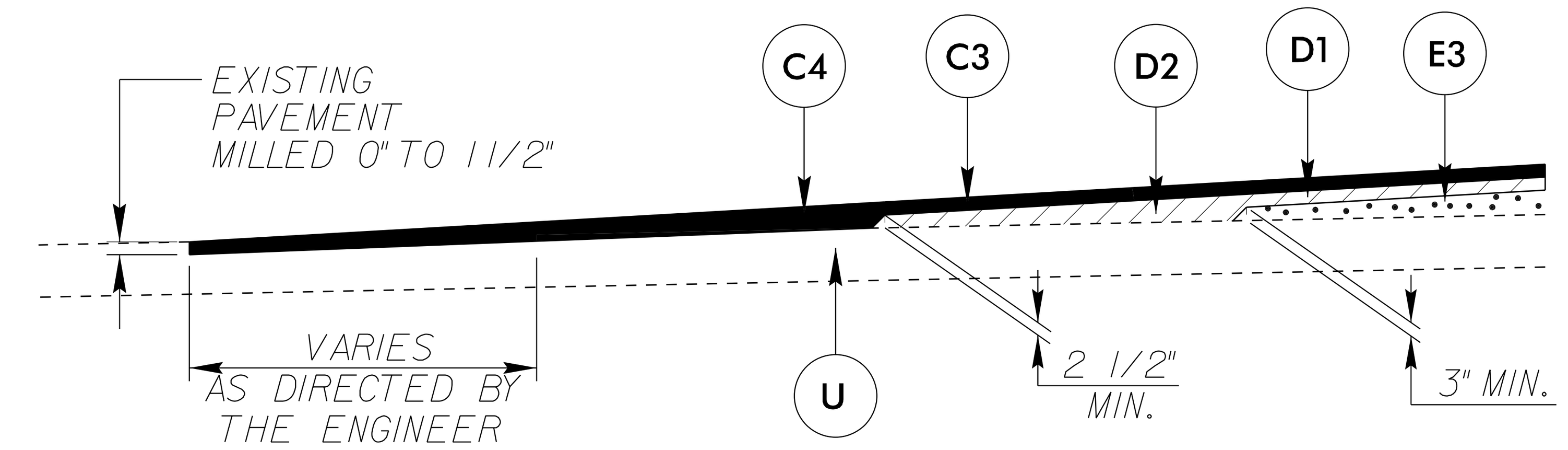
FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E2	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	S	4" CONCRETE SIDEWALK
C2	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH	T	EARTH MATERIAL
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	R1	2'-6" CONCRETE CURB AND GUTTER	U	EXISTING PAVEMENT
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH	R2	1'-6" CONCRETE CURB AND GUTTER	V1	1.5" MILLING OF ASPHALT PAVEMENT
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	2'-9" CONCRETE CURB AND GUTTER	V2	3" MILLING OF ASPHALT PAVEMENT
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH	R4	5" MONOLITHIC STAMPED CONCRETE ISLAND	W	WEDGING DETAIL
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R5	4" STAMPED CONCRETE ISLAND COVER		

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

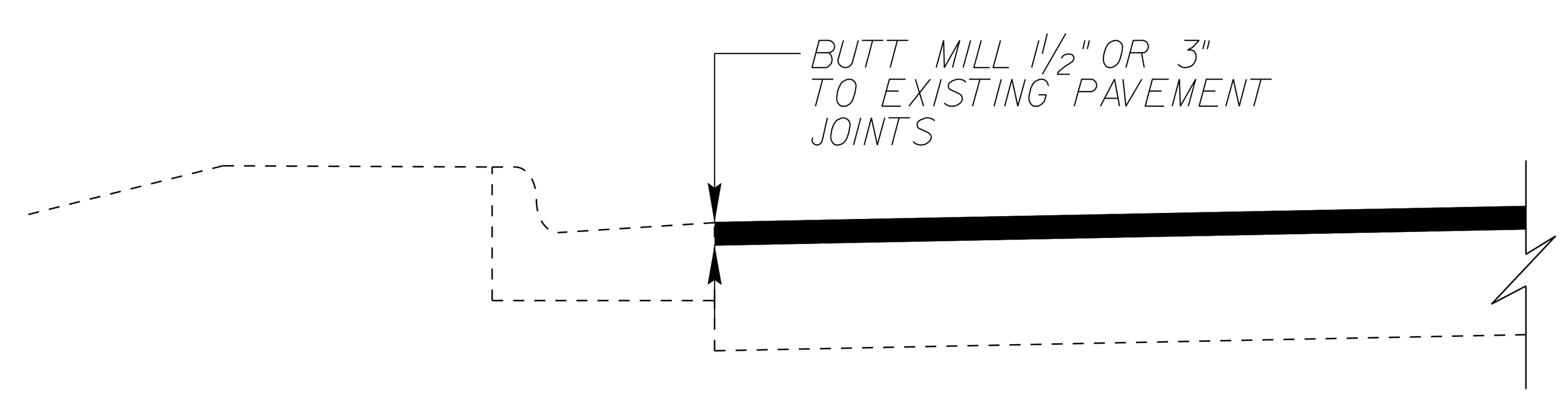


WEDGING DETAIL FOR RESURFACING



MILLING DETAIL FOR PROFILE CONNECTIONS

TYING PROPOSED PAVEMENTS TO EXISTING PAVEMENTS



MILLING DETAIL FOR EXISTING CURB & GUTTER

(SEE TYPICAL SECTIONS NOS. 1, 14 & 17 FOR LOCATIONS)

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2A-2

ROADWAY DESIGN ENGINEER — SEAL 19563, NORTH CAROLINA PROFESSIONAL ENGINEER, TIMOTHY SCOTT HAYES

PAVEMENT DESIGN ENGINEER — SEAL 022896, NORTH CAROLINA PROFESSIONAL ENGINEER, CLARK S. MORRISON

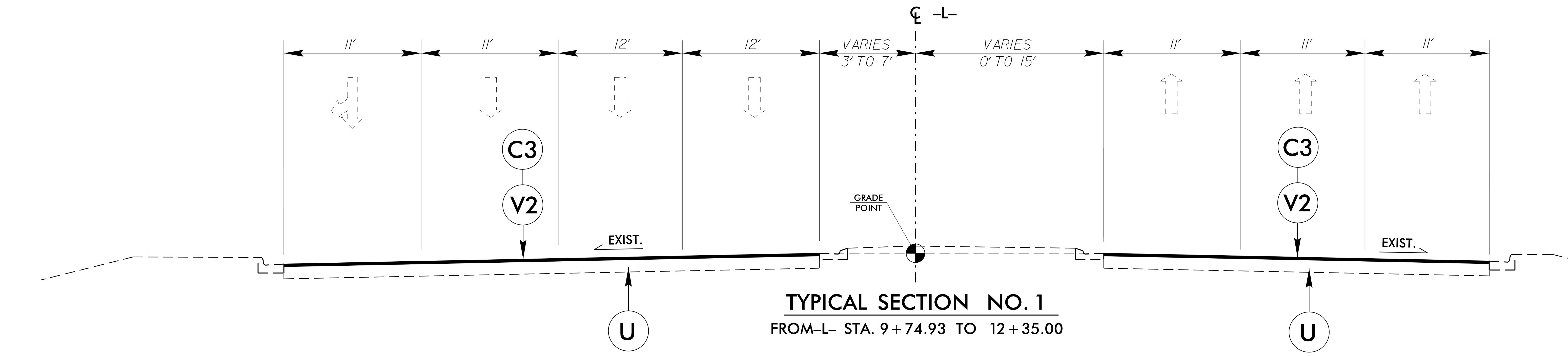
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

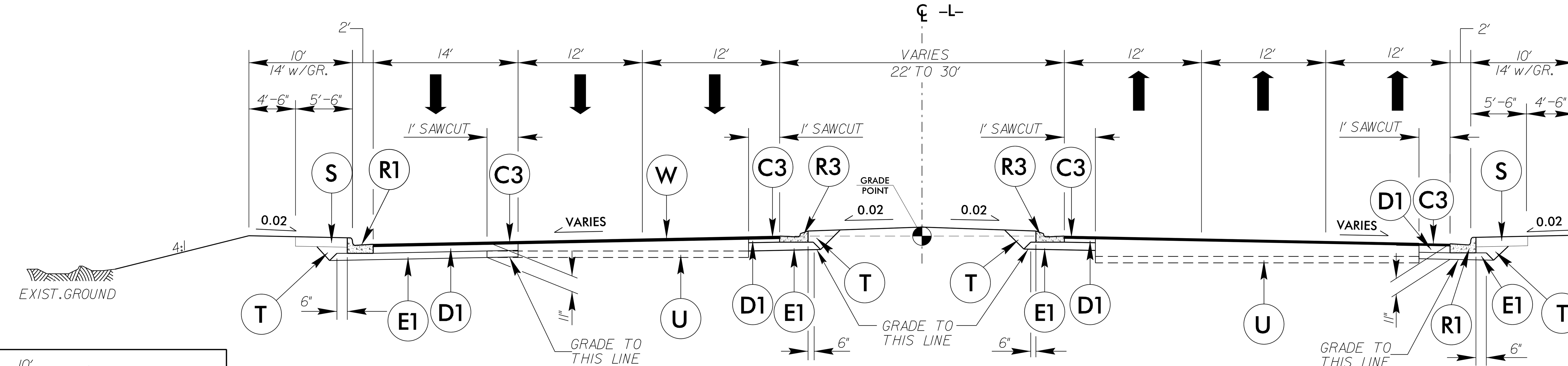
PAVEMENT SCHEDULE

C1	1.5" TYPE S9.5B
C2	2" TYPE S9.5B
C3	3" TYPE S9.5B
C4	VAR. DEPTH TYPE S9.5B
D1	4" I19.0B
D2	VAR. DEPTH I19.0B
E1	4" TYPE B25.0B
E2	5½" TYPE B25.0B
E3	VAR. DEPTH TYPE B25.0B
R1	2'-6" CONCRETE C&G
R2	1'-6" CONCRETE C&G
R3	2'-9" CONCRETE C&G
R4	5" MONOLITHIC STAMPED CONCRETE ISLAND
R5	4" STAMPED CONC. ISLAND COVER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1.5" MILLING ASPHALT PAVEMENT
V2	3" MILLING ASPHALT PAVEMENT
W	WEDGING DETAIL

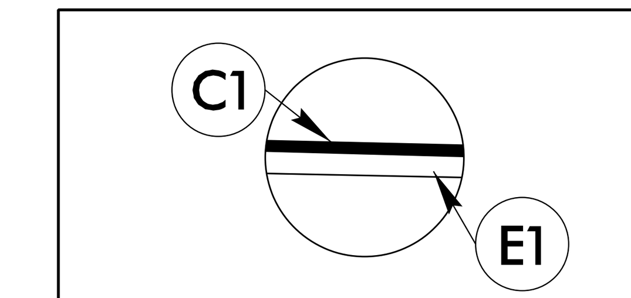
NOTE: LOCATION OF CONDUIT TO BE DETERMINED BY THE ENGINEER.



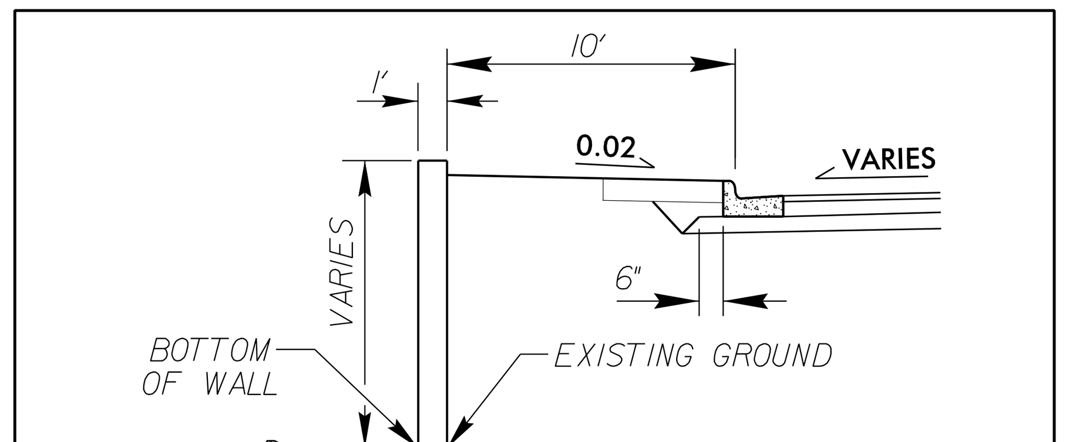
TYPICAL SECTION NO. 1
FROM -L- STA. 9+74.93 TO 12+35.00



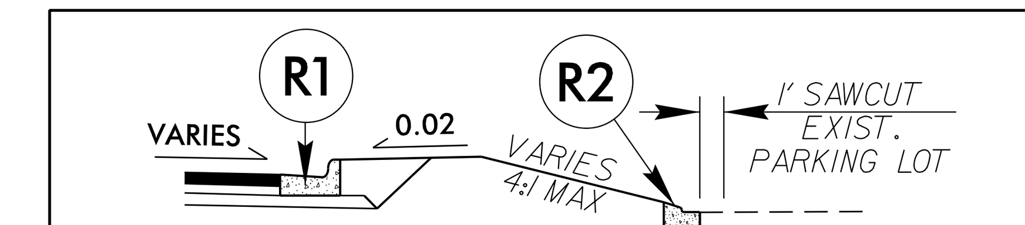
TYPICAL SECTION NO. 2
FROM -L- STA. 12+35.00 TO 14+00.00



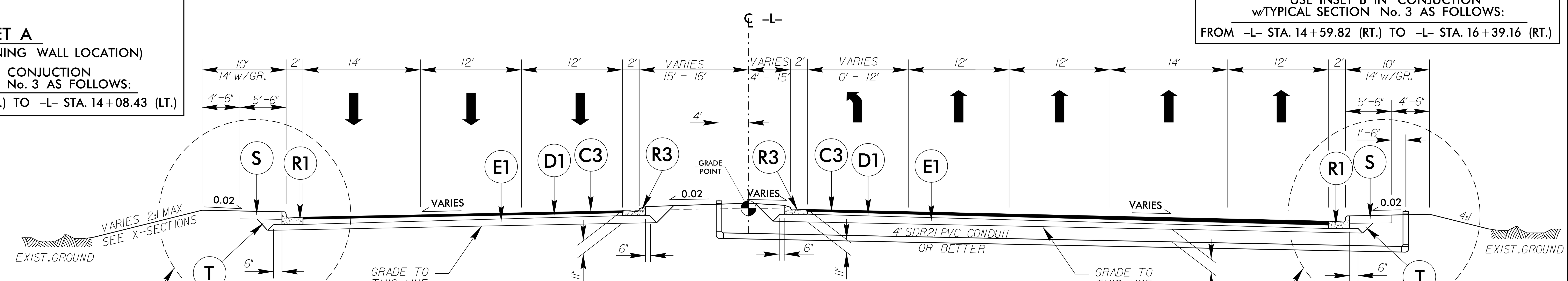
TEMPORARY PAVEMENT
(SEE SHEET TMP-10)
-L- STA. 12+35± TO 15±93+LT



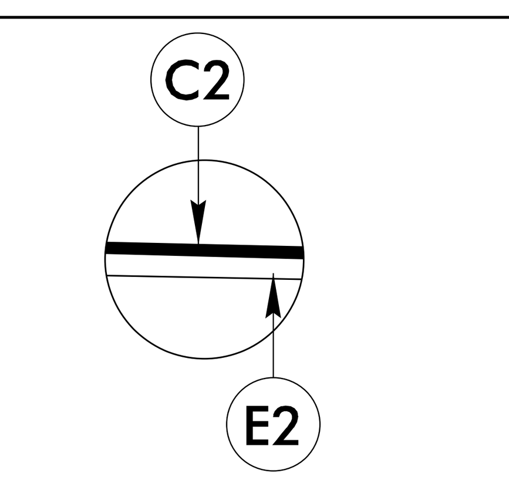
INSET A
(SEE PLANS FOR RETAINING WALL LOCATION)
USE INSET A IN CONJUCTION w/TYPICAL SECTION No. 3 AS FOLLOWS:
FROM -L- STA. 13+40.29 (LT.) TO -L- STA. 14+08.43 (LT.)



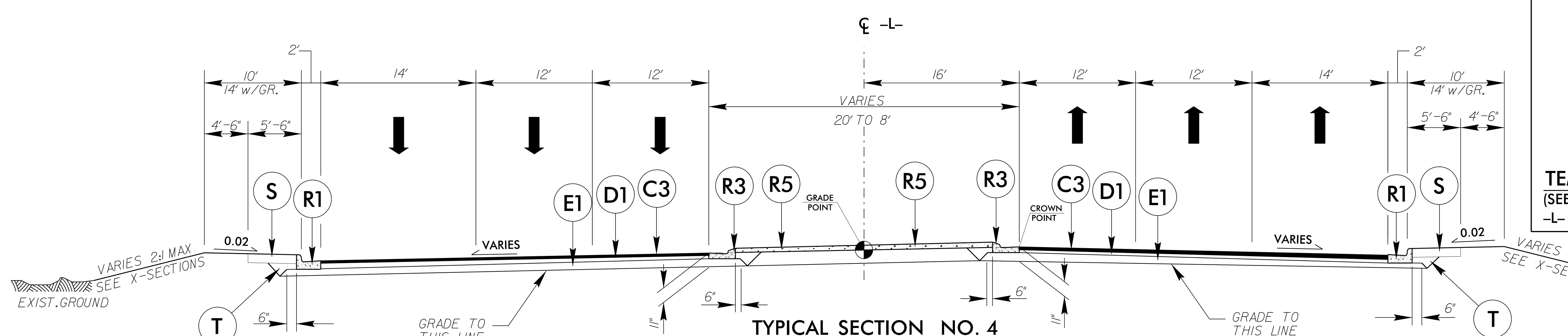
INSET B
USE INSET B IN CONJUCTION w/TYPICAL SECTION No. 3 AS FOLLOWS:
FROM -L- STA. 14+59.82 (RT.) TO -L- STA. 16+39.16 (RT.)



TYPICAL SECTION NO. 3
TRANSITION T.S. NO. 2 TO T.S. NO. 3 FROM -L- STA. 14+00.00 TO 14+50.00
-L- STA. 14+50.00 TO 18+63.87



TEMPORARY PAVEMENT
(SEE SHEETS TMP-4 AND TMP-10)
-L- STA. 16+93± TO 20+46±LT



TYPICAL SECTION NO. 4
-L- STA. 18+63.87 TO 27+50.00
(GRASS ISLAND -L- STA. 18+63.87 TO 19+34.95)

DocuSign Envelope ID: 3B3D5736-617C-4638-B79B-2DEB86677B91

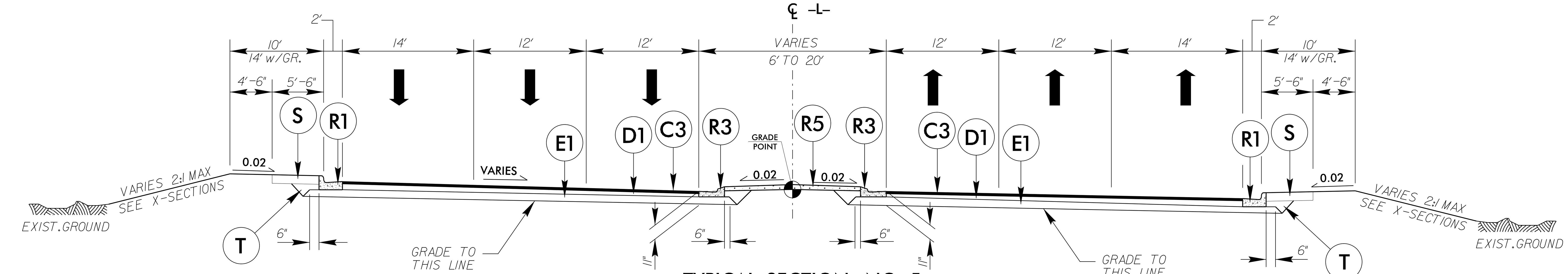
PROJECT REFERENCE NO.	SHEET NO.
B-4490	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES	NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

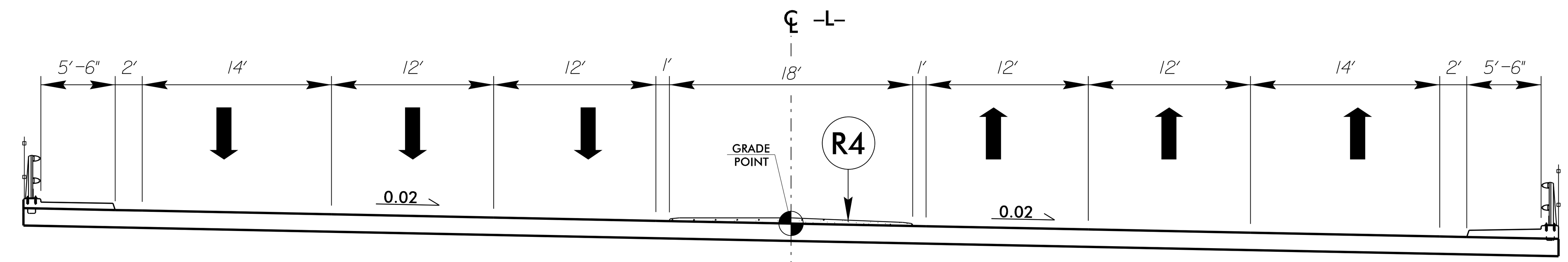
PAVEMENT SCHEDULE

C1	1.5" TYPE S9.5B
C2	2" TYPE S9.5B
C3	3" TYPE S9.5B
C4	VAR. DEPTH TYPE S9.5B
D1	4" I19.0B
D2	VAR. DEPTH I19.0B
E1	4" TYPE B25.0B
E2	5½" TYPE B25.0B
E3	VAR. DEPTH TYPE B25.0B
R1	2'-6" CONCRETE C&G
R2	1'-6" CONCRETE C&G
R3	2'-9" CONCRETE C&G
R4	5" MONOLITHIC STAMPED CONCRETE ISLAND
R5	4" STAMPED CONC. ISLAND COVER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1.5" MILLING ASPHALT PAVEMENT
V2	3" MILLING ASPHALT PAVEMENT
W	WEDGING DETAIL



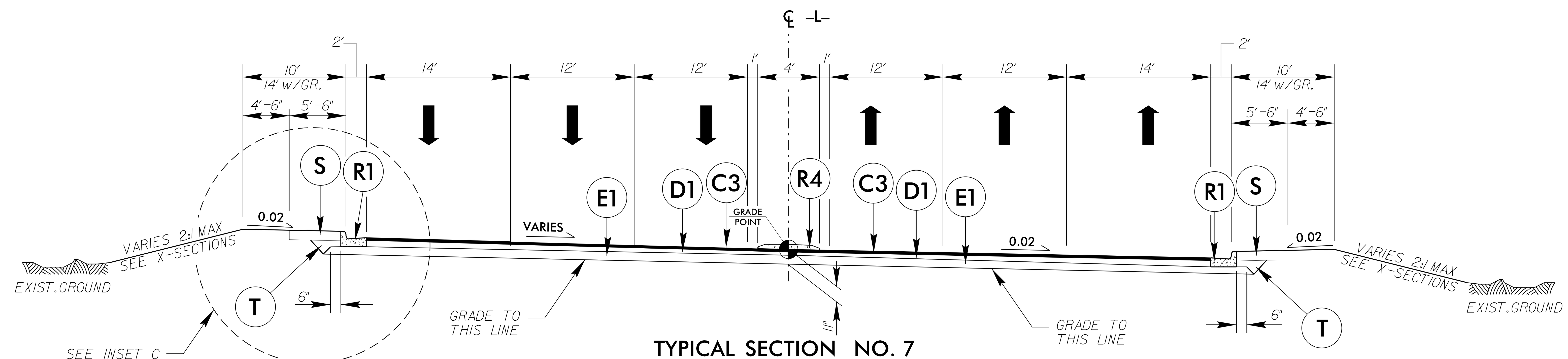
TYPICAL SECTION NO. 5

-L- STA. 27+50 TO 28+89.67 (BEGIN BRIDGE)
-L- STA. 30+46.17 (END BRIDGE) TO 33+54.89



TYPICAL SECTION NO. 6

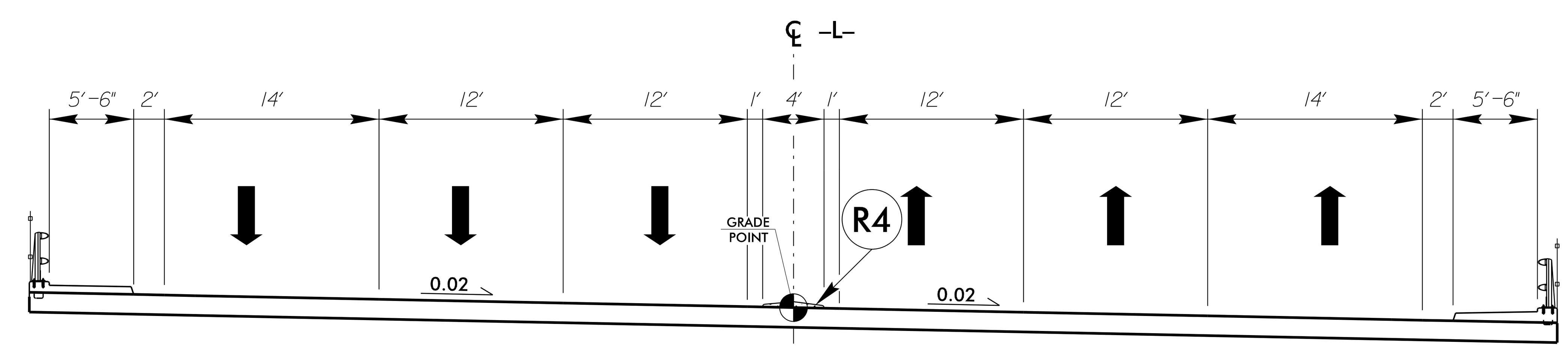
-L- STA. 28+89.67 (BEGIN BRIDGE) TO -L- STA. 30+46.17 (END BRIDGE)



TYPICAL SECTION NO. 7

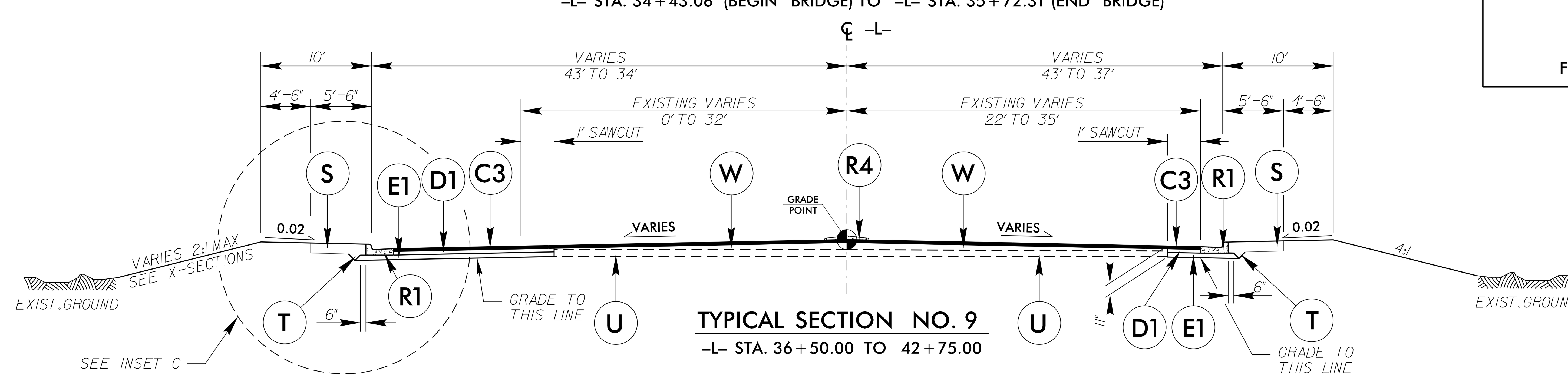
-L- STA. 33+54.89 TO 34+43.06 (BEGIN BRIDGE)
-L- STA. 35+72.31 (END BRIDGE) TO 36+00.00

* TRANSITION FROM TYPICAL SECTION 7 TO TYPICAL SECTION 9 FROM -L- STA. 36+00.00 TO 36+50.00



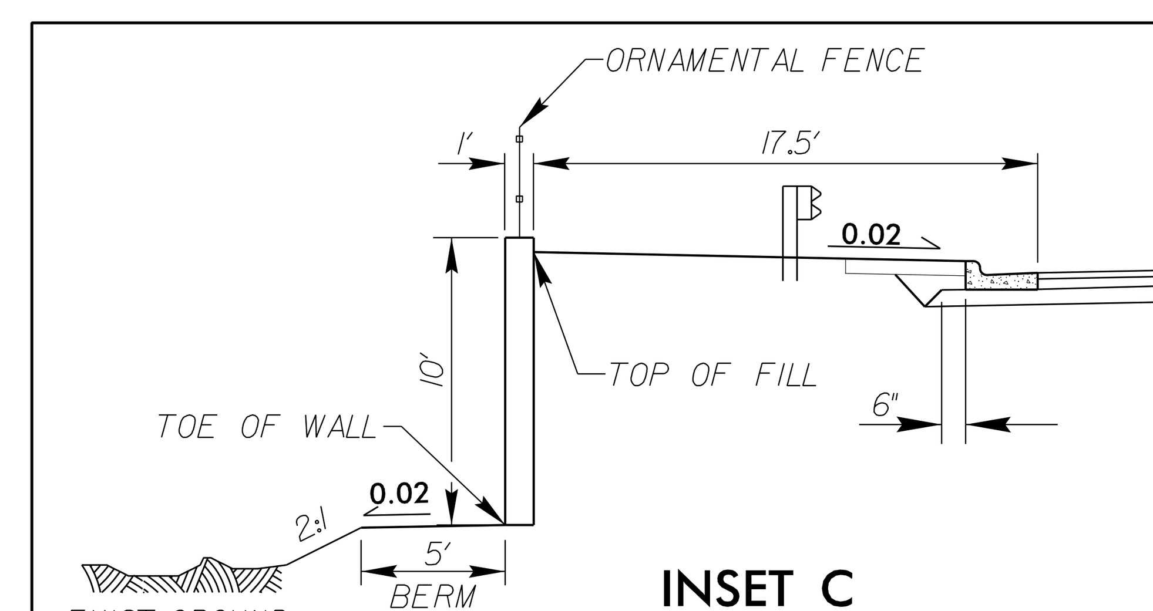
TYPICAL SECTION NO. 8

-L- STA. 34+43.06 (BEGIN BRIDGE) TO -L- STA. 35+72.31 (END BRIDGE)



TYPICAL SECTION NO. 9

-L- STA. 36+50.00 TO 42+75.00



INSET C

(SEE PLANS FOR RETAINING WALL LOCATION)

USE INSET C IN CONJUCTION w/TYPICAL SECTION No. 7 & 9 AS FOLLOWS:
FROM -L- STA. 35+72.31 (LT.) TO -L- STA. 38+00.00 (LT.)

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2A-4

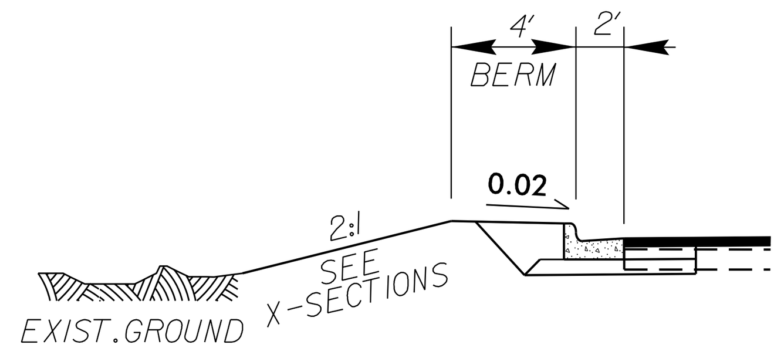
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19563 TIMOTHY SCOTT HAYES — 2016

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 CLARK S. MORRISON — 2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

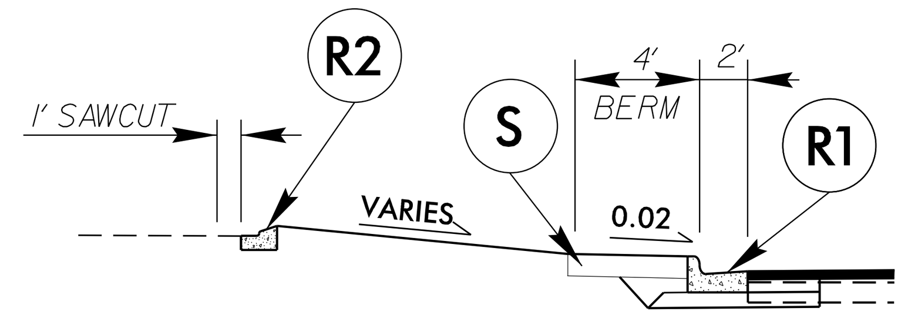
PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

PAVEMENT SCHEDULE	
C1	1.5" TYPE S9.5B
C2	2" TYPE S9.5B
C3	3" TYPE S9.5B
C4	VAR. DEPTH TYPE S9.5B
D1	4" I19.0B
D2	VAR. DEPTH I19.0B
E1	4" TYPE B25.0B
E2	5½" TYPE B25.0B
E3	VAR. DEPTH TYPE B25.0B
R1	2'-6" CONCRETE C&G
R2	1'-6" CONCRETE C&G
R3	2'-9" CONCRETE C&G
R4	5" MONOLITHIC STAMPED CONCRETE ISLAND
R5	4" STAMPED CONC. ISLAND COVER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1.5" MILLING ASPHALT PAVEMENT
V2	3" MILLING ASPHALT PAVEMENT
W	WEDGING DETAIL



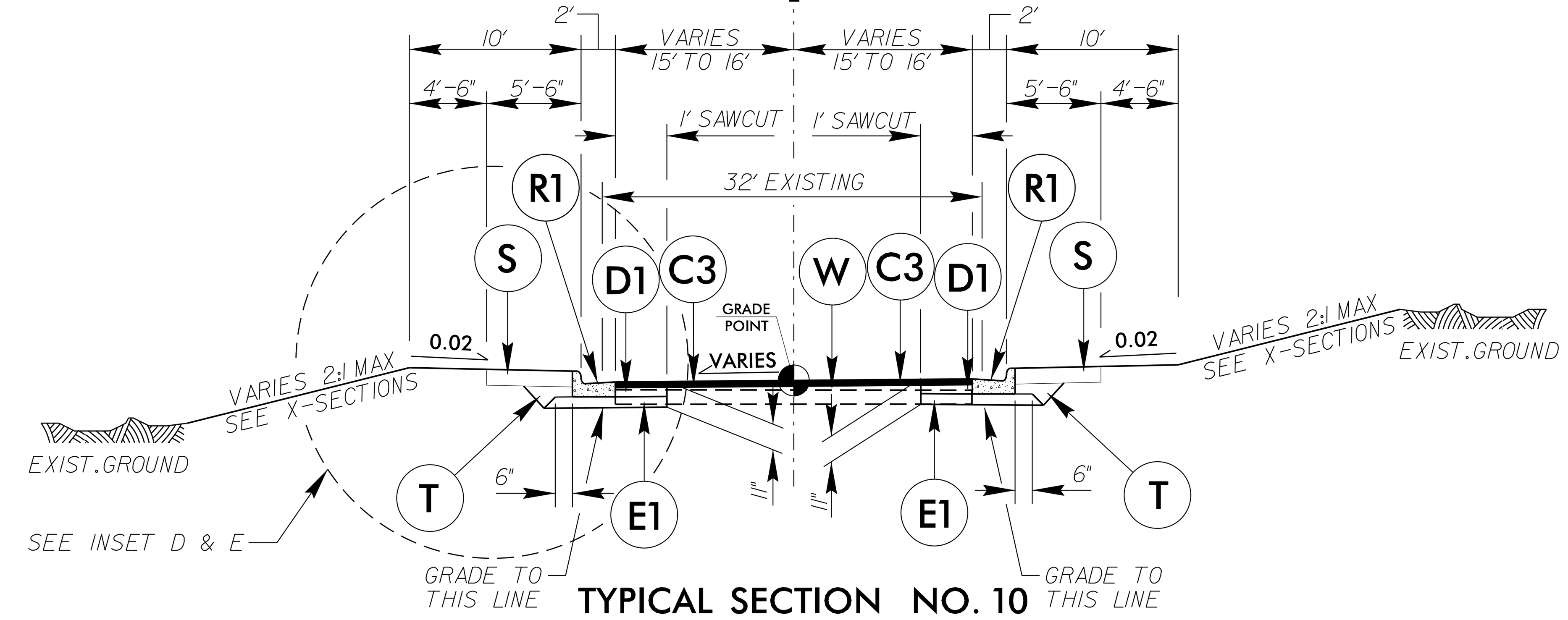
INSET D

USE INSET D IN CONJUCTION w/TYPICAL SECTION No. 10 AS FOLLOWS:
FROM -Y8- STA. 11+75.00 (LT.) TO -L- STA. 12+50.00 (LT.)



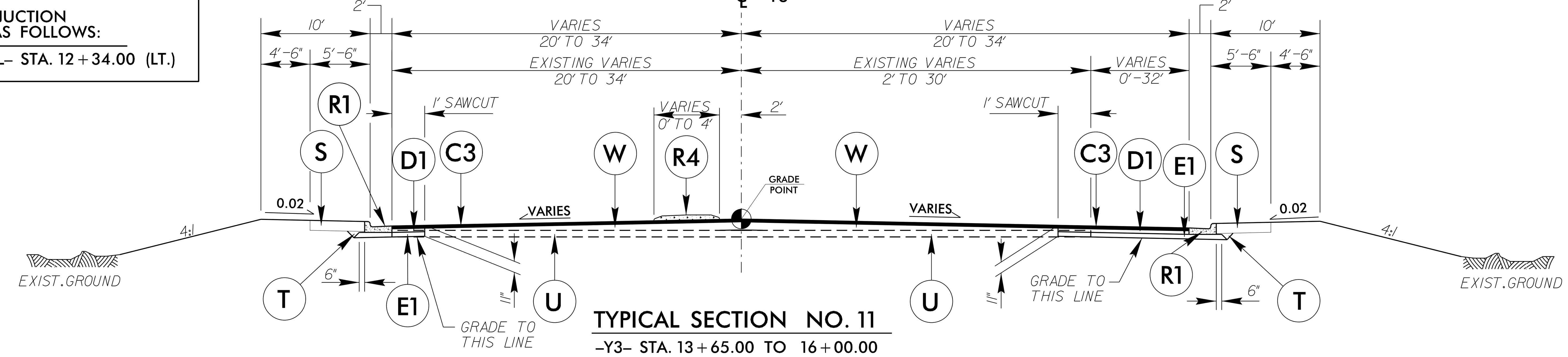
INSET E

USE INSET E IN CONJUCTION w/TYPICAL SECTION No. 10 AS FOLLOWS:
FROM -Y2- STA. 11+32.00 (LT.) TO -L- STA. 12+34.00 (LT.)



TYPICAL SECTION NO. 10

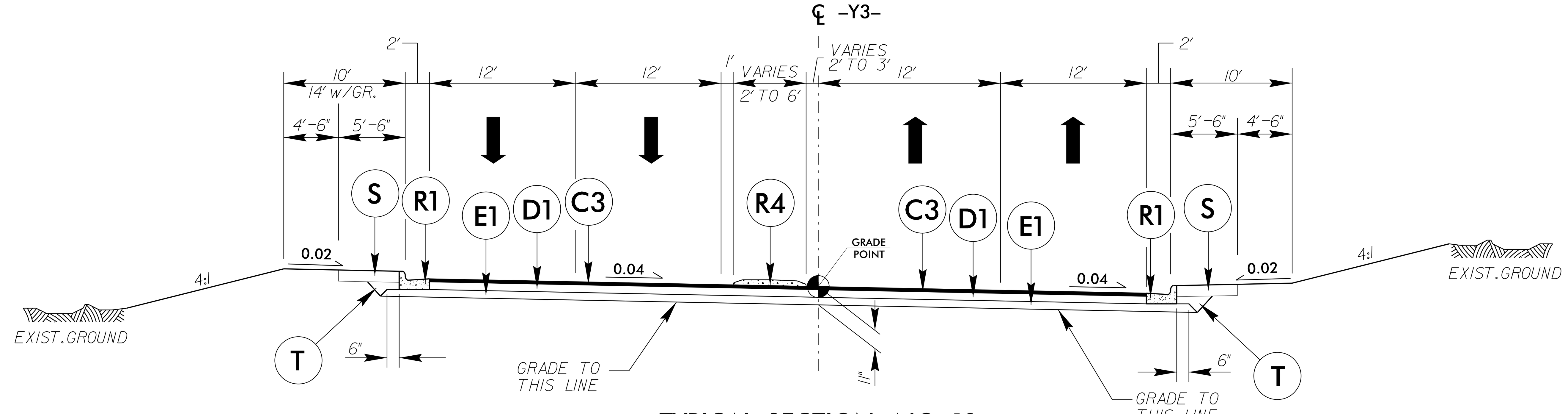
-Y1- STA. 11+50.00 TO 12+91.01
-Y2- STA. 10+66.24 TO 12+25.00
-Y8- STA. 11+75.00 TO 13+29.31



TYPICAL SECTION NO. 11

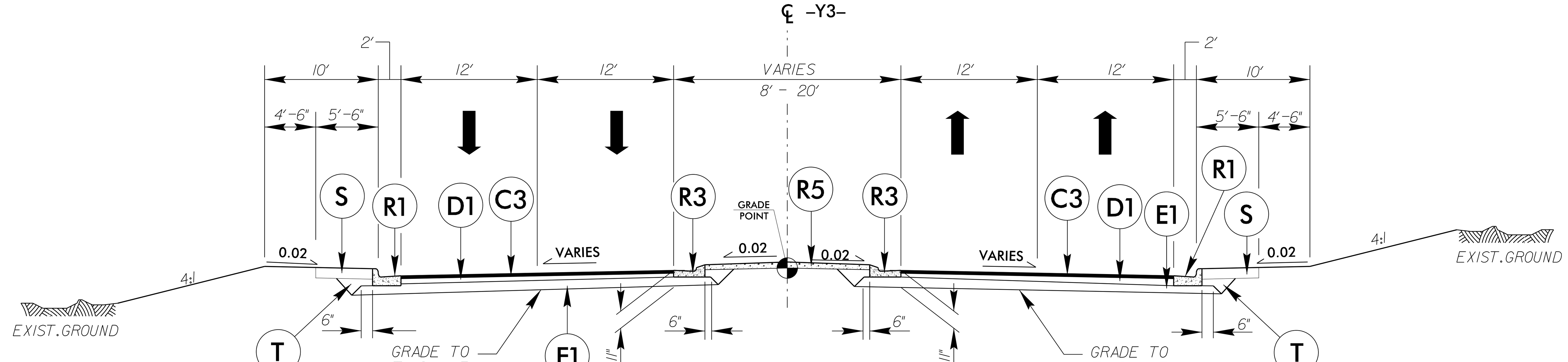
-Y3- STA. 13+65.00 TO 16+00.00

* TRANSITION FROM TYPICAL SECTION NO. 11 TO TYPICAL SECTION 12 FROM -Y3- STA. -L- 16+00.00 TO STA. 16+50.00



TYPICAL SECTION NO. 12

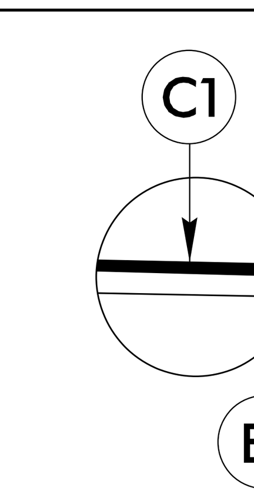
-Y3- STA. 16+50.00 TO 16+72.67



TYPICAL SECTION NO. 13

-Y3- STA. 16+72.67 TO 19+29.42
-Y3- STA. 20+39.97 TO 28+00.00

* TRANSITION FROM TYPICAL SECTION NO. 13 TO TYPICAL SECTION 14 FROM -Y3- STA. 28+00.00 TO -Y3- STA. 28+48.64

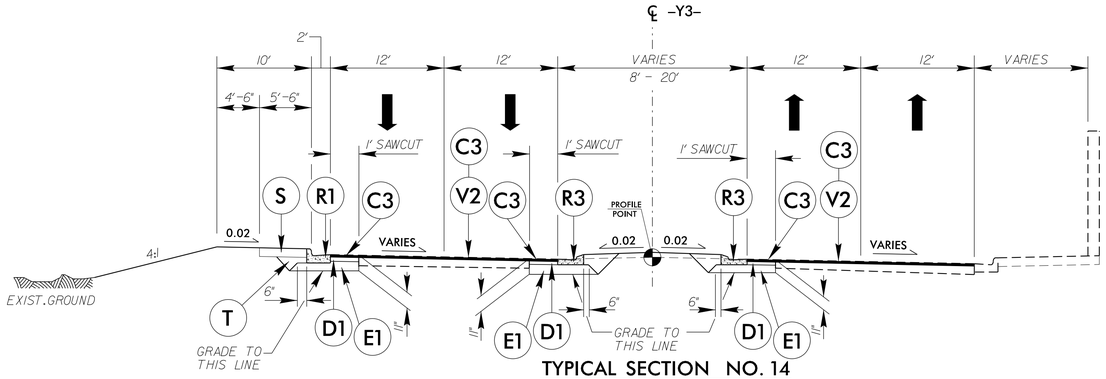


TEMPORARY PAVEMENT

(SEE SHEETS TMP-15)
-Y3- STA. 17+45± TO 17+56±LT

6/2/99

PAVEMENT SCHEDULE	
C1	1.5" TYPE S9.5B
C2	2" TYPE S9.5B
C3	3" TYPE S9.5B
C4	VAR. DEPTH TYPE S9.5B
D1	4" I19.0B
D2	VAR. DEPTH I19.0B
E1	4" TYPE B25.0B
E2	5½" TYPE B25.0B
E3	VAR. DEPTH TYPE B25.0B
R1	2'-6" CONCRETE C&G
R2	1'-6" CONCRETE C&G
R3	2'-9" CONCRETE C&G
R4	5" MONOLITHIC STAMPED CONCRETE ISLAND
R5	4" STAMPED CONC. ISLAND COVER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1.5" MILLING ASPHALT PAVEMENT
V2	3" MILLING ASPHALT PAVEMENT
W	WEDGING DETAIL

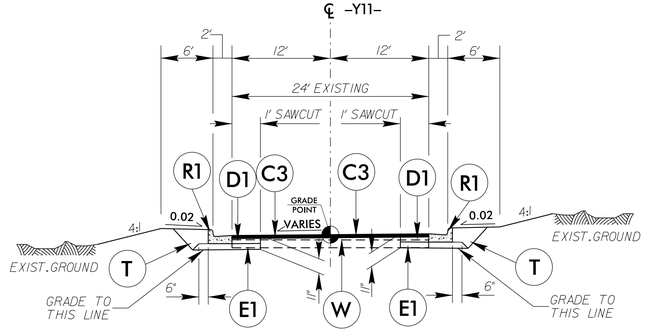


TYPICAL SECTION NO. 14

–Y3– STA. 28+48.64 TO 30+50.00

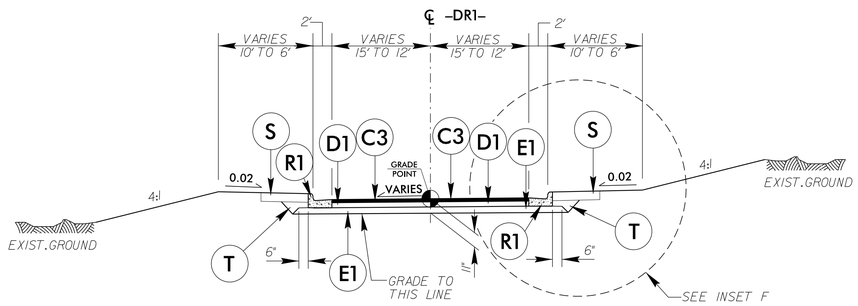
* TRANSITION FROM TYPICAL SECTION NO. 13 TO TYPICAL SECTION 14 FROM –Y3– STA. 28+00.00 TO –Y3– STA. 28+48.64

NOTE:
DO NOT DISTURB
EXIST. RETAINING WALL,
SIDEWALK AND CURB & GUTTER



TYPICAL SECTION NO. 15

–Y11– STA. 11+45.00 TO 12+06.97



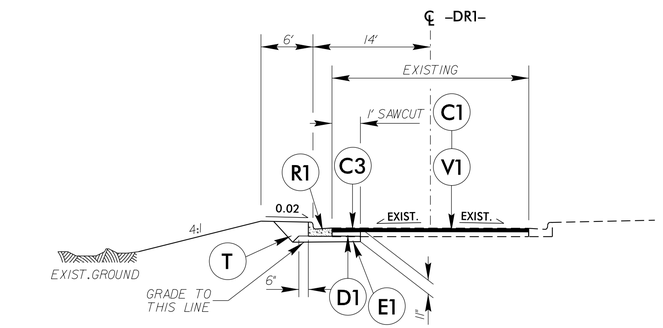
TYPICAL SECTION NO. 16

–DR1– STA. 10+16.45 TO 11+80.00

INSET F

USE INSET F IN CONJUCTION w/TYPICAL SECTION No. 16 AS FOLLOWS:

FROM –DR1– STA. 10+50.00 (RT.) TO –L– STA. 10+91.89 (RT.)



TYPICAL SECTION NO. 17

–DR1– STA. 11+80.00 TO 13+71.63

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2A-5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES

DocuSigned by: Timothy Hayes 6/2/2016

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK MORRISON

DocuSigned by: Clark Morrison 6/2/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:

PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0168

4:33:53 PM
B4490_rdy-typ.dgn
6/2/2016

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2B-1

R/W SHEET NO.

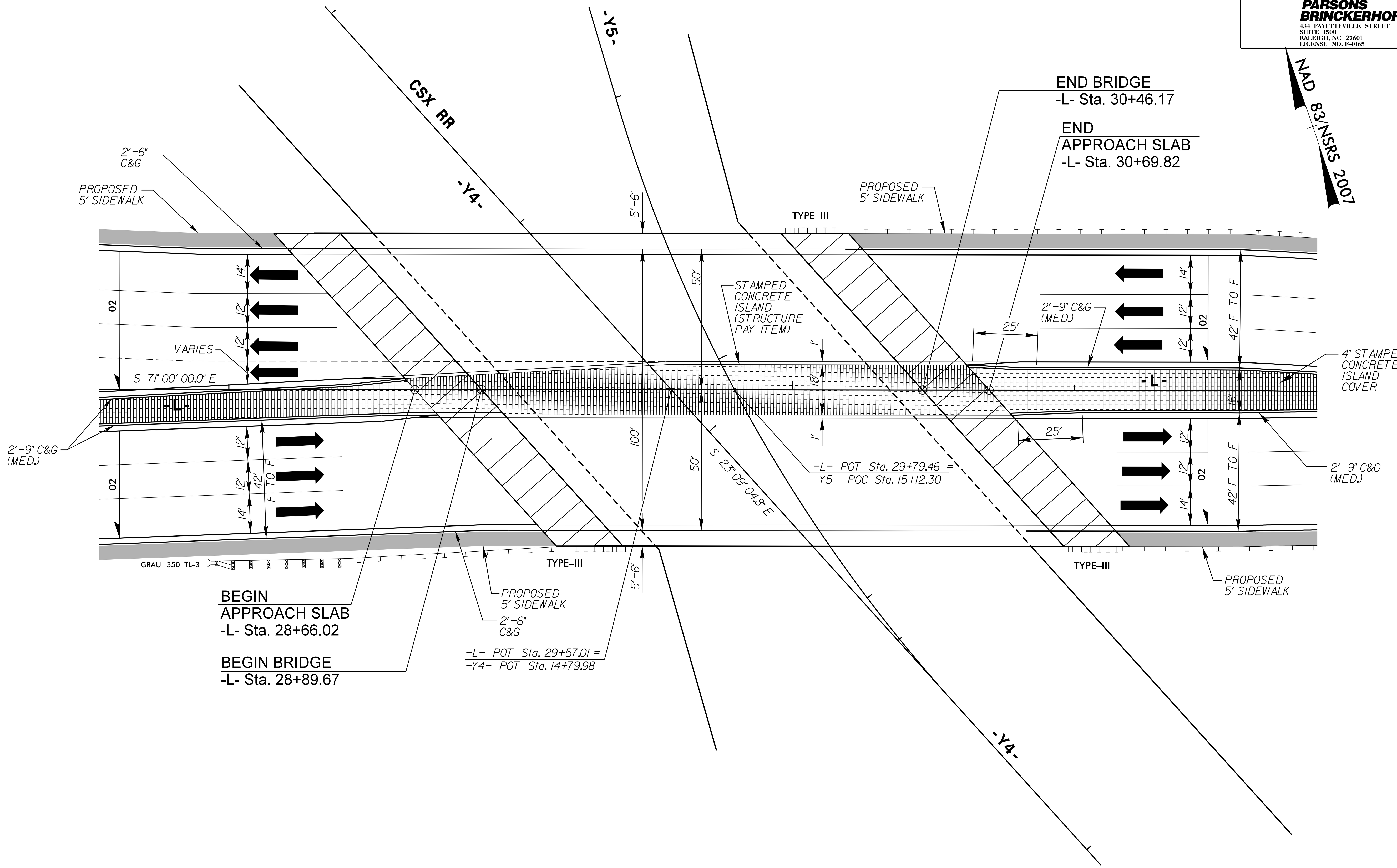
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

DETAIL SHOWING BRIDGE IN RELATION TO PAVEMENT



8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
B-4490	2B-2

R/W SHEET NO.

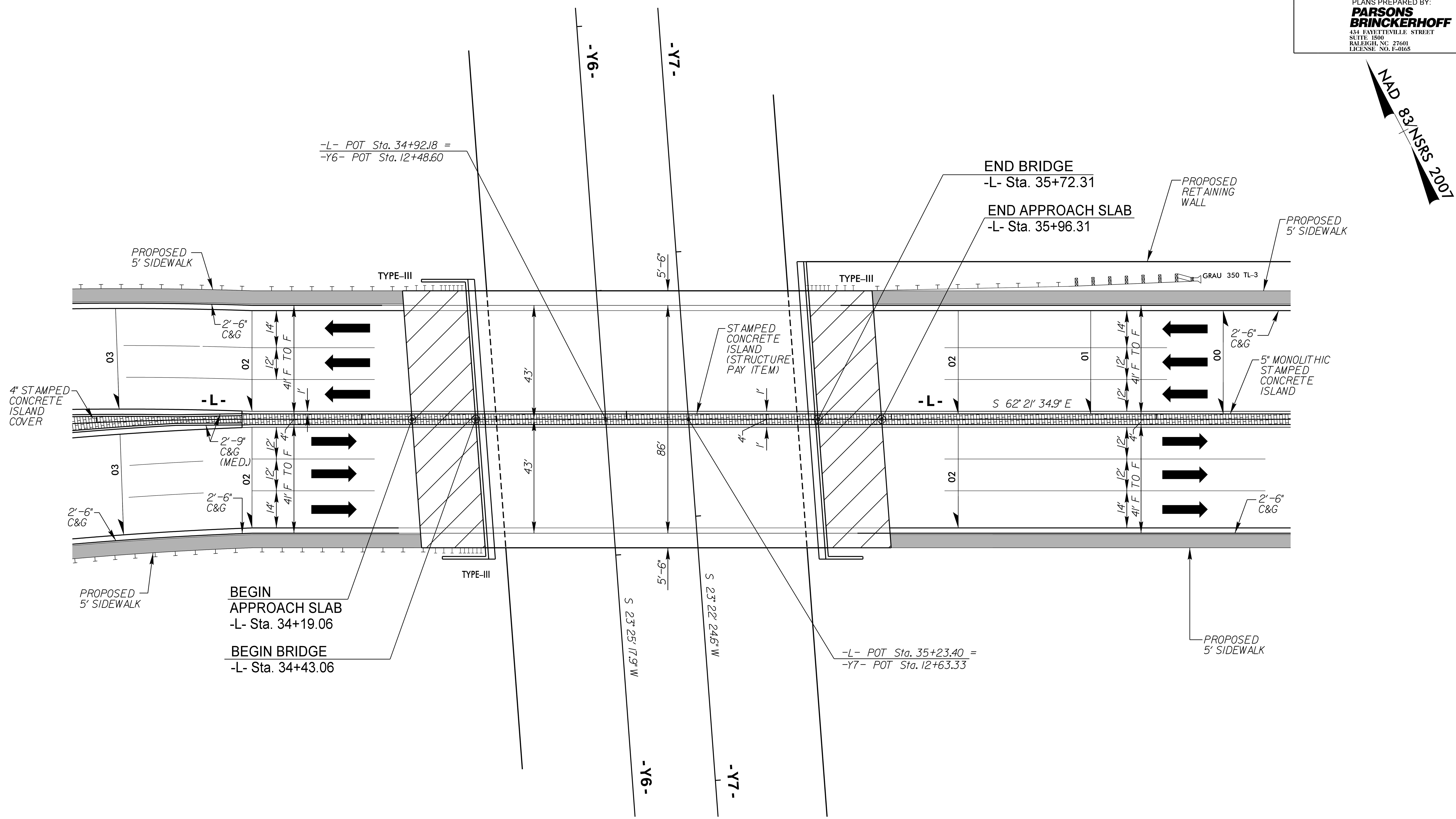
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 LICENSE NO. F-0165

DETAIL SHOWING BRIDGE IN RELATION TO PAVEMENT



8/17/99

2:36:45 PM B4490_rdy_2B-2.dgn 7/14/2016

DETAIL SHOWING PAVEMENT REMOVAL

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2B-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:

PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

NAD 83/NSRS 2007

-Y1- -Y2- -Y3- -Y4- -Y5- -L- -DR1-

-Y3- PC Sta. 14+52.13

-Y3- POT Sta. 14+10.60 =
-Y11- POT Sta. 12+31.02

BEGIN CONSTRUCTION
-Y3- POT Sta. 13+65.00

BEGIN PAVEMENT REMOVAL
-Y3- Sta. 17+00 ±

MURCHISON RD

-Y3- PT Sta. 19+42.48

-L- POC Sta. 17+75.00 =
-Y2- POT Sta. 10+00.00

-L- PT Sta. 18+96.87

-L- POT Sta. 21+50.00 =
-Y3- POT Sta. 19+84.71

S 30° 55' 53.7" W

-Y2- PC Sta. 10+33.95

W ROWAN ST

S 71° 00' 00.0" E

S 6° 44' 06.3" W

-Y3- PC Sta. 21+83.04

S 33° 56' 43.6" E

-Y2- POC Sta. 11+36.74 =
-DR1- POT Sta. 10+00.00

BRAGG BLVD

END CONSTRUCTION
-DR1- POT Sta. 13+71.63

-DR1- POT Sta. 15+10.61

POT Sta. 10+00.00

BEGIN PAVEMENT REMOVAL
-Y5- Sta. 13+45 ±

S 2° 29' 59.7" W

NORFOLK SOUTHERN RR

CSX RR

-Y5- PC Sta. 14+01.74

S 23° 09' 04.8" E

-L- PC Sta. 31+47.54

-L- POT Sta. 29+79.46 =
-Y5- POC Sta. 15+12.30

END PAVEMENT REMOVAL
-L- Sta. 31+00 ±

W ROWAN ST

RALEIGH ST.

END PAVEMENT REMOVAL
-L- Sta. 24+01 ±

-L- POT Sta. 29+57.01 =
-Y4- POT Sta. 14+79.98

-Y4- PT Sta. 16+29.36 =
-Y5- PC Sta. 16+47.98

BEGIN PAVEMENT REMOVAL
-Y3- Sta. 25+09 ±

ROWAN ST

HILLSBORO ST.

END PAVEMENT REMOVAL
END OF RADIUS

-Y3- PT Sta. 26+64.16

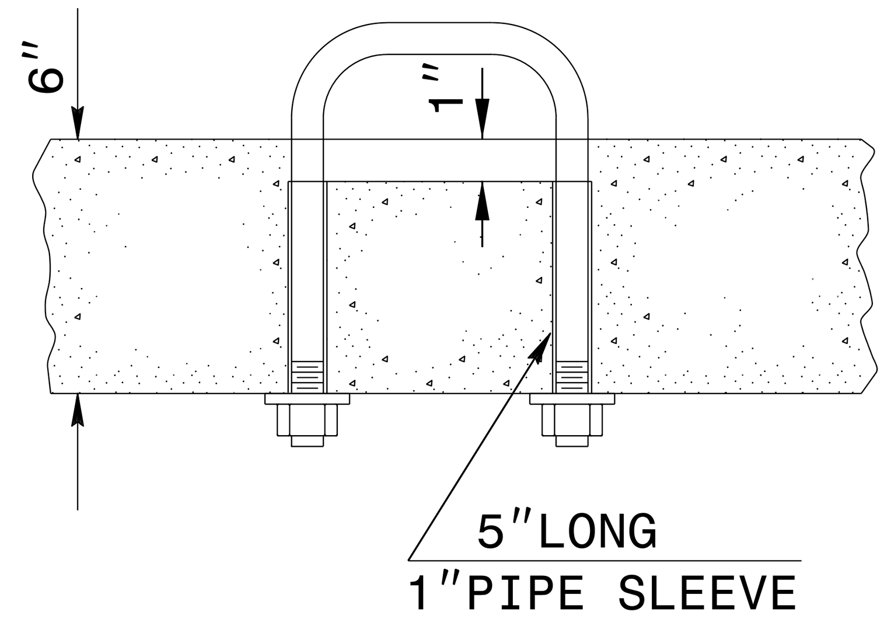
S 27° 43' 20.5" E

GRAPHIC SCALE 50 25 0 50 100

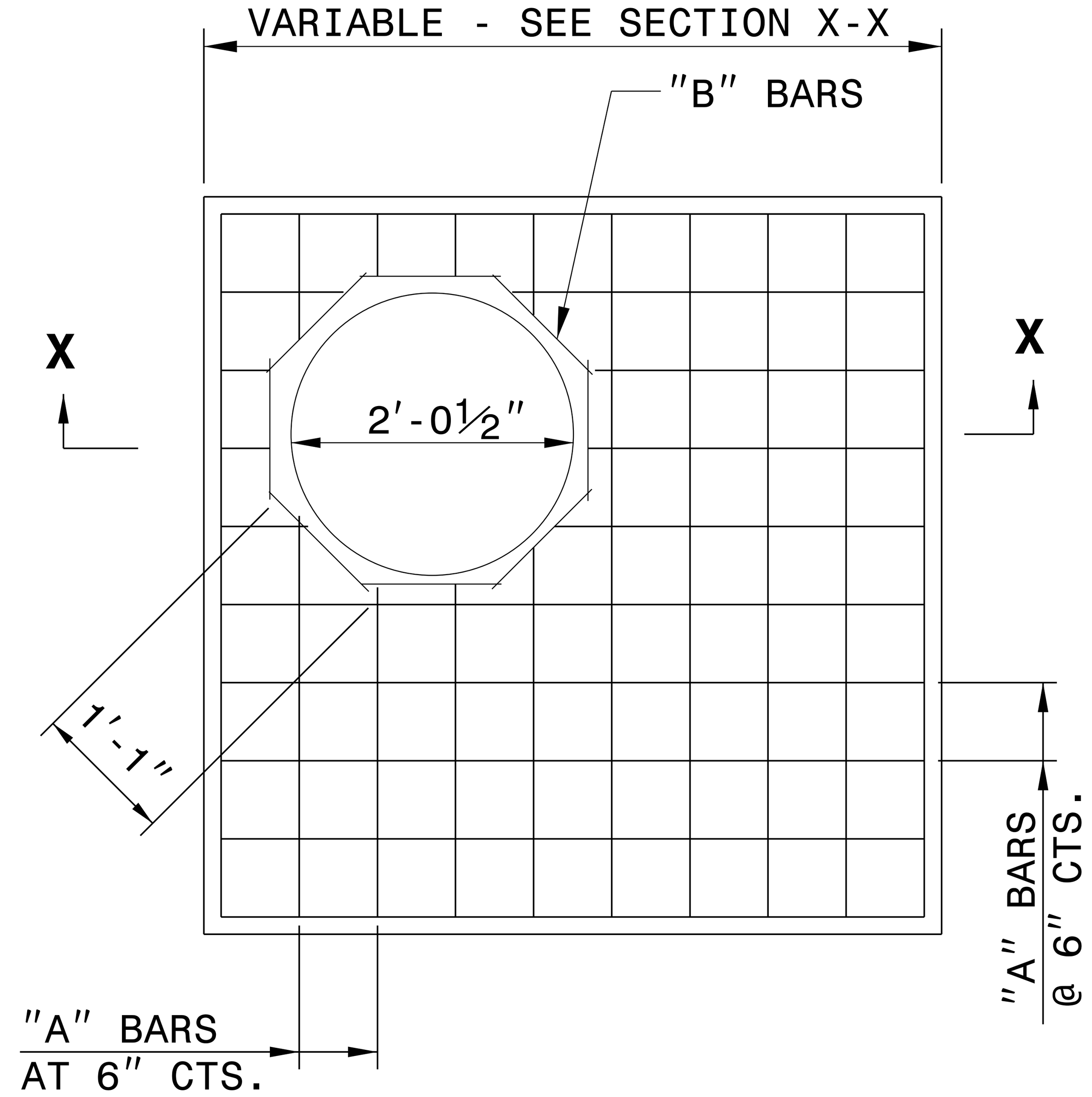
8/17/99

4/4/00 PM
B4490_PW_2B-3.dgn
3/10/2016

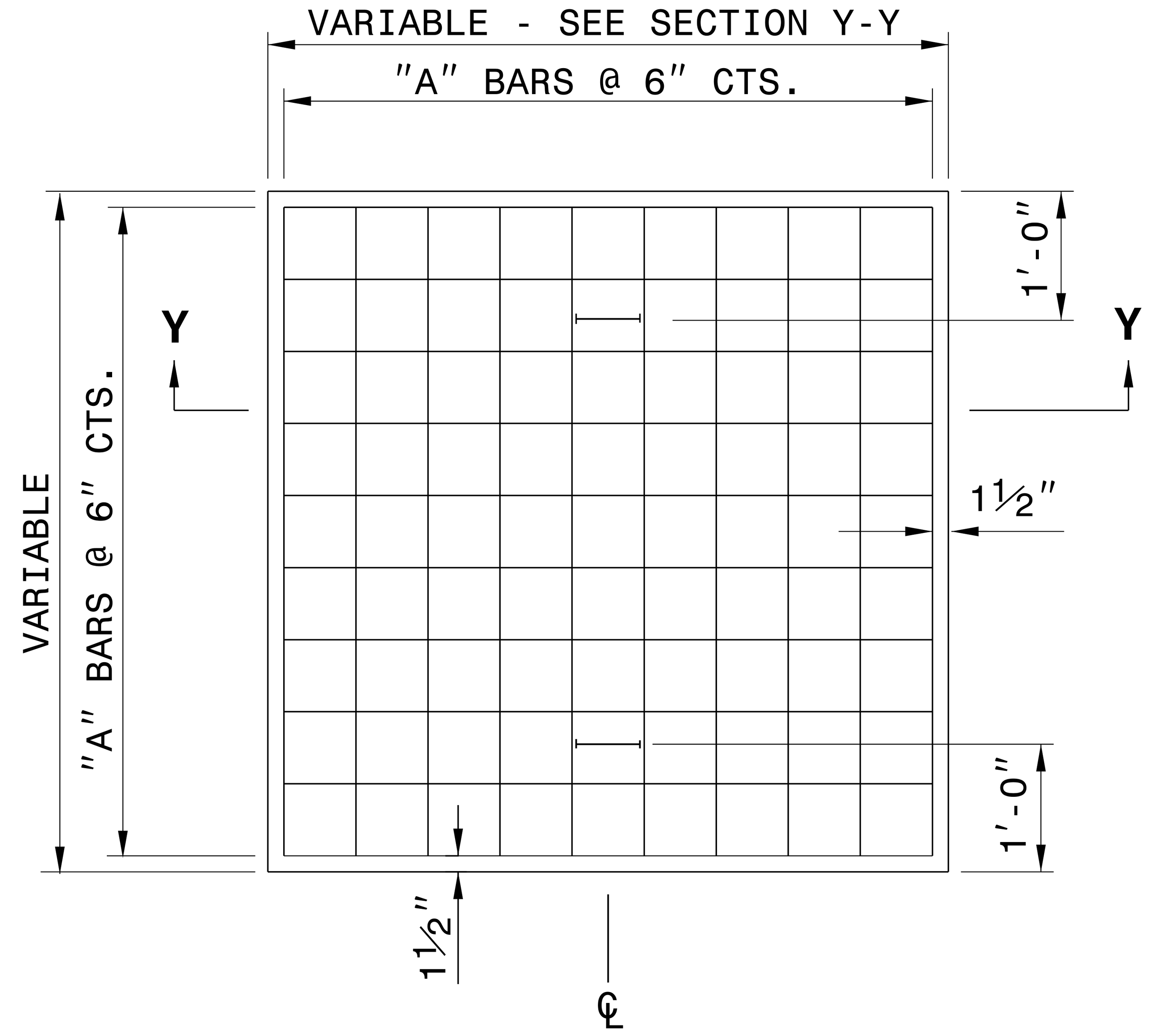
PROJECT REFERENCE NO.	SHEET NO.
B-4490	2C-1



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

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

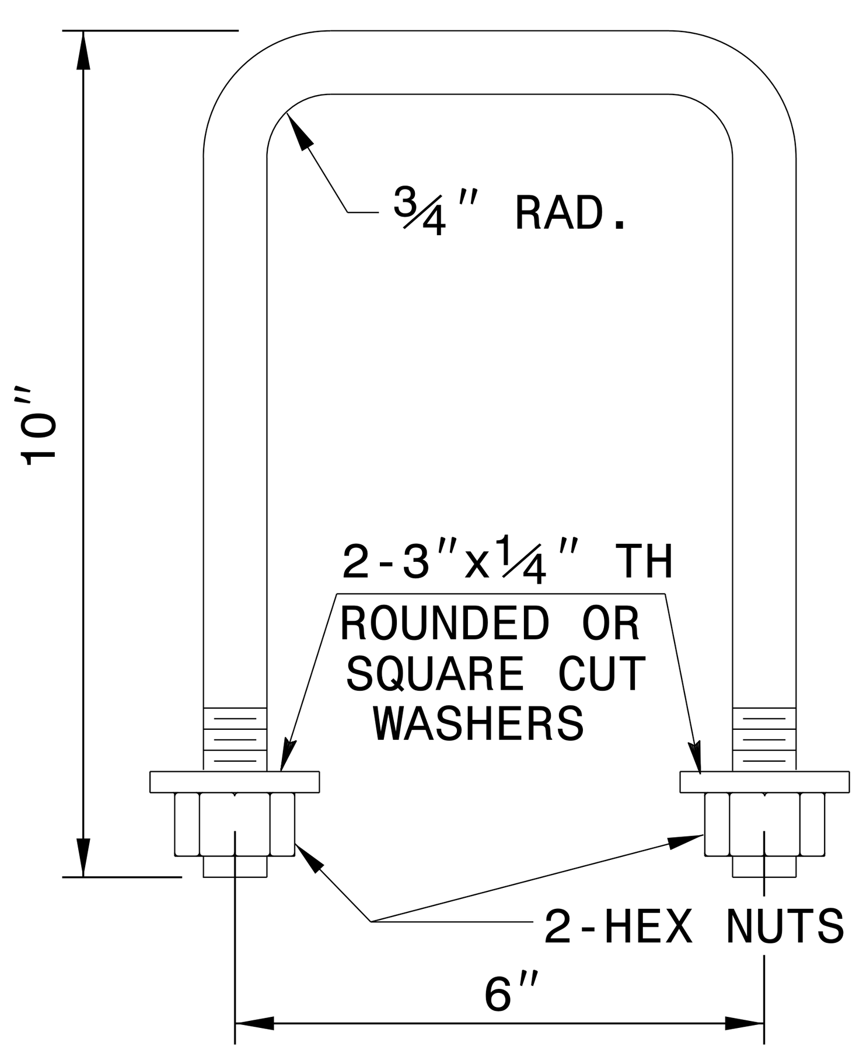
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

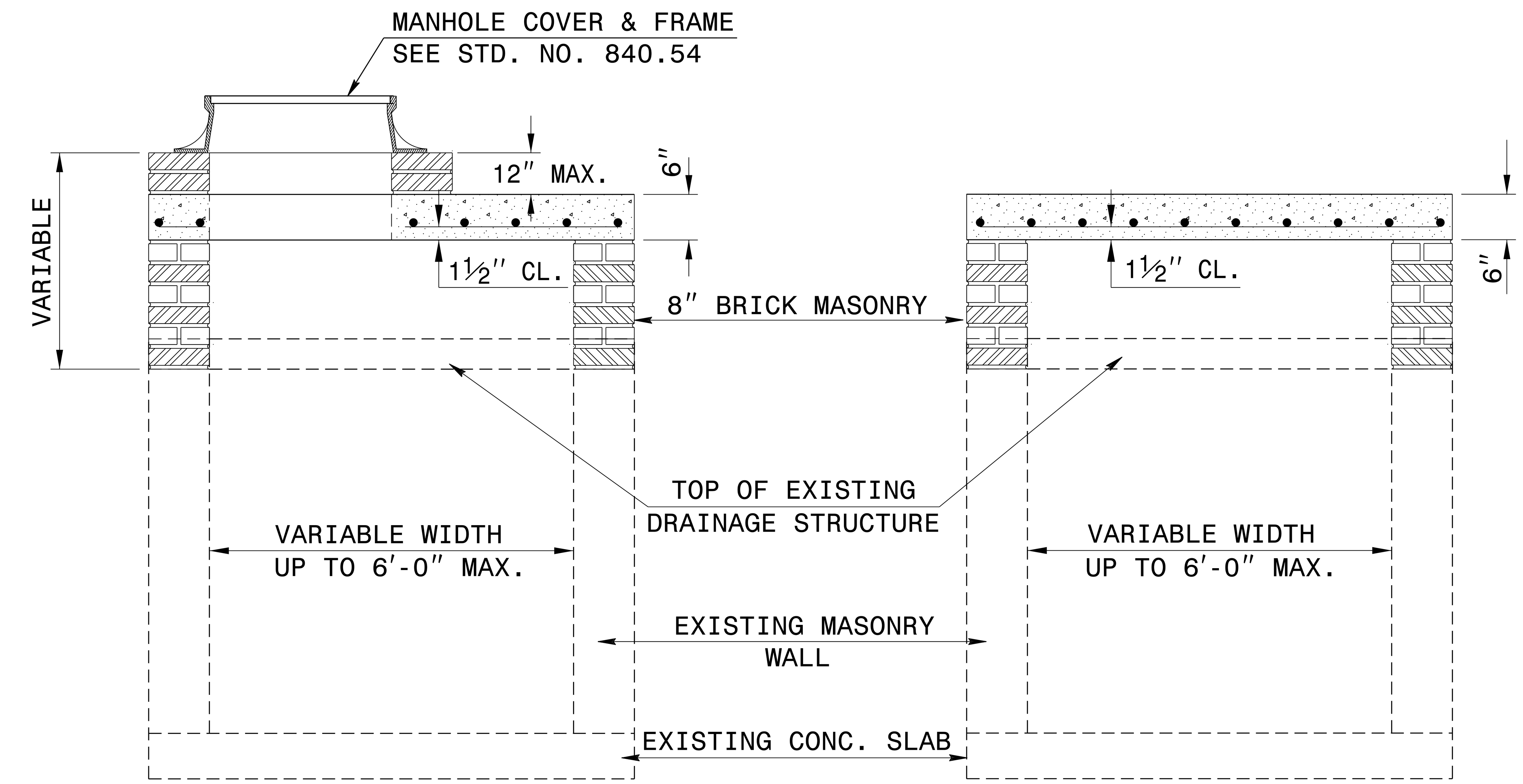
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

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

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



DETAIL OF HANDLE



SECTION X-X **SECTION Y-Y**

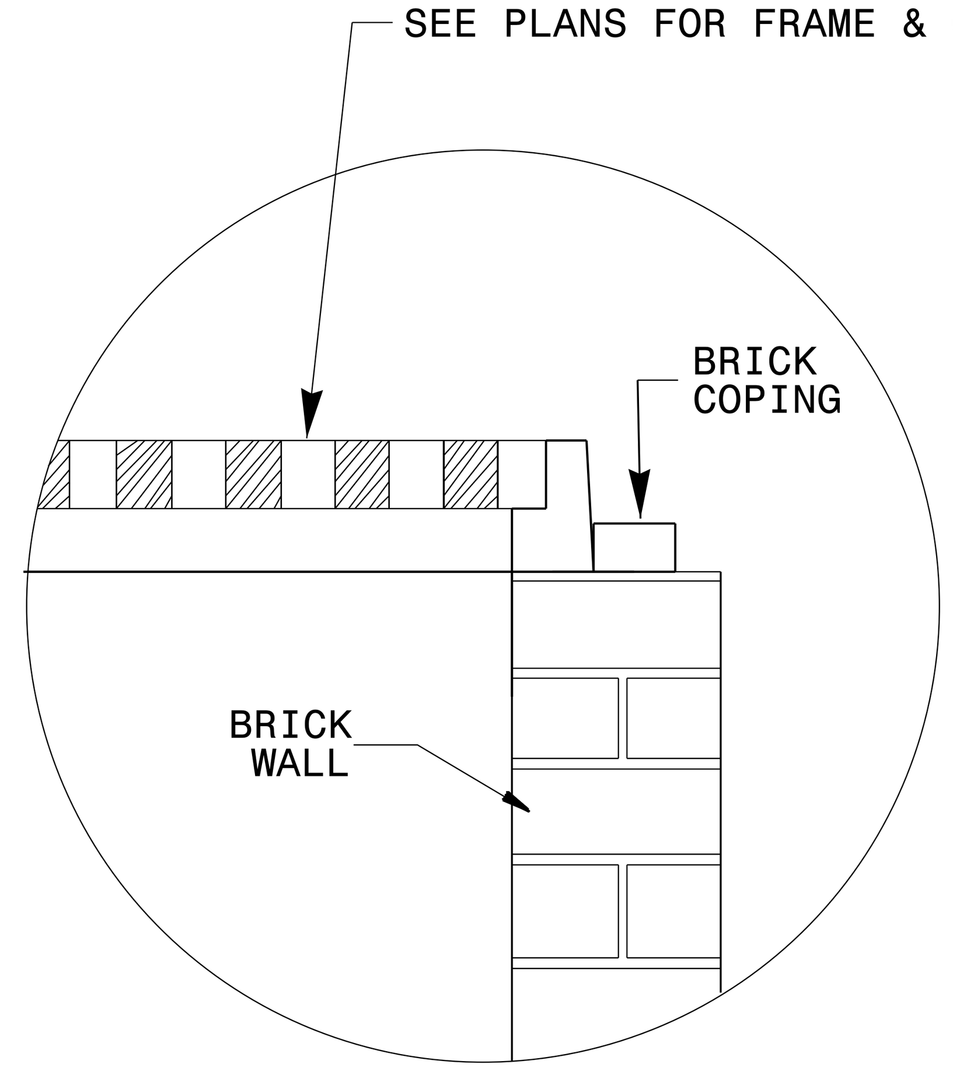
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton
DocuSigned by: Joel Howerton 4/25/2016

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

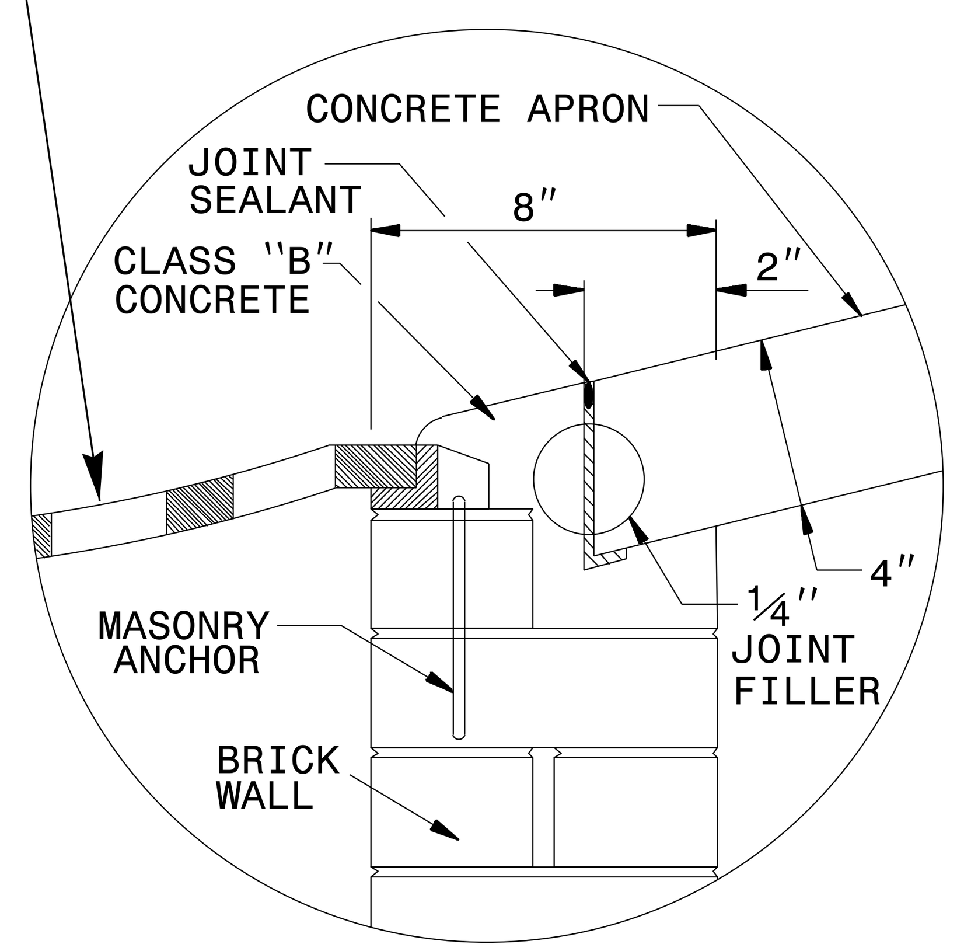
DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)

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



GRATE PLACEMENT DETAIL

FOR DROP INLETS

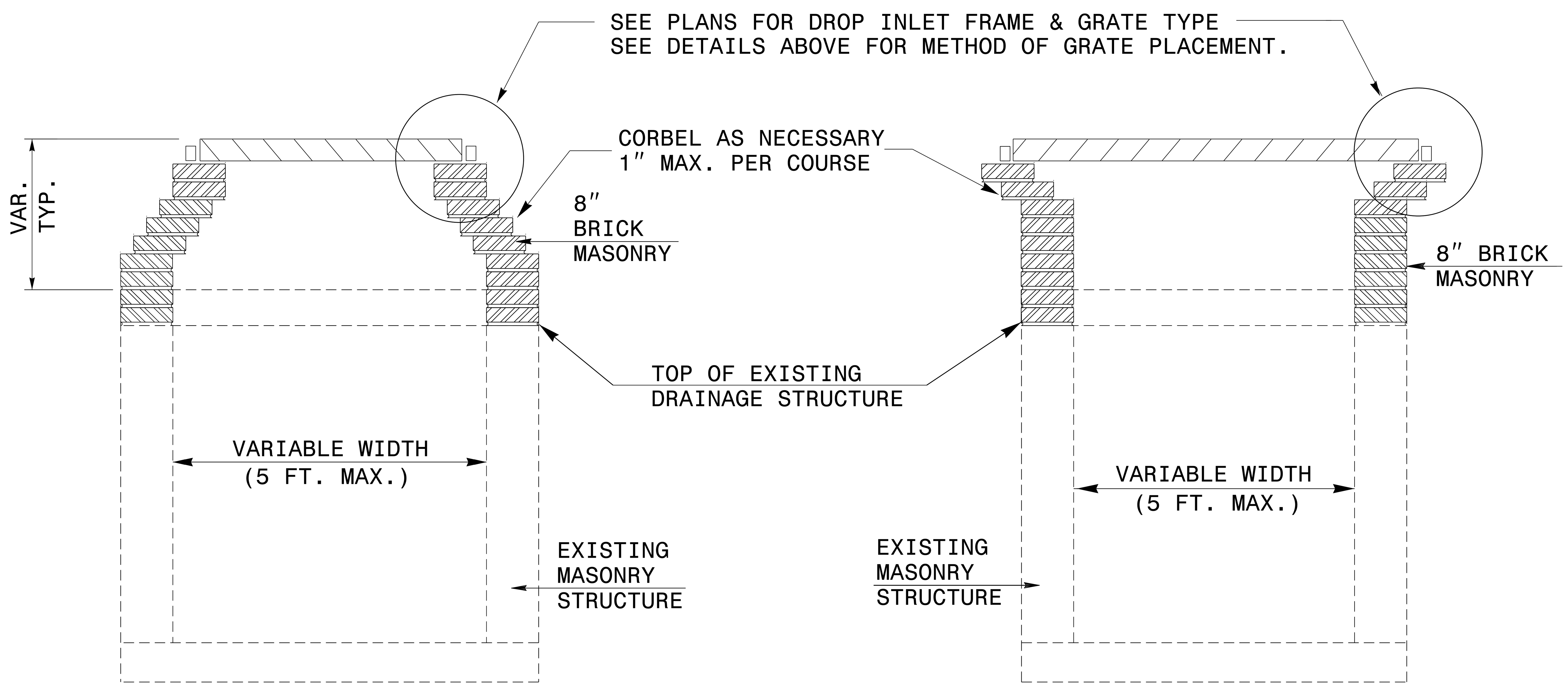


GRATE PLACEMENT DETAIL

FOR GRATED DROP INLETS

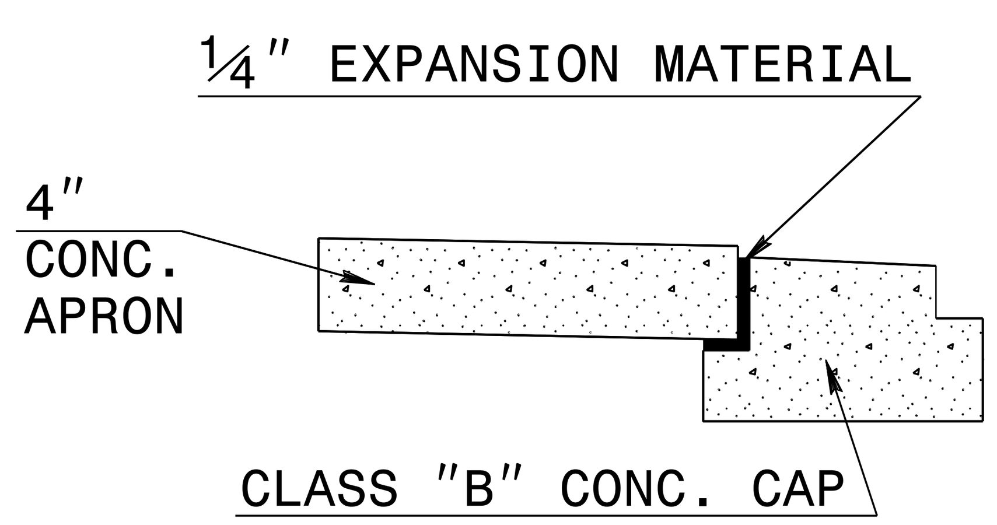
GENERAL NOTES:

- -CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.
- -USE CLASS B CONCRETE.
- -THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.
- -JUMBO CONCRETE BRICK WILL BE PERMITTED. 4" CONCRETE BRICK OR 8" SOLID CONCRETE BLOCK ARE REQUIRED FOR DRAINAGE STRUCTURE.
- -INCLUDE 18" CONCRETE APRON IN UNIT PRICE BID PER EACH, CONVERT EXISTING CATCH BASIN TO DROP INLET.
- -SPECIAL DESIGN IS REQUIRED FOR USE UNDER PAVEMENT.
- -CONFIRM DIMENSIONS ON EACH INDIVIDUAL FRAME & GRATE PROPOSAL.
- -SEE STD. DRAWING 840.25 FOR MASONRY ANCHORAGE.



TYPICAL SECTION

TYPICAL SECTION



EXPANSION JOINT DETAIL

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton 4/25/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

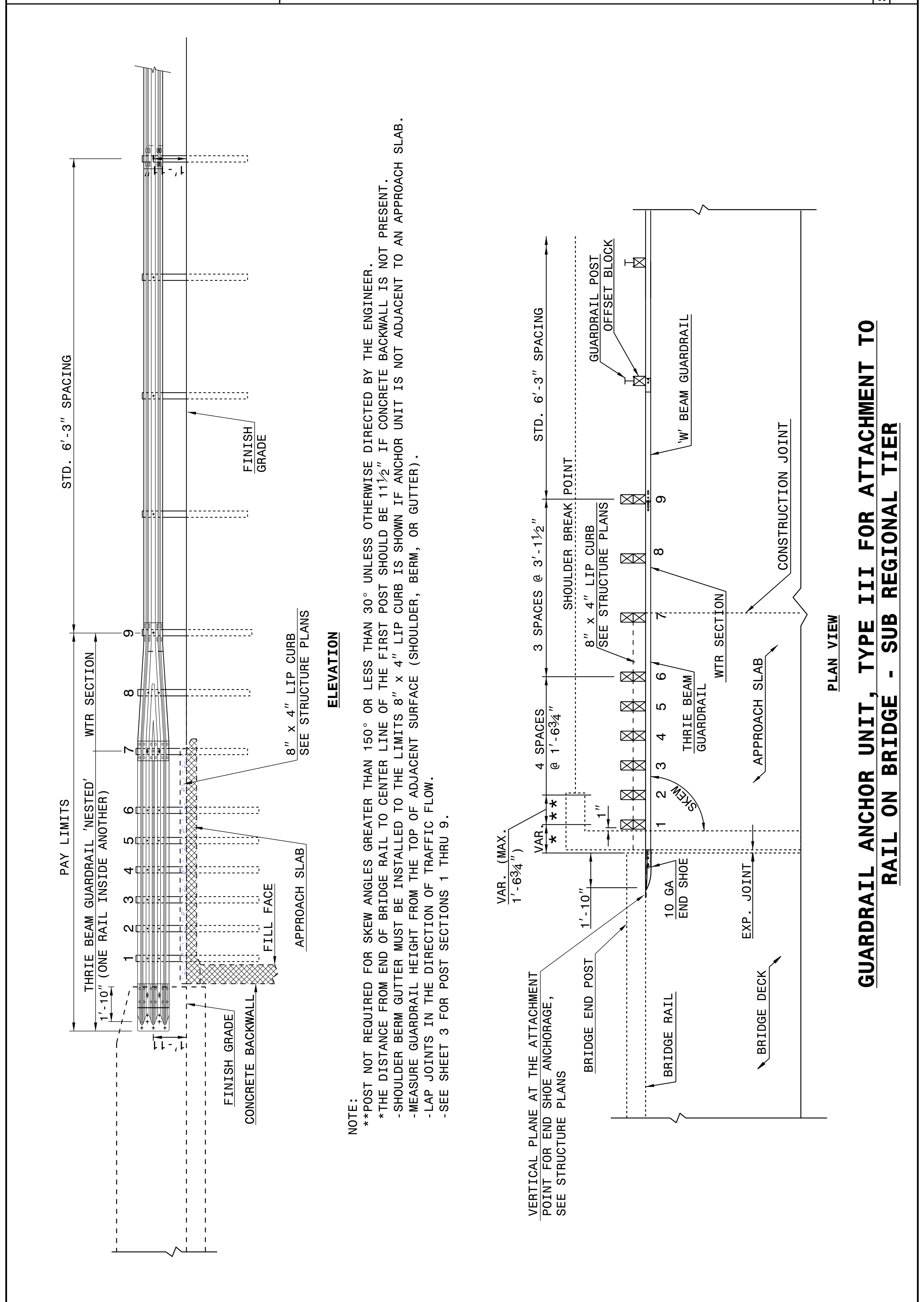
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

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

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

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2C-3

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER
SHEET 2 OF 7 862d03

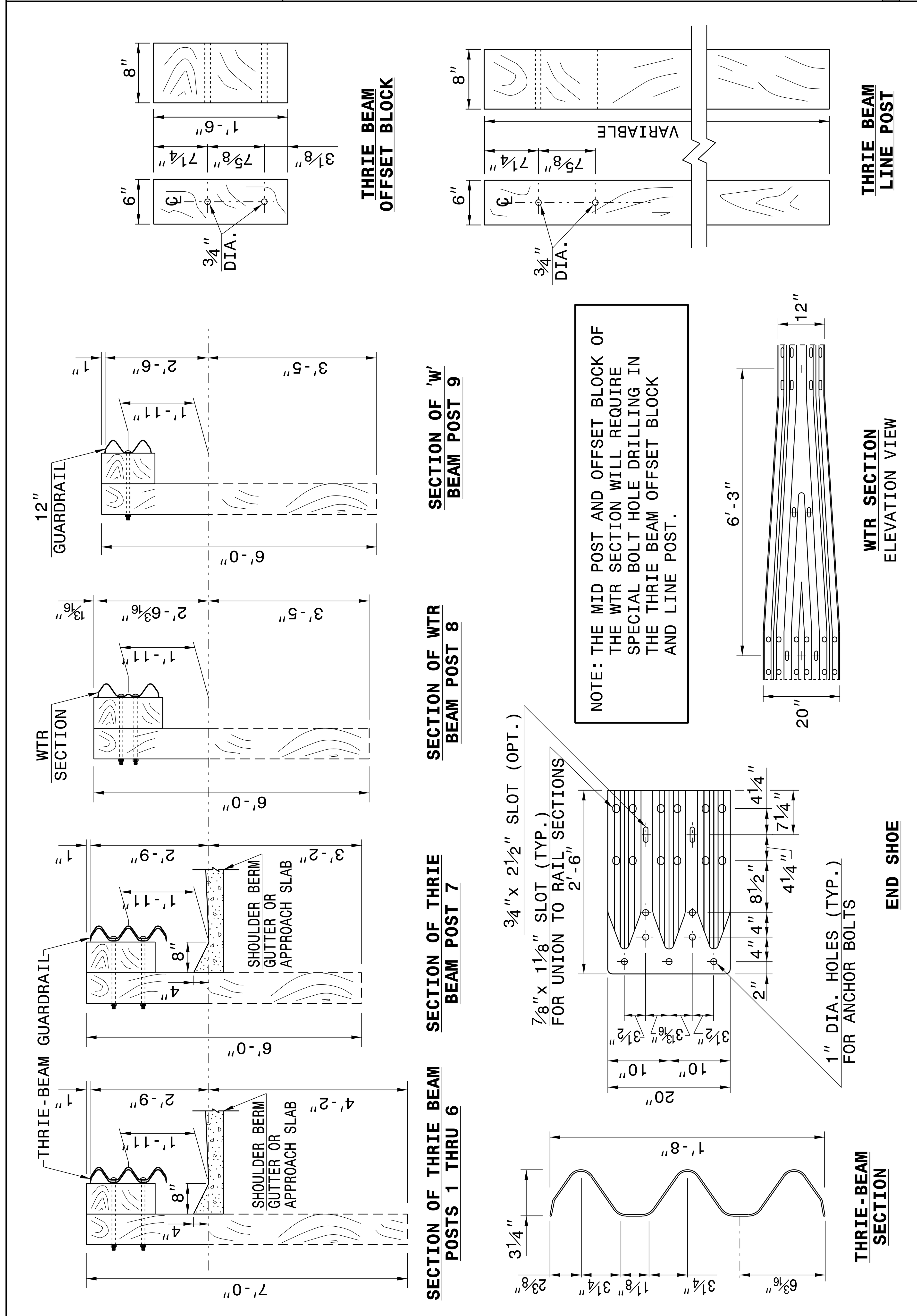


STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III
SHEET 3 OF 7 862d03



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

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7
862d03

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton
DocuSigned by: Joel Howerton 873F3D17DCDC45F...
4/25/2016

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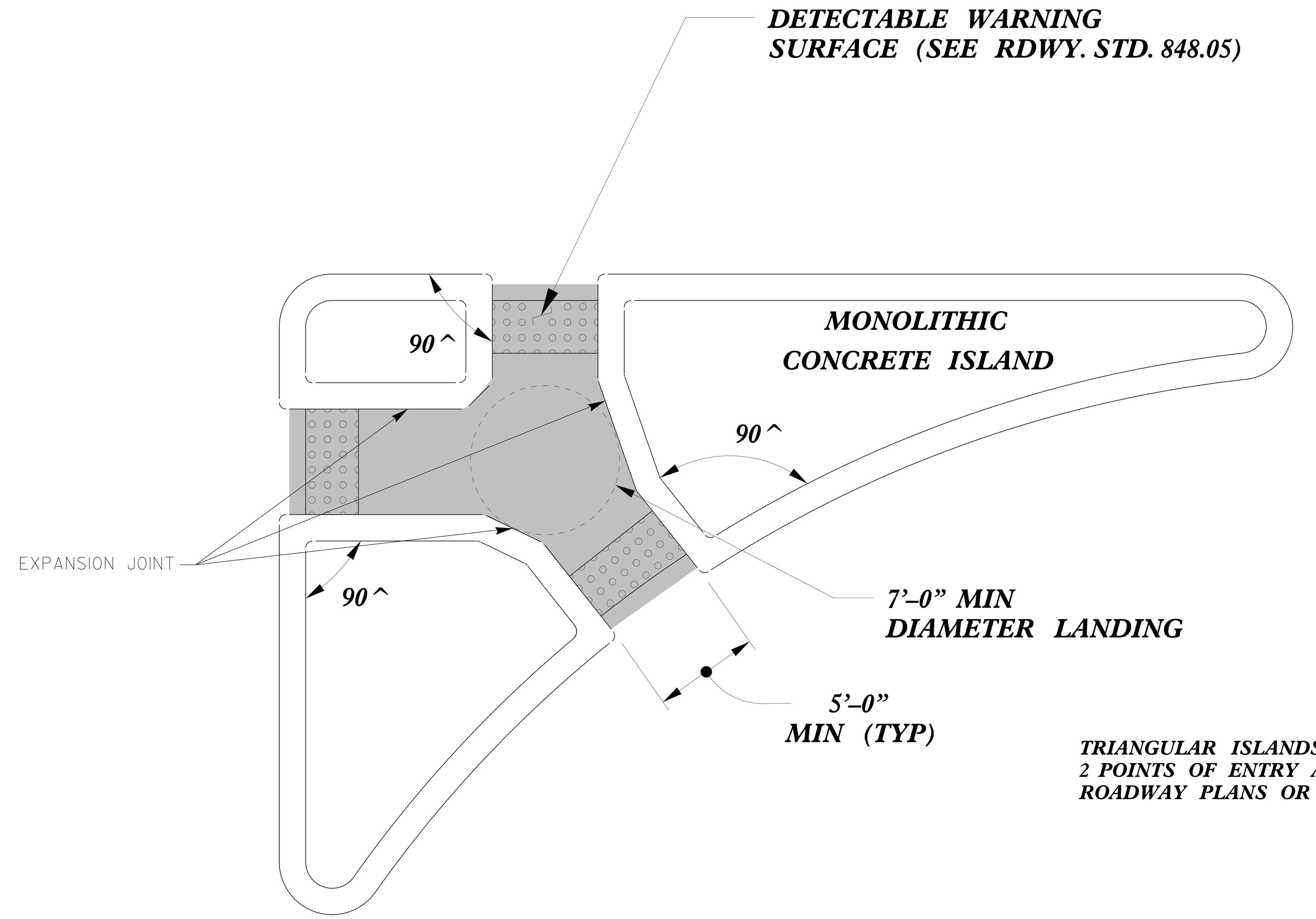
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

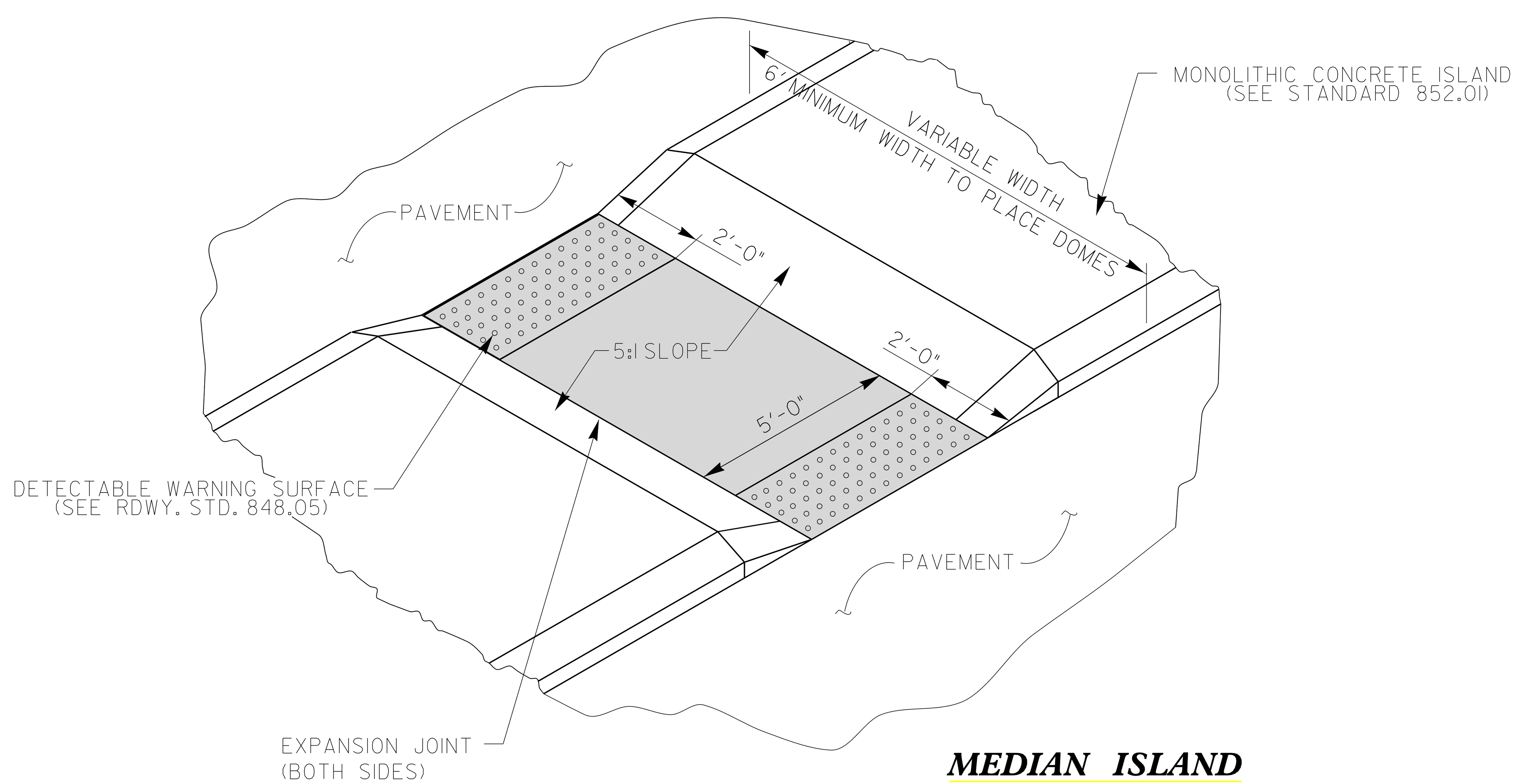
PROJECT REFERENCE NO.	SHEET NO.
B-4490	2C-4

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

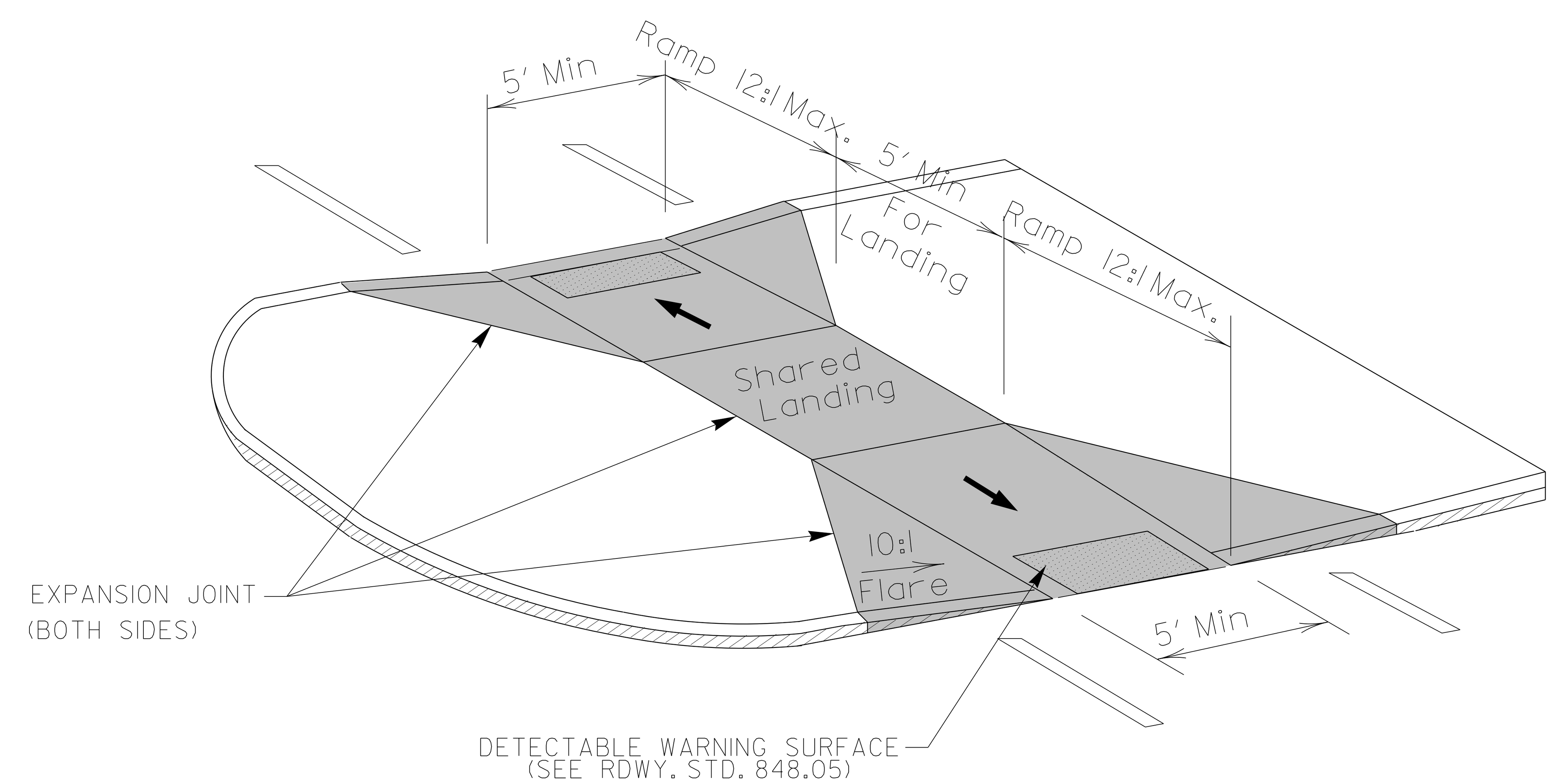


TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY 2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.

TRIANGULAR ISLAND WITH CUT THROUGH

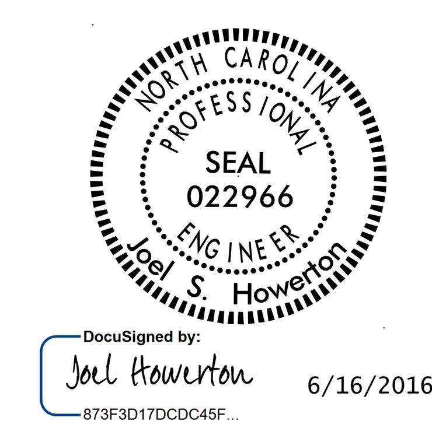


MEDIAN ISLAND WITH CUT THROUGH



MEDIAN ISLAND CURB RAMPS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



6/16/2016

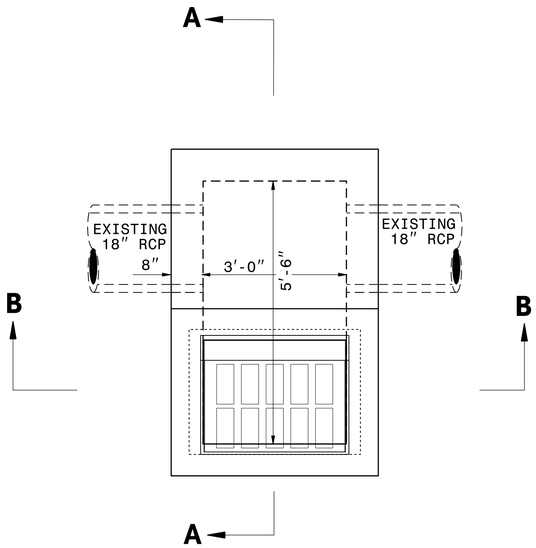
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

Median or Turn Lane Islands

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

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2C-5



PLAN

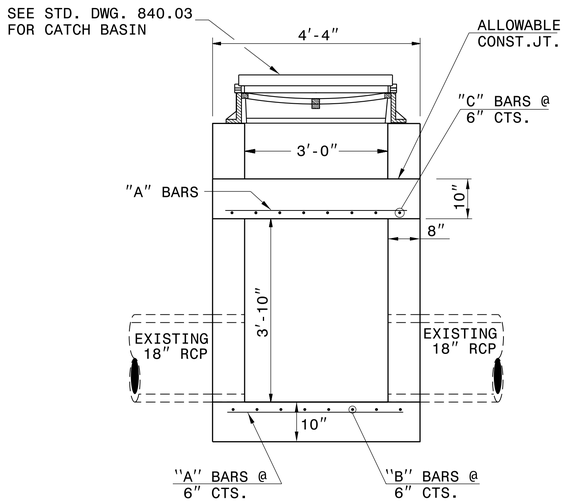
GENERAL NOTES:

1. USE CLASS "B" CONCRETE THROUGHOUT.
2. CONSTRUCT CONCRETE BOX IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS.
3. USE FORMS TOR CONSTRUCT THE BOTTOM SLAB.
4. ADJUST LENGTH OF STEEL BARS AS NEEDED TO COMPENSATE FOR PIPES AND FRAME AND GRATE OPENINGS.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60.
6. CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 2" CLEARANCE.
7. LOCATE FRAME AND GRATE AS FIELD CONDITIONS DICTATE AND AS DIRECTED BY THE ENGINEER.
8. DIMENSIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.

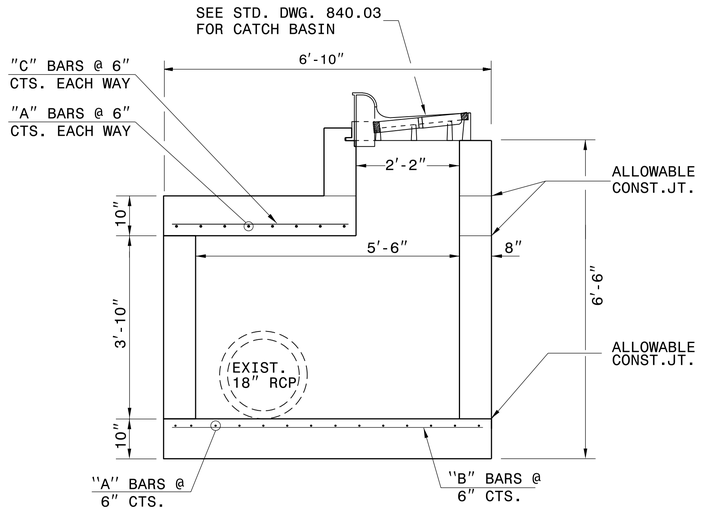
BILL OF MATERIALS

BAR	QTY	SIZE	LENGTH	WEIGHT
A	22	#5	4'-0"	92
B	8	#5	5'-2"	43
C	8	#5	3'-8"	31
TOTAL REINF. STEEL (lbs.)				166
TOTAL CONC. CU. YDS.				4.1

NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES OR CATCH BASIN OPENING.



SECTION B-B



SECTION A-A

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON

DocuSigned by: Joel Howerton 4/25/2016
873F3D17DCDC45F...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

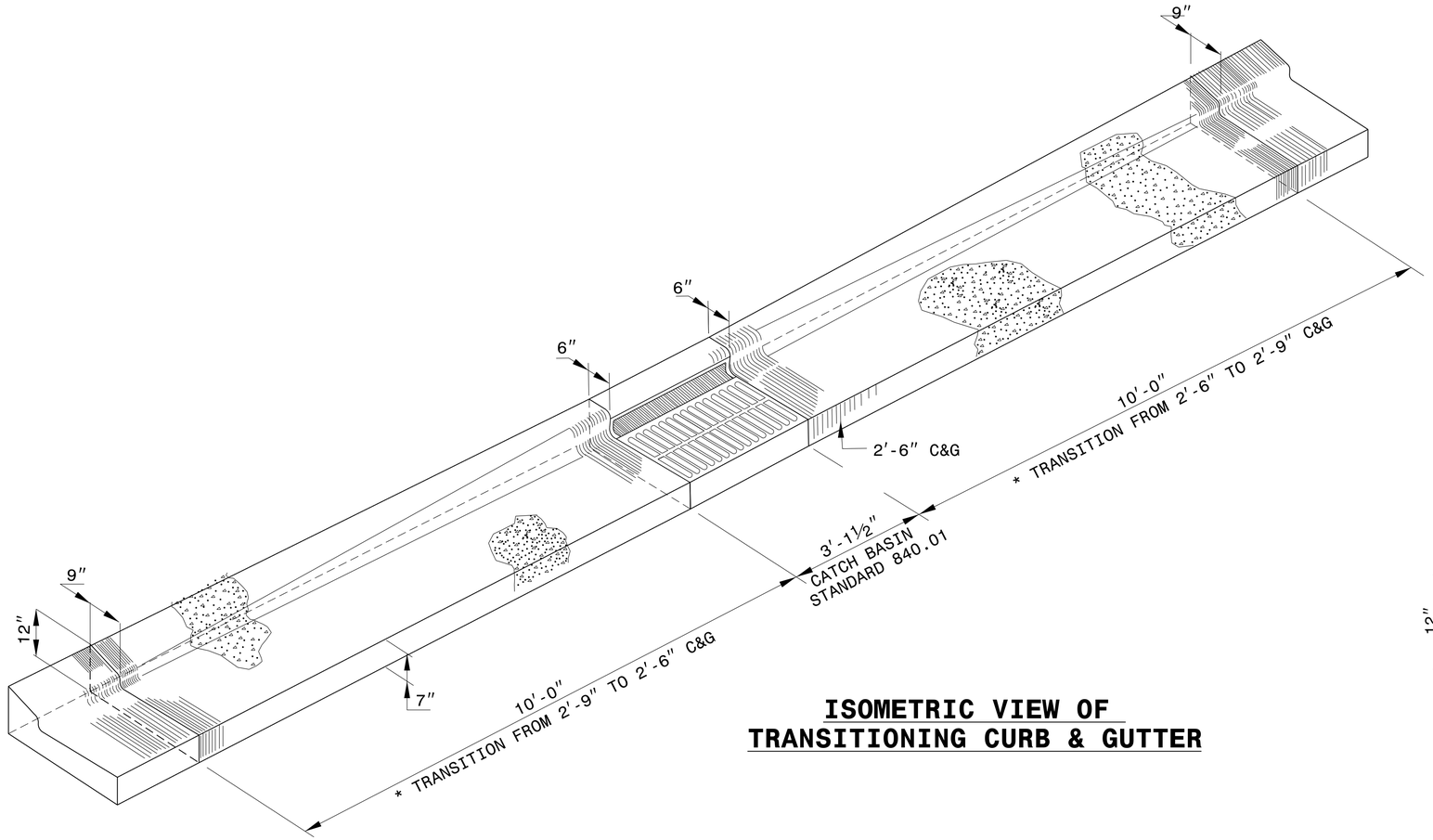
DETAIL OF SPECIAL CATCH BASIN

ORIGINAL BY: K.A.KEMPF DATE: OCTOBER 6,2015
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: s:details/kkempf/english/B4490_cb_offset.dgn

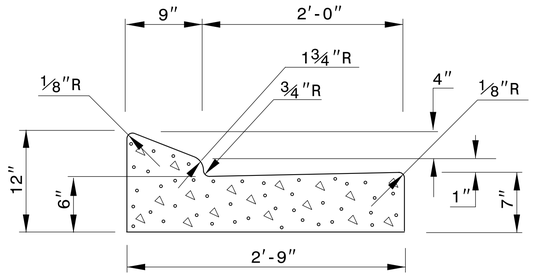
$$$$$$SYSTEM$$$$$$
$$$$$$USERNAME$$$$$$
$$$$$$DGN$$$$$$
$$$$$$DATE$$$$$$
$$$$$$TIME$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2C-6

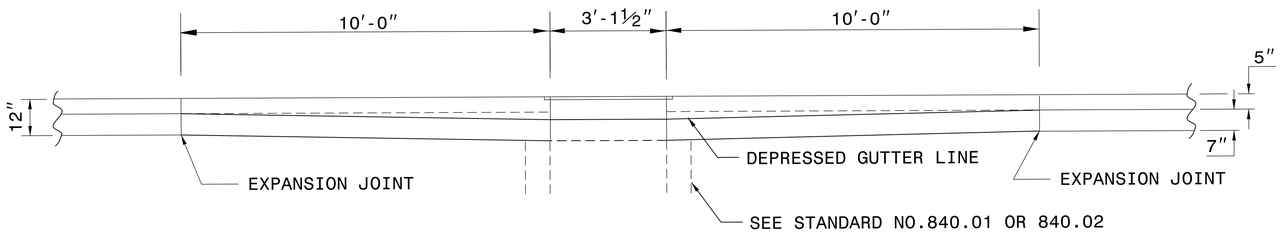
NOTE: SEE STD.DWG. 846.01 FOR 2'-6" CURB AND GUTTER INFORMATION.



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.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton 4/25/2016
873F3D17DCDC45F...

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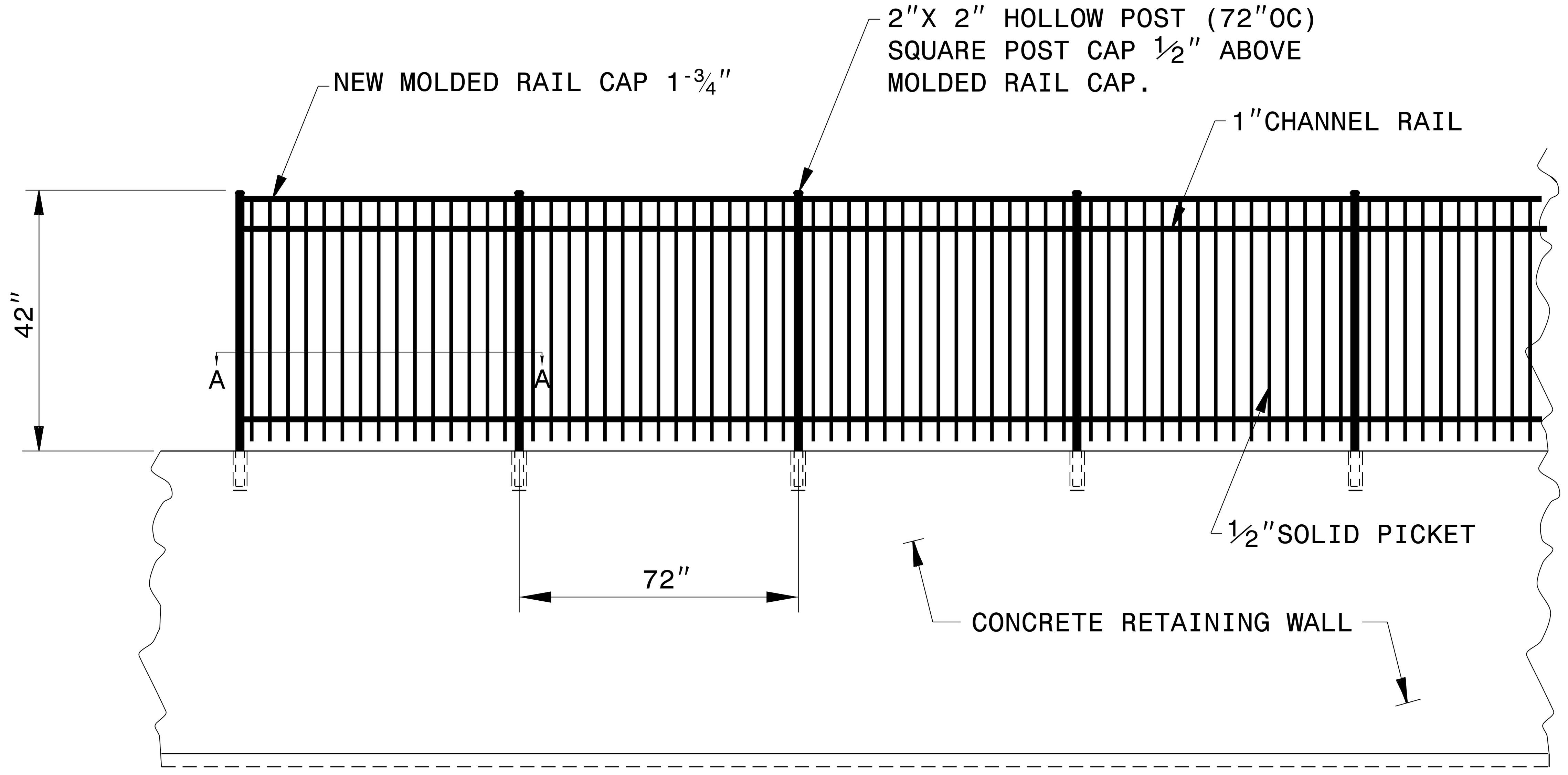
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

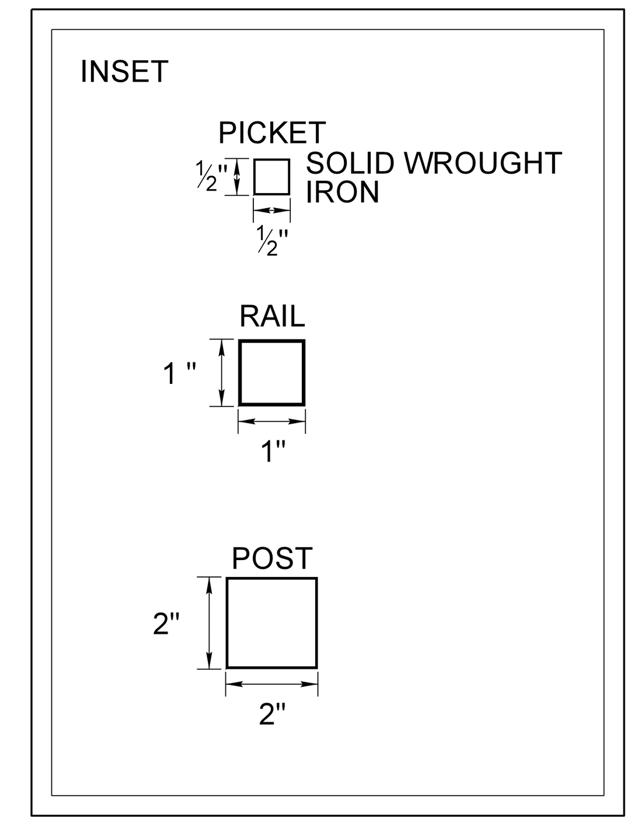
DETAIL OF 2'-9" TO 2'-6" CURB & GUTTER TRANSITION SECTION

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

$$$$SYSTIME$$$$
$$$$ITEM$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2C-7





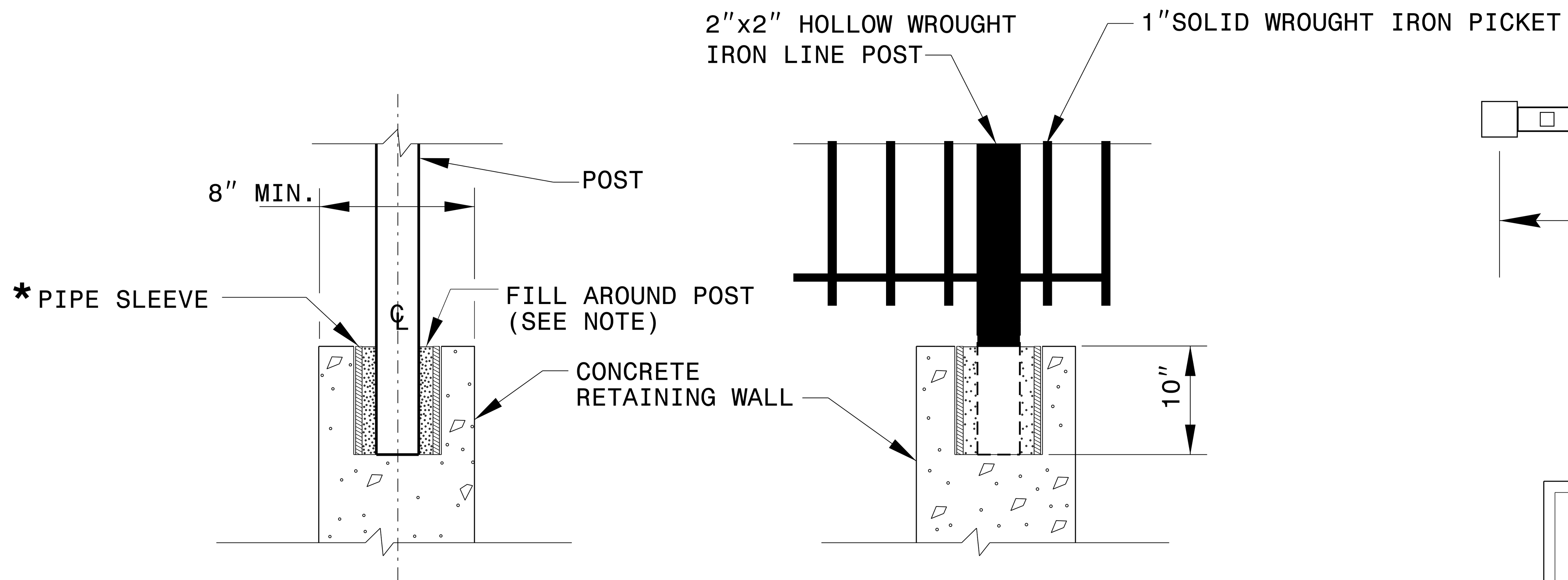
RETAINING WALL MOUNTED DECORATIVE WROUGHT IRON RAILING

NOTE:

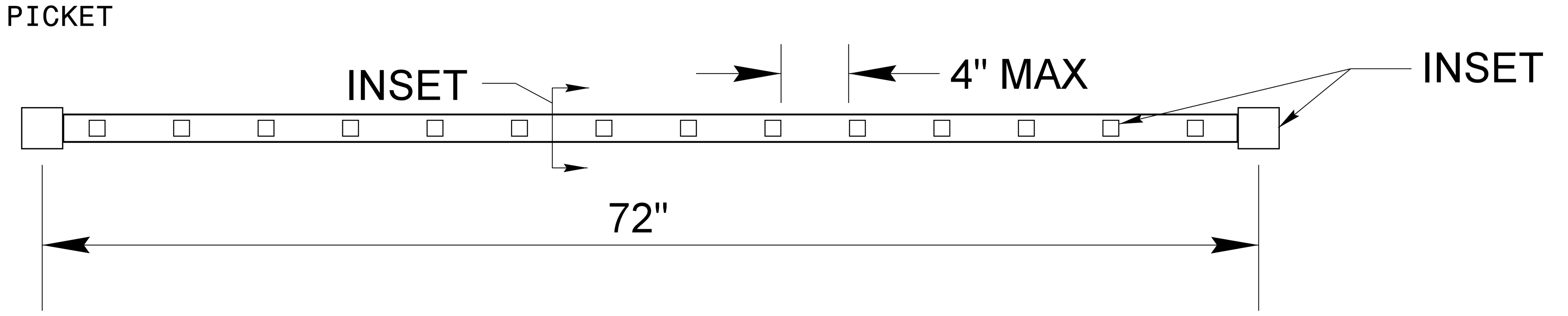
PLACEMENT OF PIPE SLEEVES SHALL CORRESPOND TO POSTS AS SHOWN.

FILL SPACE BETWEEN POST AND PIPE MATERIAL ACCORDING TO FENCE INSTALLATION SPECIFICATIONS OR MATERIAL APPROVED BY ENGINEER.

* PIPE SLEEVES SHALL BE INSTALLED IN THE CONCRETE RETAINING WALL WITH WROUGHT IRON POST AS INDICATED ...



POST EMBEDMENT IN RETAINING WALL



SECTION A-A

NOTES:

1) SUBMIT ALTERNATE FENCE MATERIAL TO ENGINEER FOR APPROVAL.

2) SUBMIT ANY VARIATIONS IN FENCE DIMENSIONS TO ENGINEER FOR APPROVAL.

3) FENCE POSTS MAY BE CAST INTO THE CONCRETE RETAINING WALL WITHOUT THE PIPE SLEEVE AS DIRECTED BY THE ENGINEER.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton

DocuSigned by: Joel Howerton 4/25/2016

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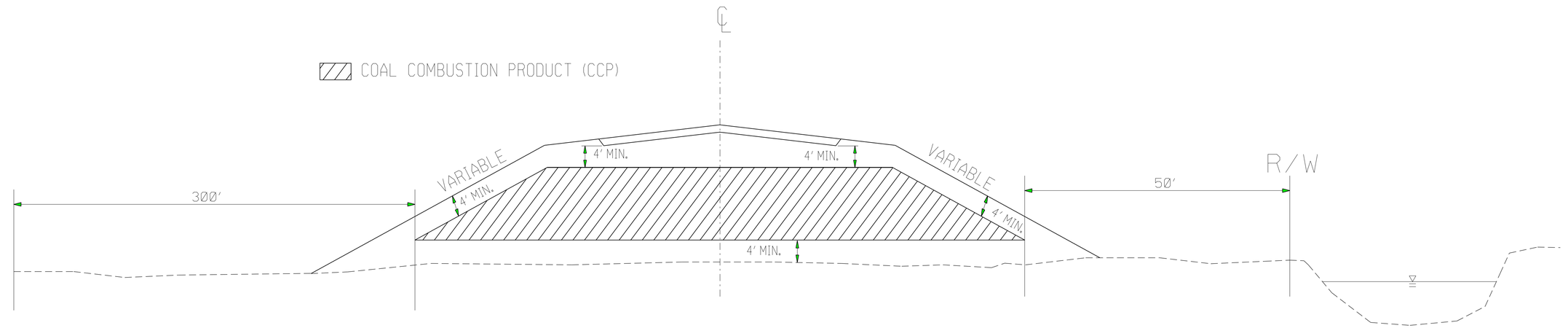
STANDARDS AND SPECIAL DESIGN
Office 919-707-6950 FAX 919-250-4119

RETAINING WALL WROUGHT IRON FENCE

ORIGINAL BY: DATE:
MODIFIED BY: rnbritt DATE: 12-01-15
CHECKED BY: DATE:
FILE SPEC.: details/english/misc/wrought iron fence retwall.dgn

PROJECT REFERENCE NO.	SHEET NO.
B–4490	2C–8

COAL COMBUSTION PRODUCT PLACEMENT



*(OBTAIN PERMISSION FROM ARMY CORPS OF ENGINEERS)

PLACE CCP IN HATCHED AREA IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS

PLACE CCP A MINIMUM OF 5' ABOVE SEASONAL HIGH GROUND WATER

PLACE AT LOCATIONS AS APPROVED BY THE ENGINEER

PLACE SOIL BORROW MATERIAL ON THE OUTSIDE OF CCP AS EACH LIFT OF CCP IS PLACED

$$$$SYSTIME$$$$
$$$$FILENAME$$$$
$$$$USERNAME$$$$

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton 4/25/2016
B73F3D17DCDC45F...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

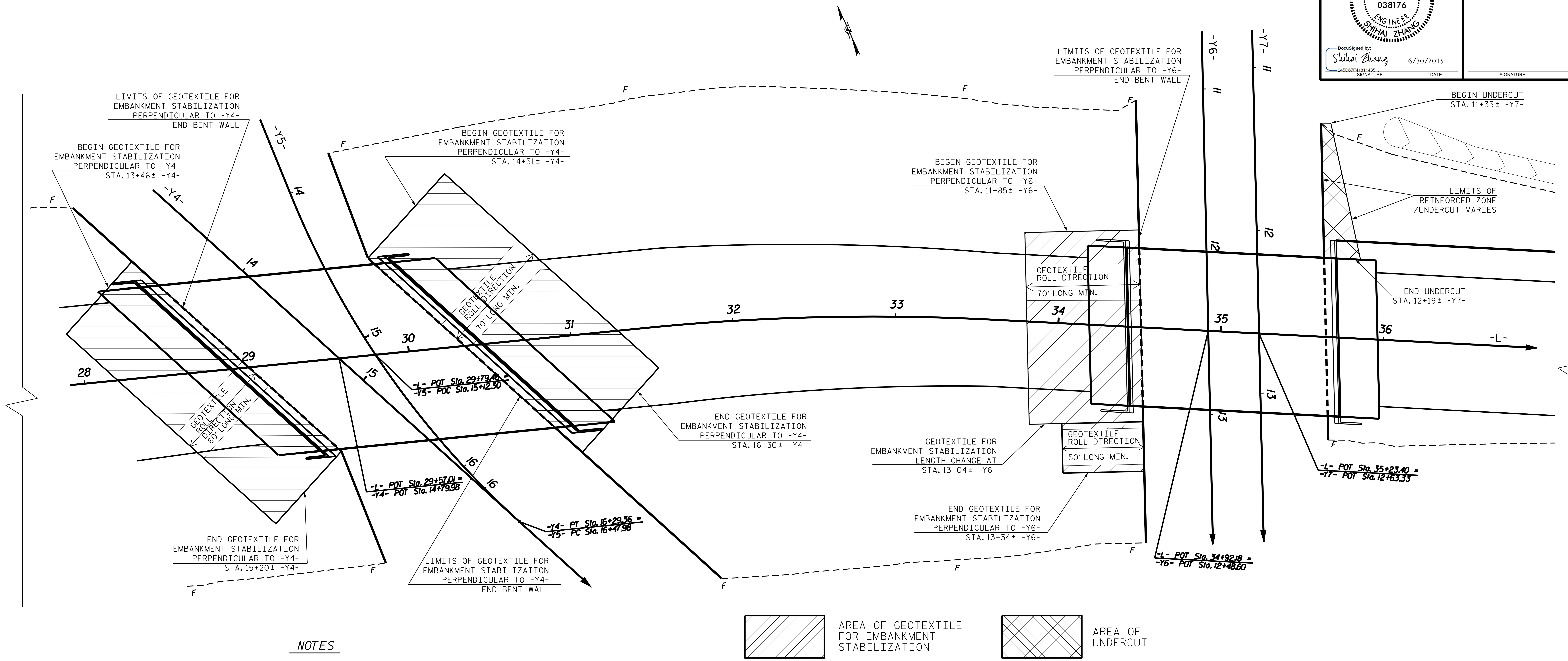
COAL COMBUSTION PRODUCT PLACEMENT DETAIL

ORIGINAL BY: J.S.H. DATE: 3/16/15
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: joel/coal combustion material detail.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2G-1

GEOTECHNICAL ENGINEER — SEAL 038176, NORTH CAROLINA PROFESSIONAL ENGINEER, SHIHAI ZHANG — DocuSigned by: Shihai Zhang 6/30/2015 — SIGNATURE / DATE

ENGINEER — SIGNATURE / DATE



PLAN VIEW FOR EMBANKMENT STABILIZATION

N.T.S.

QUANTITIES

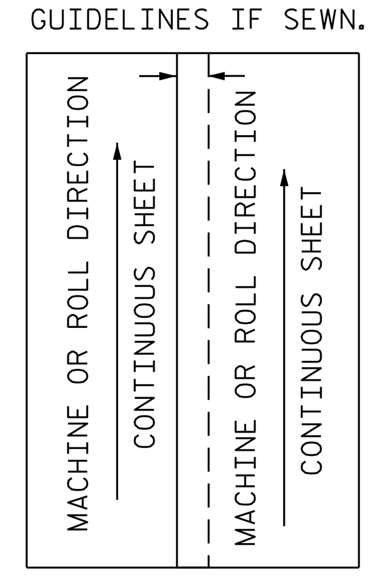
GEOTEXTILE FOR EMBANKMENT STABILIZATION	3,650 SY*
UNDERCUT	300 CY
GEOTEXTILE FOR SOIL STABILIZATION	300 SY
SELECT GRANULAR MATERIAL	300 CY

* GEOTEXTILE FOR EMBANKMENT STABILIZATION ESTIMATED QUANTITY DOES NOT INCLUDE OVERLAPS OR WASTE.

NOTES

1. GEOTEXTILE FOR EMBANKMENT STABILIZATION SHALL BE PLACED ON THE EXISTING GROUND OR BOTTOM OF THE WALL EXCAVATION AS SHOWN IN THIS PLAN AT BOTH END BENTS OF STRUCTURE NO. 1 AND END BENT 1 OF STRUCTURE NO. 2.
2. GEOTEXTILE FOR EMBANKMENT STABILIZATION SHEETS MUST HAVE A CONTINUOUS LENGTH AS INDICATED ON THE PLAN. NO SEAMS OR JOINTS ARE ALLOWED IN THE MACHINE DIRECTION OF GEOTEXTILE.
3. THE TERMS ROLL AND MACHINE DIRECTION ARE USED INTERCHANGEABLY.
4. FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION , SEE GEOTEXTILE FOR EMBANKMENT STABILIZATION SPECIAL PROVISION.
5. UNDERCUT SOFT ALLUVIAL SOIL UNDER THE REINFORCED ZONE OF THE MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL AT END BENT 2 OF STRUCTURE NO. 2 AS SHOWN IN THIS PLAN AND AS DIRECTED BY THE ENGINEER. DEPTH OF UNDERCUT VARIES FROM LOCATION TO LOCATION (5'±).
6. FOR UNDERCUT, SEE SECTION 225 OF THE STANDARD SPECIFICATIONS.
7. FOR GEOTEXTILE FOR SOIL STABILIZATION, SEE SECTION 270 OF THE STANDARD SPECIFICATIONS.
8. FOR SELECT GRANULAR MATERIAL, SEE SECTION 265 OF THE STANDARD SPECIFICATIONS.

18 INCHES MIN. OVERLAP OR SEE MANUFACTURER GUIDELINES IF SEWN.



GEOTEXTLE OVERLAP DETAIL

N.T.S.

PREPARED BY: S. ZHANG	DATE: 6/2015
REVIEWED BY: J. BATTS	DATE: 6/2015

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

EMBANKMENT STABILIZATION DETAILS AT BRIDGE APPROACHES

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2G-2

GEOTECHNICAL ENGINEER

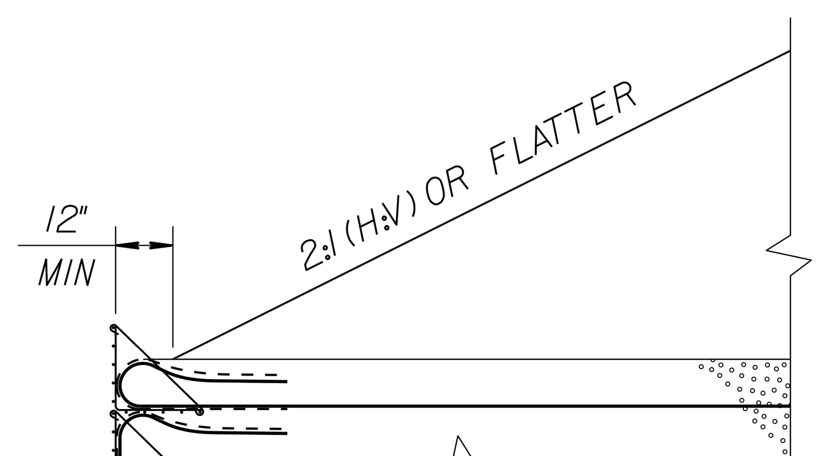
SEAL 022246 — NORTH CAROLINA PROFESSIONAL ENGINEER — SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 9/11/2015

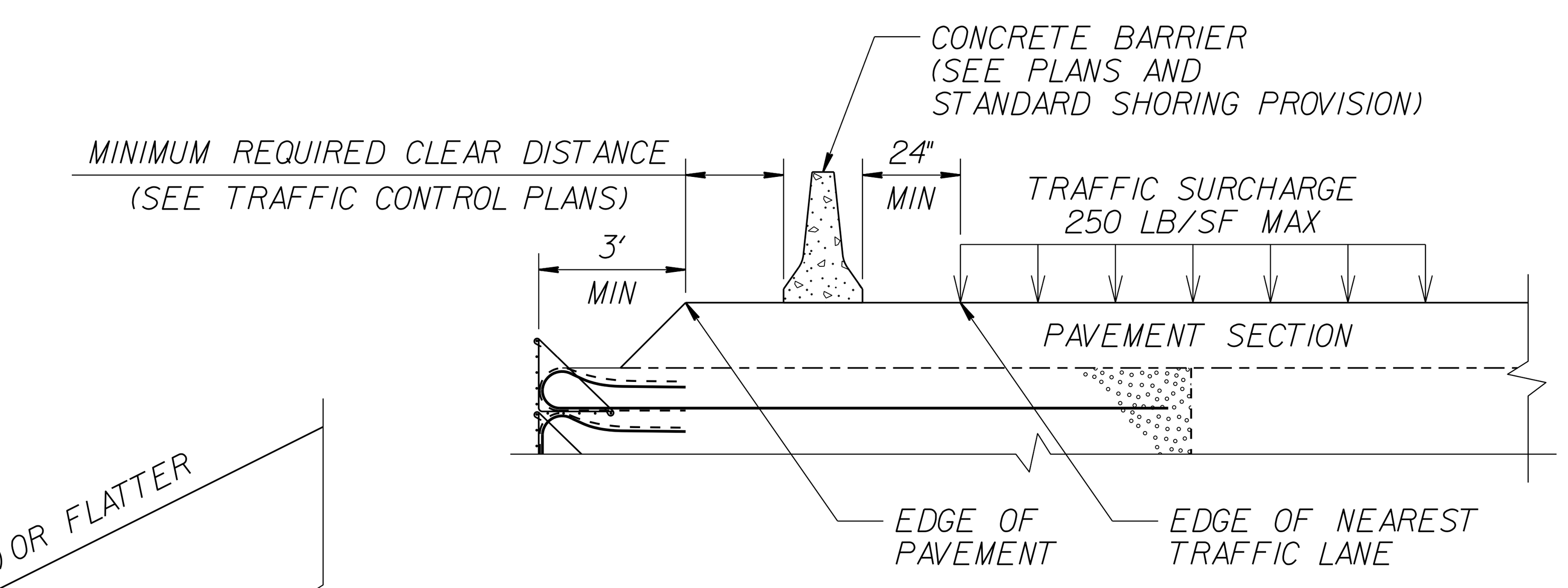
SIGNATURE DATE

ENGINEER

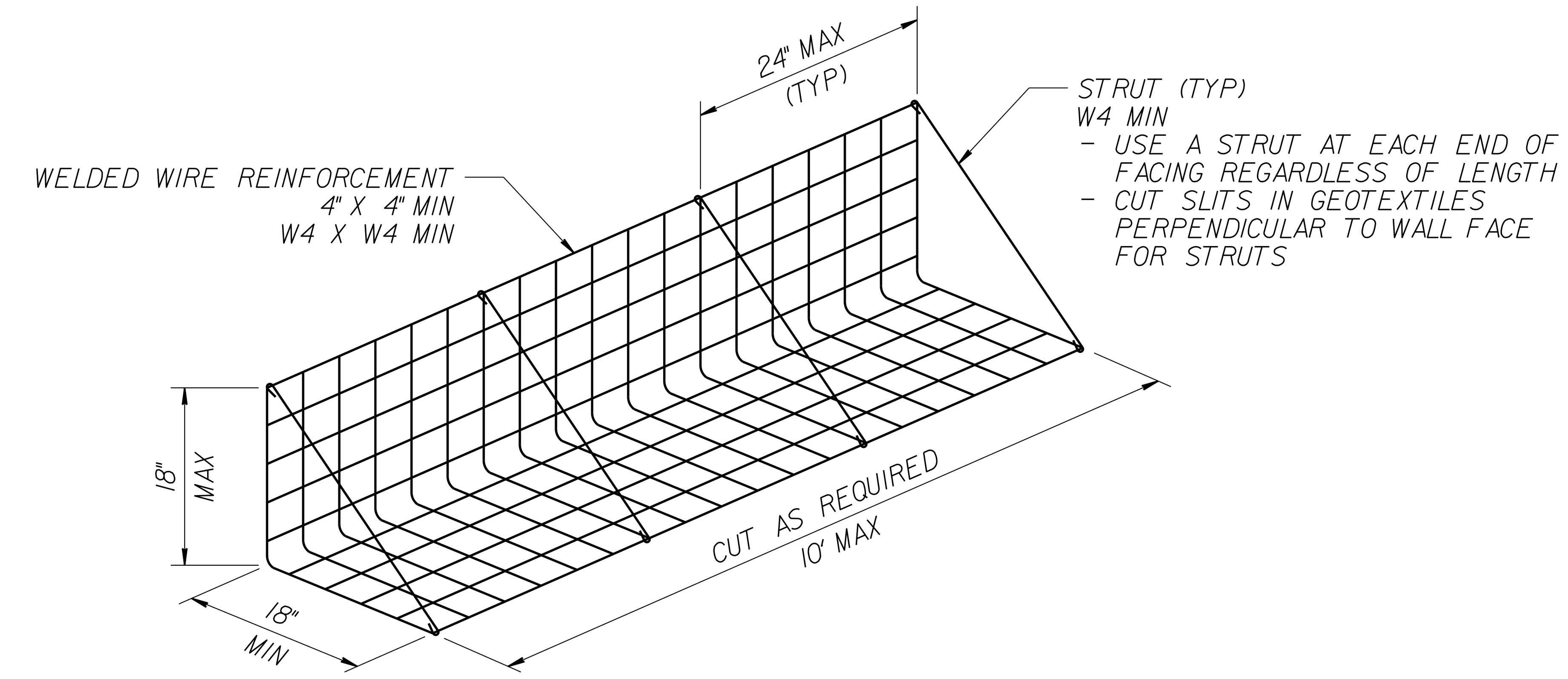
SIGNATURE DATE



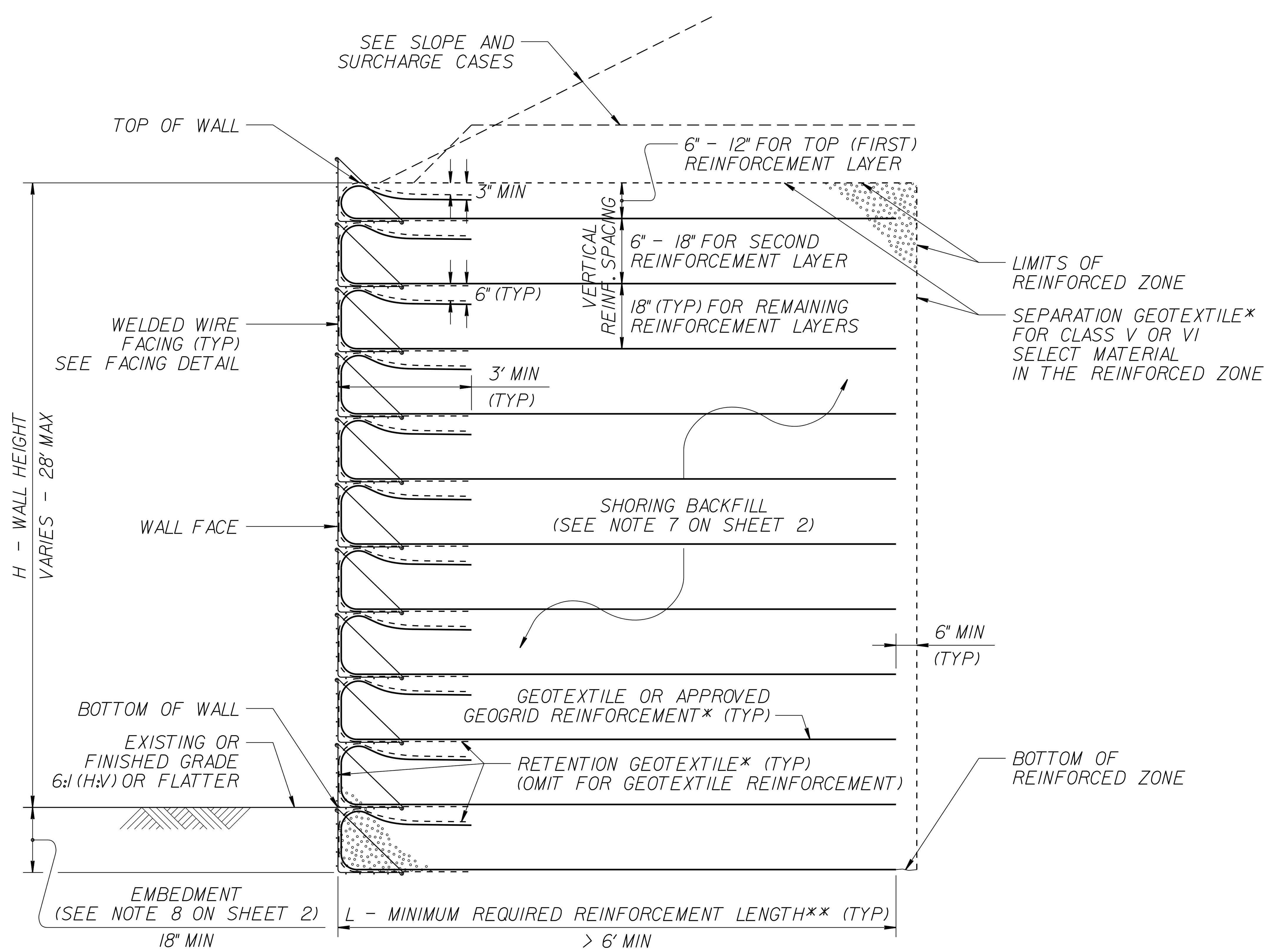
SLOPE CASE



SURCHARGE CASE

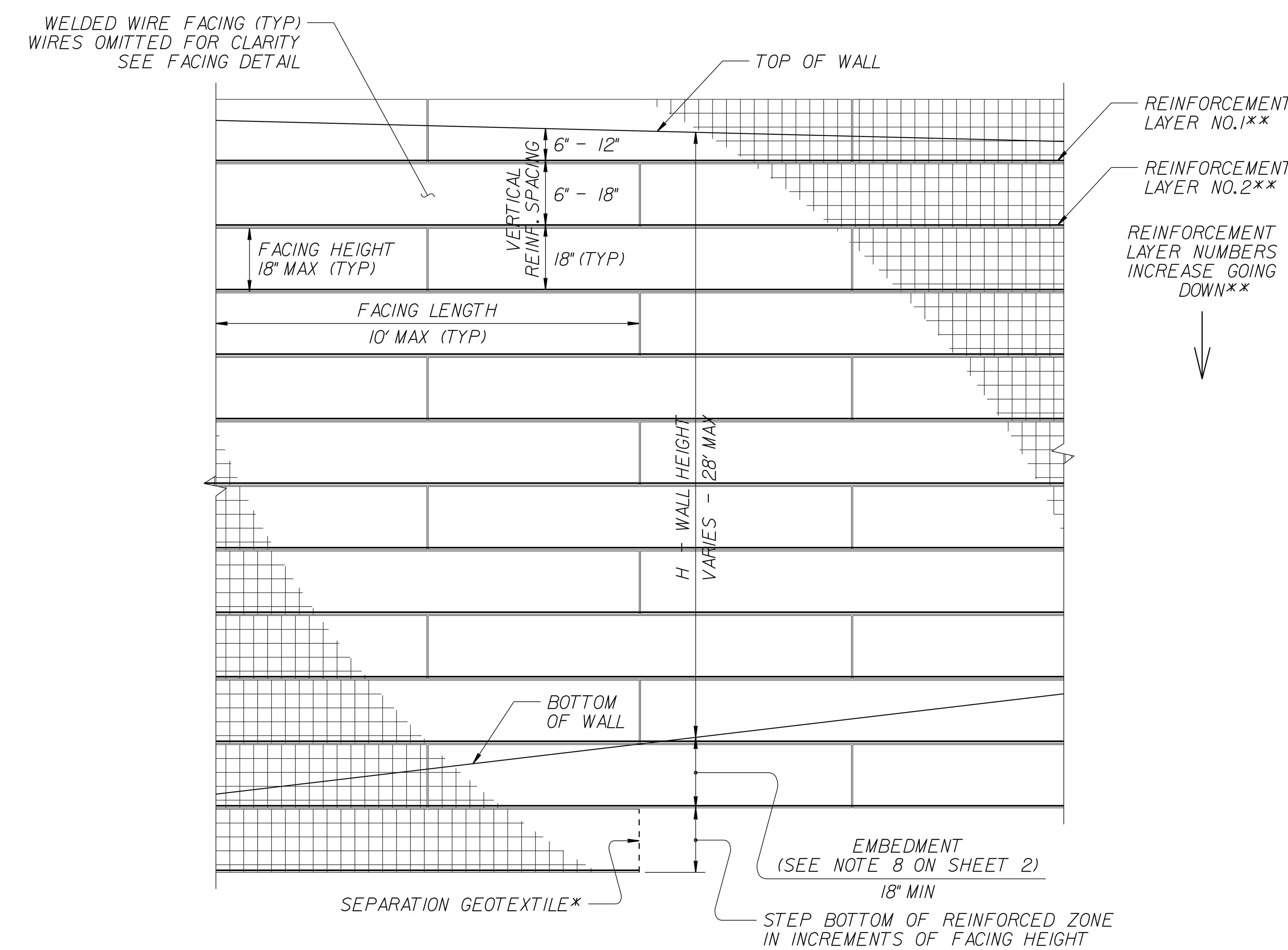


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 1 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 9/11/2015
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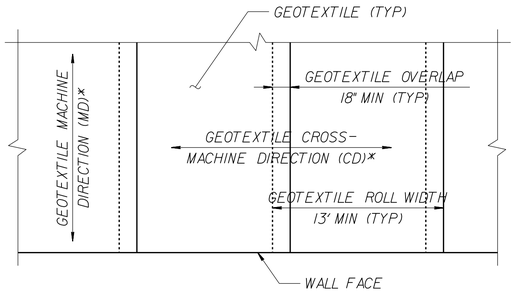
SIGNATURE DATE

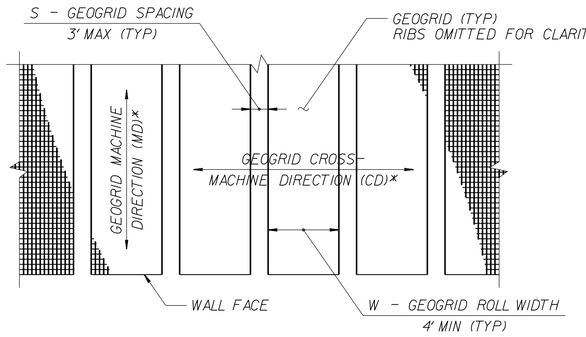
ENGINEER

SIGNATURE DATE



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

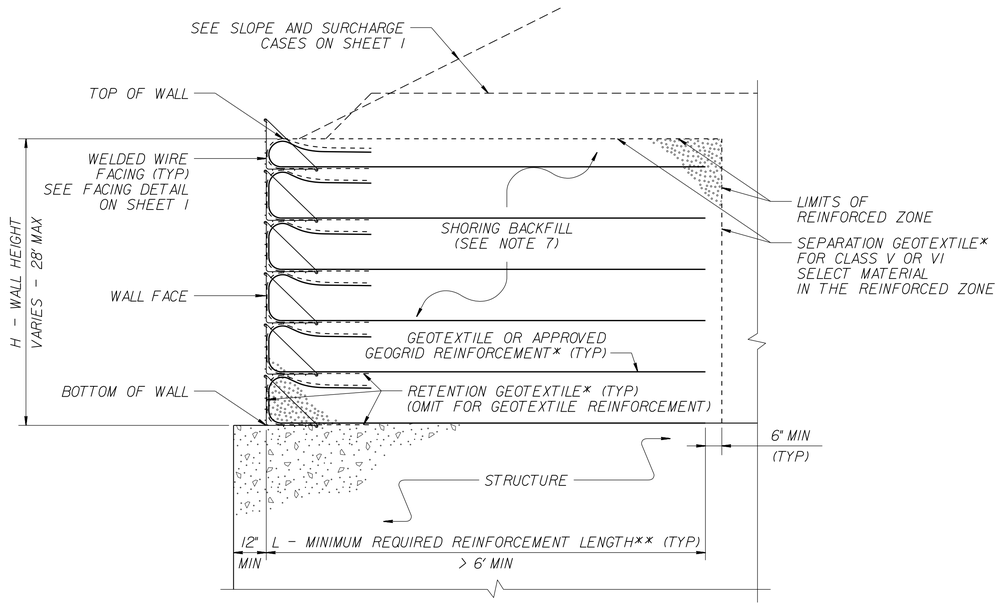


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 $\geq$ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

    IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEOGRID REINFORCEMENT.
11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 2 0F 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
B-4490	2G-4

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden F760CAEB99FC4D3... 9/11/2015

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT–TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD
(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1
FOR REINFORCEMENT LAYER NUMBERING.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 3 0F 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET
B-4490	2H-1

GEOENVIRONMENTAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31499 ENGINEER CYRUS F. PARKER

DocuSigned by: Cyrus Parker 9/11/2014
C96492AF5E824DF...

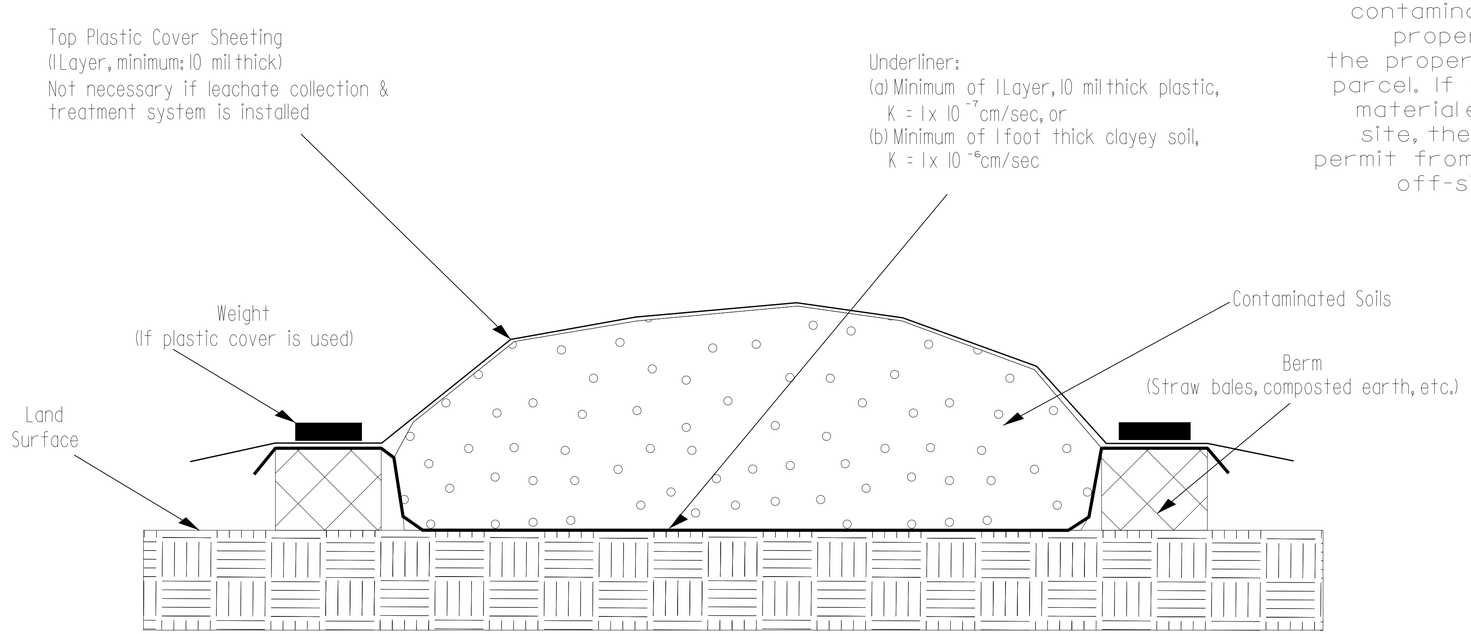
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

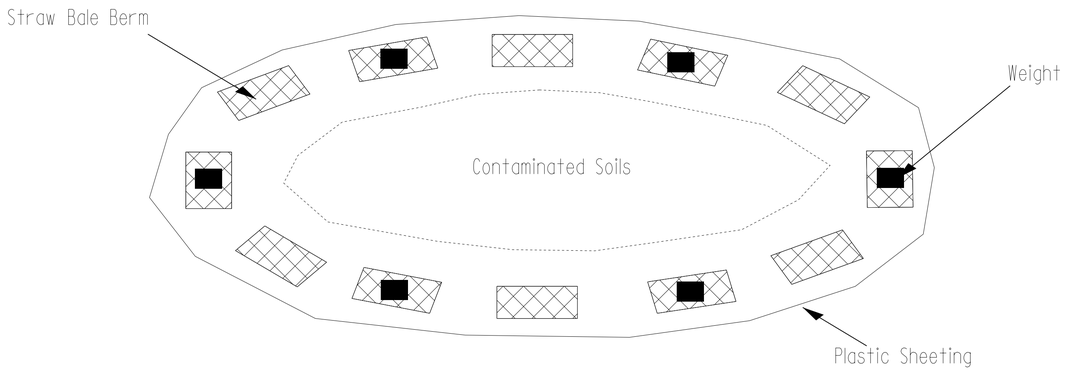
Detail for Temporary Containment of Contaminated Soil

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



PREPARED BY:	DATE:
REVIEWED BY:	DATE:

GEOTECHNICAL ENGINEERING UNIT

☐ *EASTERN REGIONAL OFFICE*
☐ *WESTERN REGIONAL OFFICE*
☒ *CONTRACT OFFICE*

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STOCKPILE CONTAINMENT DETAIL

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

12/06/07

COMPUTED BY: JENNIFER STARNES, PE DATE: June 2, 2015
CHECKED BY: ERIC MISAK DATE: March 11, 2016

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4490	3B-1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	14+00	17+38	LT.&RT	2,008
-Y1- WASHINGTON DRIVE			LT.&RT	818
-L-	17+60	24+01	RT	3,792
-Y3- MURCHINSON ST.	17+00	20+17	LT	2,357
-DRI-	10+60	12+39	LT	765
-DRI-	12+86	15+11	LT	2,359
ROWAN ST. NC 210/RAMPS			LT.&RT	6,129
RALEIGH STREET			LT.&RT	189
-Y5- HILLSBOROUGH ST.	13+45	15+46	RT	321
-Y5- HILLSBOROUGH ST./W ROWAN	13+45	15+77	LT	520
-Y4- HILLSBOROUGH ST.	14+35	19+36	RT	2,700
-L-	35+86	37+98	RT	166
-L- SEE SHEET TMP-4	16+93	20+46	LT	49
-Y3- SEE SHEET TMP-4	17+45	17+56	LT	6
-L- SEE SHEET TMP-10	18+70	20+46	LT	4
-L- SEE SHEET TMP-15	12+35	15+93	LT	41
			TOTAL:	22,224
			SAY:	22,230

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	13+95	17+38	RT	1,567
-L-	23+77	28+99	RT	3,793
RALEIGH ST.				663
-L-	30+98	34+28	RT	854
			TOTAL:	6,877
			SAY:	6,880

SUMMARY OF EARTHWORK (IN CUBIC YARDS)

STATION	STATION	UNCL. EXCAV.	UNDERCUT EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 12+35.00	-L- 18+91.95	625	0	3,690	3,065	0
-Y1- 11+42.00	-Y1- 12+91.01	17	0	239	222	0
-Y2- 10+66.24	-Y2- 12+25.00	9	0	9	0	0
-DRI- 10+16.45	-DRI- 13+71.63	113	0	113	0	0
SUBTOTALS:		764	0	4,050	3,286	0
-L- 18+91.95	-L- 21+50.00	143	0	5,705	5,562	0
-Y3- 13+65.00	-Y3- 19+29.42	1,324	0	618	0	706
-Y3- 20+39.97	-Y3- 30+50.00	682	0	13,254	12,572	0
SUBTOTALS:		2,149	0	19,577	18,134	706
-L- 21+50.00	-L- 29+00.00	203	0	59,101	58,898	0
SUBTOTALS:		203	0	59,101	58,898	0
-L- 30+46.17	-L- 34+43.06	0	0	144,451	144,451	0
SUBTOTALS:		0	0	144,451	144,451	0
-L- 35+72.31	-L- 42+75.00	522	2,200	21,020	20,963	2,665
-Y8- 11+75.00	-Y8- 13+29.31	9	0	333	324	0
REMOVAL EXISTING ROADWAY EMBANKMENT (SEE PLAN SHEET 16)		44,100	0	0	0	44,100
SUBTOTALS:		44,631	2,200	21,353	21,287	46,765
TOTALS		47,747	2,200	248,532	246,056	47,471
LOSS DUE TO CLEARING & GRUBBING						
ADDITIONAL UNDERCUT			600	750	750	600
SELECT GRANULAR MATERIAL TO REPLACE BORROW				-2500	-2500	
WASTE IN LIEU OF BORROW					-706	-706
PROJECT TOTALS:		47,747	2,800	246,782	243,600	47,365
EST.5% TO REPLACE TOP SOIL ON BORROW PIT					12,180	
GRAND TOTALS:		47,747	2,800	246,782	255,780	47,365
SAY:		47,800			255,800	

EST. DDE = 2,480 CUBIC YARDS
SELECT GRANULAR MATERIAL = 2,600 CY

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

"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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH: STRAIGHT	LENGTH: SHOP CURVED	LENGTH: DOUBLE FACED	WARRANT POINT: APPROACH END	WARRANT POINT: TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH: APPROACH END	FLARE LENGTH: TRAILING END	W: APPROACH END	W: TRAILING END	ANCHORS: III	XI	GRAU 350 TL-3	M-350	XIII	CAT-1	VI MOD	TES	AT-1	IMPACT ATTENUATOR TYPE 350: EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	27+92.38	29+42.38	RT.	150'			29+42.38								1		1													
-L-	29+93.46	34+41.30	LT.	448'			29+93.46								2															
-L-	30+93.94	34+48.51	RT.	354.5'			34+48.51								2															
-L-	35+66.87	37+16.87	LT.	150'			35+66.87								1		1													
-DRI-	13+71.63		LT.& RT.	26.5'																		2								
-Y5-	13+07.19	13+22.79	RT.	15.5'																		2								
	LESS ANCHOR DEDUCTIONS																													
	TYPE 350	2 @ 50'	=	100'																										
	TYPE III	6 @ 18.75'	=	112.5'																										
		TOTAL		932'											6		2					4								
		SAY		950'																										

ADDITIONAL GUARDRAIL POSTS = 5 EA

COMPUTED BY: CAF DATE: 09/16/15

CHECKED BY: VBB DATE: 09/17/15

PROJECT NO.	SHEET NO.
B-4490	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
L 13+00	52	RT	0401		106.6			
L 12+60	6	LT	0403		110.5			
			0403	0511		104.3	104.0	
L 13+85	57	RT	0501		104.3			
L 15+03	64	RT	0502		101.9			
L 16+71	117	RT	0503		93.8			
			0503	0504		89.2	89.2	0.4
Y2 11+85	26	RT	0504		94.1			
			0504	0507		89.2	89.0	0.4
Y2 11+80	18	LT	0505		94.0			
			0505	0506		89.0	88.5	
Y2 12+05	15	LT	0506		94.4			
Y2 12+22	18	RT	0507		94.3			
			0507	0506		89.8	88.5	0.6
Y2 12+14	18	LT	0508		94.3			
			0508	0506		89.5	88.5	
L 13+50	11	LT	0511		107.0			
			0511	0512		104.0	102.4	
L 13+85	13	LT	0512		105.8			
			0512	0527		102.4	98.2	
L 14+57	82	LT	0513		102.4			
			0513	0514		95.3	89.2	
L 15+55	94	LT	0514		94.9			
Y1 11+52	18	LT	0515		93.6			
			0515	0524		90.4	90.3	
L 17+25	2	RT	0516		95.3			
			0516	0517		92.0	91.8	
L 17+75	2	RT	0517		94.9			
			0517	0601		91.8	91.6	
L 17+00	55	LT	0518		94.4			
			0518	0519		91.2	90.4	
L 18+00	55	LT	0519		93.7			
			0519	0520		90.4	90.3	
L 16+51	109	RT	0521		94.4			
L 15+78	116	LT	0522		92.6			
Y1 11+82	18	LT	0524		94.1			
			0524	0525		90.3	90.1	
Y1 12+09	18	LT	0525		95.5			
			0525	0514		90.1	89.2	
L 16+39	122	RT	0526		94.7			
			0526	0507		91.4	89.8	
L 14+60	13	LT	0527		102.5			
			0527	0513		98.2	97.9	
L 18+64	2	RT	0601		94.6			
			0601	0602		91.6	85.0	0.6
L 20+00	7	LT	0603		94.1			
			0603	0604		91.1	89.4	
L 20+00	56	LT	0604		93.1			
			0604	0605		89.4	86.5	
L 19+98	94	LT	0605		94.5			

SIZE / THICKNESS OR GAUGE — pipe quantities (LIN. FT.). Columns: SIDE DRAIN PIPE (RCP, CSP, CAAP or HDPE) 12–84; DO NOT USE RCP / CSP / CAAP / HDPE / PVC; C. S. PIPE 12, 15, 18 (.064); R. C. PIPE CLASS III 12, 15; R. C. PIPE CLASS IV 12–48; R. C. PIPE CLASS V 12–84.

STRUCTURE	SD 12	SD 15	SD 18	SD 24	SD 30	SD 36	SD 42	SD 48	SD 54	SD 60	SD 66	SD 72	SD 78	SD 84	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	CS 12 .064	CS 15 .064	CS 18 .064	RC III 12	RC III 15	RC IV 12	RC IV 15	RC IV 18	RC IV 24	RC IV 30	RC IV 36	RC IV 42	RC IV 48	RC V 12	RC V 15	RC V 18	RC V 24	RC V 30	RC V 36	RC V 42	RC V 48	RC V 54	RC V 60	RC V 66	RC V 72	RC V 78	RC V 84
0401																																													
0403																																													
0403–0511																										92																			
0501																																													
0502																																													
0503																																													
0503–0504																												20																	
0504																																													
0504–0507																												36																	
0505																																													
0505–0506																										28																			
0506																																													
0507																																													
0507–0506																												40																	
0508																																													
0508–0506																										12																			
0511																																													
0511–0512																										36																			
0512																																													
0512–0527																											72																		
0513																																													
0513–0514																											96																		
0514																																													
0515																																													
0515–0524																											36																		
0516																																													
0516–0517																											52																		
0517																																													
0517–0601																											92																		
0518																																													
0518–0519																											100																		
0519																																													
0519–0520																											48																		
0521																																													
0522																																													
0524																																													
0524–0525																											32																		
0525																																													
0525–0514																											60																		
0526																																													
0526–0507																										36																			
0527																																													
0527–0513																											68																		
0601																																													
0601–0602																						24																							
0603																																													
0603–0604																										52																			
0604																																													
0604–0605																												40																	
0605																																													
SHEET TOTALS																						24				256	656	136																	

STRUCTURE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CATCH BASIN (SEE DETAIL 2C-6)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
0401		1			1		1																			SEE SPECIAL DETAIL SHEET 2C-5
0403		1	1.2		1		1			1																
0403–0511																										
0501		1	0.7		1		1																			
0502																			1							
0503		1									1	1														
0503–0504																										
0504		1			1	1																				
0504–0507																										
0505		1			1	1																				
0505–0506																										
0506		1	1.0													1		1								
0507		1			1			1																		
0507–0506																										
0508		1			1		1																			
0508–0506																										
0511		1			1		1			1																
0511–0512																										
0512		1			1		1			1																
0512–0527																										
0513		1	2.1												1			1								
0513–0514																										
0514		1	0.7												1			1								
0515		1			1	1																				
0515–0524																										
0516		1			1		1			1																
0516–0517																										
0517		1			1		1			1																
0517–0601																										
0518		1			1			1																		
0518–0519																										
0519		1			1			1																		
0519–0520																										
0521																		1	1							
0522																		1	1							
0524		1			1		1																			
0524–0525																										
0525		1	0.4		1		1																			
0525–0514																										
0526		1												1			1									
0526–0507																										
0527		1			1		1			1																
0527–0513																										
0601		1			1		1			1																
0601–0602																										
0603		1			1	1				1																
0603–0604																										
0604		1			1	1																				
0604–0605																										
0605		1	3.1												1			1								
SHEET TOTALS		26	9.2		20	5	12	3		8	1	1		1	3	1	1	6	3							

ABBREVIATIONS

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

COMPUTED BY:	CAF	DATE:	09/16/15
CHECKED BY:	VBB	DATE:	09/17/15

RD266191

PROJECT NO.	SHEET NO.
B-4490	3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
			0605	0523		86.5	85.9	
L 19+50	56	LT	0606		93.2			
			0606	0604		90.2	89.4	
L 23+50	68	LT	0607		94.1			
			0607	0608		90.8	90.5	
L 23+00	68	LT	0608		93.7			
			0608	0609		90.5	90.2	
L 22+10	68	LT	0609		93.5			
			0609	0604		90.2	89.4	
L 22+88	56	RT	0610		93.9			
			0610	0611		90.2	88.9	
Y3 21+14	60	LT	0611		92.6			
			0611	1321		88.9	87.6	
Y3 21+55	8	RT	0612		93.2			
			0612	0622		90.2	90.1	
L 20+64	68	RT	0613		93.7			
			0613	0614		90.4	88.0	
L 19+55	106	RT	0618		93.8			
			0618	0619		83.7	83.6	1.6
Y3 18+43	58	LT	0620		91.0			
			0620	1204		88.0	86.6	
Y3 21+85	8	RT	0621		93.3			
			0621	1321		89.9	87.1	
Y3 21+69	8	RT	0622		93.2			
			0622	0621		90.1	90.0	
L 25+00	68	LT	0701		99.0			
			0701	0607		96.0	90.8	
L 27+50	3	RT	0702		119.5			
			0702	0703		116.5	116.0	
L 27+50	55	RT	0703		119.2			
			0703	0704		115.4	98.9	
L 25+50	56	RT	0704		102.1			
			0704	0705		98.9	92.0	0.3
L 24+00	56	RT	0705		95.3			
			0705	0610		92.0	90.2	0.4
L 27+94	128	LT	0706		98.1			
L 28+00	0	CL	0708		126.9			
			0708	0702		120.6	116.5	
L 28+90	50	RT	0801		129.6			
			0801	0703		126.6	115.4	
L 30+77	8	LT	0802		139.9			
			0802	0803		136.4	136.2	
L 31+27	50	RT	0803		140.0			
			0803	0811		136.2	134.3	
Y5 13+42	19	LT	0804		101.4			
			0804	0805		98.4	97.0	
Y5 13+94	20	LT	0805		100.5			
Y5 13+93	21	RT	0806		100.4			
Y5 13+42	19	RT	0807		101.4			
			0807	0806		98.4	96.6	
							SHEET TOTALS	

FROM	TO	SIDE DRAIN PIPE (RCP, CSP, CAAP or HDPE)																				C. S. PIPE				R. C. PIPE CLASS III	
		12	15	18	24	30	36	42	48	54	60	66	72	78	84		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	12 .064	15 .064	18 .064		12	15
0605	0523																										
0606																											
0606	0604																										
0607																											
0607	0608																										
0608																											
0608	0609																										
0609																											
0609	0604																										
0610																											
0610	0611																										
0611																											
0611	1321																										
0612																											
0612	0622																										
0613																											
0613	0614																										
0618																											
0618	0619																										
0620																											
0620	1204																										
0621																											
0621	1321																										
0622																											
0622	0621																										
0701																											
0701	0607																										
0702																											
0702	0703																										
0703																											
0703	0704																										
0704																											
0704	0705																										
0705																											
0705	0610																										
0706																											
0708																											
0708	0702																										
0801																											
0801	0703																										
0802																											
0802	0803																										
0803																											
0803	0811																										
0804																											
0804	0805																										
0805																											
0806																											
0807																											
0807	0806																										
SHEET TOTALS																											

FROM	TO	R. C. PIPE CLASS IV								R. C. PIPE CLASS V														
		12	15	18	24	30	36	42	48	12	15	18	24	30	36	42	48	54	60	66	72	78	84	
0605	0523							148																
0606																								
0606	0604		52																					
0607																								
0607	0608			52																				
0608																								
0608	0609			92																				
0609																								
0609	0604			212																				
0610																								
0610	0611				80																			
0611																								
0611	1321				92																			
0612																								
0612	0622		16																					
0613																								
0613	0614		20																					
0618																								
0618	0619								40															
0620																								
0620	1204						116																	
0621																								
0621	1321			72																				
0622																								
0622	0621		20																					
0701																								
0701	0607		152																					
0702																								
0702	0703		56																					
0703																								
0703	0704			204																				
0704																								
0704	0705			152																				
0705																								
0705	0610			116																				
0706																								
0708																								
0708	0702		52																					
0801																								
0801	0703		144																					
0802																								
0802	0803			80																				
0803																								
0803	0811			152																				
0804																								
0804	0805		52																					
0805																								
0806																								
0807																								
0807	0806		52																					
SHEET TOTALS			616	1132	172		116	148	40															

FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CATCH BASIN (SEE DETAIL 2C-6)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
0605	0523																											
0606			1			1			1																			
0606	0604																											
0607			1			1		1																				
0607	0608																											
0608			1			1		1																				
0608	0609																											
0609			1			1		1																				
0609	0604																											
0610			1			1			1																			
0610	0611																											
0611			1			1			1																			
0611	1321																											
0612			1			1	1					1																
0612	0622																											
0613			1			1	1																					
0613	0614																											
0618			1	5.0	0.1												1			1								
0618	0619																											
0620		3.400																										
0620	1204																											
0621			1			1			1			1																
0621	1321																											
0622			1			1			1			1																
0622	0621																											
0701			1			1		1																				
0701	0607																											
0702			1			1			1			1																
0702	0703																											
0703			1			1			1																			
0703	0704																											
0704			1			1			1																			
0704	0705																											
0705			1			1			1																			
0705	0610																											
0706			1															1		1								
0708			1	1.3		1			1			1																
0708	0702																											
0801			1			1			1																			
0801	0703																											
0802			1			1			1			1																
0802	0803																											
0803			1			1			1																			
0803	0811																											
0804			1			1			1																			
0804	0805																											
0805			1										1	1														
0806			1										1	1														
0807			1			1		1																				
0807	0806																											
SHEET TOTALS		3.400	25	6.3	0.1	21	2	5	14			6	2	2			1	1		2								

ABBREVIATIONS

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

RD266191

COMPUTED BY:	CAF	DATE:	09/16/15
CHECKED BY:	VBB	DATE:	09/17/15

PROJECT NO.	SHEET NO.
B-4490	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

ABBREVIATIONS

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

LINE & STATION (SIZE / THICKNESS OR GAUGE)	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
L 32+00	153	LT	0808		101.5			
			0808	0809		98.5	90.5	
Y5 13+91	104	RT	0810		97.2			
L 32+75	46	RT	0811		139.2			
			0811	0903		134.3	133.8	
L 33+50	2	LT	0901		140.7			
			0901	0902		137.4	136.0	
L 34+10	0	CL	0902		139.1			
			0902	0903		136.0	134.3	
L 34+00	43	RT	0903		138.3			
			0903	0904		133.8	89.3	0.5
L 36+04	0	CL	0905		128.5			
			0905	0906		125.5	123.9	
L 36+25	0	CL	0906		127.1			
			0906	0907		123.9	123.0	
L 36+25	43	RT	0907		126.0			
			0907	0908		123.0	86.1	
L 35+70	114	LT	0909		97.0			
			0909	0912		89.2	88.4	0.5
L 35+80	41	LT	0910		94.3			
L 36+00	124	LT	0911		95.1			
			0911	0909		93.1	89.2	
L 35+76	53	LT	0912		94.2			
			0912	0910		88.4	88.3	0.5
L 38+25	43	LT	0913		113.1			
			0913	1005		109.8	107.8	
Y8 11+82	18	LT	1001		102.9			
			1001	1002		100.4	100.3	0.8
Y8 11+82	18	RT	1002		102.9			
			1002	1003		99.6	99.2	1.0
Y8 12+53	19	RT	1003		105.0			
			1003	1004		99.2	97.8	1.3
L 39+30	43	RT	1004		107.6			
			1004	1010		97.8	97.2	1.7
L 38+60	43	LT	1005		111.4			
			1005	1003		107.8	99.4	
L 39+30	52	RT	1010		109.1			
			1010	1011		97.2	96.8	1.7
L 38+84	66	RT	1011		110.3			
Y8 12+21	18	LT	1012		103.7			
			1012	1001		100.8	100.4	
Y8 12+41	31	LT	1013		103.4			
			1013	1012		100.9	100.8	
Y3 13+63	22	RT	1103		91.7			
			1103	1104		89.5	89.3	
Y3 14+05	22	RT	1104		91.8			
			1104	1115		89.4	89.1	
Y11A 10+73	18	LT	1107		91.8			
			1107	1108		89.6	88.7	0.3
Y11 11+75	37	RT	1108		91.2			

	SIDE DRAIN PIPE (RCP, CSP, CAAP or HDPE) 12	15	18	24	30	36	42	48	54	60	66	72	78	84		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)		R. C. PIPE CLASS III 12	15
SHEET TOTALS																										

FROM	TO	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	R. C. PIPE CLASS V 12	15	18	24	30	36	42	48	54	60	66	72	78	84	
0808	0809						320																	
0811	0903			124																				
0901	0902			52																				
0902	0903			44																				
0903	0904																							
0905	0906			24																				
0906	0907			44																				
0907	0908																							
0909	0912								64															
0911	0909				32																			
0912	0910								16															
0913	1005		36																					
1001	1002			36																				
1002	1003			72																				
1003	1004			144																				
1004	1010			12																				
1005	1003			64																				
1010	1011			48																				
1012	1001			40																				
1013	1012			28																				
1103	1104		44																					
1104	1115			32																				
1107	1108										116													
SHEET TOTALS			80	764	32		320		80		116													

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

STATION	FROM	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	A: 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION: D.I. STD. 852.04 OR STD. 852.06	CATCH BASIN (SEE DETAIL 2C-6)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 32+00	0808	3.400																										
Y5 13+91	0810		1										1	1														
L 32+75	0811		1			1		1																				
L 33+50	0901		1			1		1				1																
L 34+10	0902		1								1				1	1												
L 34+00	0903		1			1		1																				
L 36+04	0905		1								1				1	1												
L 36+25	0906		1								1				1	1												
L 36+25	0907		1			1		1																				
L 35+70	0909		1	2.8													1			1								
L 35+80	0910																									1.0126		
L 36+00	0911																											
L 35+76	0912		1	0.8													1											
L 38+25	0913		1			1			1																			
Y8 11+82	1001		1			1	1																					
Y8 11+82	1002		1			1	1																					
Y8 12+53	1003		1	0.9		1			1																			
L 39+30	1004		1	4.7		1		1																				
L 38+60	1005		1			1			1																			
L 39+30	1010		1	5.0	1.9												1			1								
L 38+84	1011		1	5.0	3.5												1			1								
Y8 12+21	1012		1			1		1																				
Y8 12+41	1013		1			1	1																					
Y3 13+63	1103		1			1	1																					
Y3 14+05	1104		1			1			1																			
Y11A 10+73	1107		1			1			1																			USE STD. 840D02
Y11 11+75	1108		1										1	1														USE STD. 840D02
SHEET TOTALS		3.400	24	19.2	5.4	15	4	6	5		3	1	2	2	3	3	4			3						1.0126		

COMPUTED BY:	CAF	DATE:	09/16/15
CHECKED BY:	VBB	DATE:	09/17/15

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-4490	3D-4

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	SIDE DRAIN PIPE (RCP, CSP, CAAP or HDPE) 12	15	18	24	30	36	42	48	54	60	66	72	78	84		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 12 .064	15 .064	18 .064		R. C. PIPE CLASS III 12	15	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	R. C. PIPE CLASS V 12	15	18	24	30	36	42	48	54	60	66	72	78	84		ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CATCH BASIN (SEE DETAIL 2C-6)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
		1108	1114		89.3	89.2	1.7																												28																																																
Y11 11+45	14 RT	1109		92.4																																																						1			1		1																				USE STD. 840D02
		1109	1110		90.2	89.9																																					20																																														
Y11 11+62	14 RT	1110		92.1																																																						1			1	1																					USE STD. 840D02
		1110	1111		89.9	89.8																																					32																																														
Y11 11+62	14 LT	1111		92.1																																																						1			1	1																					USE STD. 840D02
		1111	1112		89.8	89.7																														12																																																			
Y11 11+67	22 LT	1112		92.8																																																						1														1			1								
		1112	1116		88.9	88.4	1.7																																36																																																		
Y11 11+50	14 LT	1113		92.3																																																						1			1			1																			USE STD. 840D02
Y3 13+89	35 LT	1114		92.8																																																						1														1			1								
		1114	1116		89.2	88.9																															52																																																			
Y3 14+31	39 RT	1115		92.1																																																						1										1	1														
Y3 14+39	26 LT	1116		93.3																																																						1															1		1								
		1116	1115		88.4	87.8	1.9																																68																																																		
Y3 17+67	36 RT	1201		90.1																																																						1			1	1					1																
		1201	1204		87.0	86.6	0.3																													64																																																			
Y3 18+30	57 RT	1204		92.0																																																						1	0.3													1			1								
		1204	0605		86.7	86.5																																	68																																																		
Y3 17+67	8 LT	1205		91.9																																																						1			1	1					1																
		1205	1201		88.9	86.9																														44																																																				
Y3 22+32	60 LT	1301		91.3																																																						1			1	1																					
		1301	1321		88.3	87.1																														24																																																				
Y3 25+98	8 RT	1303		93.3																																																						1			1			1			1																
		1303	1327		89.7	84.3																														44																																																				
Y3 25+98	36 LT	1304		91.5																																																						1			1			1																			
		1304	1305		88.5	83.8																														38																																																				
Y3 26+33	36 LT	1305		91.5																																																						1	2.7		1		1																				
Y3 26+98	58 LT	1308		90.6																																																						1	1.9									1	1														
DR1 14+77	96 LT	1309		91.4																																																						1	1.1													1			1								
		1309	1310		85.3	85.0	0.3																																68																																																		
Y3 25+56	70 RT	1311		91.1																																																																								1							
Y3 26+34	23 LT	1312		91.3																																																						1	2.4														1										
Y3 26+99	50 LT	1313		91.0																																																																										1					
Y3 27+11	47 RT	1314		91.5																																																																							1	1							
Y3 27+06	8 RT	1315		92.6																																																						1			1		1																		0.4465		
Y3 27+14	68 RT	1316		91.3																																																																	1										1				
Y3 24+97	88 RT	1318		90.0																																																																	1								1						
DR1 13+79	57 LT	1319		91.5																																																						1										1	1														
		1319	1507		88.0	85.5																															64																																																			
Y3 22+83	74 RT	1320		86.9																																																																																
		1320	1309		85.7	85.3																														12																																																				
Y3 22+07	60 LT	1321		91.5																																																						1			1			1																			
		1321	1302		87.4	86.9																																28																																																			
Y3 27+06	12 RT	1322		92.5																																																						1	3.7		1	1					1																
Y3 25+56	8 RT	1323		92.8																																																						1			1			1			1																
		1323	1303		89.8	89.7																														44																																																				
Y3 25+56	42 LT	1324		92.6																																																						1			1			1																			
		1324	1304		89.2	88.5																														44																																																				
Y3 26+40	8 RT	1327		93.0																																																						1			1			1																			
SHEET TOTALS																																			278	140	80		240				52															25	12.1		16	6	3	7			5	3	5			4	2		6	2	1	1	1		0.4465		

ABBREVIATIONS

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

RD266191

COMPUTED BY: CAF DATE: 09/16/15

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RD266191

PROJECT NO.	SHEET NO.
B-4490	3D-5

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET		STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	SIDE DRAIN PIPE (RCP, CSP, CAAP or HDPE)															DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE				R. C. PIPE CLASS III		R. C. PIPE CLASS IV								R. C. PIPE CLASS V															ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE				CONCRETE TRANSITIONAL SECTION		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	PIPE REMOVAL	REMARKS
SIZE / THICKNESS OR GAUGE			FROM	TO	FT.	FT.	FT.	%	12	15	18	24	30	36	42	48	54	60	66	72	78	84							12 .064	15 .064	18 .064		12	15	12	15	18	24	30	36	42	48	12	15	18	24	30	36	42	48	54	60	66	72	78	84		CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.		E	F	G		D.I. STD. 852.04 OR STD. 852.06	CATCH BASIN (SEE DETAIL 2C-6)													CY	CY	LIN. FT.	
			1303	1327		89.7	84.3																													46																																																			
Y3 25+20	46	LT	1331		92.3																																																						1			1			1																				
			1331	1324		89.3	89.2																													38																																																			
Y3 29+53	35	RT	1401		92.0																																																					1			1			1																				
Y3 29+39	1	LT	1402		94.1																																																																							1	1							
Y3 28+88	8	LT	1403		93.2																																																					1			1			1			1																	
			1403	1404		88.2	86.3																														12																																																	
Y3 28+88	4	RT	1404		94.0																																																					1	2.7															1			1									
Y3 28+13	5	RT	1405		93.8																																																																										1					
			1405	1306		85.7	85.0																														96																																																	
Y3 28+25	36	RT	1406		92.3																																																					1			1			1																				
			1406	1405		89.1	85.7																													36																																																			
Y3 28+88	36	RT	1407		92.3																																																					1			1			1																				
			1407	1404		89.3	86.3																													36																																																			
DR1 11+00	14	LT	1501		92.7																																																					1			1			1																				
			1501	1506		87.7	86.0																														20																																																	
DR1 13+93	12	RT	1326		91.4																																																																								1							
DR1 13+71	13	RT	1503		91.3																																																					1			1	1																						
			1503	1326		88.0	86.2	0.4																												24																																																			
DR1 10+84	22	LT	1506		92.5																																																					1	1.5																1		1									
DR1 14+39	45	LT	1325		92.0																																																					1	1.5															1			1									
			1325	1309		85.5	85.3																																	64																																															
DR1 12+36	57	LT	1508		92.5																																																					1										1	1															
			1508	1319		88.7	88.0																														144																																																	
Y8 12+54	0	CL	0000																																																																														2			
L 15+44	84	RT	0000																																																																														6			
L 16+21	124	RT	0000																																																																														6			
Y2 12+00	4	RT	0000																																																																															2			
L 16+02	29	RT	0000																																																																															2			
L 14+21	16	LT	0000																																																																															4			
L 15+20	6	LT	0000																																																																															9			
L 15+73	40	LT	0000																																																																															7			
L 15+66	85	LT	0000																																																																															2			
Y1 11+63	16	RT	0000																																																																															1			
Y1 11+63	0	CL	0000																																																																															2			
Y1 12+20	11	LT	0000																																																																															4			
L 25+44	30	RT	0000																																																																															1			
L 25+42	60	RT	0000																																																																															3			
L 25+41	88	RT	0000																																																																															1			
L 26+42	39	LT	0000																																																																															2			
L 26+82	20	LT	0000																																																																															6			
L 27+23	30	RT	0000																																																																															3			
L 27+41	39	RT	0000																																																																																1			
L 27+51	68	RT	0000																																																																																3			
L 27+85	115	RT	0000																																																																																4			
Y3 27+59	8	RT	0000																																																																																		105	
Y3 25+82	35	LT	0000																																																																																		4	
Y3 26+09	29	LT	0000																																																																																	46	
L 19+11	504	LT	0000																																																																																		5	
Y3 24+25	5	LT	0000																																																																																		55	
SHEET TOTALS																																				180	272			64																					11	5.7		7	1		6			1	1	1			2	1		4	2		1		71		215	

ABBREVIATIONS

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

PROJECT NO.	SHEET NO.
B-4490	3D-6

RD266191

COMPUTED BY: CAF DATE: 09/16/15

CHECKED BY: VBB DATE: 09/17/15

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION (SIZE / THICKNESS OR GAUGE)	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	PIPE REMOVAL LIN. FT.	REMARKS
L 24+34	152 RT	0000						24	
L 25+02	156 RT	0000						13	
L 25+41	107 RT	0000						24	
Y3 25+23	217 LT	0000						17	
Y3 18+31	100 LT	0000						16	
Y3 18+38	72 LT	0000						42	
Y3 18+54	17 LT	0000						74	
L 20+27	50 LT	0000						74	
L 19+74	6 LT	0000						64	
L 39+09	54 LT	0000						82	
L 39+26	20 RT	0000						65	
Y3 22+93	80 RT	0000						112	
Y3 21+02	49 RT	0000						95	
Y3 20+31	25 RT	0000						53	
Y3 22+92	105 RT	0000						62	
Y2 11+93	31 RT	0000						21	
L 25+03	156 RT	0000						11	
L 25+41	107 RT	0000						23	
Y3 22+94	49 RT	0000						50	
L 28+34	264 RT	0000						187	
Y3 28+02	293 LT	0000						18	
L 27+14	382 RT	0000						34	
L 28+97	500 RT	0000						72	
L 39+29	53 RT	0000						2	
Y3 25+83	35 LT	0000						5	
Y3 26+10	29 LT	0000						47	
L 27+67	94 RT	0000						6	

	SIDE DRAIN PIPE (RCP, CSP, CAAP or HDPE) 12	15	18	24	30	36	42	48	54	60	66	72	78	84		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)		R. C. PIPE CLASS III 12	15	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	R. C. PIPE CLASS V 12	15	18	24	30	36	42	48	54	60	66	72	78	84		ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION: D.I. STD. 852.04 OR STD. 852.06	CATCH BASIN (SEE DETAIL 2C-6)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
SHEET TOTALS																																																																																1293	
PROJECT TOTALS																							24					1410	2964	420		740	148	120		168														6.800	111	59.7		79	18	26	35		3	21	9	11	3	4	14	5	1	21	7	1	2	1	71	1.4591	1508	

ABBREVIATIONS

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

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4490	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4 & 5	VAIL FAMILY LIMITED PARTNERSHIP
2	4 & 5	VALUE PLACE FAYETTEVILLE BRAGG LLC
3	5	JAMES E. GARDNER
4	5	WDO LLC
5	5,6,11 & 12	DORIS B. UTLEY
6	5	CHARLES WILLIAMS JR.
7	5 & 6	EDMUND GEORGE
8	5 & 15	S.C. RANKIN EST
9	6 & 12	ROSALIND W. WAITMAN
10	6	UTLEY RENTALS, LLC
11	6	UTLEY RENTALS, LLC
12	6	WYANE QUICK
13	6	ROSSIE BAREFOOT
14	6	NC DOT
15	6 & 12	CITY OF FAYETTEVILLE
16	6 & 7	ALEXANDER EVANS
18	7	P&S ENTERPRISES INC
19	7	P&S ENTERPRISES
21	7 & 8	GEORGE SKENTERIS
23	8	GEORGE BROWN
24	8	WILLIAM JOSEPH BAGGETT
25	8	TALLY INVESTMENTS LLC
26	8	WILLIAM JOSEPH BAGGETT
27	8	TALLY INVESTMENTS LLC
28	8	TALLY INVESTMENTS LLC
29	8 & 9	LALON L. BARNES JR.
30	9	ALFRED N. DAVIS
31	9	LAWRENCE GLINDEMAN
32	9 &10	Q. J. SCARBOROUGH JR.
33	9 & 10	CITY OF FAYETTEVILLE
34	10	MARION C. GEORGE JR.
35	10	LAFAYETTE BANK & TRUST CO.
36	11	CITY OF FAYETTEVILLE
37	11	CITY OF FAYETTEVILLE
38	11	COUNCIL & WILLIFORD PROPERTIRS, LLC
40	11 & 12	CITY OF FAYETTEVILLE
42	13 & 14	CITY OF FAYETTEVILLE
43	14	CITY OF FAYETTEVILLE
44	6, 13 & 15	EDWARD B. SEIFERT
45	6 & 15	S.C. RANKIN EST
46	5	CITY OF FAYETTEVILLE

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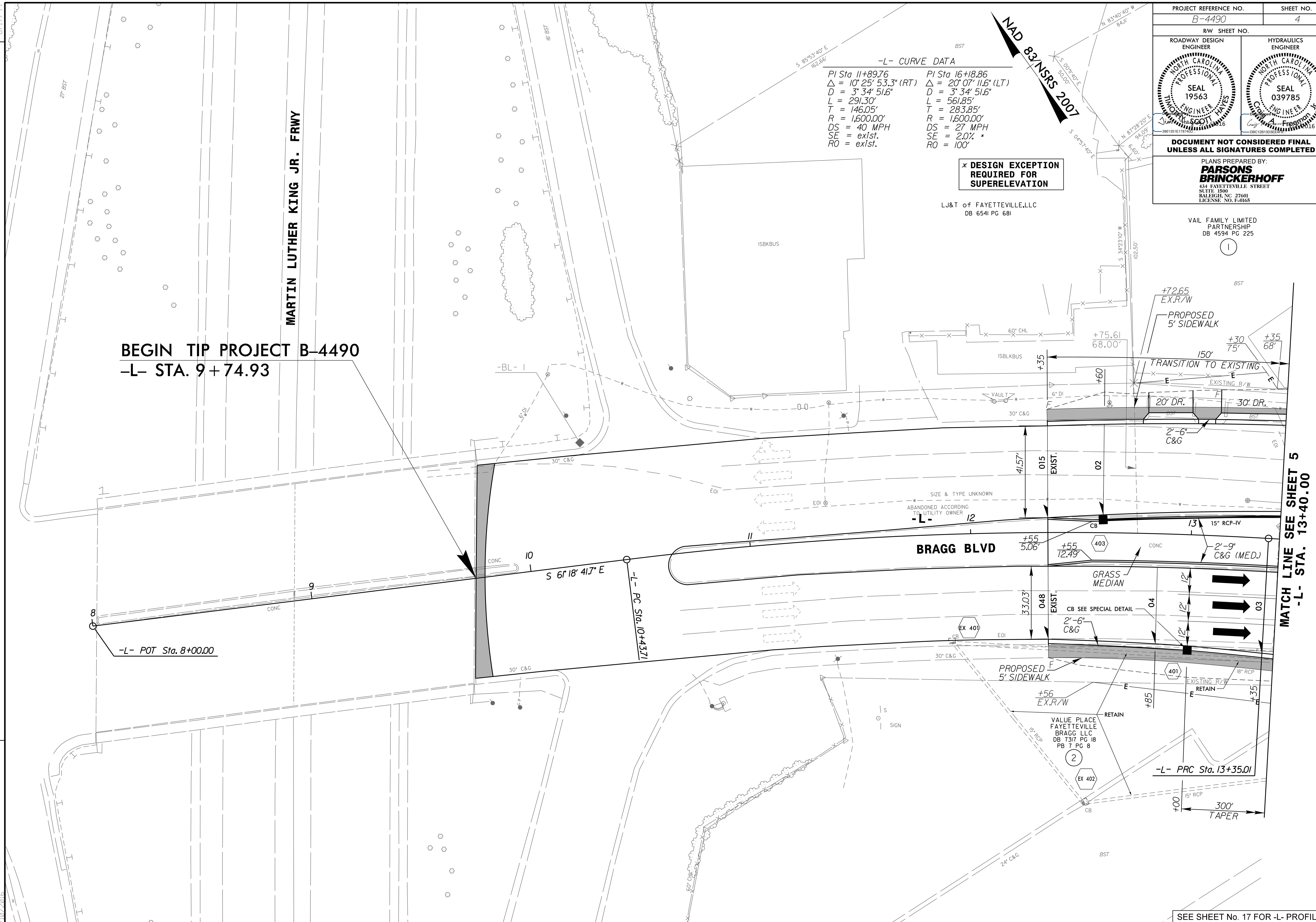
4/25/2016

PROJECT REFERENCE NO.	SHEET NO.
B-4490	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19563 TIMOTHY SCOTT HAYES	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039785 Craig A. Freeman, Jr.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165



NAD 83/NSRS 2007
-L- CURVE DATA
PI Sta 11+89.76
△ = 10° 25′ 53.3″ (RT)
D = 3° 34′ 51.6″
L = 291.30′
T = 146.05′
R = 1,600.00′
DS = 40 MPH
SE = exist.
RO = exist.
PI Sta 16+18.86
△ = 20° 07′ 11.6″ (LT)
D = 3° 34′ 51.6″
L = 561.85′
T = 283.85′
R = 1,600.00′
DS = 27 MPH
SE = 2.0% *
RO = 100′
* DESIGN EXCEPTION REQUIRED FOR SUPERELEVATION
LJ&T of FAYETTEVILLE,LLC
DB 6541 PG 681
VAIL FAMILY LIMITED PARTNERSHIP
DB 4594 PG 225
MARTIN LUTHER KING JR. FRWY
BEGIN TIP PROJECT B-4490
-L- STA. 9+74.93
-L- POT Sta. 8+00.00
S 61° 18′ 41.7″ E
-L- PC Sta. 10+43.71
BRAGG BLVD
GRASS MEDIAN
PROPOSED 5′ SIDEWALK
TRANSITION TO EXISTING
2′-6″ C&G
2′-9″ C&G (MED.)
CB SEE SPECIAL DETAIL
SIZE & TYPE UNKNOWN
ABANDONED ACCORDING TO UTILITY OWNER
VALUE PLACE FAYETTEVILLE BRAGG LLC
DB 7317 PG 18
PB 7 PG 8
-L- PRC Sta. 13+35.01
300′ TAPER
MATCH LINE SEE SHEET 5
-L- STA. 13+40.00

SEE SHEET No. 17 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
B-4490	5
R/W SHEET NO.	

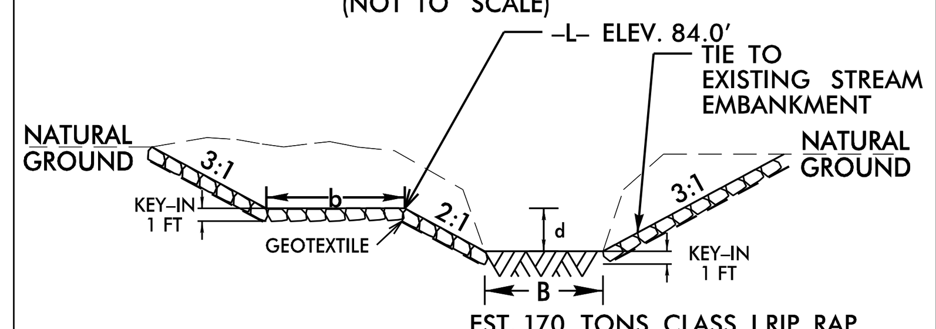
PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19563 TIMOTHY SCOTT HAYES

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039785

REVISIONS

DETAIL O
FLOOD BENCH @ INLET
(NOT TO SCALE)

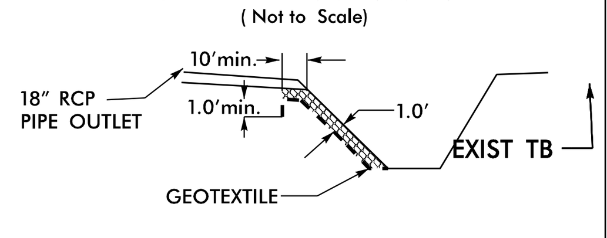


b = 5FT - 14FT VAR.
B = 28FT - 32FT VAR.
d = MIN. 1.00 FT.

EST. 170 TONS CLASS I RIP RAP
EST. 120 SY GEOTEXTILE
DDE = APPROX. 560 CY
FLOOD BENCH SLOPE= 0.19%

STA. 17+70 -L- LT

DETAIL J
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 138 TONS,CL I Rip-Rap
Geotextile= 50sy

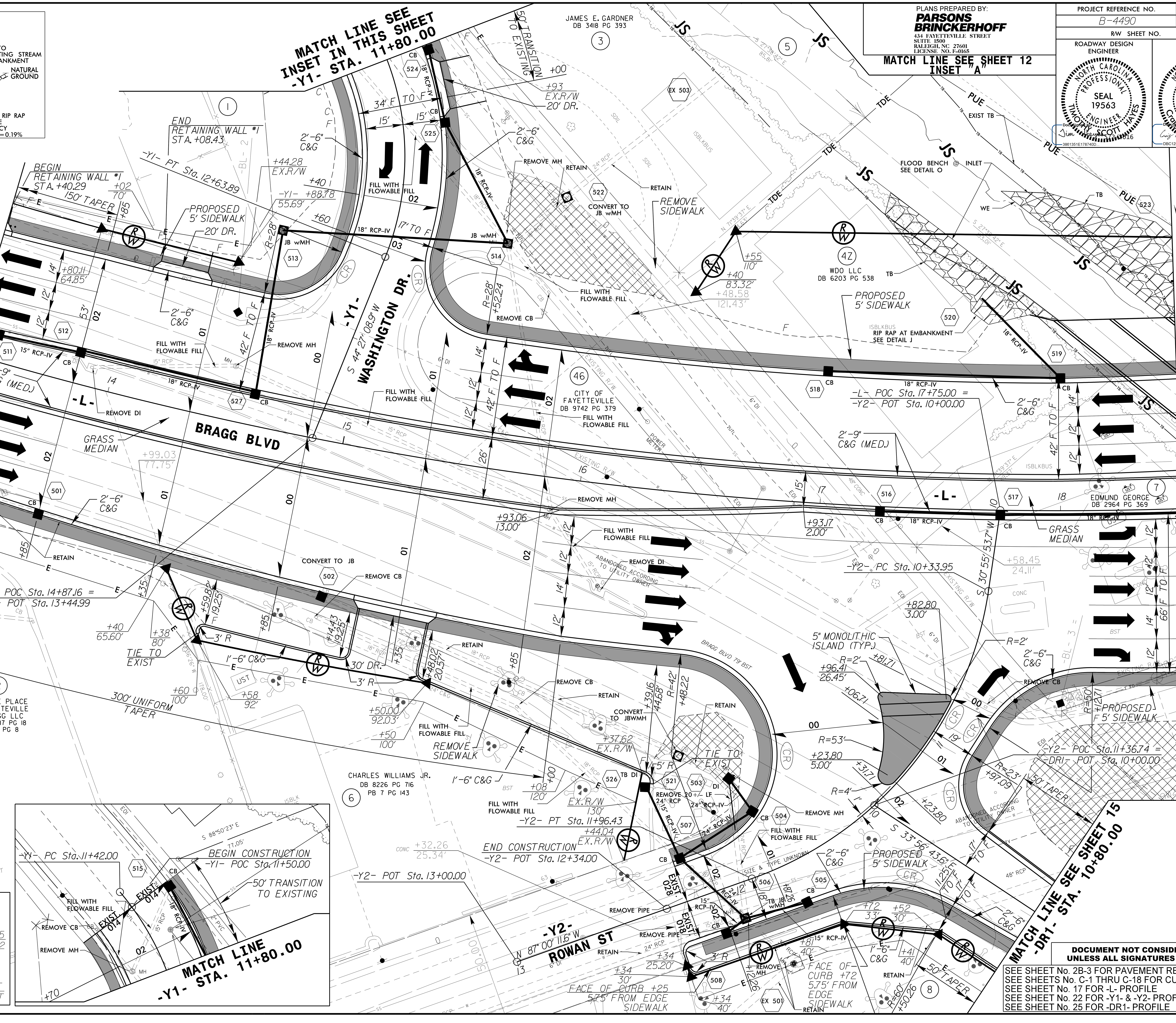
FROM STA. 17+50 TO STA. 17+82 -L- LT

-L- CURVE DATA
PI Sta 16+18.86
Δ = 20° 07' 11.6" (LT)
D = 3° 34' 51.6"
L = 561.85'
T = 283.85'
R = 1,600.00'
SE = 2.0% *
RO = 100'
DS = 27 MPH

*** DESIGN EXCEPTION REQUIRED FOR SUPERELEVATION**

-Y1- CURVE DATA
PI Sta 12+09.77
Δ = 62° 21' 15.4" (RT)
D = 51° 09' 25.0"
L = 121.89'
T = 67.77'
R = 112.00'
SE = n/a
RO = n/a

-Y2- CURVE DATA
PI Sta 11+24.19
Δ = 62° 03' 54.7" (RT)
D = 38° 11' 49.9"
L = 162.49'
T = 90.25'
R = 150.00'
SE = n/a
RO = n/a



NC 24 & W ROWAN ST.

	-L-	
22,770 / 32,944	404 / 665	2570 / 2744	24,935 / 35,022
-Y2-	2974 / 3409	2015 ADT / 2035 ADT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET No. 2B-3 FOR PAVEMENT REMOVAL DETAIL
SEE SHEETS No. C-1 THRU C-18 FOR CULVERT PLANS
SEE SHEET No. 17 FOR -L- PROFILE
SEE SHEET No. 22 FOR -Y1- & -Y2- PROFILE
SEE SHEET No. 25 FOR -DR1- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
B-4490	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 039785 ENGINEER Craig A. Freeman, Jr.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

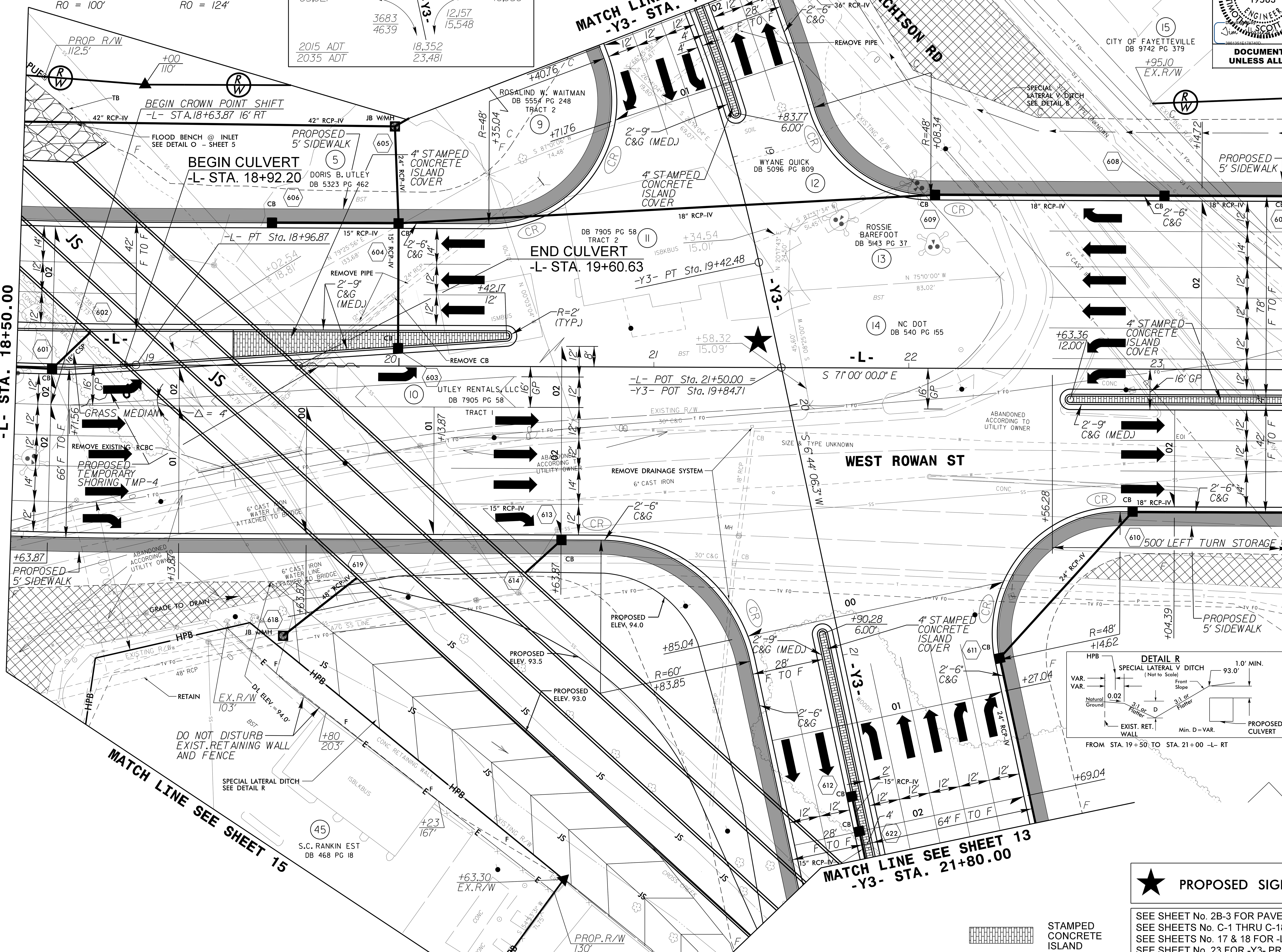
-L- CURVE DATA	-Y3- CURVE DATA
PI Sta 16+18.86	PI Sta 17+09.63
Δ = 20° 07' 11.6" (LT)	Δ = 43° 13' 24.1" (RT)
D = 3° 34' 51.6"	D = 8° 48' 53.1"
L = 561.85'	L = 490.35'
T = 283.85'	T = 257.51'
R = 1,600.00'	R = 650.00'
DS = 27 MPH	DS = 40mph
SE = 2.0 % *	SE = 4.0%
RO = 100'	RO = 124'

* DESIGN EXCEPTION REQUIRED FOR SUPERELEVATION

NC 24 & ROWAN ST.

9548 / 12,152	-Y3-
2813 / 3596	4217 / 5261
-L- 24,934 / 85,021	-L- 34,173 / 46,956
3683 / 4639	12,157 / 15,548
2015 ADT / 2035 ADT	18,352 / 23,481

DETAIL B
SPECIAL LATERAL V DITCH
(Not to Scale)
Natural Ground; 3:1; D; 4:1 or Flatter; Fill Slope; Min. D=1.5 Ft.
FROM STA. 22+00 TO STA. 25+00 -L- LT



DETAIL R
SPECIAL LATERAL V DITCH
(Not to Scale)
HPB; VAR.; VAR.; 0.02; Natural Ground; 3:1 or Flatter; D; Front Slope; 3:1 or Flatter; 1.0' MIN.; 93.0'; EXIST. RET. WALL; Min. D=VAR.; PROPOSED CULVERT
FROM STA. 19+50 TO STA. 21+00 -L- RT

★ PROPOSED SIGNAL

STAMPED CONCRETE ISLAND

SEE SHEET No. 2B-3 FOR PAVEMENT REMOVAL DETAIL
SEE SHEETS No. C-1 THRU C-18 FOR CULVERT PLANS
SEE SHEETS No. 17 & 18 FOR -L- PROFILE
SEE SHEET No. 23 FOR -Y3- PROFILE

REVISIONS

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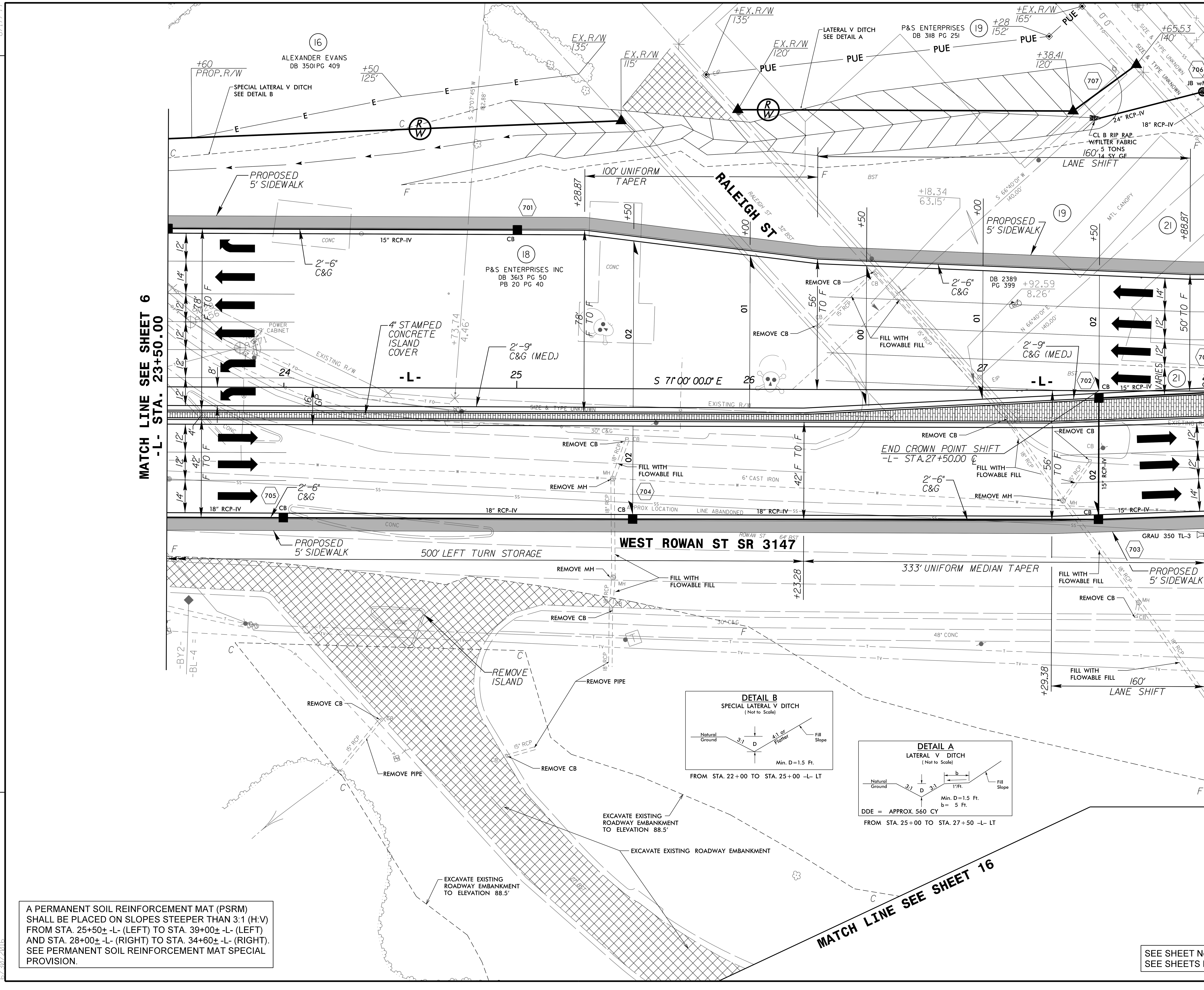
PROJECT REFERENCE NO.	SHEET NO.
B-4490	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 19563, Timothy Scott Hayes, North Carolina Professional Engineer

HYDRAULICS ENGINEER — SEAL 039785, Craig A. Freeman, Jr., North Carolina Professional Engineer

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165



NAD 83/NSRS 2007
MATCH LINE SEE SHEET 6 -L- STA. 23+50.00
MATCH LINE SEE SHEET 8 -L- STA. 28+00.00
MATCH LINE SEE SHEET 16
RALEIGH ST
WEST ROWAN ST SR 3147
ALEXANDER EVANS DB 3501 PG 409
P&S ENTERPRISES INC DB 3613 PG 50 PB 20 PG 40
P&S ENTERPRISES DB 3118 PG 251
PROPOSED 5' SIDEWALK
4" STAMPED CONCRETE ISLAND COVER
100' UNIFORM TAPER
500' LEFT TURN STORAGE
333' UNIFORM MEDIAN TAPER
160' LANE SHIFT
END CROWN POINT SHIFT -L- STA.27+50.00
S 71° 00' 00.0" E
REMOVE ISLAND
EXCAVATE EXISTING ROADWAY EMBANKMENT TO ELEVATION 88.5'
EXCAVATE EXISTING ROADWAY EMBANKMENT
DETAIL B
SPECIAL LATERAL V DITCH (Not to Scale)
Min. D=1.5 Ft.
FROM STA. 22+00 TO STA. 25+00 -L- LT
DETAIL A
LATERAL V DITCH (Not to Scale)
Min. D=1.5 Ft. b= 5 Ft.
DDE = APPROX. 560 CY
FROM STA. 25+00 TO STA. 27+50 -L- LT

A PERMANENT SOIL REINFORCEMENT MAT (PSRM) SHALL BE PLACED ON SLOPES STEEPER THAN 3:1 (H:V) FROM STA. 25+50± -L- (LEFT) TO STA. 39+00± -L- (LEFT) AND STA. 28+00± -L- (RIGHT) TO STA. 34+60± -L- (RIGHT). SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.

STAMPED CONCRETE ISLAND

SEE SHEET No. 2B-3 FOR PAVEMENT REMOVAL DETAIL
SEE SHEETS No. 18 & 19 FOR -L- PROFILE

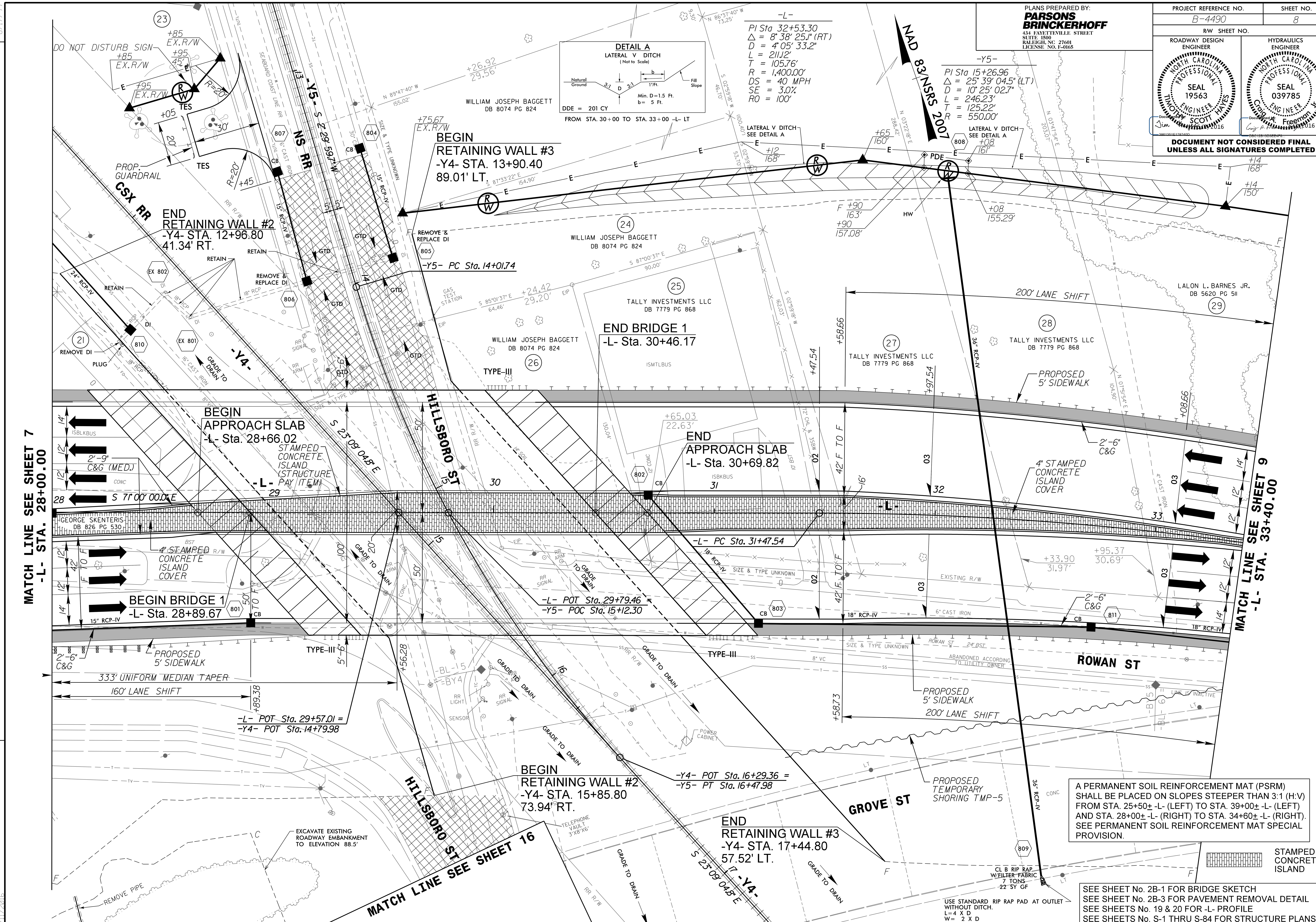
REVISIONS

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
B-4490	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES	NORTH CAROLINA PROFESSIONAL SEAL 039785 ENGINEER Craig A. Freeman Jr.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


NAD 83/NSRS 2007
DETAIL A
LATERAL V DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D=1.5 Ft.
b= 5 Ft.
DDE = 201 CY
FROM STA. 30+00 TO STA. 33+00 -L- LT
-L-
PI Sta 32+53.30
△ = 8° 38' 25.1" (RT)
D = 4° 05' 33.2"
L = 211.12'
T = 105.76'
R = 1,400.00'
DS = 40 MPH
SE = 3.0%
RO = 100'
-Y5-
PI Sta 15+26.96
△ = 25° 39' 04.5" (LT)
D = 10° 25' 02.7"
L = 246.23'
T = 125.22'
R = 550.00'
DO NOT DISTURB SIGN
PROP. GUARDRAIL
CSX RR
NS RR
SEABOARD COAST LINE RR
BEGIN RETAINING WALL #3
-Y4- STA. 13+90.40
89.01' LT.
END RETAINING WALL #2
-Y4- STA. 12+96.80
41.34' RT.
WILLIAM JOSEPH BAGGETT
DB 8074 PG 824
TALLY INVESTMENTS LLC
DB 7779 PG 868
LALON L. BARNES JR.
DB 5620 PG 511
GEORGE SKENTERIS
DB 826 PG 530
-Y5- PC Sta. 14+01.74
END BRIDGE 1
-L- Sta. 30+46.17
200' LANE SHIFT
PROPOSED 5' SIDEWALK
BEGIN APPROACH SLAB
-L- Sta. 28+66.02
STAMPED CONCRETE ISLAND (STRUCTURE PAY ITEM)
END APPROACH SLAB
-L- Sta. 30+69.82
HILLSBORO ST
4" STAMPED CONCRETE ISLAND COVER
2'-6" C&G
2'-9" C&G (MED.)
S 71° 00' 00.0" E
-L- PC Sta. 31+47.54
-L- POT Sta. 29+79.46
-Y5- POC Sta. 15+12.30
BEGIN BRIDGE 1
-L- Sta. 28+89.67
MATCH LINE SEE SHEET 7
-L- STA. 28+00.00
MATCH LINE SEE SHEET 9
-L- STA. 33+40.00
ROWAN ST
333' UNIFORM MEDIAN TAPER
160' LANE SHIFT
-L- POT Sta. 29+57.01 =
-Y4- POT Sta. 14+79.98
PROPOSED TEMPORARY SHORING TMP-5
-Y4- POT Sta. 16+29.36 =
-Y5- PT Sta. 16+47.98
BEGIN RETAINING WALL #2
-Y4- STA. 15+85.80
73.94' RT.
END RETAINING WALL #3
-Y4- STA. 17+44.80
57.52' LT.
GROVE ST
EXCAVATE EXISTING ROADWAY EMBANKMENT TO ELEVATION 88.5'
REMOVE PIPE
MATCH LINE SEE SHEET 16
S 23° 09' 04.8" E
CL B RIP RAP W/FILTER FABRIC
7 TONS
22 SY GF
USE STANDARD RIP RAP PAD AT OUTLET WITHOUT DITCH.
L=4 X D
W= 2 X D
2:1 RATIO FROM OUTLET TO END OF PAD
GRADE TO DRAIN

A PERMANENT SOIL REINFORCEMENT MAT (PSRM) SHALL BE PLACED ON SLOPES STEEPER THAN 3:1 (H:V) FROM STA. 25+50± -L- (LEFT) TO STA. 39+00± -L- (LEFT) AND STA. 28+00± -L- (RIGHT) TO STA. 34+60± -L- (RIGHT). SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.

STAMPED CONCRETE ISLAND

SEE SHEET No. 2B-1 FOR BRIDGE SKETCH
SEE SHEET No. 2B-3 FOR PAVEMENT REMOVAL DETAIL
SEE SHEETS No. 19 & 20 FOR -L- PROFILE
SEE SHEETS No. S-1 THRU S-84 FOR STRUCTURE PLANS

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PROJECT REFERENCE NO.	SHEET NO.
B-4490	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES — Jim — 8/17/2016

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 039785 ENGINEER Craig A. Freeman Jr. — 8/17/2016

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

8/17/99

REVISIONS

-L-
PI Sta 32+53.30
Δ = 8° 38' 25.1" (RT)
D = 4° 05' 33.2"
L = 211.12'
T = 105.76'
R = 1,400.00'
DS = 40 MPH
SE = 3.0%
RO = 100'

-Y7- POT Sta. 10+00.00
-Y6- POT Sta. 10+00.00

DETAIL A
LATERAL V DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, b, 1'Ft., Fill Slope
Min. D=1.5 Ft.
b= 5 Ft.
DDE = 151 CY
FROM STA. 36+00 TO STA. 37+50 -L- LT.

DETAIL T
SPECIAL LATERAL "V" DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Fill Slope
Min. D=0.5 Ft.
FROM STA. 37+50 TO STA. 38+50 -L- LT

A PERMANENT SOIL REINFORCEMENT MAT (PSRM) SHALL BE PLACED ON SLOPES STEEPER THAN 3:1 (H:V) FROM STA. 25+50± -L- (LEFT) TO STA. 39+00± -L- (LEFT) AND STA. 28+00± -L- (RIGHT) TO STA. 34+60± -L- (RIGHT). SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.

END
RETAINING WALL #4
-Y6- STA. 11+05.98
41.27' RT.

BEGIN
RETAINING WALL #5
-Y7- STA. 11+43.50
41.03' LT.

BEGIN ORNAMENTAL FENCE
-L- STA. 35+67.87 +/-

END RETAINING WALL #6
END ORNAMENTAL FENCE
-L- STA. 38+00.00
OFF. 59.5'

END BRIDGE
-L- Sta. 35+72.31

BEGIN
APPROACH SLAB
-L- Sta. 34+19.06

BEGIN BRIDGE
-L- Sta. 34+43.06

BEGIN
RETAINING WALL #4
-Y6- STA. 13+77.98
41.27' RT.

END APPROACH SLAB
-L- Sta. 35+96.31

END
RETAINING WALL #5
-Y7- STA. 14+00.00
41.03' LT.

-L- PI Sta 32+53.30
-L- PT Sta. 33+58.66
-L- POT Sta. 34+92.18 = -Y6- POT Sta. 12+48.60
-L- POT Sta. 35+23.40 = -Y7- POT Sta. 12+63.33

CSX RR
RR R/W
EXISTING R/W
EX.R/W 150'
EX.R/W 69.50'
EIP
ISFD
48" CONC
48" RCP
24" RCP-IV
48" RCP-IV
18" RCP-IV
15" RCP-IV
18" CSP
18" RCP
60" WROUGHT IRON
30" C&G
78' BST
14' BST
MTL LT
RETAIN
HPB
TDE
PDE
GRADE TO DRAIN
STAMPED CONCRETE ISLAND (STRUCTURE PAY ITEM)
5" MONOLITHIC STAMPED CONCRETE ISLAND
PROPOSED 5' SIDEWALK
PROPOSED RETAINING WALL w/ORNAMENTAL FENCE
PROPOSED TEMPORARY SHORING TMP-6
PROPOSED TEMPORARY SHORING TMP-5 & 6
200' LANE SHIFT
200' SHIFT
TYPE-III
JB w/MH
JB w/SLAB LID
CB
2'-6" C&G
2'-9" C&G (MED.)
2GI
CL B RIP RAP w/FILTER FABRIC 2 TON 7 SY GF
CL I RIP RAP W/FILTER FABRIC 26 TONS 50 SY GF
CL I RIP RAP W/FILTER FABRIC 8 TONS 20 SY GF
PLATE FILL SLOPE AROUND PIPE OUTLETS WITH CLASS B STONE 1' THICK EST. 16 TONS
SEPARATED END SECTION OF EXISTING 48" AND 18" RCP AND MINOR SLOPE FAILURE TO BE CORRECTED DURING INSTALLATION OF ADJACENT PIPE
COORDINATE WITH CITY FOR REMOVAL DURING CONSTRUCTION
COLLAR AND EXTEND 48" RCP
LATERAL V DITCH SEE DETAIL A
LATERAL V DITCH SEE DETAIL T

CHARLES T. HAIGH DB 3072 PG 57
LALON L. BARNES JR. DB 5620 PG 511
ALFRED N. DAVIS DB 1192 PG 279
LAWRENCE GLINDEMAN DB 5955 PG 587
O. J. SCARBOROUGH JR. DB 2118 PG 35

ROWAN ST

MATCH LINE SEE SHEET 8 -L- STA. 33+40.00

MATCH LINE SEE SHEET 10 -L- STA. 38+40.00

NAD 83/NSRS 2007

STAMPED CONCRETE ISLAND

SEE SHEET No. 2B-2 FOR BRIDGE SKETCH
SEE SHEET No. 2B-3 FOR PAVEMENT REMOVAL DETAIL
SEE SHEETS No. 20 & 21 FOR -L- PROFILE
SEE SHEETS No. S-1 THRU S-84 FOR STRUCTURE PLANS

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PROJECT REFERENCE NO.	SHEET NO.
B-4490	10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19563 TIMOTHY SCOTT HAYES

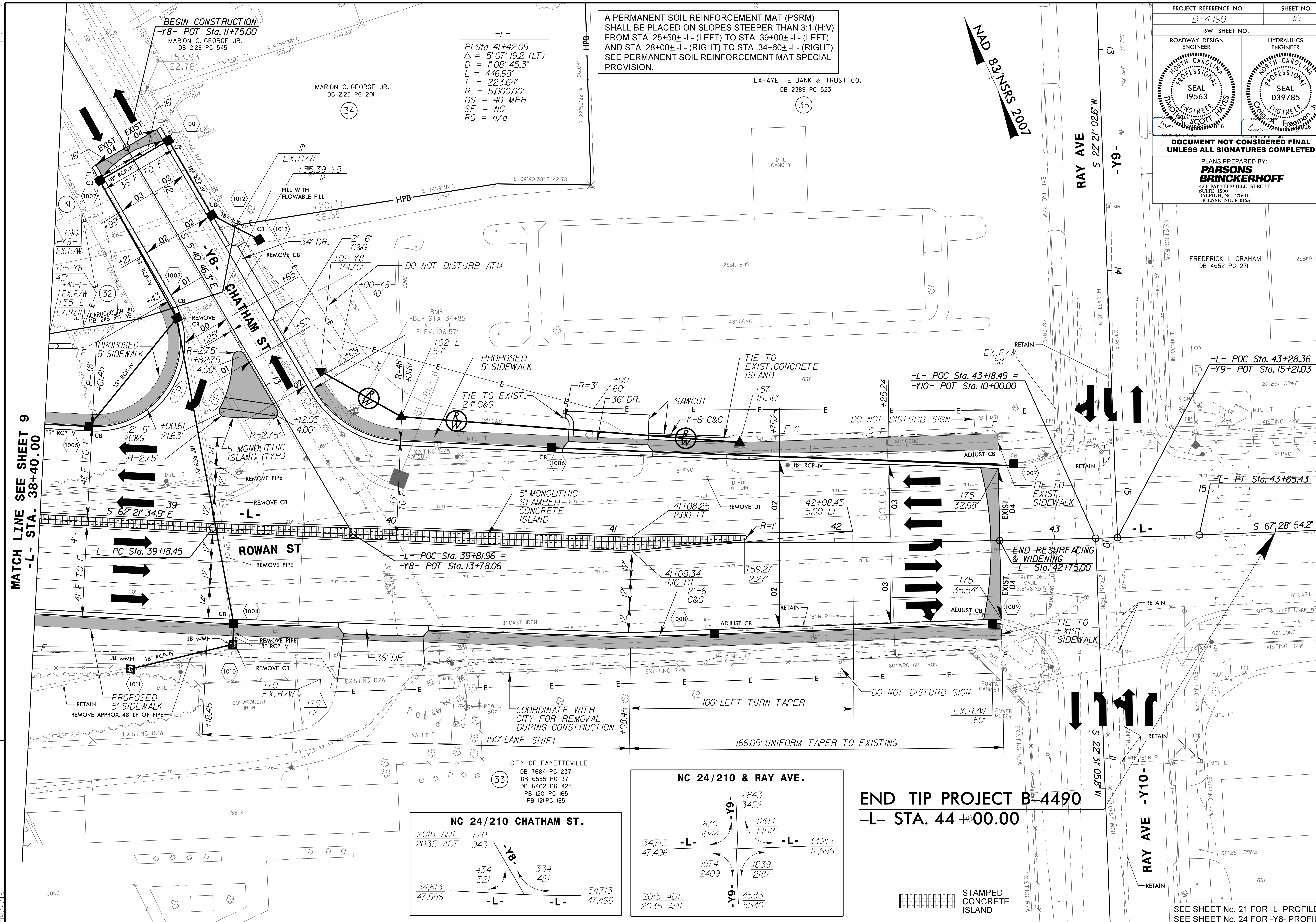
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039785 Craig M. Freeman Jr.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

A PERMANENT SOIL REINFORCEMENT MAT (PSRM) SHALL BE PLACED ON SLOPES STEEPER THAN 3:1 (H:V) FROM STA. 25+50± -L- (LEFT) TO STA. 39+00± -L- (LEFT) AND STA. 28+00± -L- (RIGHT) TO STA. 34+60± -L- (RIGHT). SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.

-L-
PI Sta 41+42.09
Δ = 5° 07' 19.2" (LT)
D = 1° 08' 45.3"
L = 446.98'
T = 223.64'
R = 5,000.00'
DS = 40 MPH
SE = NC
RO = n/a


NAD 83/NSRS 2007
BEGIN CONSTRUCTION
-Y8- POT Sta. 11+75.00
MARION C. GEORGE JR.
DB 2129 PG 545
MARION C. GEORGE JR.
DB 2125 PG 201
LAFAYETTE BANK & TRUST CO.
DB 2389 PG 523
FREDERICK L GRAHAM
DB 4652 PG 271
O. J. SCARBOROUGH JR.
DB 2118 PG 35
CITY OF FAYETTEVILLE
DB 7684 PG 237
DB 6555 PG 37
DB 6402 PG 425
PB 120 PG 165
PB 121 PG 185
CHATHAM ST
-Y8-
ROWAN ST
RAY AVE
-Y9-
-Y10-
-L-
MATCH LINE SEE SHEET 9
-L- STA. 38+40.00
S 62° 21' 34.9" E
S 67° 28' 54.2" E
S 5° 40' 46.3" E
S 22° 27' 02.6" W
S 22° 31' 05.8" W
-L- PC Sta. 39+18.45
-L- POC Sta. 39+81.96 = -Y8- POT Sta. 13+78.06
-L- POC Sta. 43+18.49 = -Y10- POT Sta. 10+00.00
-L- POC Sta. 43+28.36 = -Y9- POT Sta. 15+21.03
-L- PT Sta. 43+65.43
END RESURFACING & WIDENING -L- Sta. 42+75.00
PROPOSED 5' SIDEWALK
5' MONOLITHIC STAMPED CONCRETE ISLAND
5" MONOLITHIC ISLAND (TYP.)
TIE TO EXIST. CONCRETE ISLAND
TIE TO EXIST. SIDEWALK
TIE TO EXIST. 24' C&G
FILL WITH FLOWABLE FILL
DO NOT DISTURB ATM
DO NOT DISTURB SIGN
COORDINATE WITH CITY FOR REMOVAL DURING CONSTRUCTION
REMOVE APPROX. 48 LF OF PIPE
100' LEFT TURN TAPER
190' LANE SHIFT
166.05' UNIFORM TAPER TO EXISTING
BM81 -BL- STA 34+85 32' LEFT ELEV. 106.57'

END TIP PROJECT B-4490
–L– STA. 44+00.00

NC 24/210 CHATHAM ST.

2015 ADT	2035 ADT
-Y8-: 770 / 943	
434 / 521	334 / 421
-L- 34,813 / 47,596	-L- 34,713 / 47,496

NC 24/210 & RAY AVE.

-Y9- (north): 2843 / 3452	
870 / 1044	1204 / 1452
-L- 34,713 / 47,496	-L- 34,913 / 47,696
1974 / 2409	1839 / 2187
-Y9- (south): 4583 / 5540	
2015 ADT / 2035 ADT	

STAMPED CONCRETE ISLAND

SEE SHEET No. 21 FOR -L- PROFILE
SEE SHEET No. 24 FOR -Y8- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
B-4490	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 19563, NORTH CAROLINA PROFESSIONAL ENGINEER, TIMOTHY SCOTT HAYES

HYDRAULICS ENGINEER — SEAL 039785, NORTH CAROLINA PROFESSIONAL ENGINEER, Craig A. Freeman, Jr.

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PLANS PREPARED BY:
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434 FAYETTEVILLE STREET
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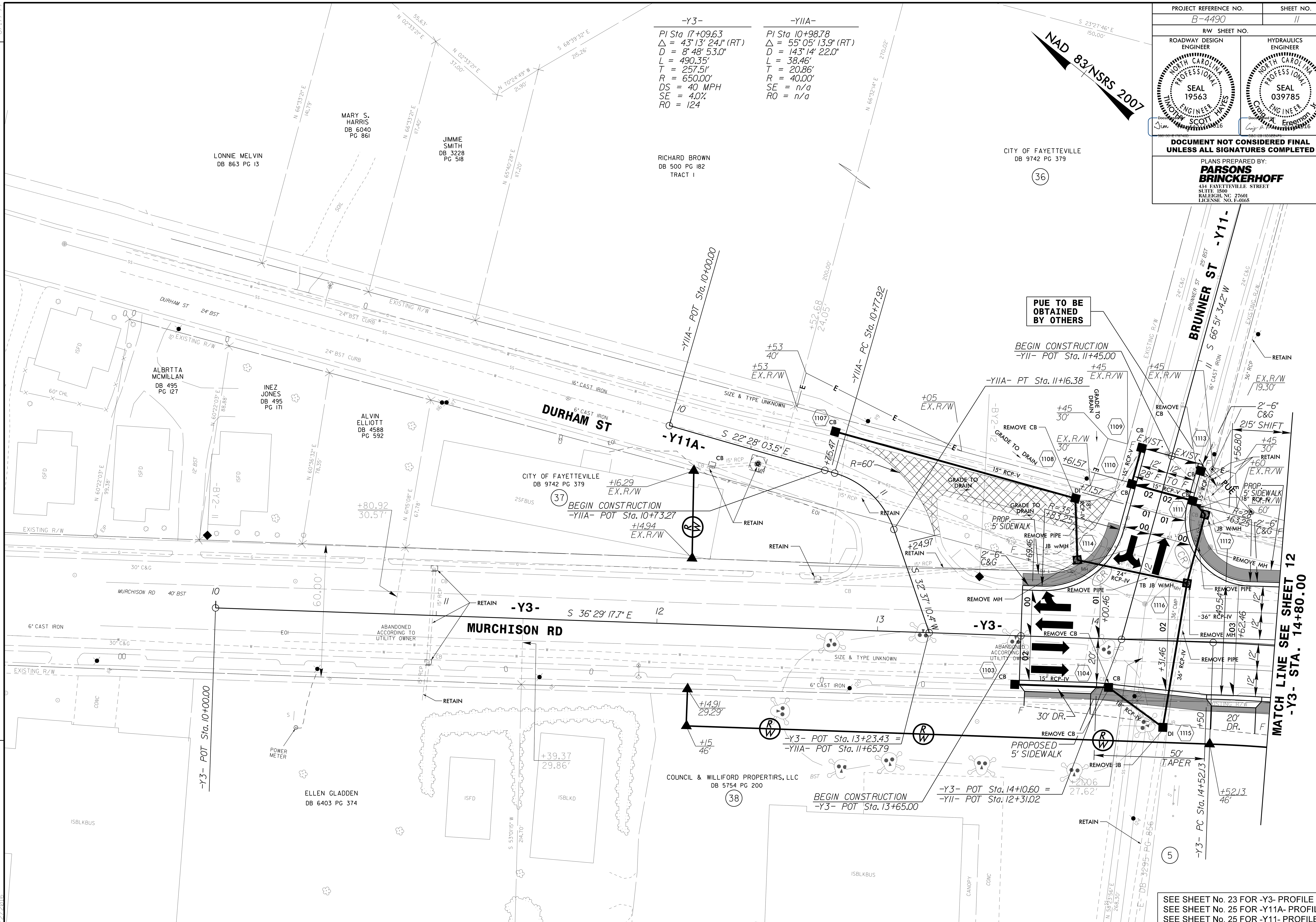
RALEIGH, NC 27601
LICENSE NO. F-0165



NAD 83/NSRS 2007
-Y3-
PI Sta 17+09.63
Δ = 43° 13' 24.1" (RT)
D = 8° 48' 53.0"
L = 490.35'
T = 257.51'
R = 650.00'
DS = 40 MPH
SE = 4.0%
RO = 124
-Y11A-
PI Sta 10+98.78
Δ = 55° 05' 13.9" (RT)
D = 143° 14' 22.0"
L = 38.46'
T = 20.86'
R = 40.00'
SE = n/a
RO = n/a
LONNIE MELVIN DB 863 PG 13
MARY S. HARRIS DB 6040 PG 861
JIMMIE SMITH DB 3228 PG 518
RICHARD BROWN DB 500 PG 182 TRACT 1
CITY OF FAYETTEVILLE DB 9742 PG 379
ALBRTTA MCMILLAN DB 495 PG 127
INEZ JONES DB 495 PG 171
ALVIN ELLIOTT DB 4588 PG 592
CITY OF FAYETTEVILLE DB 9742 PG 379
ELLEN GLADDEN DB 6403 PG 374
COUNCIL & WILLIFORD PROPERTIRS, LLC DB 5754 PG 200
DURHAM ST
MURCHISON RD
BRUNNER ST
-Y11A-
-Y11-
-Y3-
S 22° 28' 03.5" E
S 36° 29' 17.7" E
S 66° 51' 34.2" W
-Y11A- POT Sta. 10+00.00
-Y11A- PC Sta. 10+177.92
-Y3- POT Sta. 10+00.00
BEGIN CONSTRUCTION -Y11A- POT Sta. 10+73.27
BEGIN CONSTRUCTION -Y11- POT Sta. 11+45.00
-Y11A- PT Sta. 11+16.38
-Y3- POT Sta. 13+23.43 = -Y11A- POT Sta. 11+65.79
BEGIN CONSTRUCTION -Y3- POT Sta. 13+65.00
-Y3- POT Sta. 14+10.60 = -Y11- POT Sta. 12+31.02
-Y3- PC Sta. 14+52.13
PUE TO BE OBTAINED BY OTHERS
MATCH LINE SEE SHEET 12 -Y3- STA. 14+80.00
PROPOSED 5' SIDEWALK
RETAIN
REMOVE CB
REMOVE MH
REMOVE PIPE
REMOVE JB
GRADE TO DRAIN
ABANDONED ACCORDING TO UTILITY OWNER
SIZE & TYPE UNKNOWN
6" CAST IRON
16" CAST IRON
EXISTING R/W
POWER METER

SEE SHEET No. 23 FOR -Y3- PROFILE
SEE SHEET No. 25 FOR -Y11A- PROFILE
SEE SHEET No. 25 FOR -Y11- PROFILE

REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4490	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES	NORTH CAROLINA PROFESSIONAL SEAL 039785 ENGINEER Craig A. Freeman, Jr.

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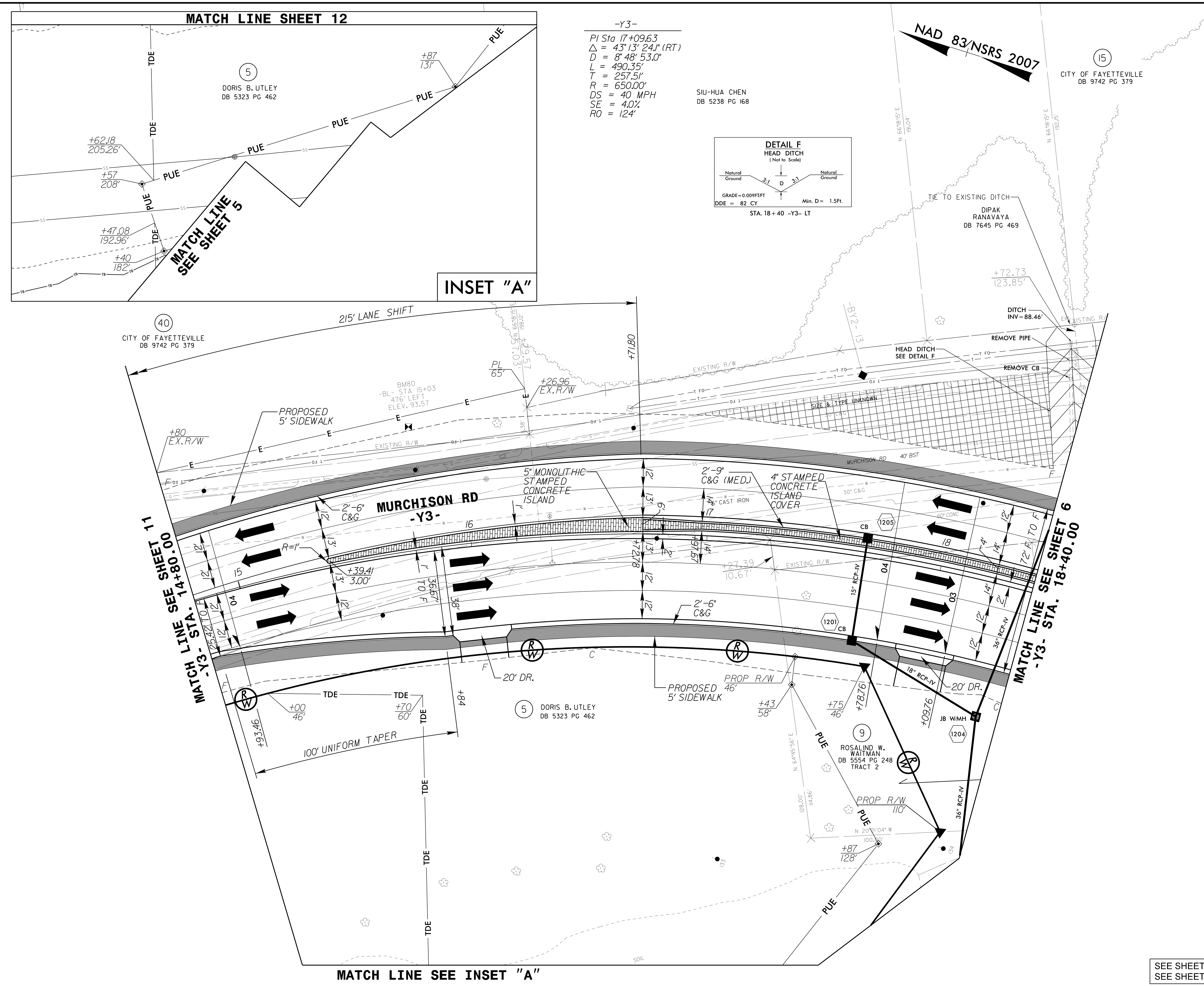
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

REVISIONS

8/17/99



MATCH LINE SHEET 12
INSET "A"
MATCH LINE SEE SHEET 5
DORIS B. UTLEY
DB 5323 PG 462
-Y3-
PI Sta 17+09.63
Δ = 43°13' 24.1" (RT)
D = 8° 48' 53.0"
L = 490.35'
T = 257.51'
R = 650.00'
DS = 40 MPH
SE = 4.0%
RO = 124'
SIU-HUA CHEN
DB 5238 PG 168
DETAIL F
HEAD DITCH
(Not to Scale)
Natural Ground
GRADE = 0.009FT/FT
DDE = 82 CY
Min. D = 1.5Ft.
STA. 18+40 -Y3- LT
NAD 83/NSRS 2007
CITY OF FAYETTEVILLE
DB 9742 PG 379
TIE TO EXISTING DITCH
DIPAK RANAVAYA
DB 7645 PG 469
DITCH INV = 88.46'
REMOVE PIPE
HEAD DITCH SEE DETAIL F
REMOVE CB
215' LANE SHIFT
CITY OF FAYETTEVILLE
DB 9742 PG 379
PROPOSED 5' SIDEWALK
BM80 -BL- STA 15+03 476' LEFT ELEV. 93.57
EXISTING R/W
SIZE & TYPE UNKNOWN
MURCHISON RD 40' BST
5" MONOLITHIC STAMPED CONCRETE ISLAND
2'-9" C&G (MED.)
4" STAMPED CONCRETE ISLAND COVER
MURCHISON RD
-Y3-
2'-6" C&G
MATCH LINE SEE SHEET 11 -Y3- STA. 14+80.00
MATCH LINE SEE SHEET 6 -Y3- STA. 18+40.00
20' DR.
PROPOSED 5' SIDEWALK
PROP R/W
DORIS B. UTLEY
DB 5323 PG 462
ROSALIND W. WAITMAN
DB 5554 PG 248
TRACT 2
100' UNIFORM TAPER
15" RCP-IV
18" RCP-IV
36" RCP-IV
JB W/MH
MATCH LINE SEE INSET "A"

STAMPED CONCRETE ISLAND

SEE SHEET No. 2B-3 FOR PAVEMENT REMOVAL DETAIL
SEE SHEET No. 23 FOR -Y3- PROFILE

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4490	13

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19563 TIMOTHY SCOTT HAYES	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039785 Craig A. Freeman Jr.
DocuSigned by: Jim Hayes 5/5/2016 3861351E178740D...	DocuSigned by: Craig A. Freeman 5/6/2016 DBC12B13D3EE4F8...

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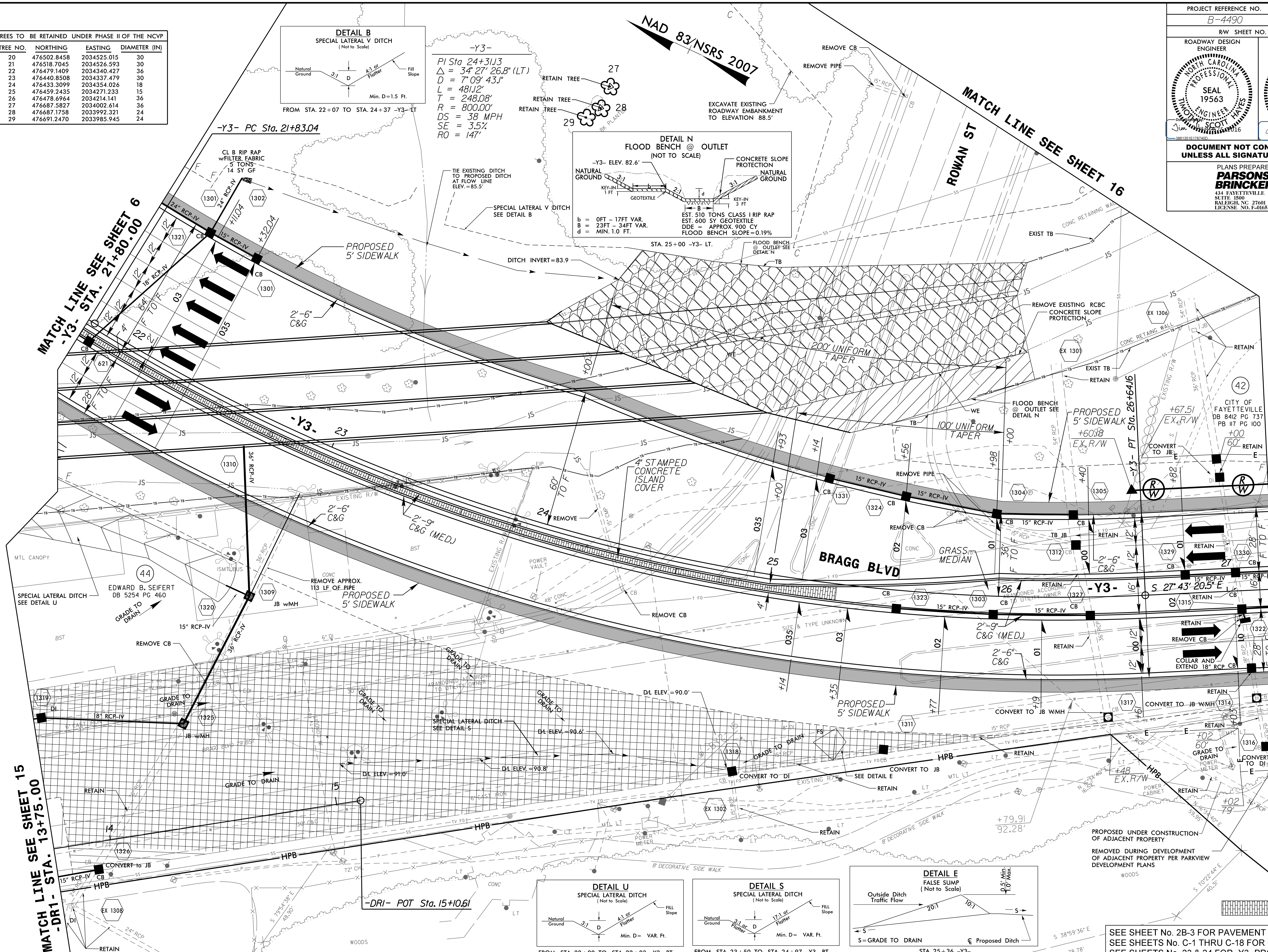
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

TREES TO BE RETAINED UNDER PHASE II OF THE NCVP

TREE NO.	NORTHING	EASTING	DIAMETER (IN)
20	476502.8458	2034525.015	30
21	476518.7045	2034526.593	30
22	476479.1409	2034340.427	36
23	476440.8508	2034337.479	30
24	476433.3099	2034354.026	18
25	476459.2435	2034271.233	15
26	476478.6964	2034214.141	36
27	476687.5827	2034002.614	36
28	476687.1758	2033992.321	24
29	476691.2470	2033985.945	24



DETAIL U
SPECIAL LATERAL DITCH
(Not to Scale)
Min. D= VAR. Ft.
FROM STA. 22+00 TO STA. 22+83 -Y3- RT

DETAIL S
SPECIAL LATERAL DITCH
(Not to Scale)
Min. D= VAR. Ft.
FROM STA. 23+50 TO STA. 24+97 -Y3- RT

DETAIL E
FALSE SUMP
(Not to Scale)
S=GRADE TO DRAIN
℄ Proposed Ditch
STA. 25+36 -Y3-

STAMPED CONCRETE ISLAND

SEE SHEET No. 2B-3 FOR PAVEMENT REMOVAL DETAIL
SEE SHEETS No. C-1 THRU C-18 FOR CULVERT PLANS
SEE SHEETS No. 23 & 24 FOR -Y3- PROFILE

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-4490	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19563 TIMOTHY SCOTT HAYES

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039785 Craig A. Freeman, Jr.

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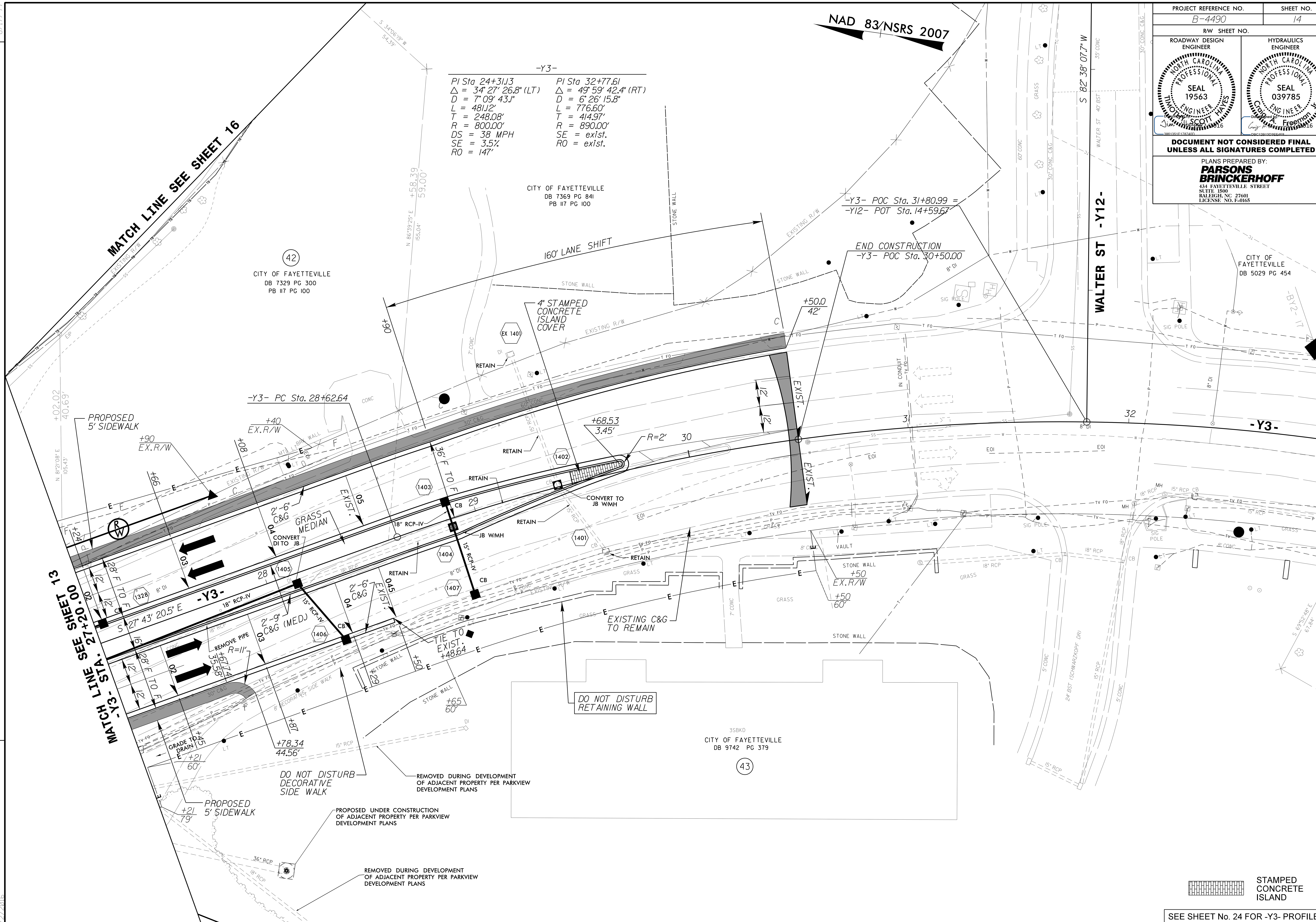

NAD 83/NSRS 2007
-Y3-
PI Sta 24+31.13
Δ = 34° 27' 26.8" (LT)
D = 7° 09' 43.1"
L = 481.12'
T = 248.08'
R = 800.00'
DS = 38 MPH
SE = 3.5%
RO = 147'
PI Sta 32+77.61
Δ = 49° 59' 42.4" (RT)
D = 6° 26' 15.8"
L = 776.60'
T = 414.97'
R = 890.00'
SE = exist.
RO = exist.
MATCH LINE SEE SHEET 16
MATCH LINE SEE SHEET 13 -Y3- STA. 27+20.00
CITY OF FAYETTEVILLE DB 7329 PG 300 PB 117 PG 100
CITY OF FAYETTEVILLE DB 7369 PG 841 PB 117 PG 100
CITY OF FAYETTEVILLE DB 5029 PG 454
CITY OF FAYETTEVILLE DB 9742 PG 379
160' LANE SHIFT
-Y3- POC Sta. 31+80.99 = -Y12- POT Sta. 14+59.67
END CONSTRUCTION -Y3- POC Sta. 30+50.00
WALTER ST -Y12-
S 82° 38' 07.7" W
-Y3- PC Sta. 28+62.64
4" STAMPED CONCRETE ISLAND COVER
PROPOSED 5' SIDEWALK
GRASS MEDIAN
CONVERT DI TO JB
CONVERT TO JB W/MH
JB W/MH
RETAIN
REMOVE PIPE
TIE TO EXIST.
EXISTING C&G TO REMAIN
DO NOT DISTURB RETAINING WALL
DO NOT DISTURB DECORATIVE SIDE WALK
GRADE TO DRAIN
REMOVED DURING DEVELOPMENT OF ADJACENT PROPERTY PER PARKVIEW DEVELOPMENT PLANS
PROPOSED UNDER CONSTRUCTION OF ADJACENT PROPERTY PER PARKVIEW DEVELOPMENT PLANS
S 27° 43' 20.5" E
STONE WALL

STAMPED CONCRETE ISLAND

SEE SHEET No. 24 FOR -Y3- PROFILE

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-4490	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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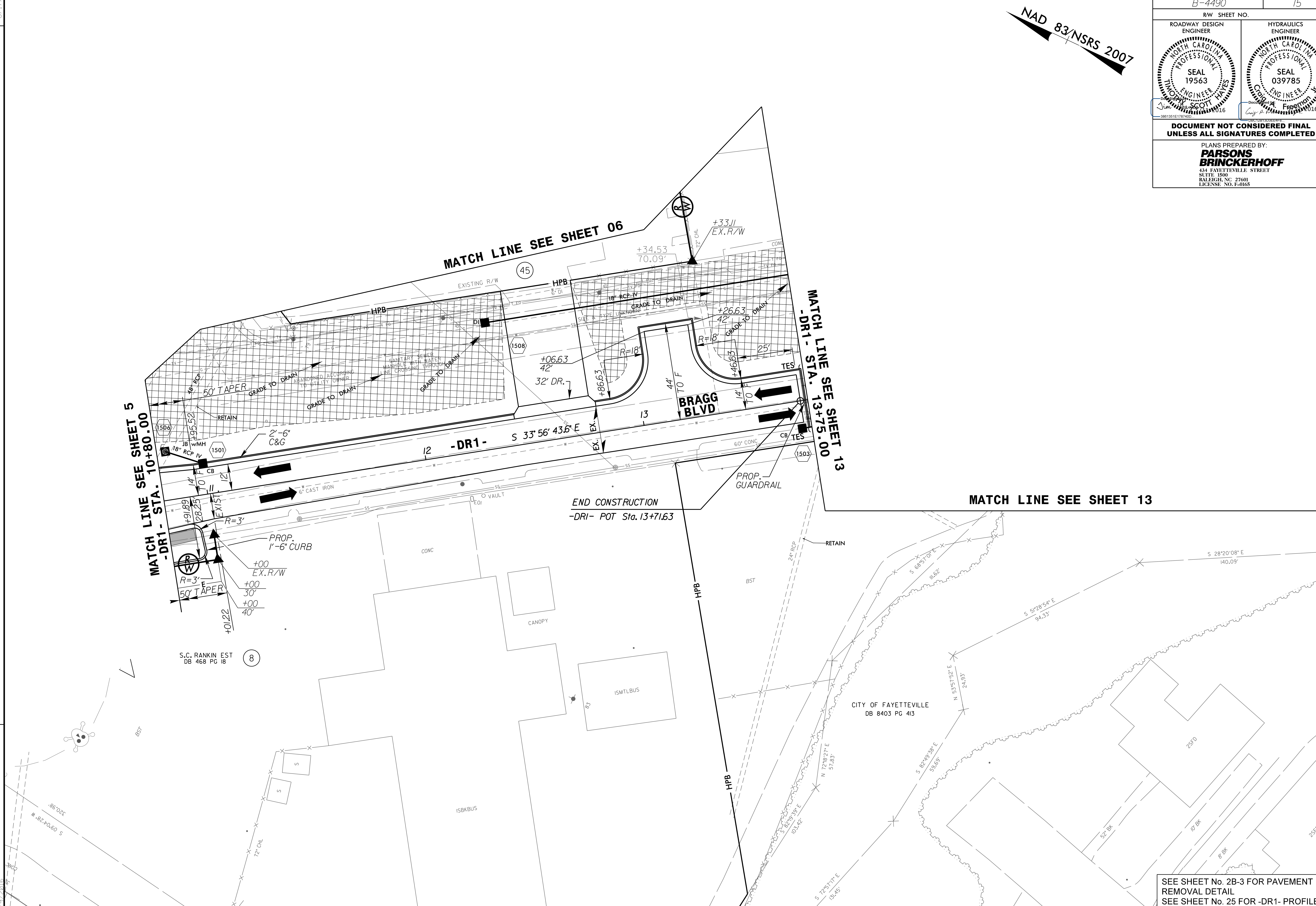
REVISIONS



SEE SHEET No. 2B-3 FOR PAVEMENT REMOVAL DETAIL
SEE SHEET No. 25 FOR -DR1- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
B-4490	16

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19563 TIMOTHY SCOTT HAYES

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039785 Craig A. Freeman Jr.

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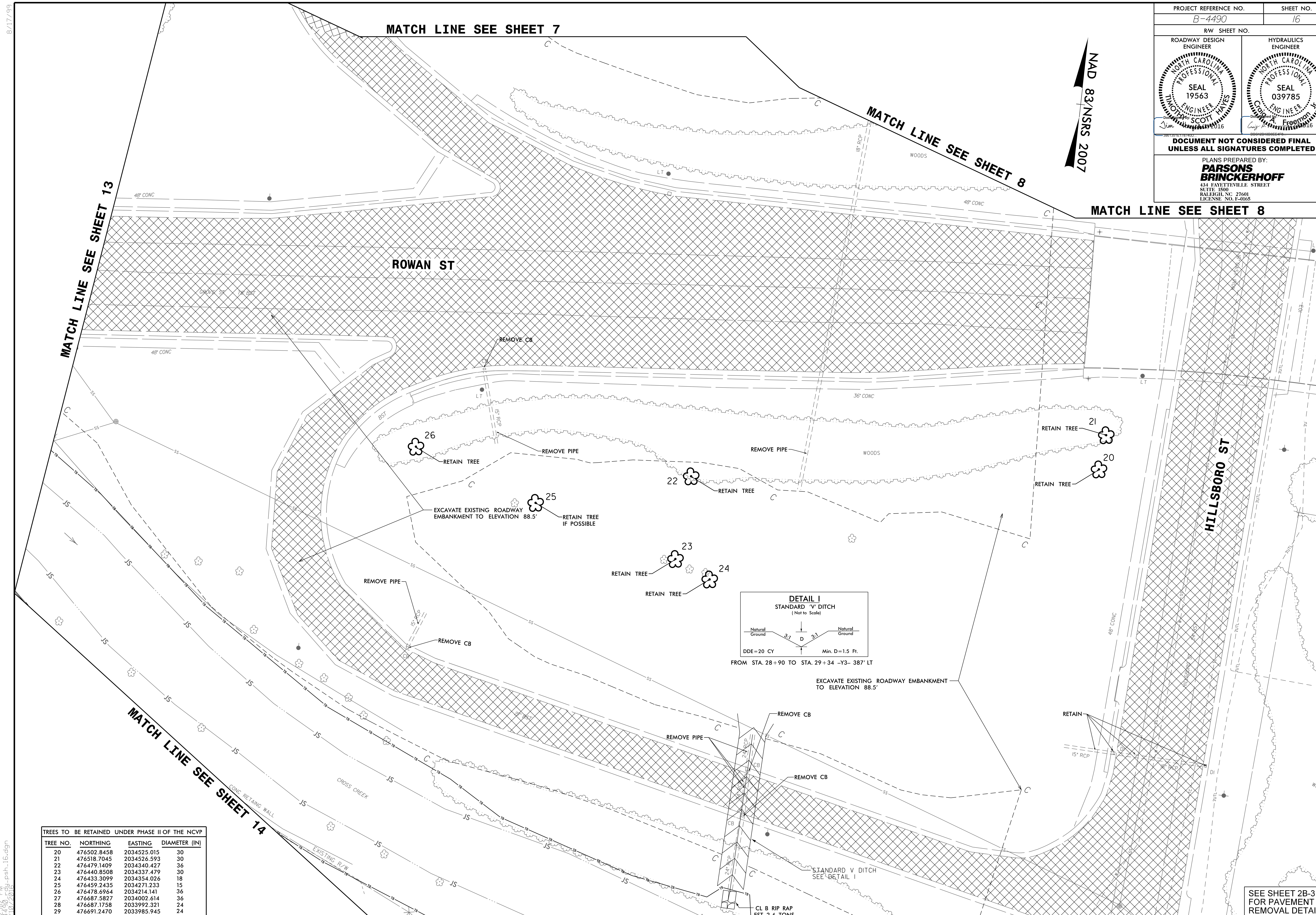

TREES TO BE RETAINED UNDER PHASE II OF THE NCVP			
TREE NO.	NORTHING	EASTING	DIAMETER (IN)
20	476502.8458	2034525.015	30
21	476518.7045	2034526.593	30
22	476479.1409	2034340.427	36
23	476440.8508	2034337.479	30
24	476433.3099	2034354.026	18
25	476459.2435	2034271.233	15
26	476478.6964	2034214.141	36
27	476687.5827	2034002.614	36
28	476687.1758	2033992.321	24
29	476691.2470	2033985.945	24

SEE SHEET 2B-3 FOR PAVEMENT REMOVAL DETAIL

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19563 TIMOTHY SCOTT HAYES

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039785 Craig A. Freeman, Jr.

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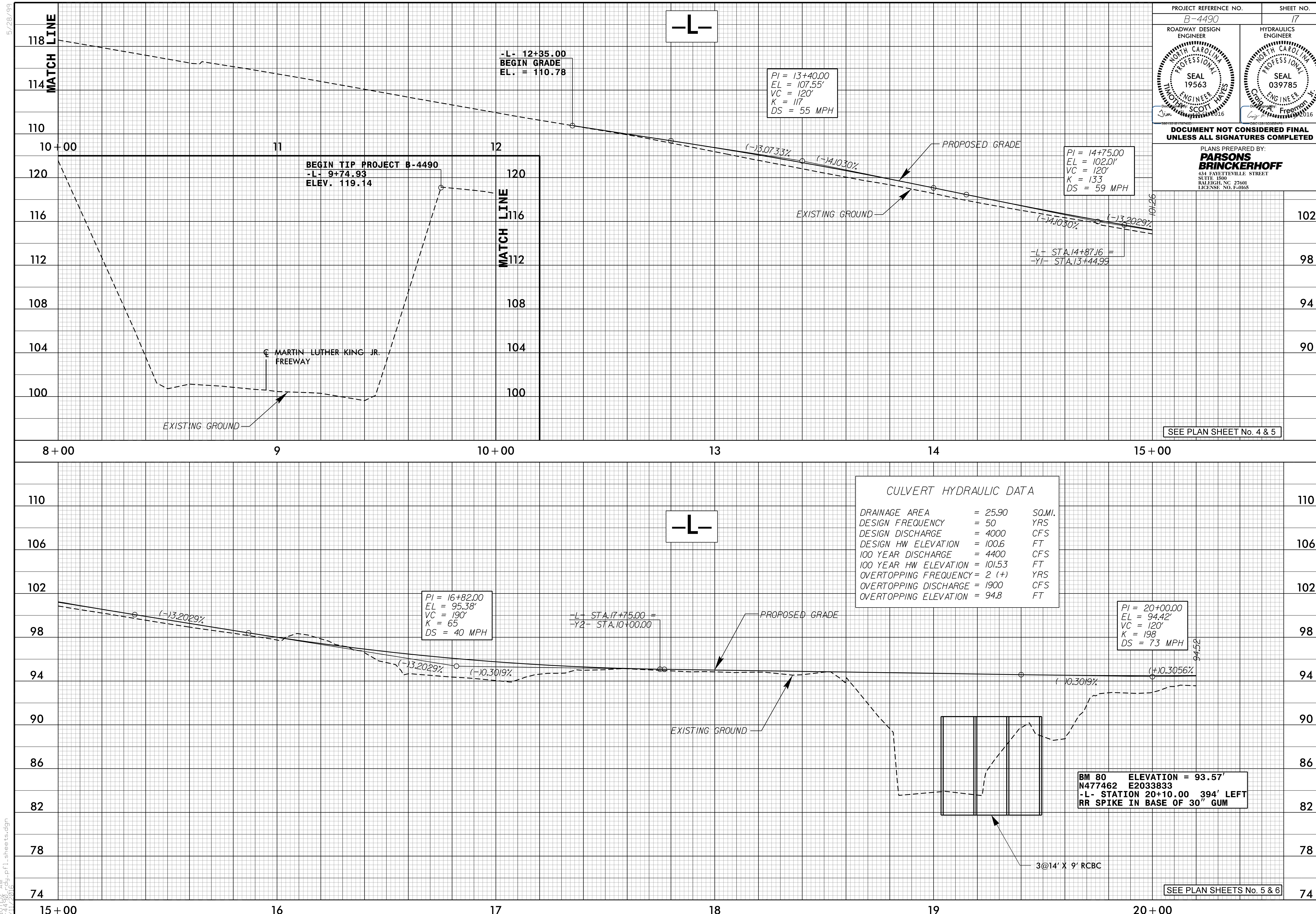

-L-
MATCH LINE
-L- 12+35.00
BEGIN GRADE
EL. = 110.78
PI = 13+40.00
EL = 107.55'
VC = 120'
K = 117
DS = 55 MPH
(-)3.0733%
(-)4.1030%
PROPOSED GRADE
EXISTING GROUND
PI = 14+75.00
EL = 102.01'
VC = 120'
K = 133
DS = 59 MPH
(-)4.1030%
(-)3.2029%
101.26
-L- STA.14+87.16 =
-Y1- STA.13+44.99
BEGIN TIP PROJECT B-4490
-L- 9+74.93
ELEV. 119.14
℄ MARTIN LUTHER KING JR. FREEWAY
EXISTING GROUND
SEE PLAN SHEET No. 4 & 5
-L-
PI = 16+82.00
EL = 95.38'
VC = 190'
K = 65
DS = 40 MPH
(-)3.2029%
(-)3.2029%
(-)0.3019%
-L- STA.17+75.00 =
-Y2- STA.10+00.00
PROPOSED GRADE
EXISTING GROUND
PI = 20+00.00
EL = 94.42'
VC = 120'
K = 198
DS = 73 MPH
94.52
(-)0.3019%
(+)0.3056%
BM 80 ELEVATION = 93.57'
N477462 E2033833
-L- STATION 20+10.00 394' LEFT
RR SPIKE IN BASE OF 30" GUM
3@14' X 9' RCBC
SEE PLAN SHEETS No. 5 & 6

CULVERT HYDRAULIC DATA

DRAINAGE AREA	= 25.90	SQ.MI.
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 4000	CFS
DESIGN HW ELEVATION	= 100.6	FT
100 YEAR DISCHARGE	= 4400	CFS
100 YEAR HW ELEVATION	= 101.53	FT
OVERTOPPING FREQUENCY	= 2 (+)	YRS
OVERTOPPING DISCHARGE	= 1900	CFS
OVERTOPPING ELEVATION	= 94.8	FT

PROJECT REFERENCE NO.	SHEET NO.
B-4490	18

ROADWAY DESIGN ENGINEER — SEAL 19563, NORTH CAROLINA PROFESSIONAL ENGINEER, TIMOTHY SCOTT HAYES. DocuSigned by: Jim Hayes 5/2/2016 3861351E178740D...

HYDRAULICS ENGINEER — SEAL 039785, NORTH CAROLINA PROFESSIONAL ENGINEER, Craig A. Freeman Jr. DocuSigned by: Craig A. Freeman Jr. 5/2/2016 DBC12B13D3EE4F8...

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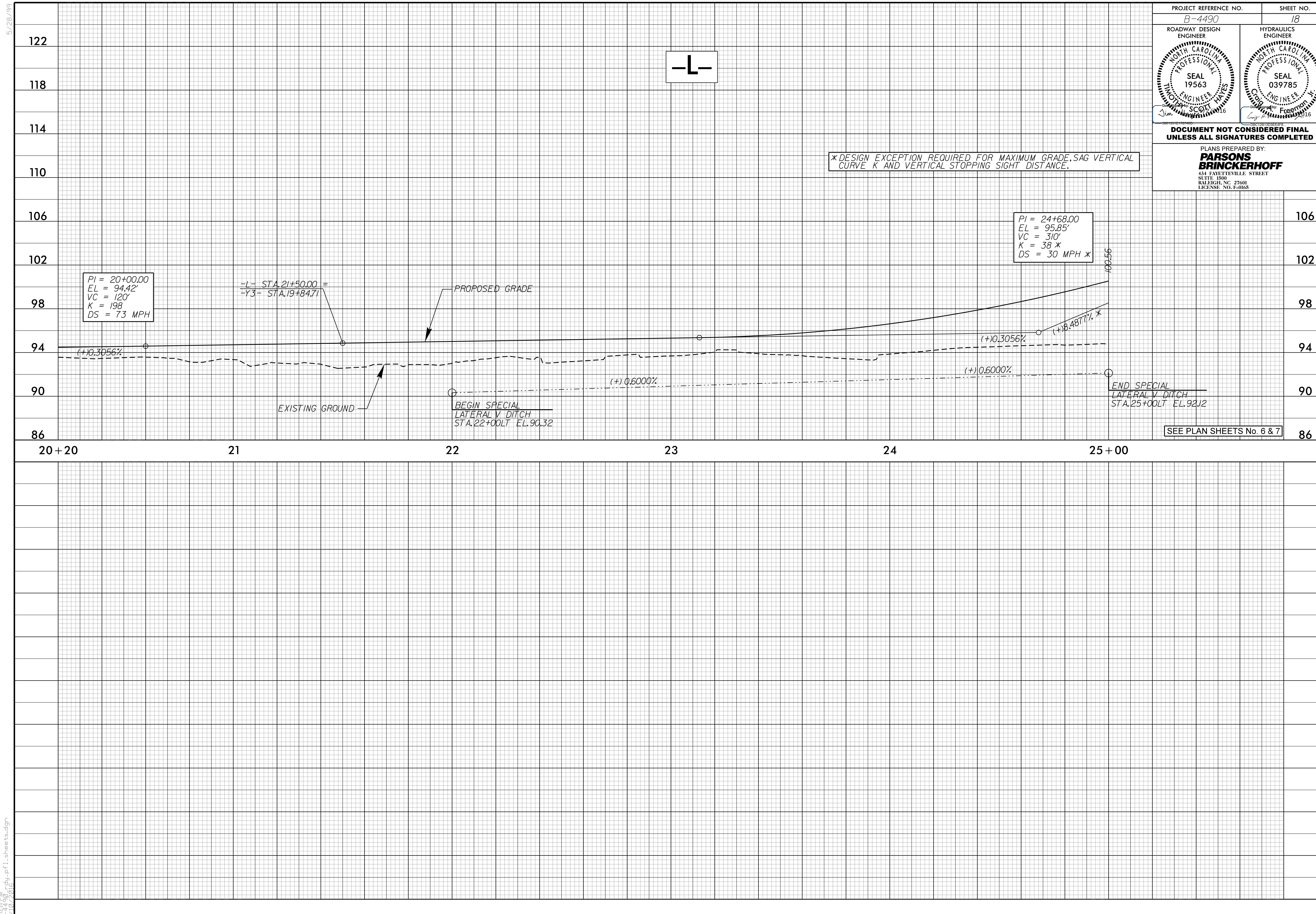

5/28/99
5:12:11 PM
R-4490_rdy_pfl_sheets.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-4490	19

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAYES — DocuSigned by: Jim Hayes 5/2/2016 — 3801351E178740D...

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 039785 ENGINEER Craig A. Freeman Jr. — DocuSigned by: Craig A. Freeman Jr. 5/2/2016 — DBC12B13D3EE4F8...

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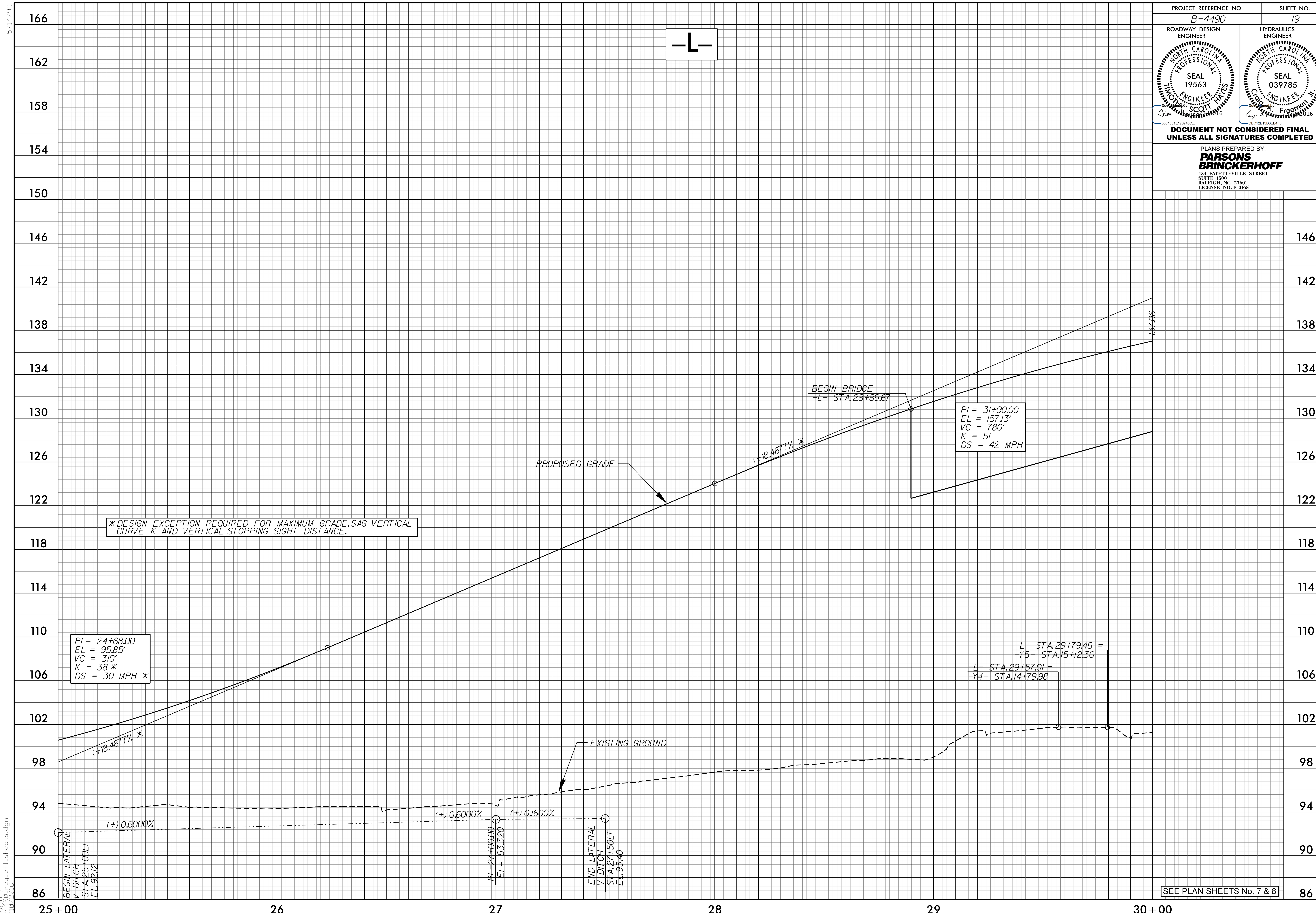

PROJECT REFERENCE NO.	SHEET NO.
B-4490	20

ROADWAY DESIGN ENGINEER — SEAL 19563, NORTH CAROLINA PROFESSIONAL ENGINEER, TIMOTHY SCOTT HAYES

HYDRAULICS ENGINEER — SEAL 039785, NORTH CAROLINA PROFESSIONAL ENGINEER, Craig A. Freeman, Jr.

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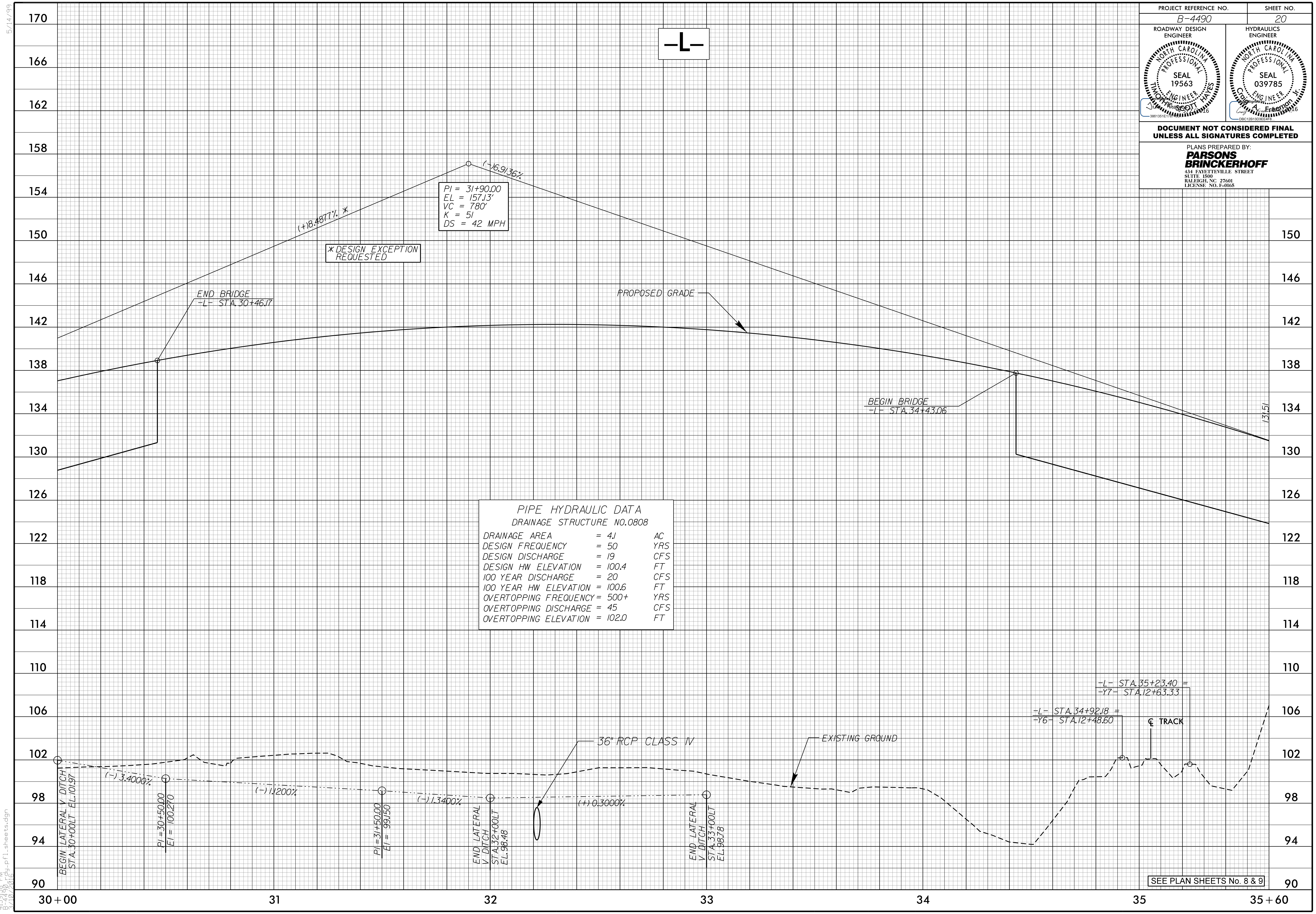
-L-



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.0808

DRAINAGE AREA	=	41	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	19	CFS
DESIGN HW ELEVATION	=	100.4	FT
100 YEAR DISCHARGE	=	20	CFS
100 YEAR HW ELEVATION	=	100.6	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	45	CFS
OVERTOPPING ELEVATION	=	102.0	FT

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4490	21

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAGS

Digitally signed by Timothy Scott Hags
Date: 2016.05.16

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039785 ENGINEER Christopher A Freeman

Digitally signed by Christopher A Freeman
Date: 2016.05.16

DBC12B13DBE4F8...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:

PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

-L-

END BRIDGE
-L- STA. 35+72.31

PI = 31+90.00
EL = 157.13'
VC = 780'
K = 51
DS = 42 MPH

(-)6.9136%

(-)6.9136%

PROPOSED GRADE

EXISTING GROUND

(-)6.9136%

PI = 39+20.00
EL = 106.66'
VC = 600'
K = 94
DS = 49 MPH

BM 81 ELEVATION = 106.57'
N476398 E2035550
-L- STATION 39+81.00 56' LEFT
RR SPIKE IN BASE OF 18" HARDWOOD

-L- STA. 39+81.96 =
-Y8- STA. 13+78.06

106.42

(-)10.5275%

(+) 3.3000%

(+) 3.3400%

(+) 3.0400%

BEGIN LATERAL V DITCH
STA. 36+00LT EL. 93.06

PI = 36+50.000
EL = 94.580

PI = 38+00.00
EL = 99.590

END LATERAL V DITCH
STA. 38+50LT EL. 101.240

UNDERCUT SEE SHEETS X-18 AND X-19

SEE PLAN SHEET No. 9 & 10

35+60 36 37 38 39 40 41+00

-L-

-L- 42+75.00
END GRADE
ELEV. 104.79

-L- STA. 43+18.49 =
-Y10- STA. 10+00.00

-L- STA. 43+28.36 =
-Y9- STA. 15+21.03

END TIP PROJECT B-4490
-L- 44+00.00

PROPOSED GRADE

EXISTING GROUND

SEE PLAN SHEET No. 10

41+00 42 43 44 45 46

5:10:25 PM
B-4490_rdy_prf_sheets.dgn
5/10/2016

PROJECT REFERENCE NO.	SHEET NO.
B-4490	22

ROADWAY DESIGN ENGINEER — SEAL 19563, NORTH CAROLINA PROFESSIONAL ENGINEER, TIMOTHY SCOTT HAYES

HYDRAULICS ENGINEER — SEAL 039785, NORTH CAROLINA PROFESSIONAL ENGINEER

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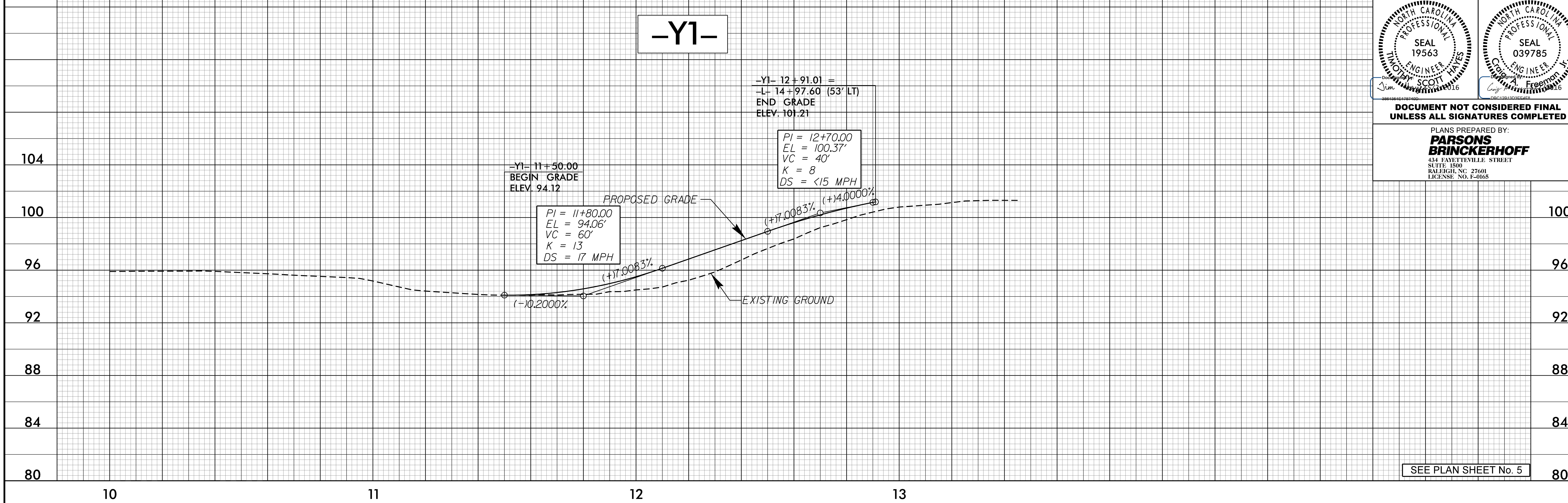

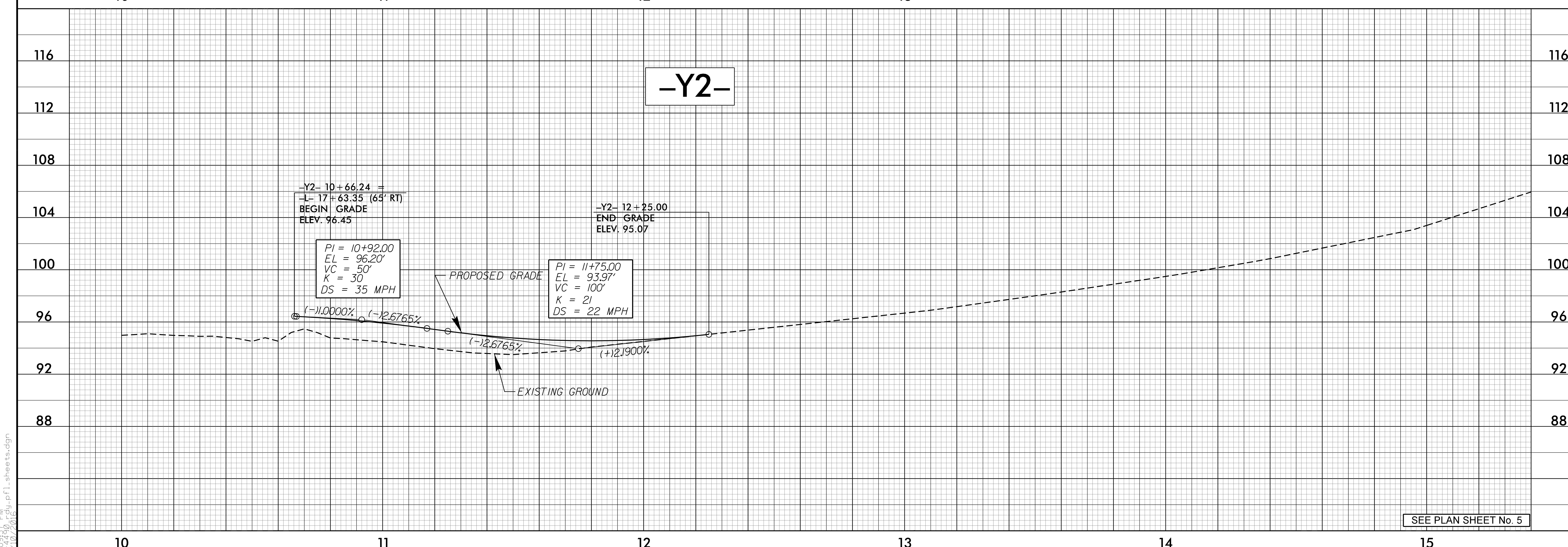

PROJECT REFERENCE NO.	SHEET NO.
B-4490	23

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19563 TIMOTHY SCOTT HAYES

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039785 Craig A. Freeman, Jr.

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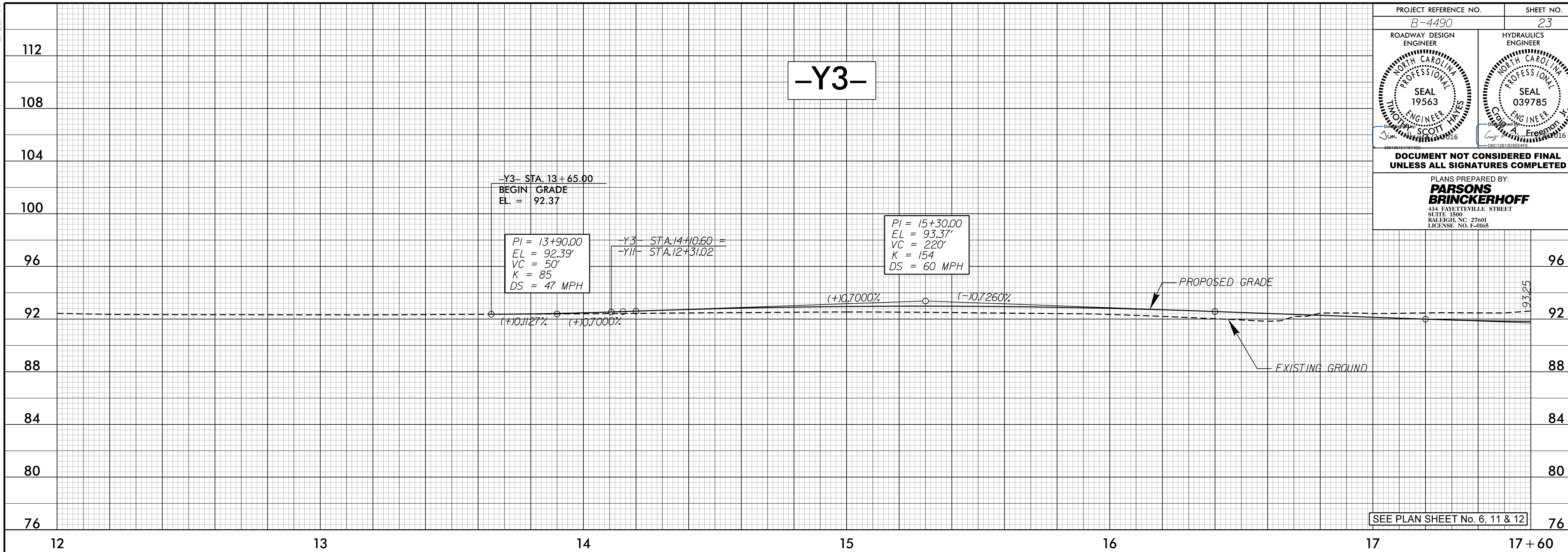
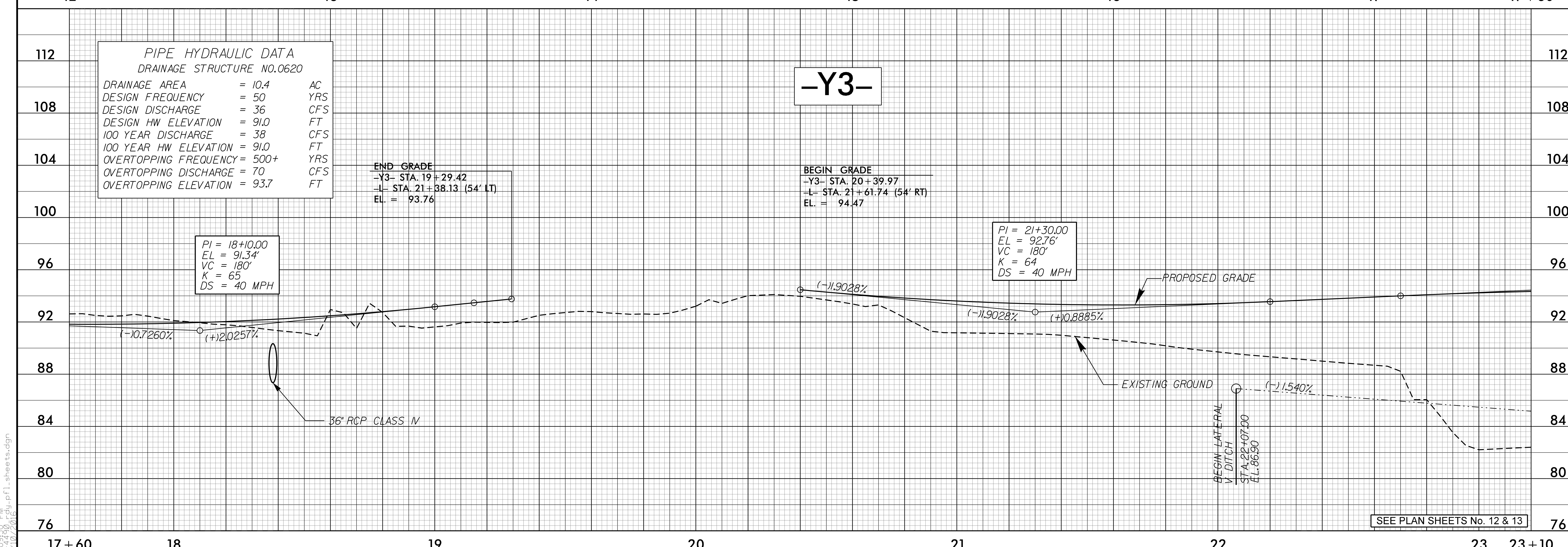
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165





PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.0620

DRAINAGE AREA	= 10.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 36	CFS
DESIGN HW ELEVATION	= 91.0	FT
100 YEAR DISCHARGE	= 38	CFS
100 YEAR HW ELEVATION	= 91.0	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 70	CFS
OVERTOPPING ELEVATION	= 93.7	FT

5/28/99
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B-4490 rdy-pfl sheets.dgn
6/10/2016

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4490	24

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19563 ENGINEER TIMOTHY SCOTT HAIGS

Digitally signed by TIMOTHY SCOTT HAIGS
DN: c=US, o=North Carolina Department of Transportation, ou=Roadway Design Unit, cn=TIMOTHY SCOTT HAIGS, 0.9.2342.19200300.100.1.1=3881351E178740D
Date: 2016.02.10 08:46:16

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039785 ENGINEER Craig A. Fesperman JR

Craig A. Fesperman JR
DN: c=US, o=North Carolina Department of Transportation, ou=Hydraulics Unit, cn=Craig A. Fesperman JR, 0.9.2342.19200300.100.1.1=DBC1B15D5EE4F6
Date: 2016.02.10 08:46:16

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PLANS PREPARED BY:

PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

–Y3–

PI = 23+50.00
EL = 94.71'
VC = 160'
K = 115
DS = 55 MPH

(+)0.8885%

(–)0.5000%

(–)1.540%

(–)3.595%

PI = 24+00LT
El = 83.53

END LATERAL V. DITCH STA. 24+37LT EL. 82.60

PI = 27+27.00
EL = 92.83'
VC = 100'
K = 116
DS = 55 MPH

(–)0.5000%

(+)0.3587%

END GRADE –Y3–
BEGIN MILLING AND RESURFACING –Y3–
–Y3– STA. 28+48.64
EL. = 93.26

SEE PLAN SHEETS No. 13 & 14

23+10 24 25 26 27 28 28+80

112 108 104 100 96 92 88 84 80 76

–Y3–

END MILLING AND RESURFACING –Y3–
–Y3– STA. 30+50.00
EL. = 93.76

SEE PLAN SHEET No. 14

28+80 29 30 31

–Y8–

–Y8– 11+75.00
BEGIN GRADE
ELEV. 103.88

PI = 12+25.00
EL = 103.67'
VC = 100'
K = 17
DS = 20 MPH

(–)0.4080%

(+)5.4702%

PROPOSED GRADE

EXISTING GROUND

–Y8– 13+29.31 = –L– 39+55.48 (41' LT)
END GRADE
ELEV. 109.38

SEE PLAN SHEET No. 10

11 12 13

5:08:23 PM
B-4490_rdy_prfl_sheets.dgn
2/10/2016

PROJECT REFERENCE NO.	SHEET NO.
B-4490	25

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19563 TIMOTHY SCOTT HAYES

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039785 Craig A. Freeman, Jr.

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PLANS PREPARED BY:
PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
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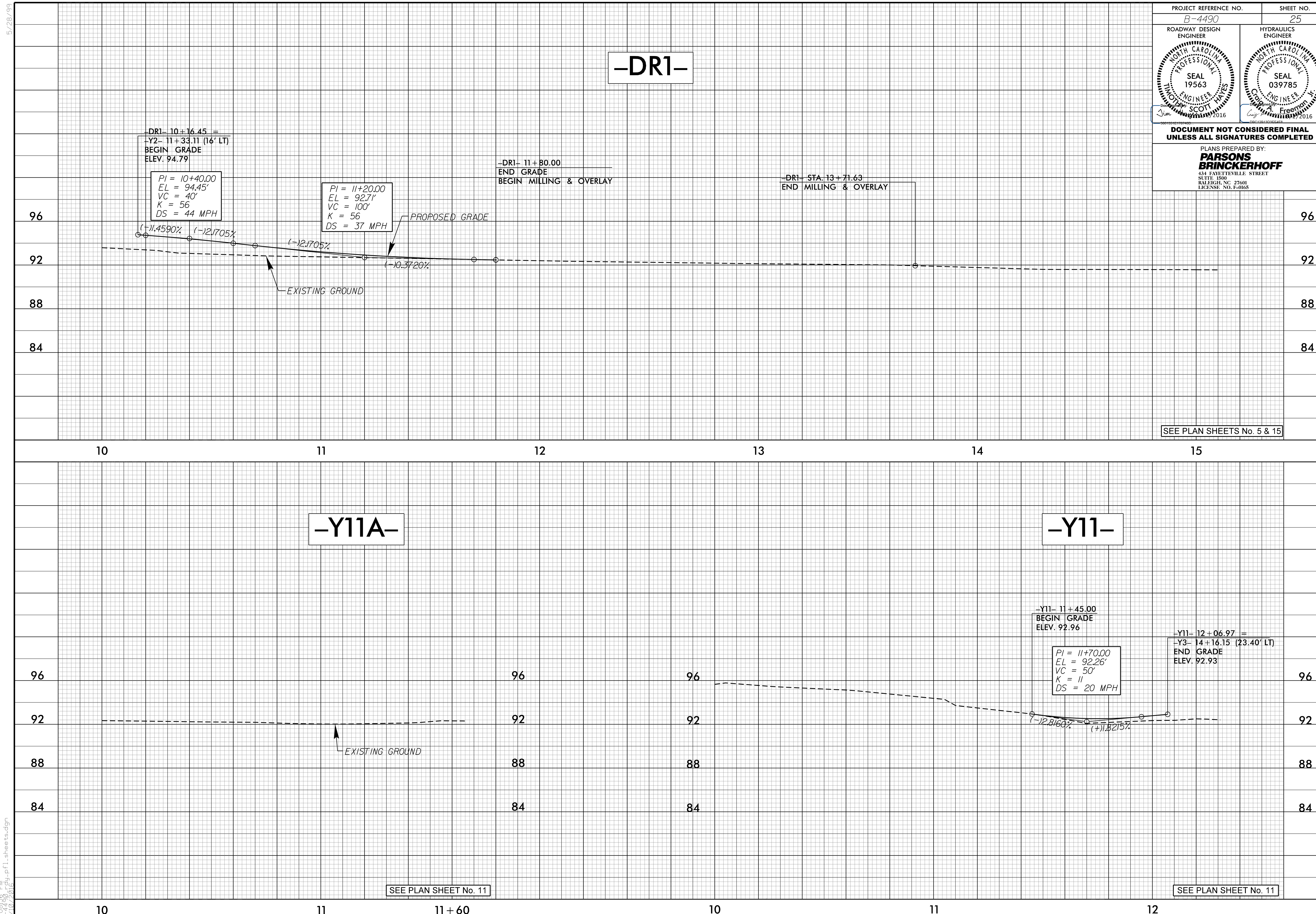
RALEIGH, NC 27601
LICENSE NO. F-0165


-DR1-
-DR1- 10+16.45 =
-Y2- 11+33.11 (16' LT)
BEGIN GRADE
ELEV. 94.79
PI = 10+40.00
EL = 94.45'
VC = 40'
K = 56
DS = 44 MPH
PI = 11+20.00
EL = 92.71'
VC = 100'
K = 56
DS = 37 MPH
-DR1- 11+80.00
END GRADE
BEGIN MILLING & OVERLAY
-DR1- STA. 13+71.63
END MILLING & OVERLAY
PROPOSED GRADE
EXISTING GROUND
(-)11.4590%
(-)12.1705%
(-)12.1705%
(-)0.3720%
96
92
88
84
10
11
12
13
14
15
SEE PLAN SHEETS No. 5 & 15
-Y11A-
EXISTING GROUND
SEE PLAN SHEET No. 11
11+60
-Y11-
-Y11- 11+45.00
BEGIN GRADE
ELEV. 92.96
PI = 11+70.00
EL = 92.26'
VC = 50'
K = 11
DS = 20 MPH
-Y11- 12+06.97 =
-Y3- 14+16.15 (23.40' LT)
END GRADE
ELEV. 92.93
(-)2.8160%
(+)1.8215%
SEE PLAN SHEET No. 11