09/08/99

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

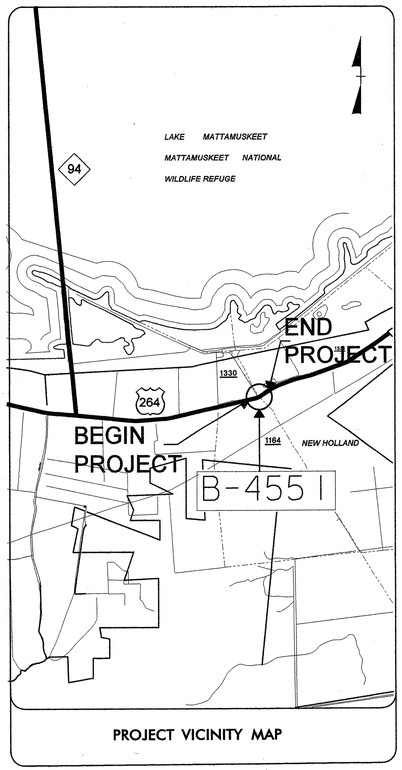
HYDE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4551	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33764.1.1	BRSTP-0264(23)	P.E.
33764.2.1	BRSTP-0264(23)	R/W & UTILITY
33764.3.1	BRSTP-0264(23)	CONST.

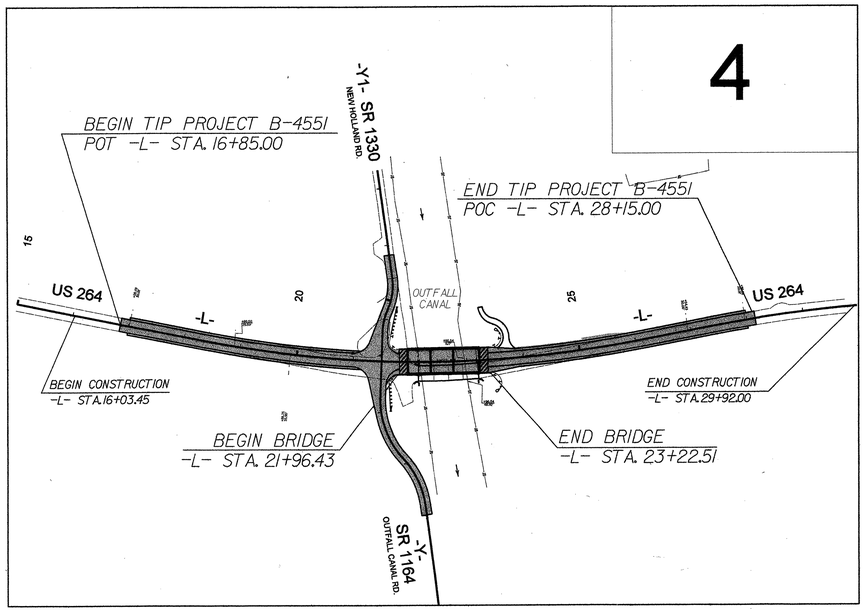
LOCATION: BRIDGE NO. 45 OVER A CANAL ON US 264

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



PROJECT VICINITY MAP

TO SWAN QUARTER



TO ENGELHARD

NCDOT Contact: Ron E. McCollum, PE
Roadway Design-Engineering Coordination

TIP PROJECT: B-4551

CONTRACT: C202661

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011 = 2790
ADT 2031 = 4170
DHV = 10 %
D = 60 %
T = 5% (TTST 2%, DUAL 3%)
V = 60 MPH

DESIGN EXCEPTION
SUPERELEVATION RATE = e_{max} 4%

FUNC CLASS = MINOR ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4551 = 0.190 MILE

LENGTH STRUCTURE TIP PROJECT B-4551 = 0.024 MILE

TOTAL LENGTH TIP PROJECT B-4551 = 0.214 MILE

Prepared In the Office of
DYER, RIDDLE, MILLS & PRECOURT, INC. (DRMP)
5950 FAIRVIEW RD., SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289 NC LICENSE NO. C-2213

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 20, 2009

LETTING DATE:
OCTOBER 18, 2011

James E. Beck, PE
PROJECT ENGINEER

Garrett S. McCaffety, EI
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21656 ENGINEER ROGER S. WEAD

SIGNATURE: 7/28/11

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK

SIGNATURE: 7/26/2011 P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

R:\Roadway\Proj\B455LRdy_tsh.dgn
10:59:00 AM
7/26/2011

PROJECT REFERENCE NO.	SHEET NO.
B-4551	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK 6-2-2011

INDEX OF SHEETS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-30-08

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

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 Hyde County Water,

Embarq,

Tideland Electric Membership Cooperative

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.

EFF. 07-18-06
REV. 01-02-07

2006 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 July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
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
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

R:\Roadway\Proj\B4551_Rdy_SHT_1-A.dgn
8/10/11 AM

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
B-4551	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- 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
- Curb Cut Future Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

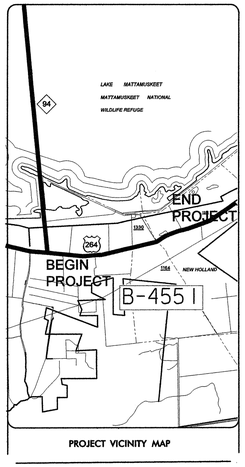
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
B-4551	1-C
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET B-4551



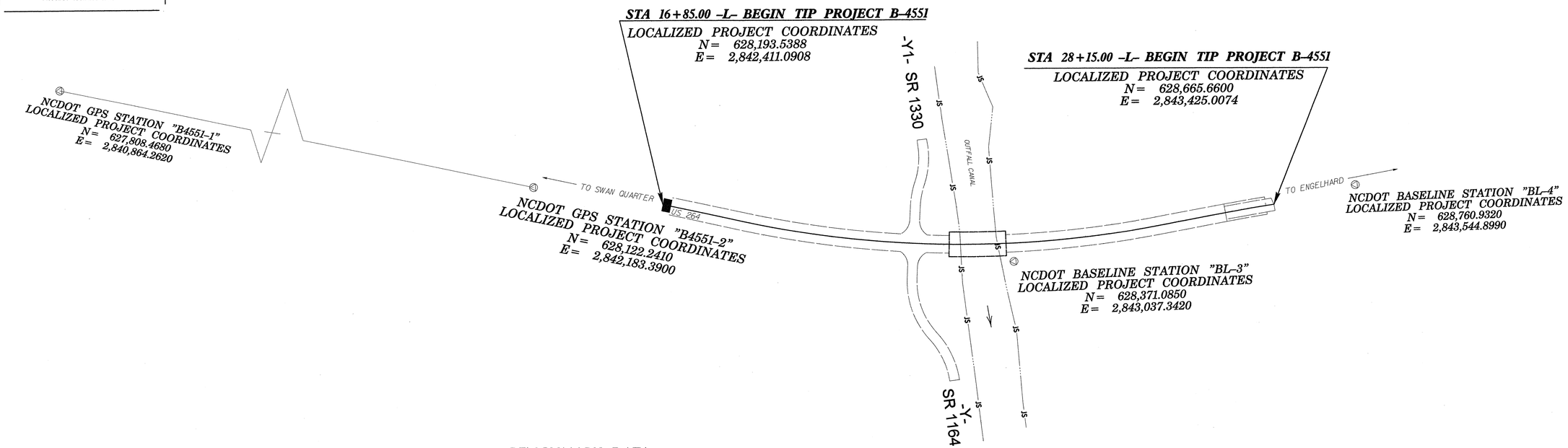
PROJECT VICINITY MAP

CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B45511	(B5551-1)	627808.4680	2840864.2620	2.21	OUTSIDE PROJECT LIMITS	
B45512	(B4551-2)	628122.2410	2842183.3900	2.52	OUTSIDE PROJECT LIMITS	
BL3	(BL-3)	628371.0850	2843037.3420	6.82	23+32.07	33.73 RT
BL4	(BL-4)	628760.9320	2843544.8990	2.79	29+66.52	17.90 LT

NC GRID
NAD 83/95



BENCHMARK DATA

```
**********************************************
BM1Ø        ELEVATION = 5.37
N 628431       E 2842873
L STATION 22+09 92 LEFT
RR SPIKE IN BASE 24 INCH PINE
**********************************************
```

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4551-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 627808.469(ft) EASTING: 2840864.263(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988399 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4551-1" TO -L- STATION 16+85.00 IS N 76°01'15" E 1,594.04' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT FILE: b4551_ls_control_081218.txt

SITE CALIBRATION PARAMETERS HAVE NOT BEEN DETERMINED 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 UTILIZING GLOBAL POSITIONING SYSTEM. NETWORK FOR GPS "B4551-1" ESTABLISHED FROM NGS ONLINE POSITIONING USER SERVICE (OPUS)*

NOTE: DRAWING NOT TO SCALE

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4551	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 28615 ENGINEER JAMES E. BECK 7/26/2011

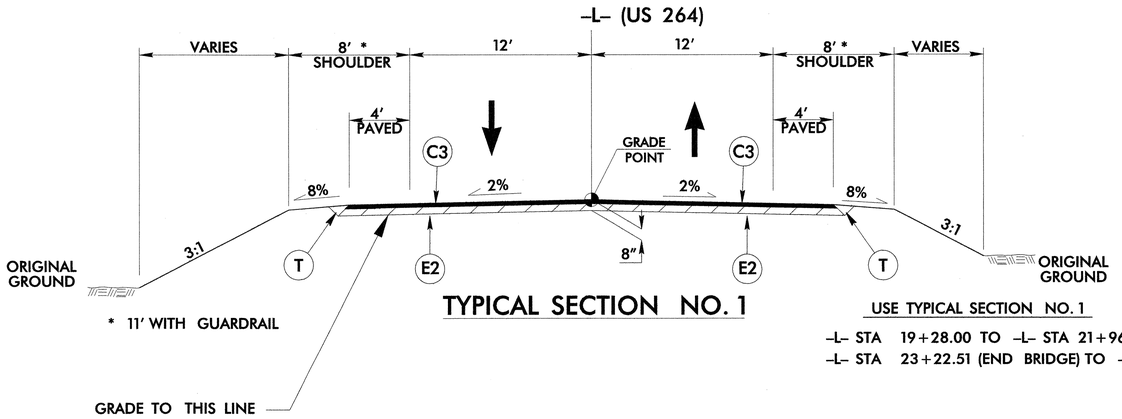
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 7/26/11

PAVEMENT SCHEDULE

C1	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
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 LESS THAN 1.5" IN DEPTH OR GREATER THAN 2.0" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 5.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 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 5.5" IN DEPTH.
J1	6" AGGREGATE BASE COURSE.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING. (SEE WEDGING DETAIL, THIS SHEET)

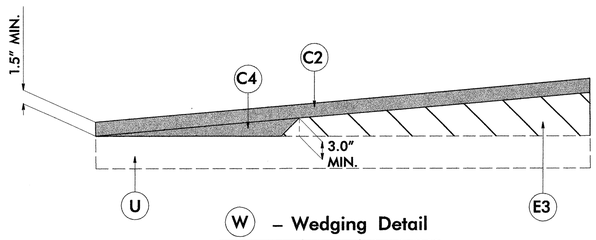
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA 19+28.00 TO -L- STA 21+96.43 (BEGIN BRIDGE)
-L- STA 23+22.51 (END BRIDGE) TO -L- STA 25+93.00



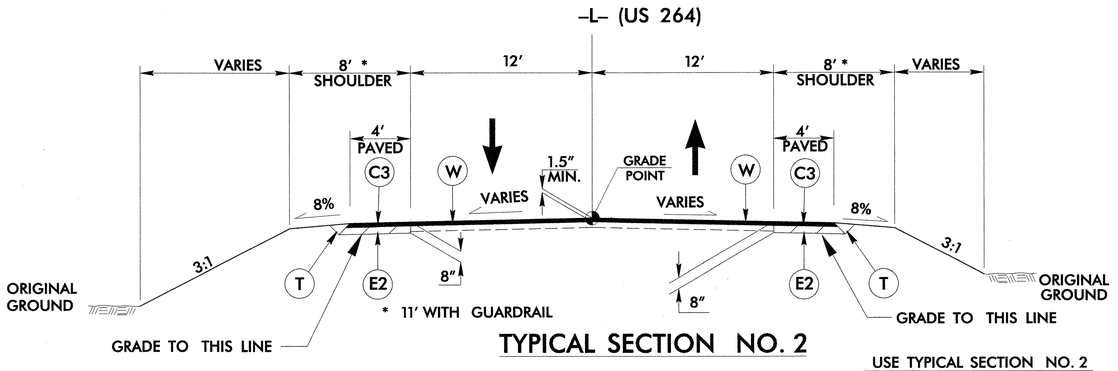
W - Wedging Detail

TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING (INCLUDES FEATHERING)

-L- STA 16+85.00 (BEGIN PROJECT) TO -L- STA 17+00.00

TRANSITION FROM TYPICAL SECTION NO. 2 TO EXISTING (INCLUDES FEATHERING)

-L- STA 28+00.00 TO -L- STA 28+15.00 (END PROJECT)



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA 17+00.00 TO -L- STA 19+28.00
-L- STA 25+93.00 TO -L- STA 28+00.00

R:\Roadway\Proj\B4551_rdy_typ.dgn
10:21:57 AM
7/26/2011

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4551	2-A

ROADWAY DESIGN ENGINEER

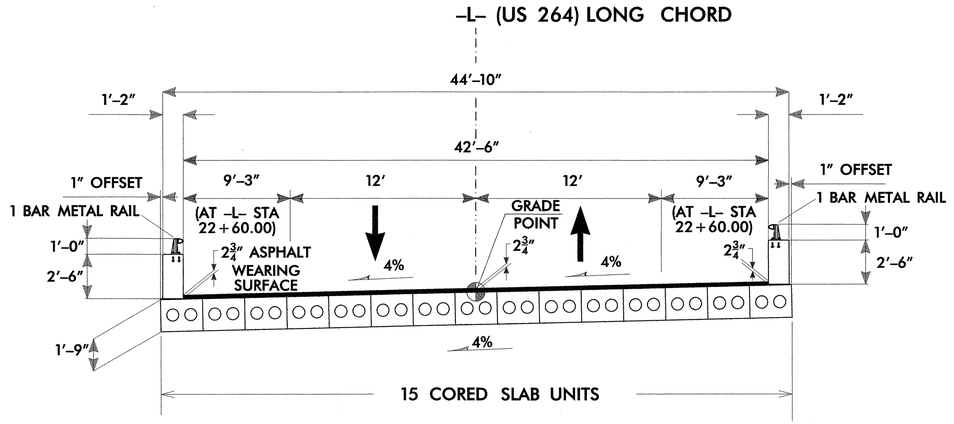
NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK

7/24/2011

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

7/24/11



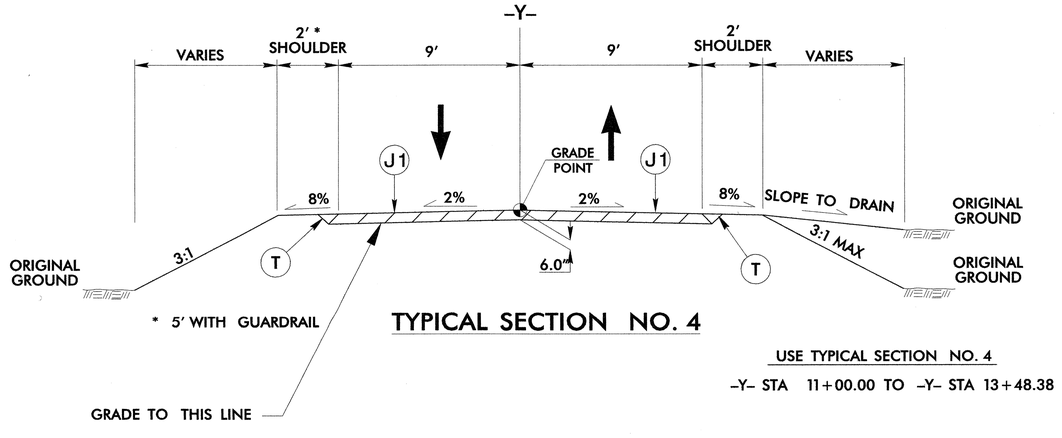
TYPICAL SECTION NO. 3

(NOTE: BRIDGE IS CENTERED ON THE LONG CHORD BETWEEN –L– STA 21+96.43 AND –L– STA 23+22.51 AND IS PARALLEL TO THE TANGENT TO THE –L– CURVE AT –L– STA 22+59.47)

USE TYPICAL SECTION NO. 3

–L– STA 21+96.43 (BEGIN BRIDGE) TO –L– STA 23+22.51 (END BRIDGE)

PAVEMENT SCHEDULE	
C1	2.5″ SF9.5A
C2	1.5″ S9.5B
C3	3.0″ TYPE S9.5B
C4	VAR. DEPTH S9.5B
E1	4.0″ B25.0B
E2	5.0″ B25.0B
E3	VAR. DEPTH TYPE B25.0B
J1	6″ A.B.C.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

–Y– STA 11+00.00 TO –Y– STA 13+48.38

R:\Roadway\Proj\B4551rdy_typ.dgn
10:25:46 AM
7/26/2011

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4551	2-B

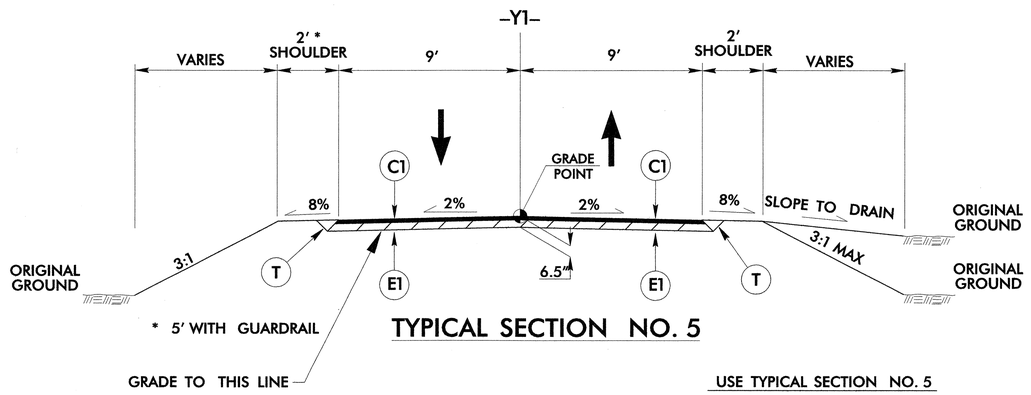
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK
7/26/2011

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22698 ENGINEER CLARK S. MORRISON
7/24/11

DRMP
ENGINEERS · PLANNERS · SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
5950 FAIRVIEW RD., SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-2213



TYPICAL SECTION NO. 5

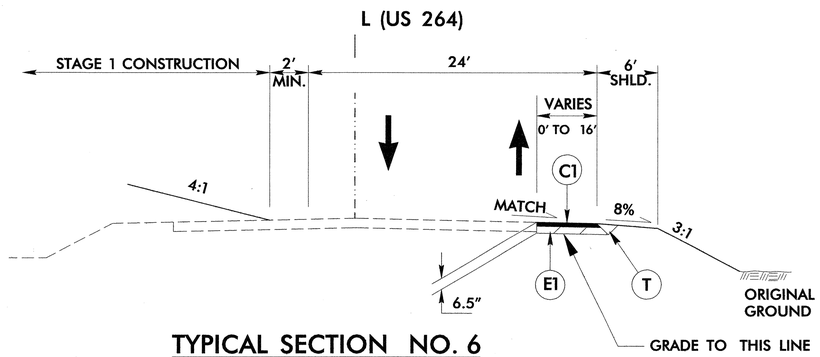
USE TYPICAL SECTION NO. 5

-Y1- STA 14+32.40 TO -Y1- STA 15+65.78

TRANSITION FROM TYPICAL SECTION NO. 5 TO EXISTING (INCLUDES FEATHERING)

-Y1- STA 15+65.78 TO -Y1- STA 15+80.78

PAVEMENT SCHEDULE	
C1	2.5" SF9.5A
C2	1.5" S9.5B
C3	3.0" TYPE S9.5B
C4	VAR. DEPTH S9.5B
E1	4.0" B25.0B
E2	5.0" B25.0B
E3	VAR. DEPTH TYPE B25.0B
J1	6" A.B.C.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING



TYPICAL SECTION NO. 6
TEMPORARY PAVEMENT

USE TYPICAL SECTION NO. 6

-L- STA 16+03.45 TO -L- STA 21+64.00
-L- STA 23+36.79 TO -L- STA 29+92.00

R:\Roadway\Proj\B455l_rdy_typ.dgn
10:35:25 AM
7/26/2011

PROJECT REFERENCE NO.	SHEET NO.
B-4551	2-C
RW SHEET NO.	

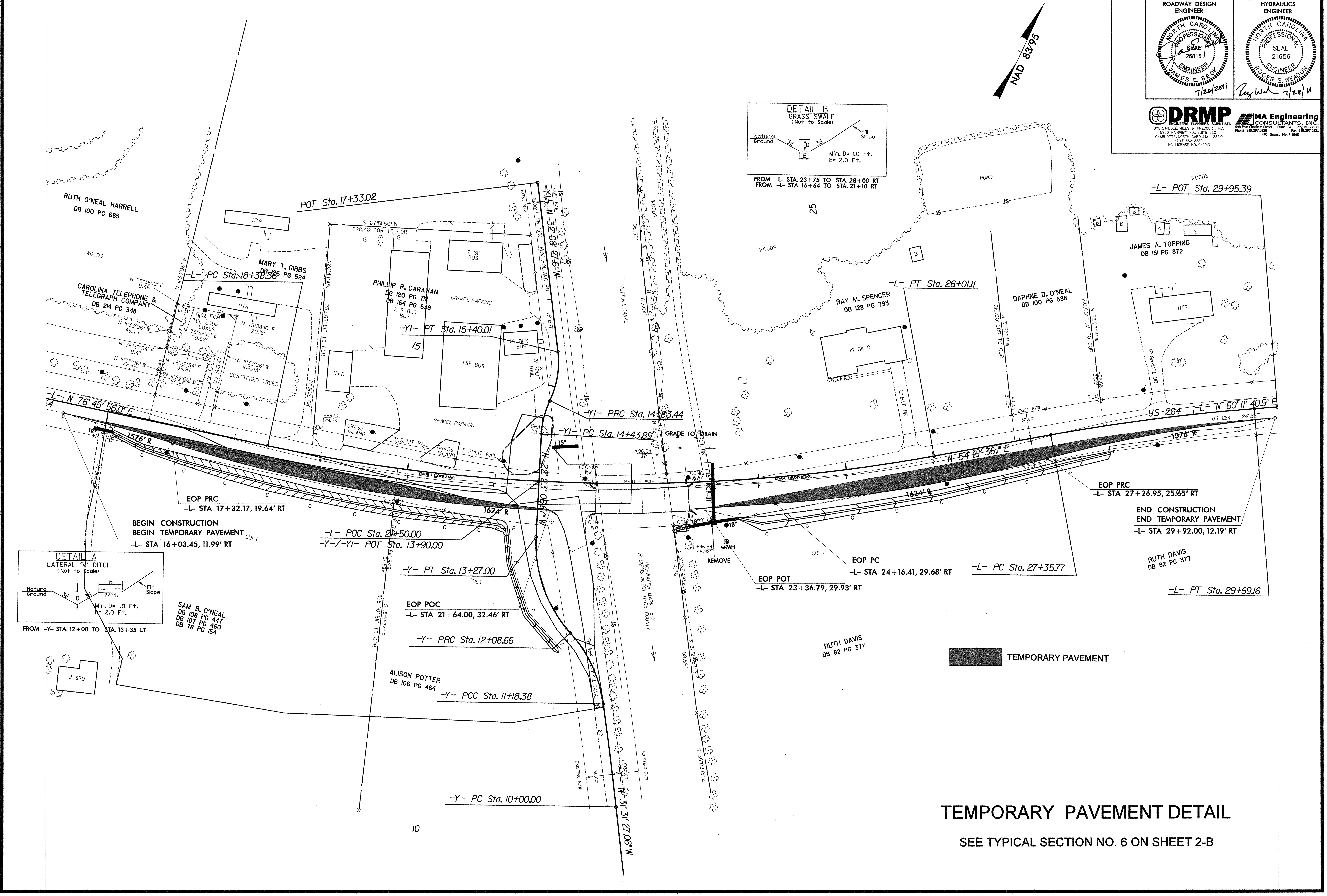
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26815 JAMES E. BECK 7/26/2011

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21656 ROGER S. WEADON 7/28/11

DRMP ENGINEERS · PLANNERS · SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
5950 FAIRVIEW RD., SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-2213

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
NC License No. F-0560

REVISIONS

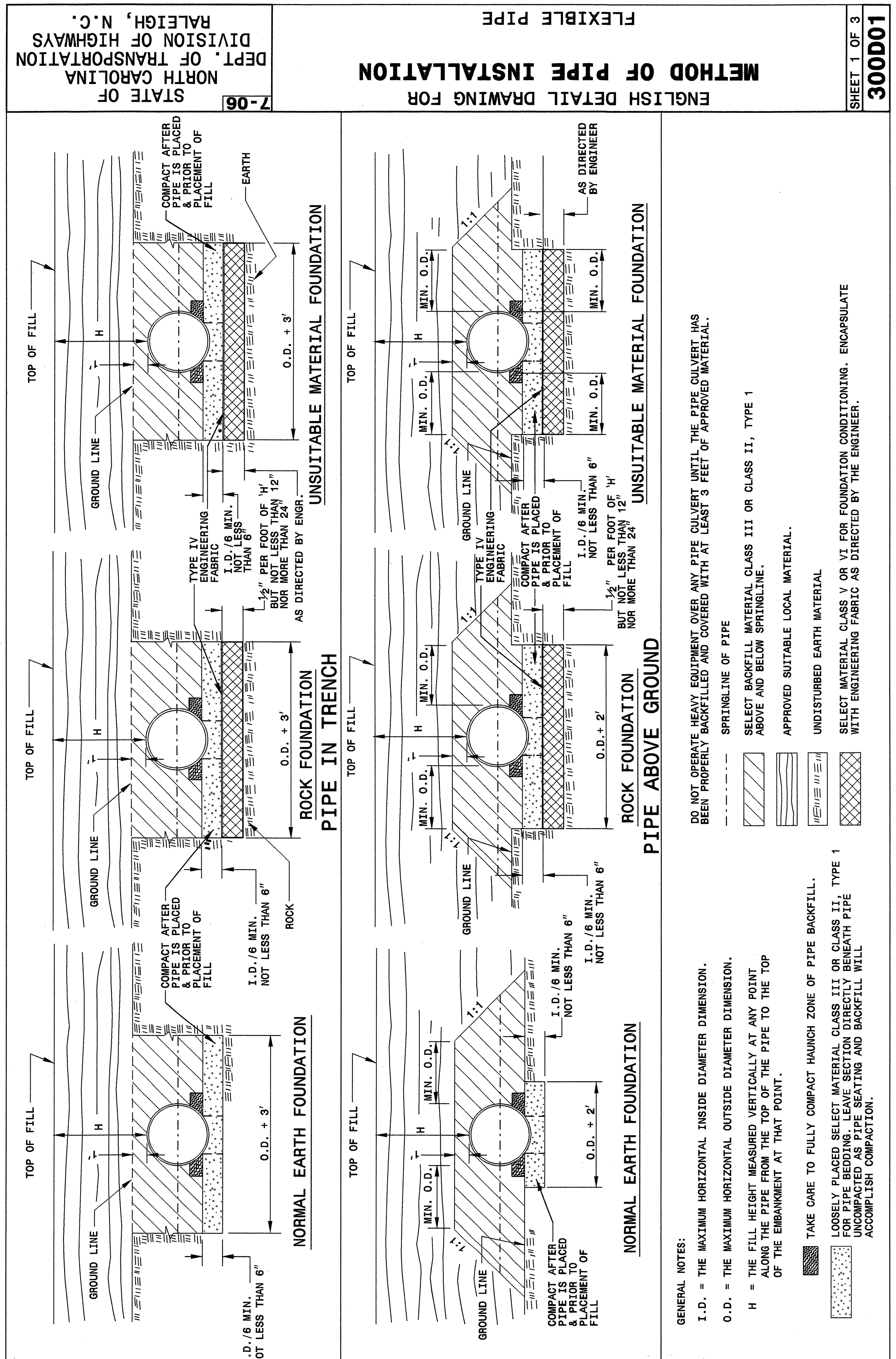


TEMPORARY PAVEMENT DETAIL

SEE TYPICAL SECTION NO. 6 ON SHEET 2-B

R:\Roadway\Proj\B4551_Rdy_dtl.dgn
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4551	2-D



TOP OF FILL
GROUND LINE
H
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
I.D./6 MIN. NOT LESS THAN 6"
NORMAL EARTH FOUNDATION
ROCK
ROCK FOUNDATION
PIPE IN TRENCH
TYPE IV ENGINEERING FABRIC
EARTH
UNSUITABLE MATERIAL FOUNDATION
PIPE ABOVE GROUND
AS DIRECTED BY ENGINEER
GENERAL NOTES:
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.
TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.
SPRINGLINE OF PIPE
SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.
APPROVED SUITABLE LOCAL MATERIAL.
UNDISTURBED EARTH MATERIAL
SELECT MATERIAL, CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

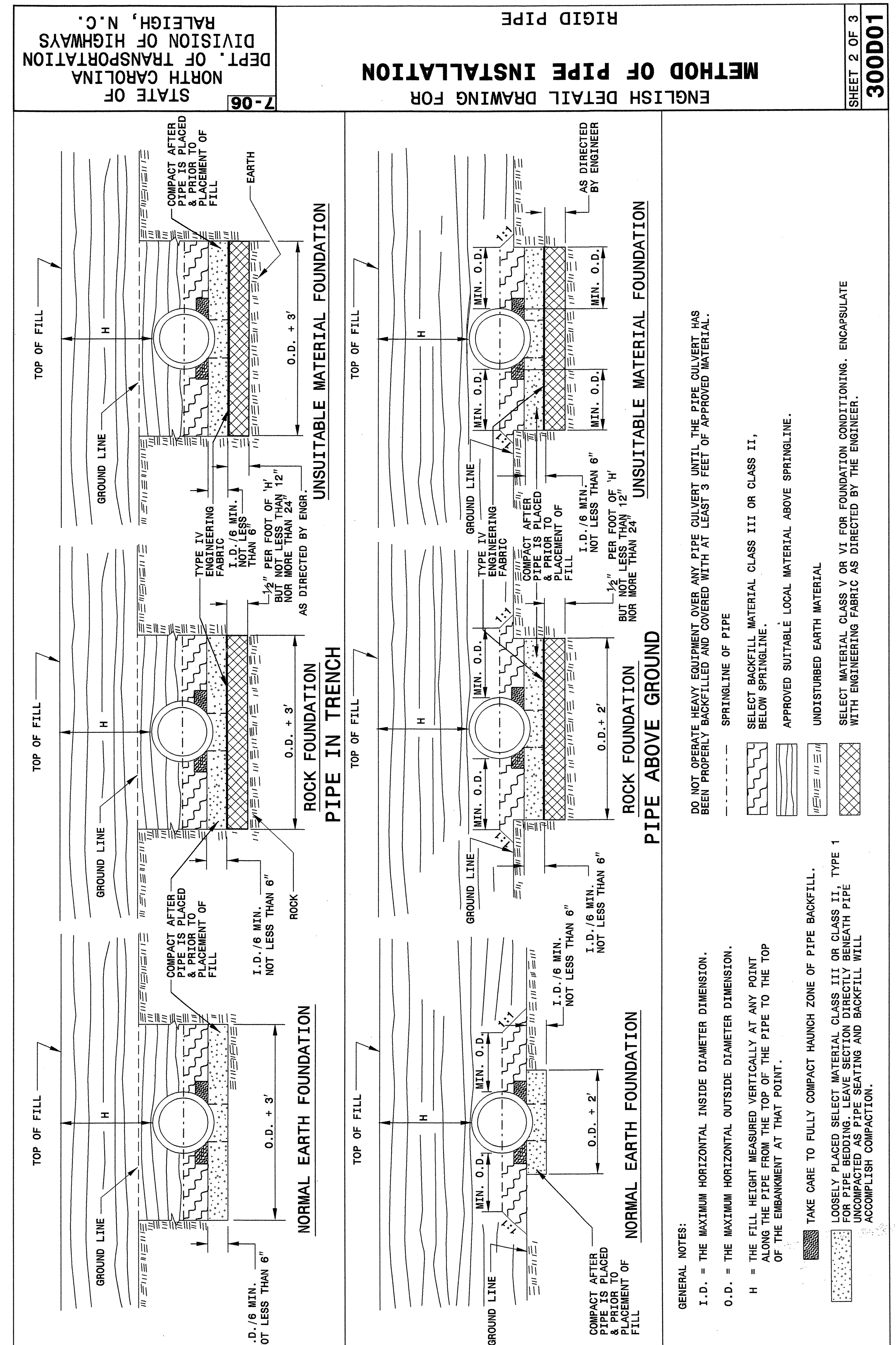
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 3
300D01



TOP OF FILL
GROUND LINE
H
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
I.D./6 MIN. NOT LESS THAN 6"
NORMAL EARTH FOUNDATION
ROCK
ROCK FOUNDATION
PIPE IN TRENCH
TYPE IV ENGINEERING FABRIC
EARTH
UNSUITABLE MATERIAL FOUNDATION
PIPE ABOVE GROUND
AS DIRECTED BY ENGINEER
GENERAL NOTES:
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.
TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.
SPRINGLINE OF PIPE
SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.
APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.
UNDISTURBED EARTH MATERIAL
SELECT MATERIAL, CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

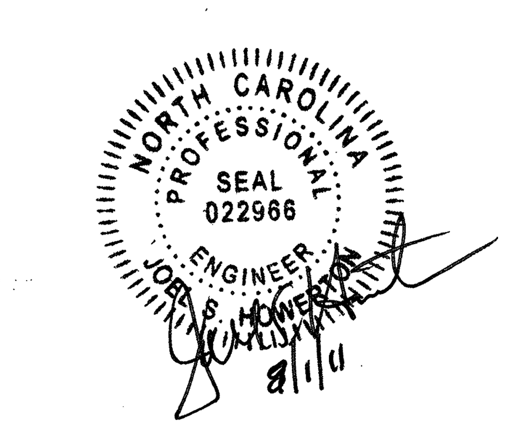
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 3
300D01



PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/30/09
FILE SPEC: c/ericward/stds/stdstodetails/30001/0300d01.dgn

30-JUL-2009 08:49
s:\contracts\contracts\special details\ericward\stds\06' stds to special details\30001\0300d01.dgn
jhowerton AT FS237501

5/14/99

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

7-06

ENGLISH DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3

300D01

FLEXIBLE PIPE

Round Corrugated Steel Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	204	256			
15	12	162	204			
18	12	135	169	239		
21	12	115	145	204		
24	12	100	126	178		
30	12	79	100	142		
36	12	65	83	117	152	
42	12	55	70	100	130	160
48	12	48	61	87	113	139
54	12		54	77	100	123
60	12			69	90	111
66	12				81	100
72	12				74	91
78	12					81
84	12					69

Round Corrugated Aluminum Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	123	155	218	281	344
15	12	98	123	174	224	275
18	12	81	102	144	187	228
21	12	69	87	123	160	195
24	12	60	76	108	139	171
27	12		67	95	123	151
30	12		60	85	111	136
36	12		50	71	92	113
42	12			60	78	96
48	12			52	68	84
54	12			46	50	74
60	12				50	62
66	12					51
72	12					41

** FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

HDPE - * (Minimum fill) 2′ for pipe diameters ≥ 12″ and ≤ 60″
* (Maximum fill) 20′ for pipe diameters ≤ 24″
17′ for pipe diameters ≥ 30″ and ≤ 60″

PVC - * (Minimum fill) 2′ for pipe diameters ≥ 12″ and ≤ 36″
* (Maximum fill) 30′ for pipe diameters ≥ 12″ and ≤ 36″

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

CSP - AASHTO M36
CAAP - AASHTO M196
HDPE - AASHTO M294
PVC - ASTM F949 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1′ MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

RIGID PIPE

RCP - * (Minimum fill) 1′ for Class IV & CLASS V
2′ for Class III & Class II

* (Maximum fill) 10′ - Class II pipe
20′ - Class III pipe
30′ - Class IV pipe
40′ - Class V pipe

(For fills > 40′ & < 80′ use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1′ MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

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

7-06

ENGLISH DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3

300D01

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER

ORIGINAL BY: KKampf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/5/11
FILE SPEC/ericward/stds/stdstodetails/300d/0300d01.dgn

SEE PLATE FOR TITLE

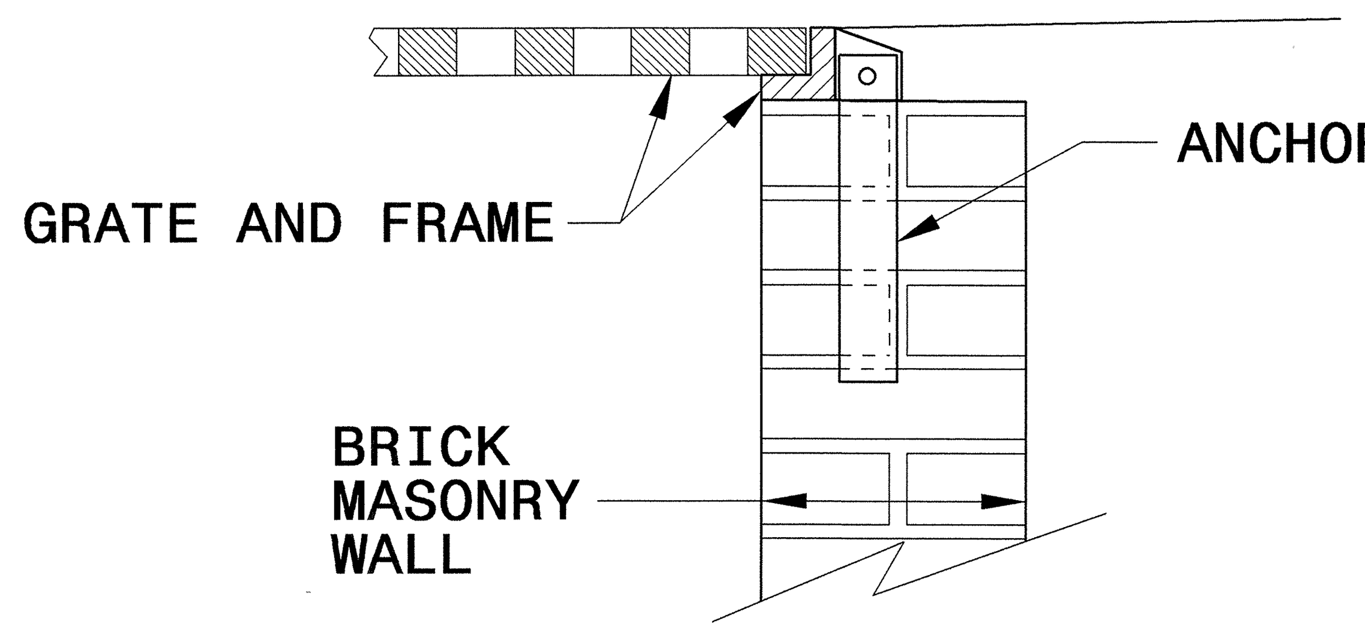
PROJECT REFERENCE NO. B-4551
SHEET NO. 2-E

PROJECT REFERENCE NO.	SHEET NO.
B-4551	2-F

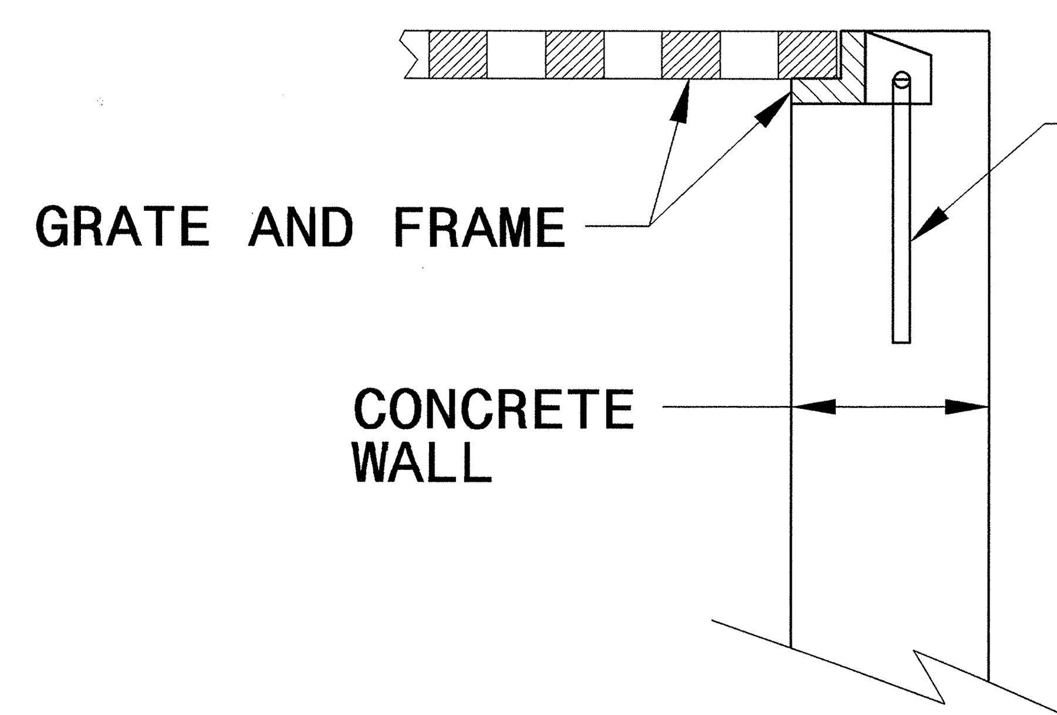
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

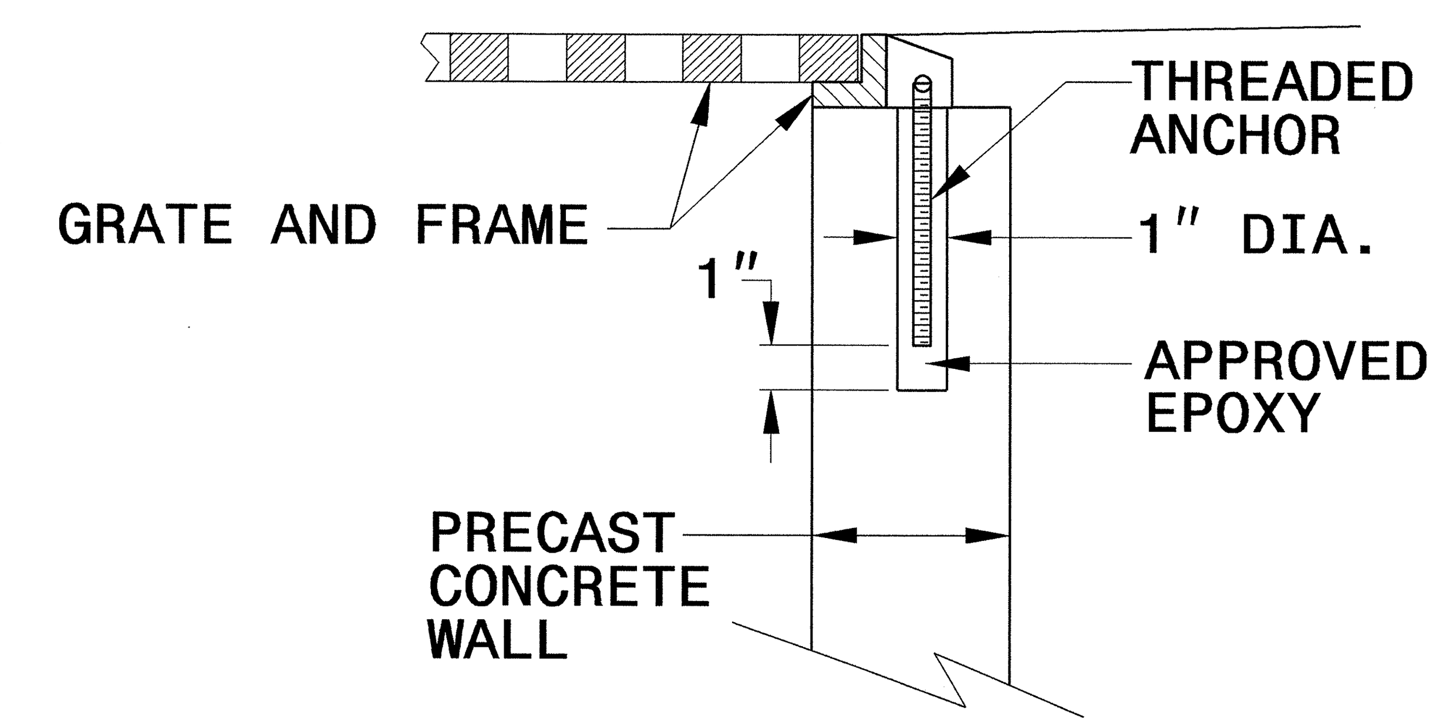
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



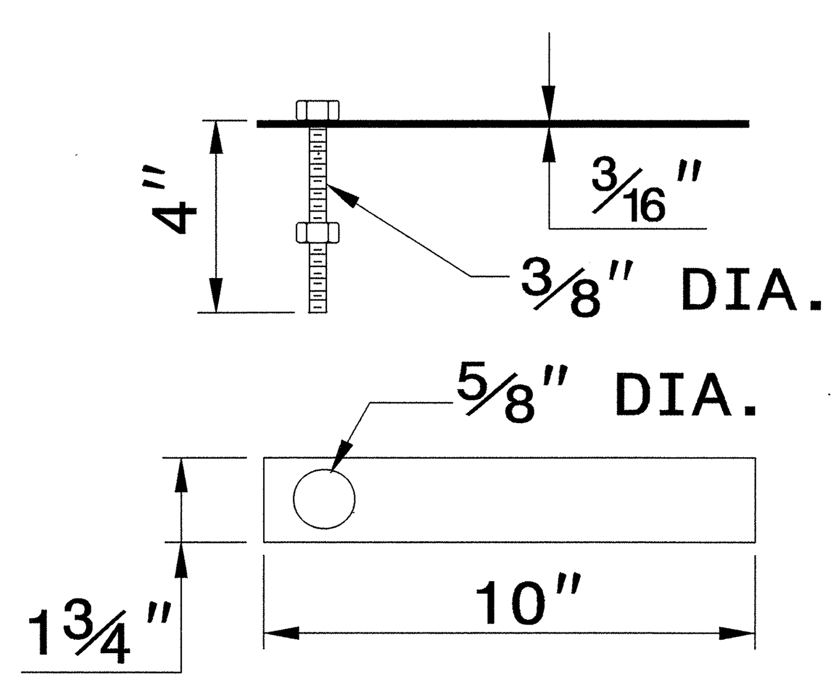
CONCRETE CONSTRUCTION



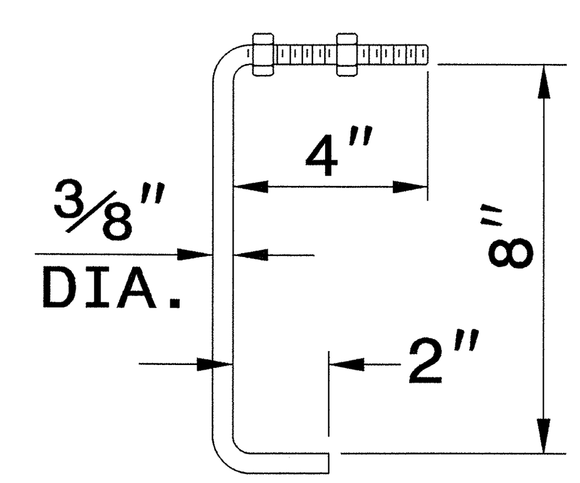
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

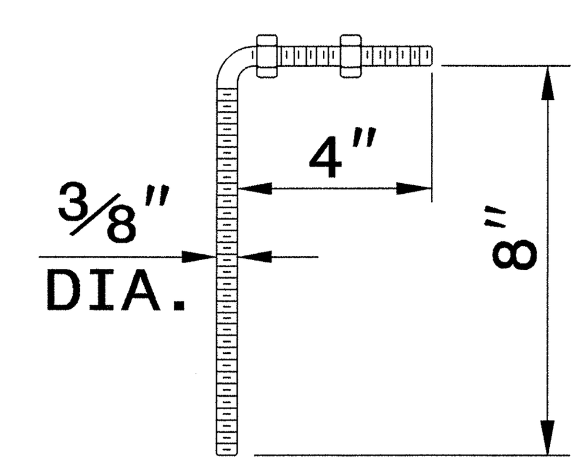
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



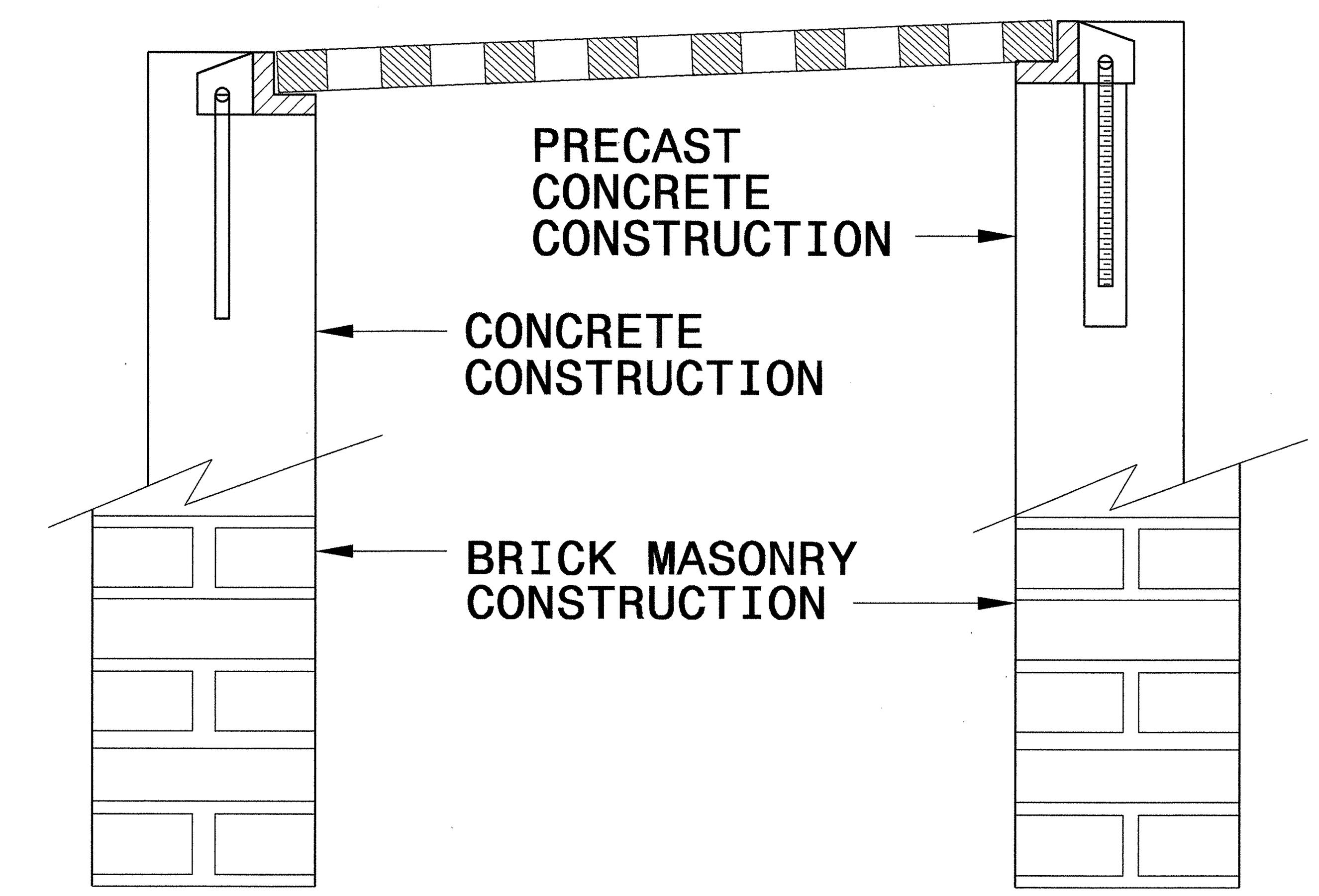
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY:	2006 STD 840.25	DATE:	07/18/06
MODIFIED BY:	E.E. WARD	DATE:	9/25/06
CHECKED BY:		DATE:	
FILE SPEC.:			

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

PROJECT REFERENCE NO.	SHEET
B-4551	2-G

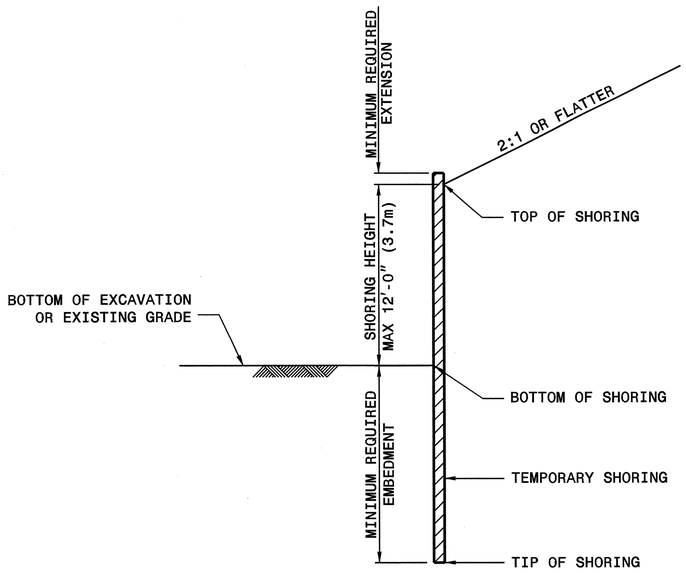
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32471 ENGINEER JINYOUNG PARK

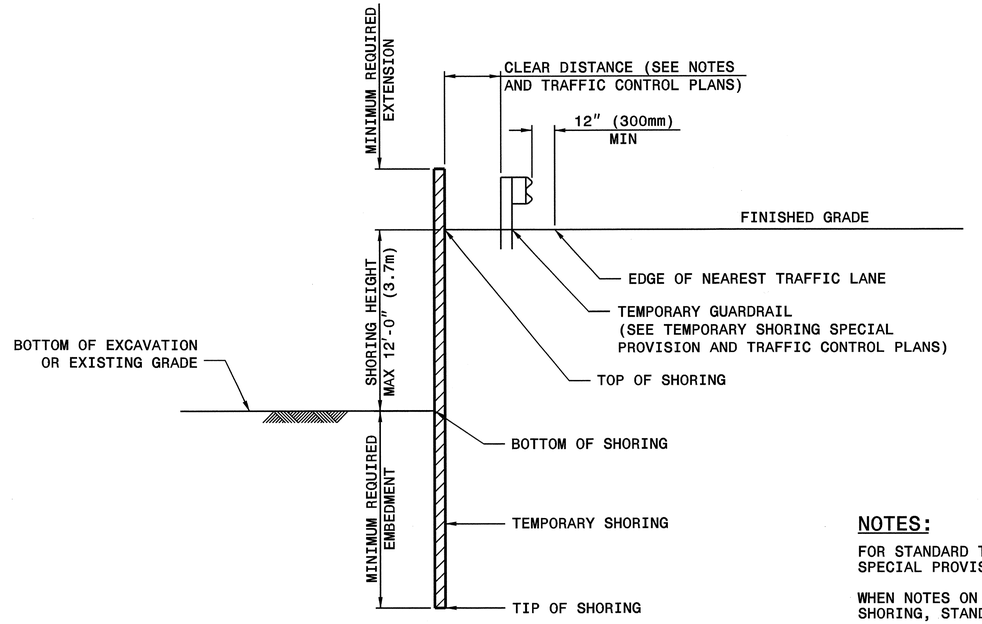
SIGNATURE DATE

ENGINEER

SIGNATURE DATE



SLOPE CASE



SURCHARGE CASE

GROUNDWATER CONDITION	SHORING HEIGHT FT (m)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT: SHEET PILES: MINIMUM REQUIRED EMBEDMENT FT (m)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT: SHEET PILES: MINIMUM REQUIRED SECTION MODULUS IN^3/FT (cm^3/m)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT: H PILES WITH TIMBER LAGGING: MINIMUM REQUIRED EMBEDMENT FT (m): HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)	SURCHARGE CASE WITH TRAFFIC IMPACT: SHEET PILES: MINIMUM REQUIRED EMBEDMENT FT (m)	SURCHARGE CASE WITH TRAFFIC IMPACT: SHEET PILES: MINIMUM REQUIRED SECTION MODULUS IN^3/FT (cm^3/m)	SURCHARGE CASE WITH TRAFFIC IMPACT: H PILES WITH TIMBER LAGGING: MINIMUM REQUIRED EMBEDMENT FT (m): HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)
GROUNDWATER ELEVATION BELOW TIP OF SHORING	< 6 (1.8)	7.5 (2.3)	3.0 (161)	8.0 (2.4)	8.0 (2.4)	8.0 (2.4)	11.0 (3.4)	10.0 (538)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)
	7 (2.1)	8.5 (2.6)	4.5 (242)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)	12.0 (3.7)	12.0 (645)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)
	8 (2.4)	10.0 (3.0)	6.5 (349)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)	12.5 (3.8)	14.0 (753)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)
	9 (2.7)	11.0 (3.4)	9.5 (511)	--	12.0 (3.7)	12.0 (3.7)	13.5 (4.1)	16.5 (887)	--	12.5 (3.8)	12.5 (3.8)
	10 (3.0)	12.5 (3.8)	13.0 (699)	--	--	13.5 (4.1)	14.0 (4.3)	19.5 (1048)	--	13.5 (4.1)	13.5 (4.1)
	11 (3.4)	13.5 (4.1)	17.0 (914)	--	--	14.5 (4.4)	15.0 (4.6)	22.5 (1210)	--	--	14.5 (4.4)
	12 (3.7)	15.0 (4.6)	21.5 (1156)	--	--	16.0 (4.9)	16.0 (4.9)	25.5 (1371)	--	--	15.5 (4.7)
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND TIP OF SHORING	< 6 (1.8)	11.5 (3.5)	4.5 (242)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)	16.0 (4.9)	12.0 (645)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)
	7 (2.1)	13.0 (4.0)	7.0 (376)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)	17.0 (5.2)	14.5 (780)	14.5 (4.4)	14.5 (4.4)	14.5 (4.4)
	8 (2.4)	15.0 (4.6)	10.0 (538)	--	15.0 (4.6)	15.0 (4.6)	18.0 (5.5)	17.0 (914)	--	15.5 (4.7)	15.5 (4.7)
	9 (2.7)	17.0 (5.2)	14.0 (753)	--	17.0 (5.2)	17.0 (5.2)	19.0 (5.8)	20.0 (1075)	--	17.0 (5.2)	17.0 (5.2)
	10 (3.0)	18.5 (5.6)	19.5 (1048)	--	--	18.5 (5.6)	20.0 (6.1)	23.5 (1263)	--	--	18.5 (5.6)
	11 (3.4)	20.5 (6.3)	26.0 (1398)	--	--	--	21.0 (6.4)	28.0 (1505)	--	--	20.0 (6.1)
	12 (3.7)	22.5 (6.9)	33.0 (1774)	--	--	--	22.0 (6.7)	33.0 (1774)	--	--	21.5 (6.6)

NOTE: MINIMUM REQUIRED EXTENSION IS 6" (150mm) FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" (800 mm) FOR "SURCHARGE CASE WITH TRAFFFIC IMPACT".

NOTES:

FOR STANDARD TEMPORARY SHORING, SEE TEMPORARY SHORING SPECIAL PROVISION.

WHEN NOTES ON PLANS DO NOT PROHIBIT STANDARD TEMPORARY SHORING, STANDARD TEMPORARY SHORING IS OPTIONAL.

SUBMIT "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 14 DAYS BEFORE BEGINNING SHORING CONSTRUCTION. UP TO THREE LOCATIONS MAY BE INCLUDED ON EACH SELECTION FORM.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING CONDITIONS:
1) MAXIMUM SHORING HEIGHT IS 12'-0" (3.7m).
2) TRAFFIC SURCHARGE IS 240 PSF (11.5 KPA) MAXIMUM OR BACKSLOPE IS 2:1 (H:V) OR FLATTER.
3) BOTTOM OF EXCAVATION OR EXISTING GRADE IN FRONT OF SHORING IS 6:1 (H:V) SLOPE OR FLATTER.
4) H PILE SPACING IS 6'-0" (1.8m).
5) H PILE EMBEDMENT DEPTHS ARE FOR DRIVEN PILES.
6) TIMBER LAGGING IS A MINIMUM OF 3" (75mm) THICK.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
TOTAL UNIT WEIGHT = 120 PCF (18.8 KN/M^3)
FRICTION ANGLE = 30 DEGREES
COHESION = 0 PSF (0 KPA)
GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE THE BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT WITHIN THE EMBEDMENT DEPTH.

VERIFY GROUNDWATER ELEVATION BEFORE BEGINNING SHORING CONSTRUCTION.

IF THE CLEAR DISTANCE IS LESS THAN THE 3'-0", USE THE "SURCHARGE CASE WITH TRAFFIC IMPACT".

AT THE CONTRACTOR'S OPTION, H PILE EMBEDMENT DEPTHS FOR PILES SET IN DRILLED HOLES MAY BE REDUCED BY 25%. FOR PILE EXCAVATION, SEE TEMPORARY SHORING SPECIAL PROVISION.

CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF THE SHORING. COLLECT AND DIRECT RUNOFF AWAY FROM SHORING.

CONTACT THE ENGINEER IF MINIMUM REQUIRED EMBEDMENT IS NOT ACHIEVED.

PREPARED BY: J. PARK	DATE: 05 / 2011
REVIEWED BY: J. BATTS	DATE: 05 / 2011

GEOTECHNICAL ENGINEERING UNIT

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD TEMPORARY SHORING

REVISIONS

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

PROJECT REFERENCE NO.	SHEET
33764.1.1 (B-4551)	2-H

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22171 JINYOUNG PARK

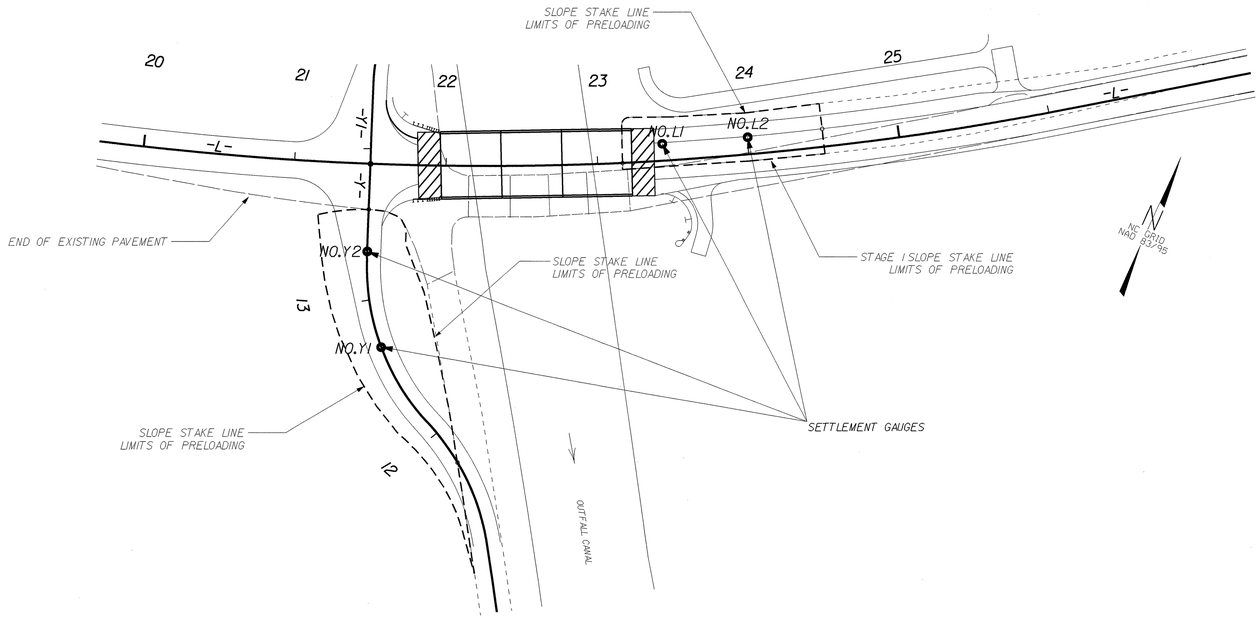
SIGNATURE DATE

ENGINEER

SIGNATURE

SETTLEMENT GAUGE LOCATIONS

NOT TO SCALE



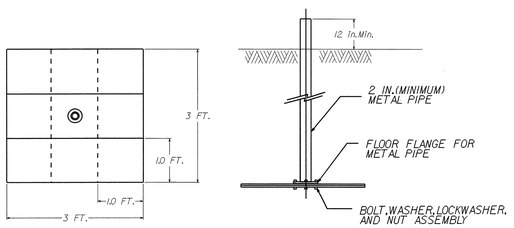
SETTLEMENT GAUGE LOCATIONS		
GAUGE NO.	STATION	OFFSET
L1	-L- 23 + 45.00 ±	10 FT. ±, LT
L2	-L- 24 + 00.00 ±	10 FT. ±, LT
Y1	-Y- 12 + 70.00 ±	0 FT ±
Y2	-Y- 13 + 30.00 ±	0 FT ±

NOTES

1. THE USE OF EITHER THE WOOD BASE OR THE STEEL BASE SETTLEMENT GAUGE SHALL BE THE CONTRACTOR'S OPTION.
2. SETTLEMENT GAUGES SHALL BE INSTALLED BEFORE ANY FILL IS PLACED.
3. SETTLEMENT GAUGE ELEVATIONS ARE TO BE DETERMINED AND RECORDED WEEKLY BY THE RESIDENT ENGINEER.
4. THE INITIAL ELEVATION OF THE SETTLEMENT GAUGE PLATE (AT TOP OF PLATE) SHALL BE DETERMINED AT THE TIME OF INSTALLATION ALONG WITH THE EMBANKMENT ELEVATION. WHEN NEW SECTIONS OF THE PIPE ARE ADDED, ELEVATIONS SHALL BE RECORDED AT THE TOP OF EXISTING PIPE AND AT THE TOP OF THE NEW PIPE. THIS IS TO TAKE INTO ACCOUNT INTERIM SETTLEMENT, VARIABLE PIPE LENGTHS, AND THREAD LENGTHS IN COUPLING.
5. RESULTS OF SETTLEMENT GAUGE READINGS SHALL BE FORWARDED TO MR. K.J. KIM, EASTERN REGIONAL GEOTECHNICAL MANAGER, WITHIN THREE DAYS.

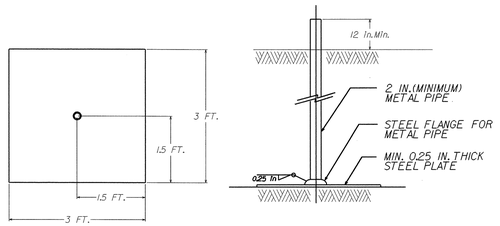
SETTLEMENT GAUGE DETAILS

NOT TO SCALE



DETAIL OF WOOD BASE

SIX - 1IN.X 1FT. X 3 FT. PLANKS OF LUMBER OR TWO PIECES 1IN. X 3 FT.X 3 FT.EXTERIOR GRADE PLYWOOD,SECURELY FASTENED AND THEN COATED WITH WOOD PRESERVATIVE



DETAIL OF STEEL BASE

SETTLEMENT GUAGE QUANTITIES	
EMBANKMENT SETTLEMENT GAUGES	4 EA.

PREPARED BY: JYP	DATE: 03/2010
REVIEWED BY: JRB	DATE: 03/2010

GEOTECHNICAL ENGINEERING UNIT

☒ *EASTERN REGIONAL OFFICE*

☐ *WESTERN REGIONAL OFFICE*

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EMBANKMENT MONITORING DETAIL

REVISIONS

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

RD248630 4/25/2011 B4551_GEO_RDWY_Preloading Plan btkyle RD-Oce860-34

PROJECT REFERENCE NO.	SHEET
33764.1.1 (B-4551)	2-I

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER JINYOUNG PARK

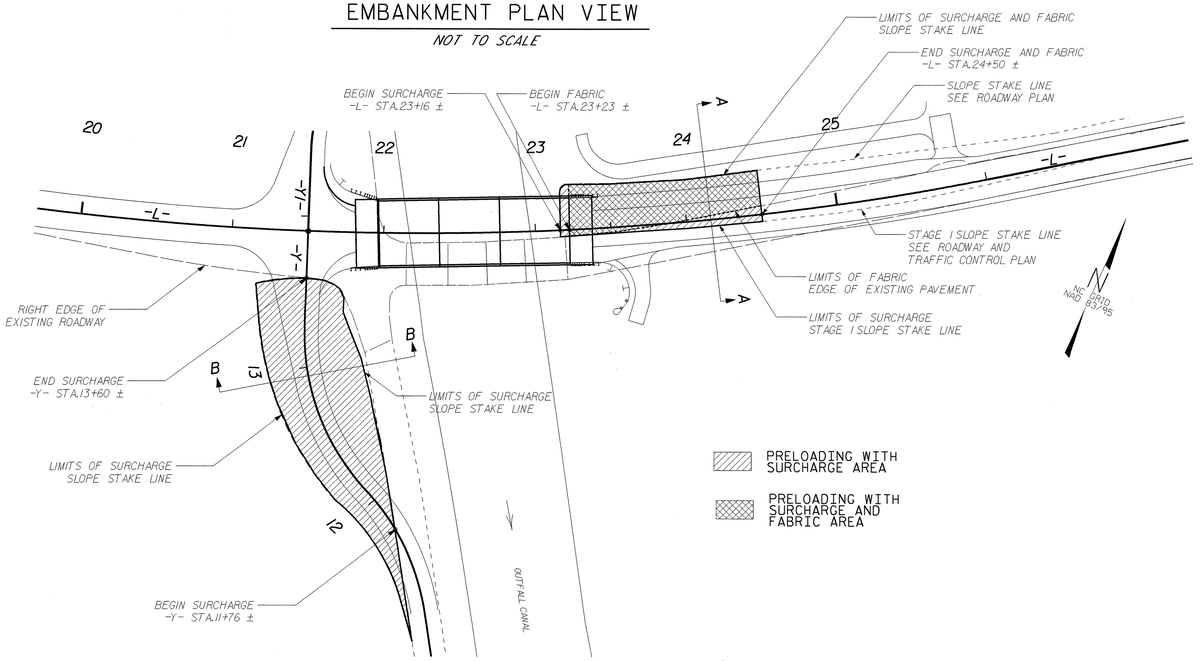
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

EMBANKMENT PLAN VIEW

NOT TO SCALE



FABRIC FOR EMBANKMENT STABILIZATION		
LINE	Begin Station	End Station
-L-	23 + 23 ±	24 + 50 ±

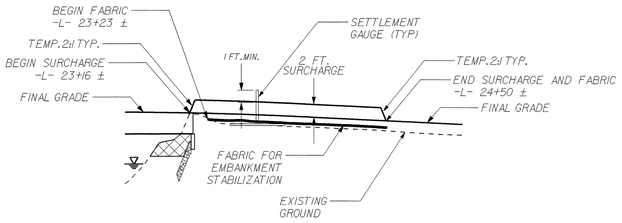
PRELOADING WITH SURCHARGE				
LINE	STATIONS		MINIMUM SURCHARGE	MINIMUM WAITING PERIOD
	FROM	TO		
- L -	23 + 16 ±	24 + 50 ±	2.0 FT.	1 MONTH DURING STAGE 1
- Y -	11 + 76 ±	13 + 60 ±	2.0 FT.	1 MONTH DURING STAGE 1

NOTES

1. FABRIC FOR EMBANKMENT STAILIZATION SHALL BE PLACED AT THE LOCATIONS LISTED IN THE FABRIC FOR EMBANKMENT STABILIZATION TABLE.
2. AT FABRIC LOCATIONS, ALL STUMPS SHALL BE CUT CLOSE TO THE GROUND AND/OR WATER SURFACE. GRUBBING IS NOT TO BE PERFORMED IN THE FABRIC PLACEMENT AREAS.
3. MACHINE DIRECTION OF THE FABRIC SHALL BE PERPENDICULAR TO THE ROADWAY DIRECTION.
4. SEE THE FABRIC FOR EMBANKMENT STABILIZATION SPECIAL PROVISION FOR DETAILED REQUIREMENTS OF MATERIALS AND CONSTRUCTION.
5. INSTALL SURCHARGE MATERIAL AS SHOWN ON THE PLANS. SEE SURCHARGE PLACEMENT, MAINTENANCE AND REMOVAL SPECIAL PROVISION.
6. MAINTAIN THE SURCHARGE OR EMBANKMENT ELEVATIONS THROUGHOUT THE WAITING PERIODS.
7. FOR SETTLEMENT GAUGE, SEE EMBANKMENT MONITORING SPECIAL PROVISION AND EMBANKMENT MONITORING DETAIL SHEET.
8. WAITING PERIOD BEGINS AFTER INSTALLING SURCHARGE OR EMBANKMENT.

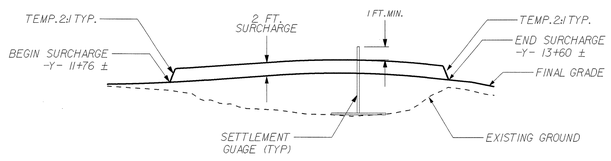
SECTION ALONG ℄ -L-

NOT TO SCALE



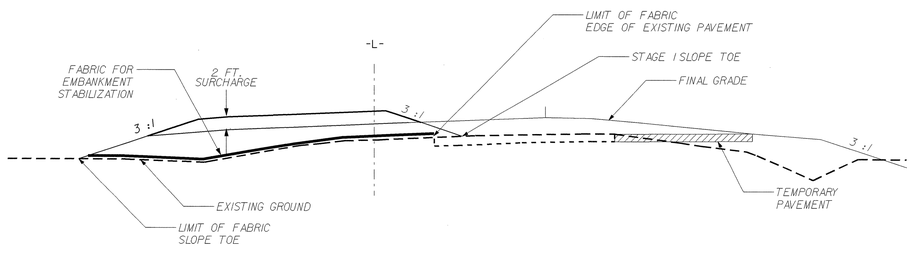
SECTION ALONG ℄ -Y-

NOT TO SCALE



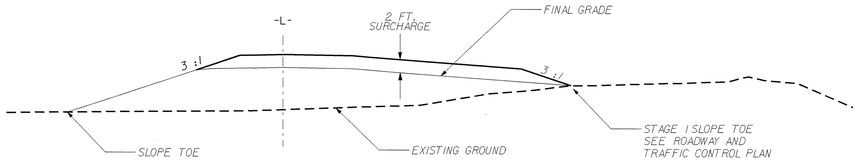
A-A CROSS SECTION

NOT TO SCALE



B-B CROSS SECTION

NOT TO SCALE



ESTIMATED QUANTITIES	
FABRIC FOR EMBANKMENT STABILIZATION	450 SY.
BORROW EXCAVATION	850 CY.
UNCLASSIFIED EXCAVATION	900 CY.

PREPARED BY: JYP	DATE: 03/2010
REVIEWED BY: JRB	DATE: 03/2010

GEOTECHNICAL ENGINEERING UNIT

☒ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

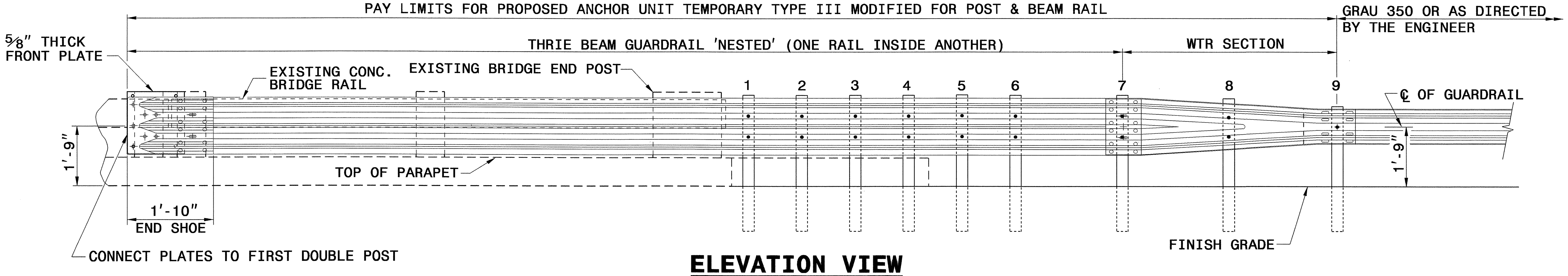
GROUND IMPROVEMENT WITH FABRIC AND SURCHARGE

REVISIONS

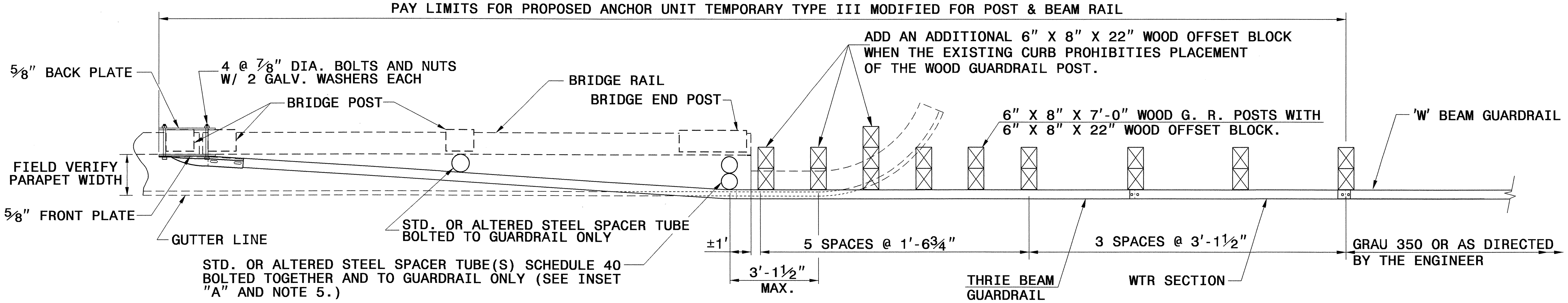
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

RD248630 4/25/2011 B4551_GEO_RDWY_Preloading Plan btkyle RD-Oce860-34

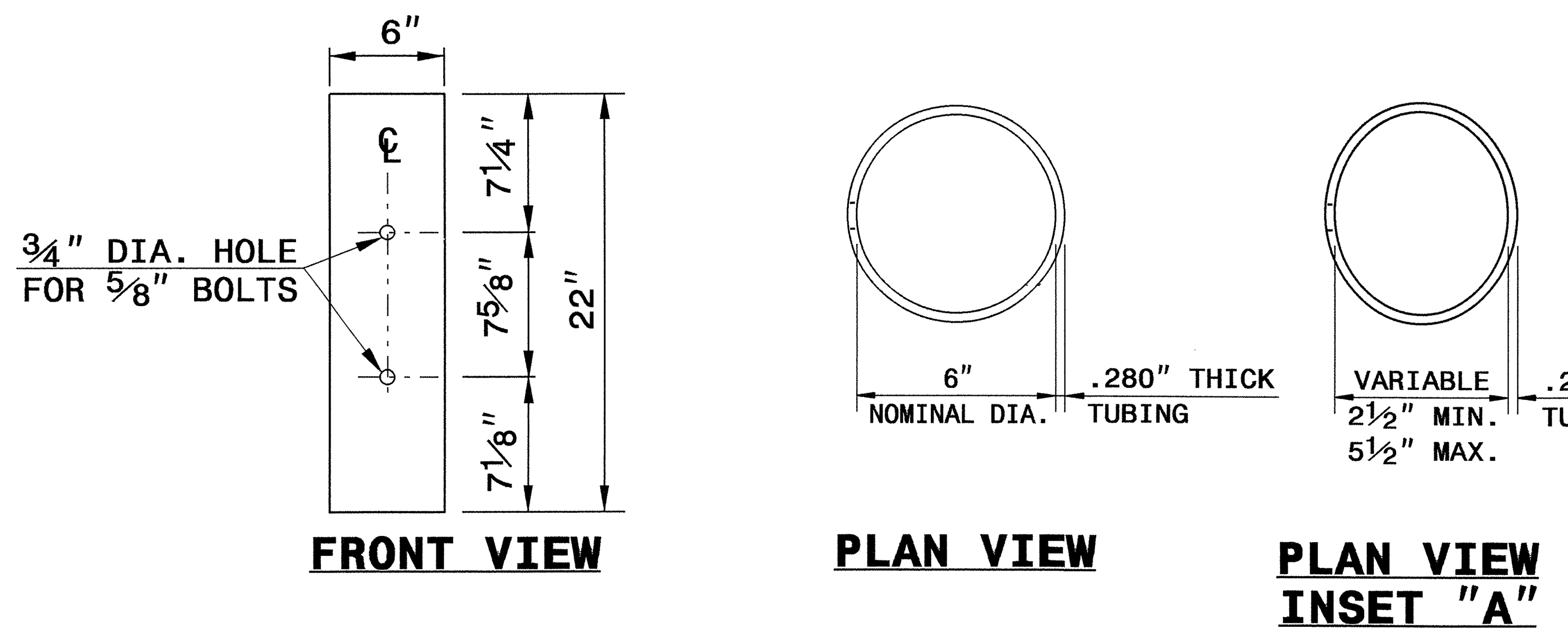
PROJECT REFERENCE NO.	SHEET NO.
B-4551	2-J



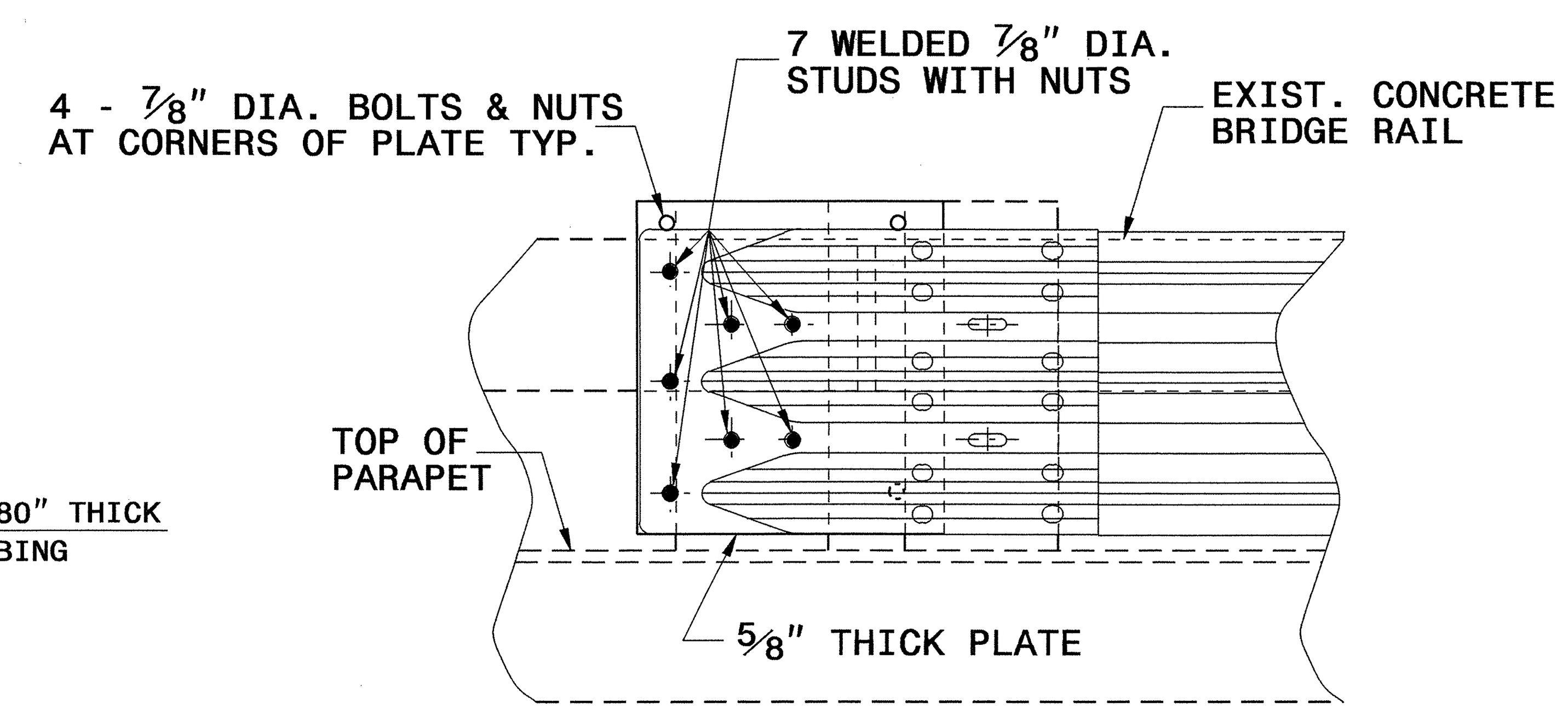
ELEVATION VIEW



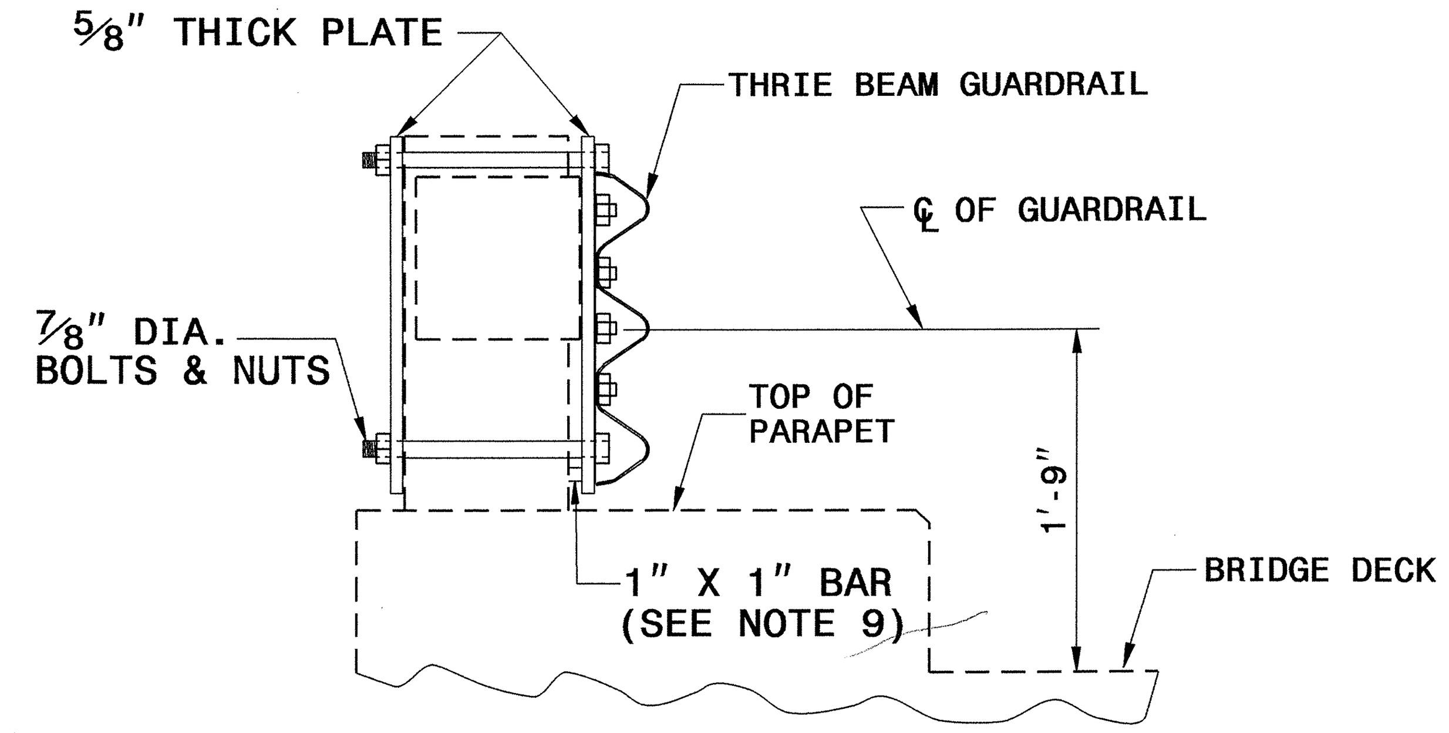
PLAN VIEW



STEEL SPACER TUBE

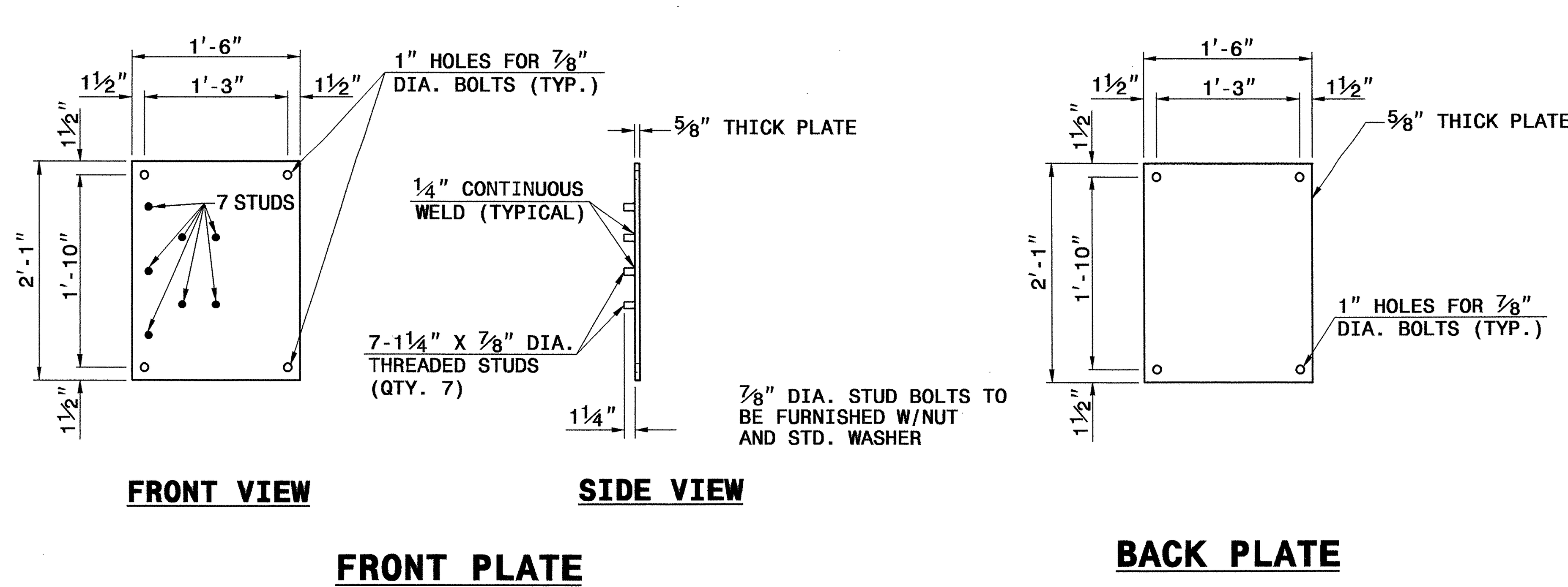


ELEVATION VIEW

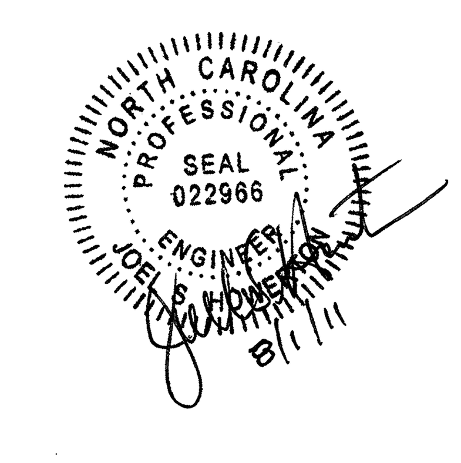


SECTION VIEW

GENERAL NOTES:
1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
7. USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
10. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
11. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
12. SEE ROADWAY STANDARD DRAWING 862.03 SHEET 4 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT



BRIDGE PLATES



CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-250-4128 FAX 919-250-4119

GUARDRAIL ANCHOR UNIT TEMPORARY TYPE III MODIFIED

ORIGINAL BY: E.E. WARD DATE: 01-03
MODIFIED BY: E.E. WARD DATE: 02-04
CHECKED BY: DATE: 7/11/11
FILE SPEC.: ...\details\stand\bpiii originial.dgn

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

5/28/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202661

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ************ (22+60.00)
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0057000000-E	226	400	CY	UNDERCUT EXCAVATION
0127000000-N	SP	4	EA	EMBANKMENT SETTLEMENT GAUGES
0134000000-E	240	20	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	SP	400	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	500	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	699	SF	TEMPORARY SHORING
0241000000-E	SP	450	SY	GENERIC GRADING ITEM FABRIC FOR EMBANKMENT STABILI-ZATION
0318000000-E	SP	31	TON	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRS
0320000000-E	SP	860	SY	FOUNDATION CONDITIONING FABRIC
0335200000-E	SP	32	LF	15" DRAINAGE PIPE
0335300000-E	SP	56	LF	18" DRAINAGE PIPE
0344000000-E	SP	24	LF	18" SIDE DRAIN PIPE
0366000000-E	SP	68	LF	15" RC PIPE CULVERTS, CLASS III
0995000000-E	340	42	LF	PIPE REMOVAL
1121000000-E	520	180	TON	AGGREGATE BASE COURSE
1220000000-E	545	40	TON	INCIDENTAL STONE BASE
1489000000-E	610	1,330	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1519000000-E	610	830	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1525000000-E	610	80	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1575000000-E	SP	115	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	20	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	SP	22.4	CY	SUBDRAIN EXCAVATION
2033000000-E	SP	16.8	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	SP	100	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS
2077000000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)
2286000000-N	840	3	EA	MASONRY DRAINAGE STRUCTURES
2367000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
2396000000-N	840	1	EA	FRAME WITH COVER, STD 840.54
2556000000-E	846	50	LF	SHOULDER BERM GUTTER
3030000000-E	862	75	LF	STEEL BM GUARDRAIL
3045000000-E	862	125	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3380000000-E	862	512.5	LF	TEMPORARY STEEL BM GUARDRAIL
3382000000-E	862	162.5	LF	TEMPORARY STEEL BM GUARDRAIL (SHOP CURVED)
3387000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE ********* TEMPORARY (III MODIFIED)
3389100000-N	SP	6	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
3649000000-E	876	5	TON	RIP RAP, CLASS B
3656000000-E	876	714	SY	FILTER FABRIC FOR DRAINAGE
4400000000-E	1110	244	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	192	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	40	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	90	EA	DRUMS
4445000000-E	1145	80	LF	BARRICADES (TYPE III)
4450000000-N	1150	960	HR	FLAGGER
4516000000-N	1180	15	EA	SKINNY DRUM
4600000000-N	SP	4	EA	GENERIC TRAFFIC CONTROL ITEM WARNING FLAGS
4609000000-N	SP	270	DAY	GENERIC TRAFFIC CONTROL ITEM TEMPORARY TRAFFIC SIGNAL SYSTEM
4650000000-N	1251	40	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	2,565	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	2,532	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4710000000-E	1205	44	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4810000000-E	1205	15,500	LF	PAINT PAVEMENT MARKING LINES (4")
4835000000-E	1205	90	LF	PAINT PAVEMENT MARKING LINES (24")
4850000000-E	1205	4,234	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4870000000-E	1205	60	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4900000000-N	1251	16	EA	PERMANENT RAISED PAVEMENT MARKERS
5325400000-E	1510	165	LF	4" WATER LINE
5325600000-E	1510	97	LF	6" WATER LINE
5540000000-E	1515	2	EA	6" VALVE
5666000000-E	1515	1	EA	FIRE HYDRANT
5798000000-E	1530	235	LF	ABANDON **" UTILITY PIPE (4")
5800000000-E	1530	18	LF	ABANDON 6" UTILITY PIPE
5815500000-N	1530	1	EA	REMOVE FIRE HYDRANT
6000000000-E	1605	2,100	LF	TEMPORARY SILT FENCE
6006000000-E	1610	350	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	100	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	70	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	3	ACR	TEMPORARY MULCHING
6018000000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.5	TON	FERTILIZER FOR TEMPORARY SEED-ING
6024000000-E	1622	600	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	12	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	900	LF	SAFETY FENCE
6030000000-E	1630	270	CY	SILT EXCAVATION
6036000000-E	1631	1,865	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	300	SY	COIR FIBER MAT
6042000000-E	1632	250	LF	1/4" HARDWARE CLOTH
6048000000-E	SP	500	SY	FLOATING TURBIDITY CURTAIN
6071010000-E	SP	450	LF	WATTLE
6071020000-E	SP	50	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	175	LF	COIR FIBER BAFFLE
6071050000-E	SP	2	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	3	ACR	SEEDING & MULCHING
6087000000-E	1660	3	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	75	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	2	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.1	ACR	REFORESTATION

R:\Roadway\Proj\B4551_Rdy_sum.dgn

COMPUTED BY: GSM DATE: 8/3/2011
CHECKED BY: JEB DATE: 8/3/2011

PROJECT NO.	SHEET NO.
B-4551	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station	Station	TOTAL UNCLASS. EXCAV.	UNDERCUT	Embank. +%	Borrow	Waste
-L- 17+00.00	21+96.43 (BEG. BRIDGE)	229		982	753	0
SUBTOTAL:		229		982	753	0
-L- 23+22.51 (END BRIDGE)	28+00.00	212		1092	880	0
SUBTOTAL:		212		1092	880	0
-Y- 11+00.00	13+50.00	24		1218	1194	0
SUBTOTAL:		24		1218	1194	0
-Y1- 14+00.00	15+50.00	103		5	0	98
SUBTOTAL:		103		5	0	98
PLACE SURCHARGE (PER GEOTECH)					850	
REMOVE SURCHARGE (PER GEOTECH)		900				900
SUMMARIES SUBTOTAL:		1468		3297	3677	998
WASTE IN LIEU OF BORROW					-998	
PROJECT TOTALS:		1468		3297	2679	
EST. 5% FOR REPLACING TOP SOIL ON BORROW PITS					134	
GRAND TOTALS:		1468			2813	
SAY:		1470			2820	

EST. UNDERCUT = 400 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
EST. SELECT GRANULAR MATERIAL = 400 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
EST. FABRIC FOR SOIL STABILIZATION = 400 SY (CONTINGENCY FROM GEOTECHNICAL REPORT)
EST. FABRIC FOR EMBANKMENT STABILIZATION = 450 SY (CONTINGENCY FROM GEOTECHNICAL REPORT)

SUMMARY OF PAVEMENT REMOVAL/BREAKING

LINE	STATION TO STATION	LOC	ASPHALT REMOVAL (SY)	ASPHALT BREAKING (SY)	CONCRETE REMOVAL (SY)	CONCRETE BREAKING (SY)	
-L-	20+57 TO 21+25	RT	27.37				
-Y-	13+06 TO 13+68	RT	135.30				
-L-	16+03 TO 21+64	RT	577.65				TEMP. PAVEMENT
-L-	23+32 TO 29+92	RT	761.58				TEMP. PAVEMENT
-L-	19+29 TO 21+97	LT/RT		958.19			
-L-	23+23 TO 25+93	LT/RT		961.74			
	GRAND TOTAL:		1501.90	1919.93			
	SAY:		1510	1920			

DDE= 20 CY
NOTE: 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.
APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL AND BREAKUP OF EXISTING PAVEMENT WILL BE PAID AT THE LUMP SUM PRICE FOR "GRADING".

"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.
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC. -L-	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	TEMP. GIR LENGTH STRAIGHT	TEMP. GIR LENGTH SHOP CURVED	ANCHORS GRAU 350	ANCHORS TEMP III MOD	ANCHORS TEMP GRAU 350	ANCHORS III	ANCHORS AT-1	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GRDRAIL		REMARKS
-Y-/-L-	-Y- 12+97.47	-L- 21+97.12	RT	75.00	25		21+97.12		9.25	2	50		1				1			1							
-Y1-/-L-	-Y1- 14+87.58	-L- 21+95.75	LT	87.50	25			21+95.75	9.25	2	50		1				1			1							
-L-	23+21.82	24+47.16	RT	50.00	37.5			23+21.82	9.25	11										1	1						LENGTH CONTROLLED BY EXIST. DRIVEWAY
-L-	23+23.19	25+52.52	LT	50.00	37.5		23+23.19		9.25	11										1	1						LENGTH CONTROLLED BY EXIST. DRIVEWAY
-Y-/-L-	-Y- 12+80.35	-L- 22+14.99	RT						2	0	50		1		87.5	37.5		1	1								SEE TMP-5
-Y1-/-L-	-Y1- 14+59.56	-L- 22+14.71	LT						2	0	50		1		87.5	50		1	1								SEE TMP-5
-L-	-L- 23+19.87	-L- 24+55.00	RT						2	0	50		1		137.5			1	1								SEE TMP-5
-L-	-L- 24+55.00	-L- 25+00.00	LT						2	0	50		1		187.5			1	1								SEE TMP-5
-Y-/-L-	-Y- 13+48.38	-L- 24+60.66	RT						2	0	50		1		312.5	75			2								SEE TMP-6
		PROPOSED SUBTOTAL		262.50	125.00										TEMPORARY SUBTOTAL		812.50	162.50									

ANCHOR UNIT DEDUCTIONS

GRAU 350 =	2 x 50	=	-100.00
AT-1 =	2 x6.25	=	-12.50
TYPE III =	4 x 18.75	=	-75.00
		TOTAL	75.00 125.00
		SAY	75.00 125.00

(5 ADDITIONAL GUARDRAIL POST)

ANCHOR UNIT DEDUCTIONS

TEMP GRAU 350 =	6 x 50	=	-300.00
TEMP TYPE III MOD =	4		
		TOTAL	512.50 162.50
		SAY	512.50 162.50

DRMP ENGINEERS · PLANNERS · SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
5950 FAIRVIEW RD., S-320
CHARLOTTE, NC 28210
704-332-2289 NC LICENSE NO. C-2213

CHA-RSMITH

COMPUTED BY: RSW DATE: 8/4/2011

CHECKED BY: GSM DATE: 8/4/2011

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-4551	3-B

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

STATION	LOCATION (LT. RT. OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	DRAINAGE PIPE THICKNESS OR GAUGE	C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE	C.S. PIPE TYPE B THICKNESS OR GAUGE	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE	CLASS III R.C. PIPE THICKNESS OR GAUGE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	'TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. A 5.0' THRU 10.0'	'TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE m	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE F	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE G	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH TWO GRATES STD. 840.20	J.B. STD. 840.31 OR 840.32	T.B.D.I. STD. 840.35	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	BICYCLE SAFE STEEL FRAME AND GRATES	PREFORMED SCOUR HOLE (SEE DETAIL 'A' ON SHEET 5)	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
-L- 16+52	RT	1														24																												
-L- 21+61	LT	2		6.1				32											1																									
		2	OUT		1.3	1																																					
-L- 23+48	LT	3		5.7															1																									
		3	5		1	0.5						68																															
-L- 23+74	RT	IN																																									
		IN	5		0.5	0.5		28																																		42	
-L- 23+46	RT	5		6.5															1															1			1						
		5	OUT		0.5	0.5		28																																			
PROJECT TOTALS								32	56			68				24			3					1		2	1	1		1										42	

ABBREVIATIONS

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

DRMP ENGINEERS • PLANNERS • SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
5950 FAIRVIEW RD., S-320
CHARLOTTE, NC 28210
704-332-2289 NC LICENSE NO. C-2213

MA Engineering
CONSULTANTS, INC.
598 East Chatham Street, Suite 137
Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221 NC LICENSE NO. F-0160

PROJECT REFERENCE NO.	SHEET NO.
B-4551	4
R/W SHEET NO.	

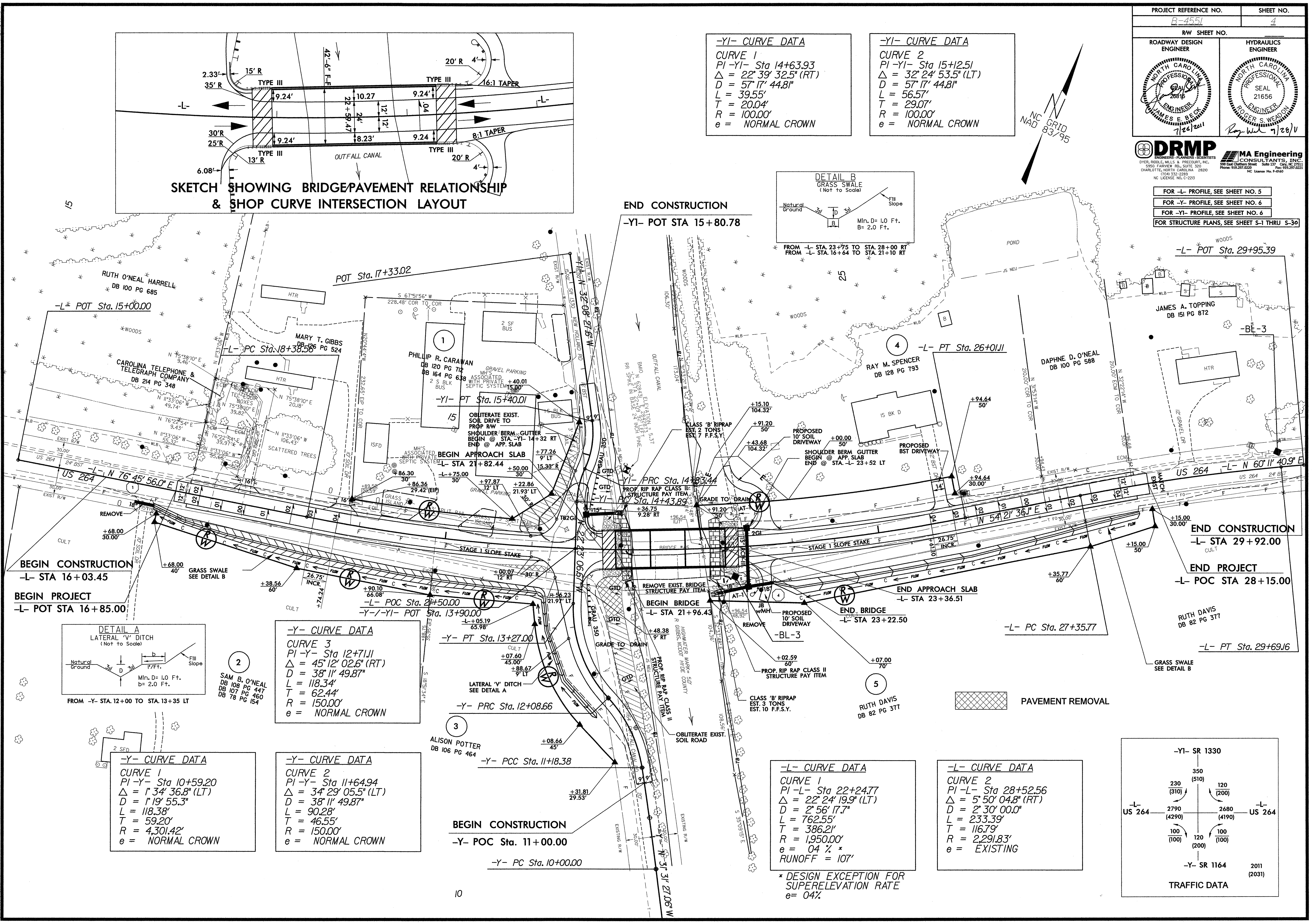
ROADWAY DESIGN ENGINEER — SEAL 26816, JAMES E. BECK, 7/26/2011

HYDRAULICS ENGINEER — SEAL 21656, ROGER S. WEADON, 7/28/11

DRMP ENGINEERS · PLANNERS · SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
5950 FAIRVIEW RD., SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-2213

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
NC License No. F-0160

FOR -L- PROFILE, SEE SHEET NO. 5
FOR -Y- PROFILE, SEE SHEET NO. 6
FOR -Y1- PROFILE, SEE SHEET NO. 6
FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-30



DETAIL A
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1.0 Ft.
b= 2.0 Ft.
FROM -Y- STA. 12+00 TO STA. 13+35 LT

DETAIL B
GRASS SWALE
(Not to Scale)
Min. D= 1.0 Ft.
B= 2.0 Ft.
FROM -L- STA. 23+75 TO STA. 28+00 RT
FROM -L- STA. 16+64 TO STA. 21+10 RT

-Y1- CURVE DATA
CURVE 1
PI -Y1- Sta 14+63.93
Δ = 22° 39' 32.5" (RT)
D = 57° 17' 44.81"
L = 39.55'
T = 20.04'
R = 100.00'
e = NORMAL CROWN

-Y1- CURVE DATA
CURVE 2
PI -Y1- Sta 15+12.51
Δ = 32° 24' 53.5" (LT)
D = 57° 17' 44.81"
L = 56.57'
T = 29.07'
R = 100.00'
e = NORMAL CROWN

-Y- CURVE DATA
CURVE 3
PI -Y- Sta 12+71.11
Δ = 45° 12' 02.6" (RT)
D = 38° 11' 49.87"
L = 118.34'
T = 62.44'
R = 150.00'
e = NORMAL CROWN

-Y- CURVE DATA
CURVE 1
PI -Y- Sta 10+59.20
Δ = 1° 34' 36.8" (LT)
D = 1° 19' 55.3"
L = 118.38'
T = 59.20'
R = 4,301.42'
e = NORMAL CROWN

-Y- CURVE DATA
CURVE 2
PI -Y- Sta 11+64.94
Δ = 34° 29' 05.5" (LT)
D = 38° 11' 49.87"
L = 90.28'
T = 46.55'
R = 150.00'
e = NORMAL CROWN

-L- CURVE DATA
CURVE 1
PI -L- Sta 22+24.77
Δ = 22° 24' 19.9" (LT)
D = 2° 56' 17.7"
L = 762.55'
T = 386.21'
R = 1,950.00'
e = 04 % *
RUNOFF = 107'

* DESIGN EXCEPTION FOR SUPERELEVATION RATE e= 04%

-L- CURVE DATA
CURVE 2
PI -L- Sta 28+52.56
Δ = 5° 50' 04.8" (RT)
D = 2° 30' 00.0"
L = 233.39'
T = 116.79'
R = 2,291.83'
e = EXISTING

PAVEMENT REMOVAL

TRAFFIC DATA
-Y1- SR 1330: 350 (510)
230 (310); 120 (200)
-L- US 264: 2790 (4290); 2680 (4190) -L- US 264
100 (100); 120 (200); 100 (100)
-Y- SR 1164
2011 (2031)

R:\Roadway\Proj\B4551_Rdy_psh.dgn
1:53:28 PM
7/26/2011

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4551	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK
7/24/2011

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21656 ENGINEER ROGER S. WEADON
7/20/11

DRMP
ENGINEERS • PLANNERS • SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
5950 FAIRVIEW RD., SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-2213

MA Engineering CONSULTANTS, INC.
590 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
NC License No. P-0160

BM #10
-L- STA 22+09, 92' LT
ELEV= 5.37
RR SPIKE SET IN 24" PINE
N: 628431 E: 2842873

FEATHER TO MATCH EXISTING

BEGIN GRADE
-L- STA. 17+00.00
EL. 3.78

PI = 18+50.00
EL = 4.24'
VC = 200'
K = 446

PROPOSED GRADE

BEGIN BRIDGE
-L- STA. 21+96.43
EL. 6.75

PI = 22+70.00
EL = 7.40'
VC = 260'
K = 153

END BRIDGE
-L- STA. 23+22.51
EL. 6.70

PI = 26+25.00
EL = 4.03'
VC = 150'
K = 231

RESURFACE

FEATHER TO MATCH EXISTING

EXISTING GROUND

(+)0.3045%
(+)0.7532%
(+)0.7532%
(-)0.9495%
(-)0.9495%
(-)0.3000%
(+) 0.00%
(-) 1.00%
(+) 0.00%

+85.00
+00.00
3.78
+85.00
+60.00
+15.00
3.73

PROP. RIP RAP CLASS II STRUCTURE PAY ITEM
PROP. RIP RAP CLASS II STRUCTURE PAY ITEM
PROP. EXCAVATION STRUCTURE PAY ITEM
PROP. EXCAVATION STRUCTURE PAY ITEM

PROPOSED
21" CORED SLAB
THREE SPAN BRIDGE

REMOVE EXISTING BRIDGE STRUCTURE PAY ITEM

END GRADE
-L- STA. 27+25.00
EL. 3.73

BEGIN LATERAL V. DITCH
-L- STA. 16+64.00 RT
EL = 0.20

PI -L- STA. 20+00.00 RT
EL = 0.20

END LATERAL V. DITCH
-L- STA. 21+10.00 RT
EL = 1.30

BEGIN GRASS SWALE
-L- STA. 23+75.00 RT
EL = 0.50

END GRASS SWALE
-L- STA. 28+00.00 RT
EL = 0.50

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= NA (TIDAL) CFS
DESIGN FREQUENCY	= NA (TIDAL) YRS
DESIGN HW ELEVATION	= NA (TIDAL) FT
BASE DISCHARGE	= NA (TIDAL) CFS
BASE FREQUENCY	= NA (TIDAL) YRS
BASE HW ELEVATION	= NA (TIDAL) FT
OVERTOPPING DISCHARGE	= NA (TIDAL) CFS
OVERTOPPING FREQUENCY	= NA (TIDAL) YRS
OVERTOPPING ELEVATION	= NA (TIDAL) FT
DATE OF SURVEY	
W.S. ELEVATION AT DATE OF SURVEY	= NA (TIDAL) FT

10
0
-10
-20

16 17 18 19 20 21 22 23 24 25 26 27 28

B:\Roadway\Proj\B455l_Rdy_pfsh.dgn
9:52:38 AM
7/20/2011

PROJECT REFERENCE NO.	SHEET NO.
B-4551	6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26815 JAMES E. BECK

7/26/2011

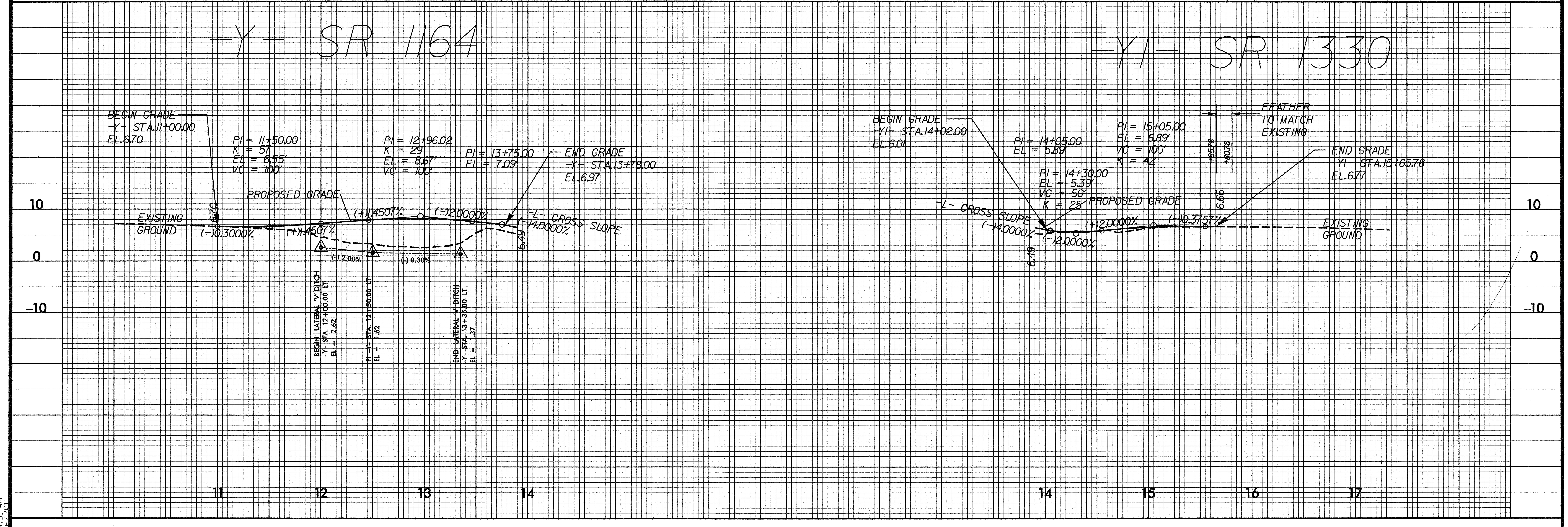
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21656 ROGER S. WEADON

7/28/11

DRMP
ENGINEERS · PLANNERS · SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
5950 FAIRVIEW RD., SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-2213

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
NC License No. F-0160



5/28/99

R:\Roadway\Proj\B4551_Rdy_pfsh2.dgn