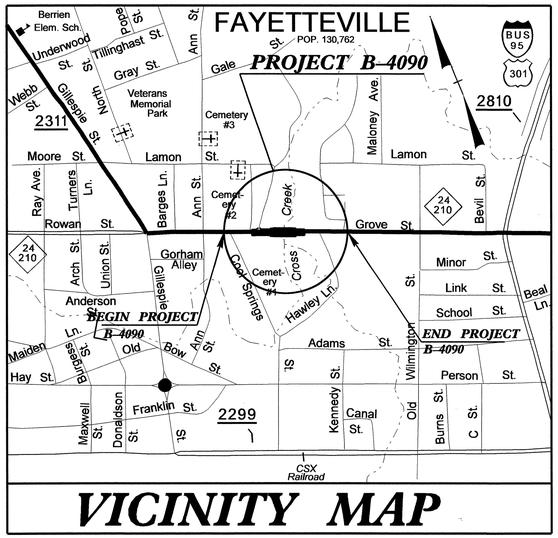
09/08/99

TIP PROJECT: B-4090

CONTRACT: C202724

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

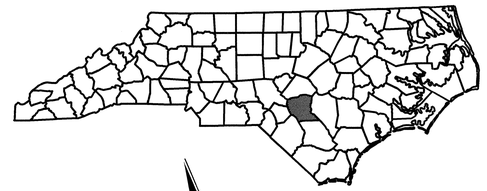
CUMBERLAND COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4090	1	

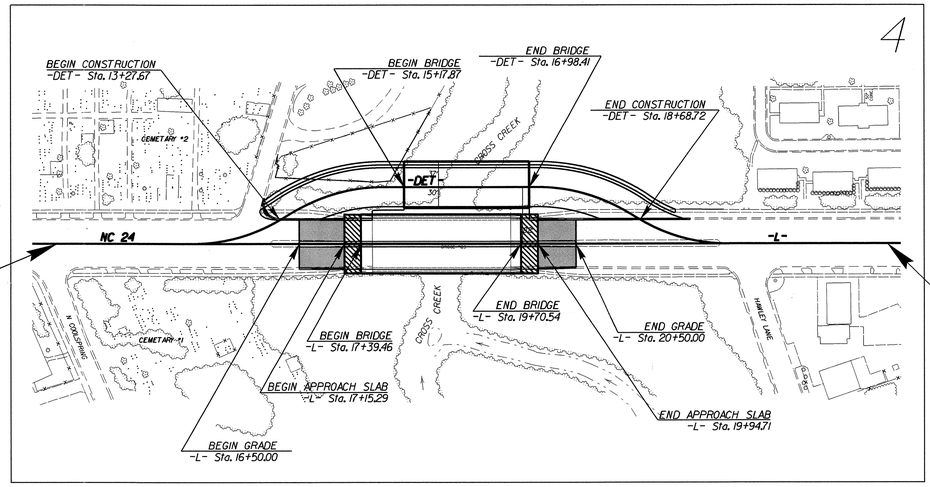
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33448.1.1	BRSTP-0024(17)	P.E.
33448.3.1	BRSTP-0024(17)	R/W, UTIL.
33448.2.2	BRSTP-0024(50)	CONST.

LOCATION: BRIDGE 125 OVER CROSS CREEK ON NC 24 IN FAYETTEVILLE

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



NAD 83/95



TO SR 2311 GREEN ST.

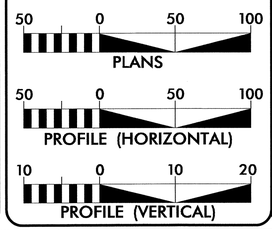
TO BUS 95/US 301

BEGIN TIP PROJECT B-4090
-L- STA. 13+00.00

END TIP PROJECT B-4090
-L- STA. 25+00.00

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED LANE WIDTH.

GRAPHIC SCALES



DESIGN DATA

ADT 2011	=	41,315
ADT 2030	=	63,700
DHV	=	10 %
D	=	60 %
T	=	5 % *
V	=	40 MPH

* TTST 2 + DUAL 3

CLASS = PRINCIPAL ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4090 = 0.183 MILE
LENGTH STRUCTURE TIP PROJECT B-4090 = 0.044 MILE
TOTAL LENGTH TIP PROJECT B-4090 = 0.227 MILE

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 18, 2010

LETTING DATE: January 17, 2012

TONY HOUSER, P.E.
PROJECT ENGINEER

JASON TALLEY, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22578 ENGINEER PAUL F. FISHER

SIGNATURE: 8/11/2011

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 02847 ENGINEER JASON M. TALLEY

SIGNATURE: 8/11/2011

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Art McMillan

STATE HIGHWAY DESIGN ENGINEER

08-AUG-2011 15:50
R:\Roadway\Proj\b4090_rdy_tsh.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4090	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

8-11-11

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A	TYPICAL SECTIONS
2-B	DETOUR PLAN SHEET
2-C	TEMPORARY SHORING DETAIL
2-D	ANCHORAGE FOR FRAMES DETAIL
2-E THRU 2-F	METHOD OF PIPE INSTALLATION
2-G THRU 2-H	CURB RAMP DETAIL
2-I	CHAIN LINK FENCE DETAIL
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF DRAINAGE QUANTITIES SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-12	TRANSPORTATION MANAGEMENT PLAN
PM-1 THRU PM-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-3	SIGNING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-0	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-12	CROSS-SECTIONS
S-1 THRU S-41	STRUCTURE PLANS
W-1 THRU W-2	RETAINING WALL PLANS

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.

SAFETY CLEARING:

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE AREAS IN THE PLANS DESIGNATED SAFETY CLEARING. THE LIMITS ARE AS SHOWN AND THE CLEARING AND GRUBBING IS CONSIDERED A PART OF THE LUMP SUM ITEM FOR "CLEARING AND GRUBBING".

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.

DRIVEWAYS:

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".

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE PWC (POWER) - ELECTRIC POWER

CENTURYLINK - TELEPHONE

TIME WARNER CABLE - CATV

PIEDMONT NATURAL GAS - GAS

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS:

WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH DETAILS IN PLANS.

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 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 8 - INCIDENTALS	
840.25	Anchorage for Frames - Brick or Concrete (Beg. January 2007 Let Use Detail in Lieu of Standard)
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.04	Street Turnout
852.01	Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

8/17/99
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04/16/11

PROJECT REFERENCE NO.	SHEET NO.
B-4090	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: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite 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.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4090	1C
Location and Surveys	

SURVEY CONTROL SHEET B-4090

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4090 -BL1-	475549.8000	2037539.7520	88.72	OUTSIDE PROJECT LIMITS	
2	B4090 -BL2-	475371.9719	2037948.8271	88.23	14+38.51	43.87 LT
3	B4090 -BL3-	475165.8770	2038431.5511	90.44	19+63.39	40.97 LT
4	B4090 -BL4-	474955.4110	2038959.2299	88.04	25+31.39	51.46 LT
5	B4090 -BL5-	474812.7591	2039292.9919	88.52	28+94.35	49.31 LT
6	B4090 -BL5-	474622.9321	2039731.4450	87.86	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
20	B4090 -BL2-	475371.9719	2037948.8271	88.23	14+38.51	43.87 LT
7	B4090 -BY-7-	475201.1661	2037797.8420	86.95	13+65.53	172.10 RT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
40	B4090 -BL4-	474955.4110	2038959.2299	88.04	25+31.39	51.46 LT
8	B4090 -BY1-8-	474860.7219	2038676.6479	87.03	23+07.59	145.34 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
9	B4090 -BY2-9-	475038.7129	2039032.3751	86.89	25+66.54	156.60 LT
140	B4090 -BL4-	474955.4110	2038959.2299	88.04	25+31.39	51.46 LT

NC GRID
NAD 83/95

```
**************************************
80      ELEVATION = 88.33
N 475459      E 2037446
L STATION 10+00
S 62° 40' 57.1" W  DIST    91.86
ORANGE SPOT ON CONCRETE CORNER SIGNAL
**************************************
```

```
**************************************
81      ELEVATION = 90.62
N 475268      E 2038301
L STATION 18+03 85 LEFT
RR SPIKE IN A 20 INCH HARDWOOD
**************************************
```

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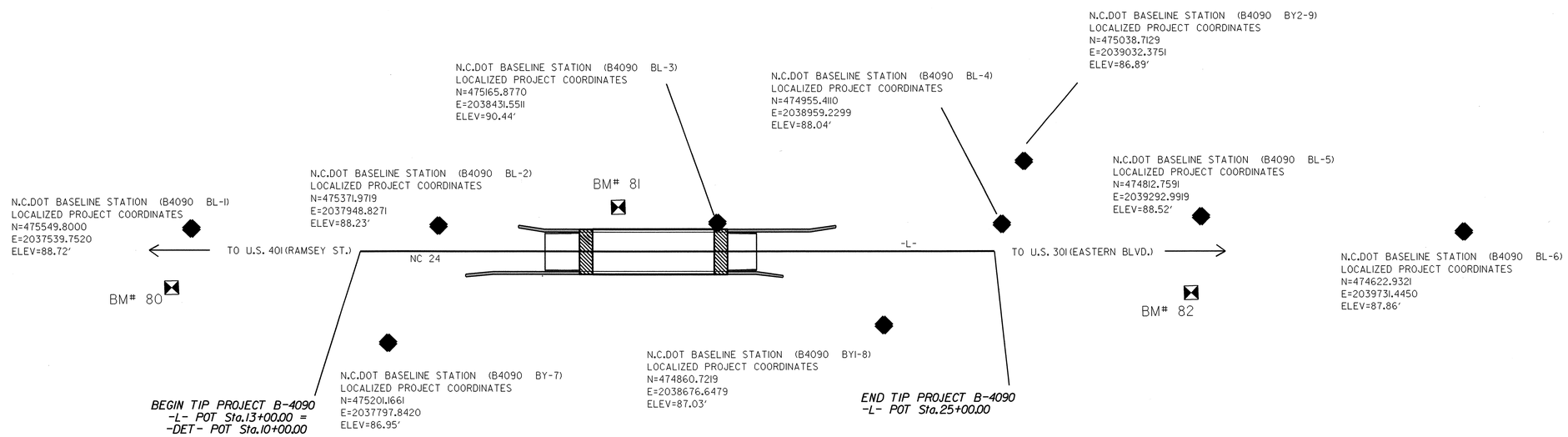
**************************************
82      ELEVATION = 90.68
N 474730      E 2039257
L STATION 28+94 41 RIGHT
ORANGE NUT ON HIGHWAY
**************************************
```

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	475501.4763	2037527.5803
POT	33+63.82	474585.3532	2039706.6585

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	21+75.00	-50.00	475092.1848	2038630.1252
L	21+75.00	-62.00	475103.2479	2038634.7763
L	16+00.00	-62.00	475326.0948	2038104.7157
L	16+00.00	-50.00	475315.0316	2038100.0646



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT ""VANDER RM3"" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 464925.9500(ft) EASTING: 2069182.4200(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .999879130
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM ""VANDER RM3"" TO -L- STA 13+00.00 IS N 71° 33' 55.19" W 33,075.56'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

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

THE FILES TO BE FOUND ARE AS FOLLOWS:
TIP####_LS_CONTROL_DATE.HTML

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.

20-SEP-2011 07:50
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PROJECT REFERENCE NO.	SHEET NO.
B-4090	2

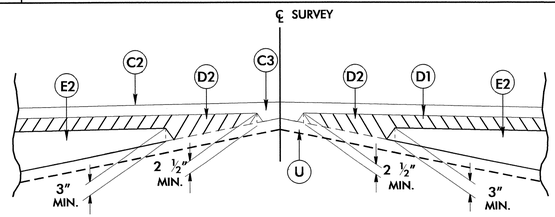
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER — ALLISON M. TALLEY — 8-11-11

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER — CLARK S. MORRISON — 8/12/11

PAVEMENT SCHEDULE

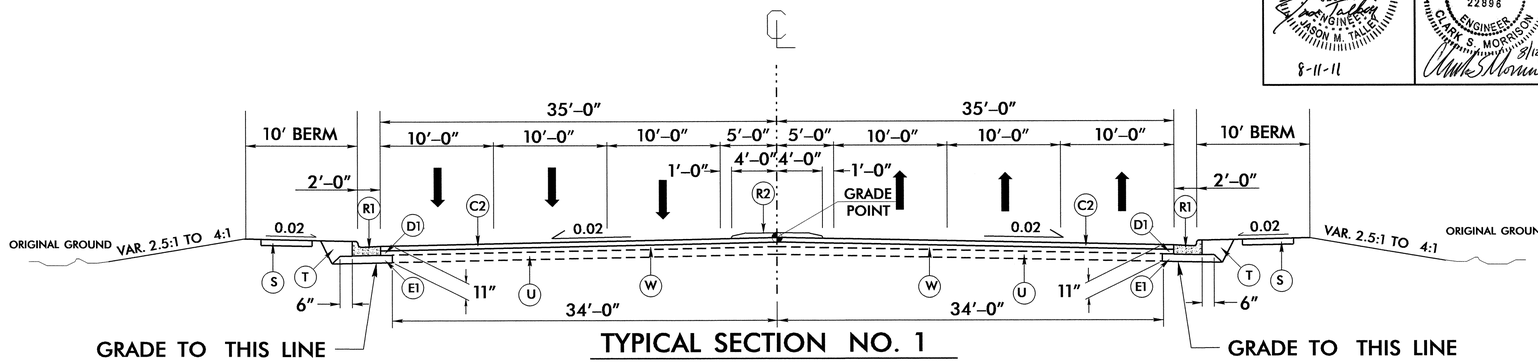
FINAL PAVEMENT DESIGN

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 10" AGGREGATE BASE COURSE
R1	2'- 6" CONCRETE CURB AND GUTTER
R2	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)



Detail Showing Method of Wedging

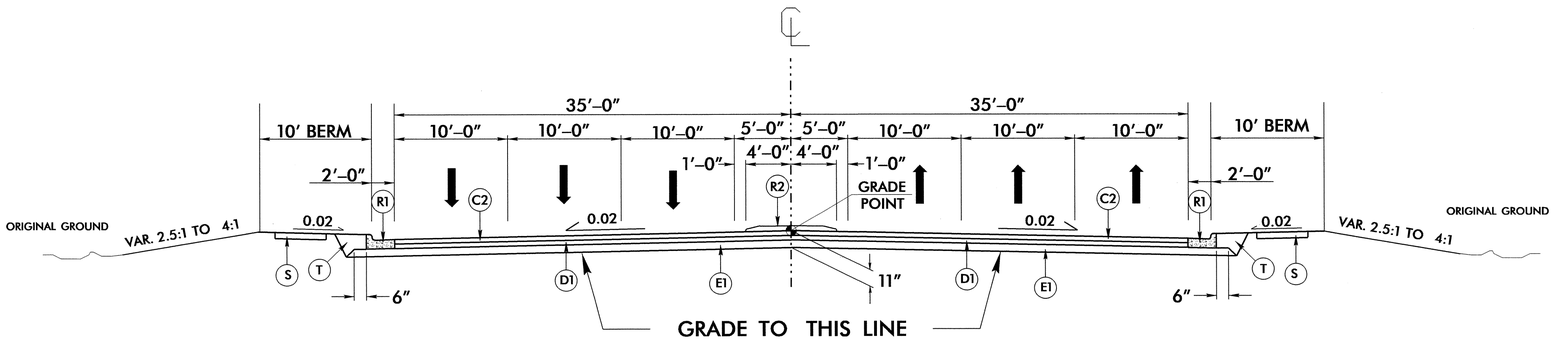
A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED LANE WIDTH.



TYPICAL SECTION NO. 1

–L– STA. 16+50.00 to –L– STA. 16+75.00

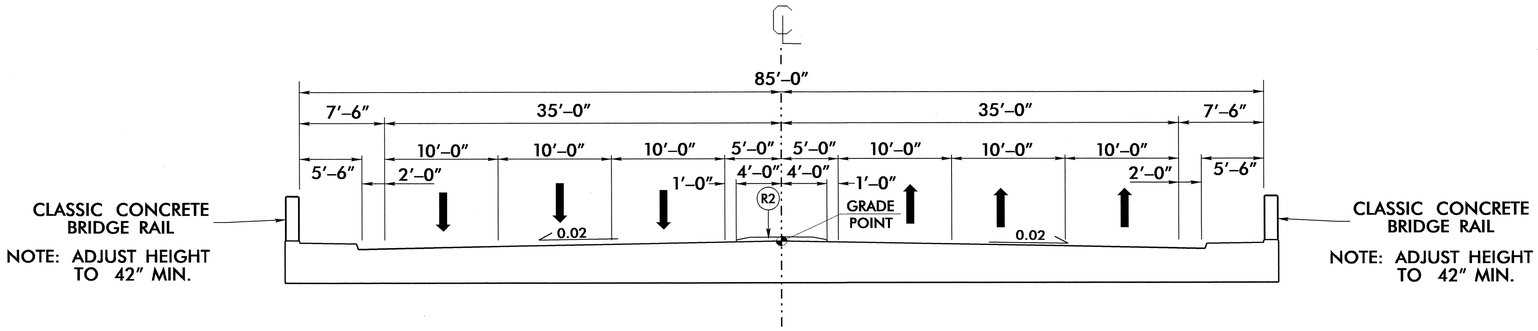
–L– STA. 20+25.00 to –L– STA. 20+50.00



TYPICAL SECTION NO. 2

–L– STA. 16+75.00 to –L– STA. 17+39.46 (Begin Bridge)

–L– STA. 19+70.54 (End Bridge) to –L– STA. 20+25.00



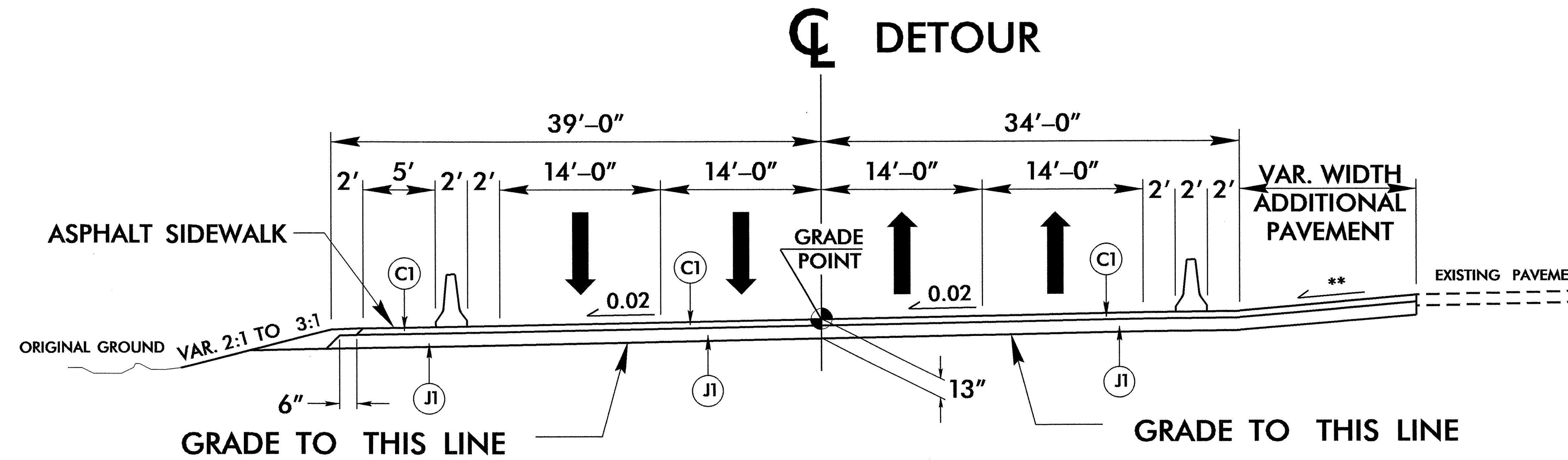
NOTE: ADJUST HEIGHT TO 42" MIN.

NOTE: ADJUST HEIGHT TO 42" MIN.

TYPICAL SECTION 3:

–L– STA. 17+39.46 to –L– STA. 19+70.54

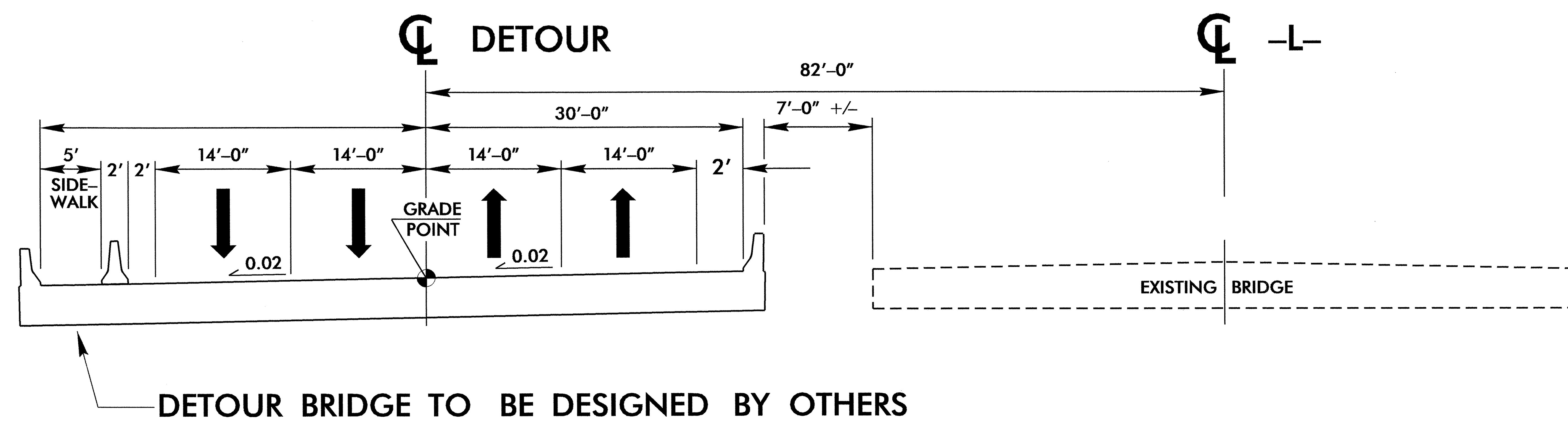
PROJECT REFERENCE NO.	SHEET NO.
B-4090	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 8-11-11	NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 8/12/11



TYPICAL SECTION NO. 4

–DET– STA. 13+27.67 to –DET– STA. 15+17.87 (Begin Bridge)
–DET– STA. 16+98.41 (End Bridge) to –DET– STA. 18+68.72
** NOTE: GRADE TO DRAIN PAVED SHOULDER AS NEEDED

PAVEMENT SCHEDULE *FINAL PAVEMENT DESIGN*	
C1	3" S9.5B
J1	10" ABC
T	EARTH MATERIAL



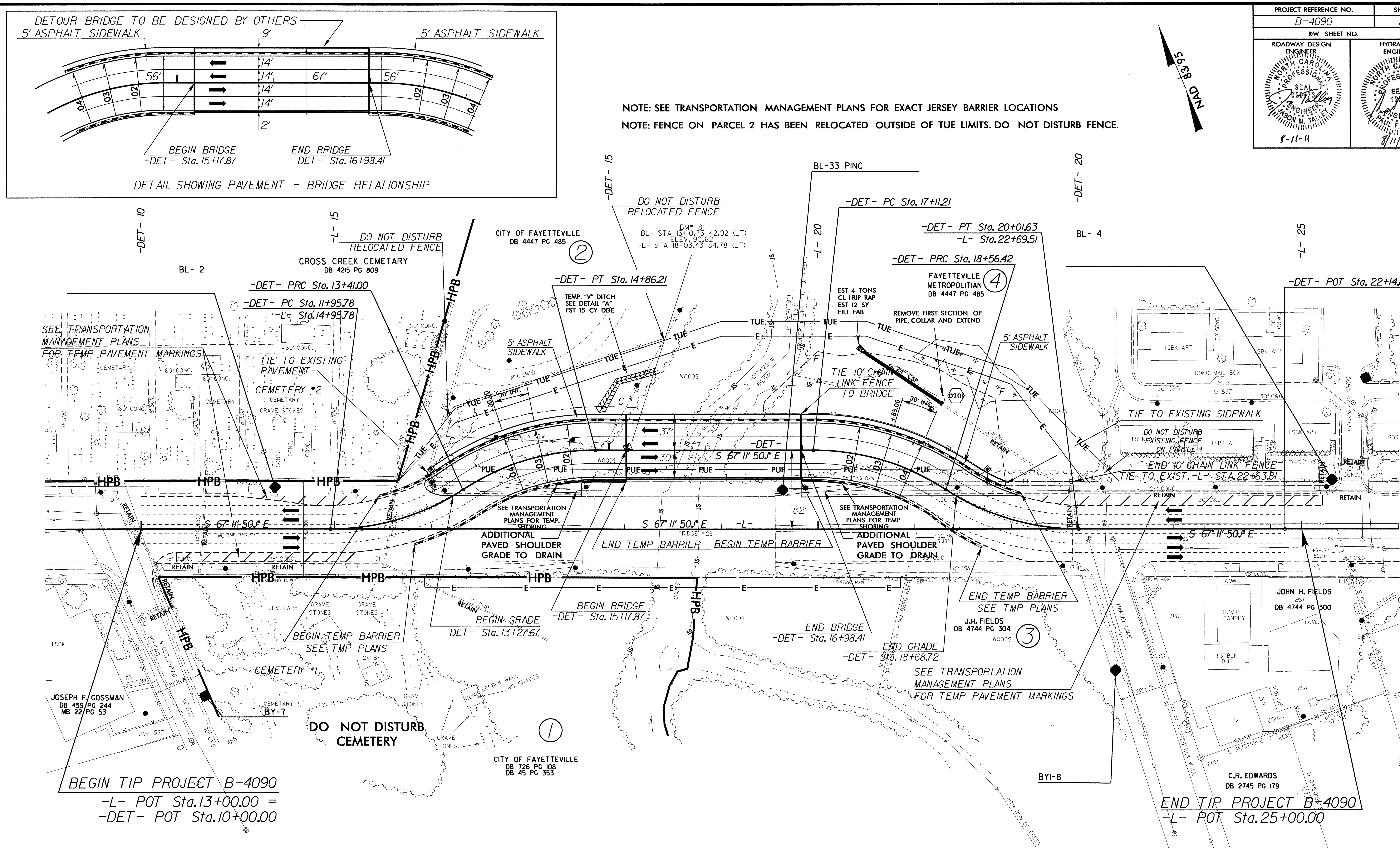
TYPICAL SECTION NO. 5

–DET– STA. 15+17.87 to –DET– STA. 16+98.41

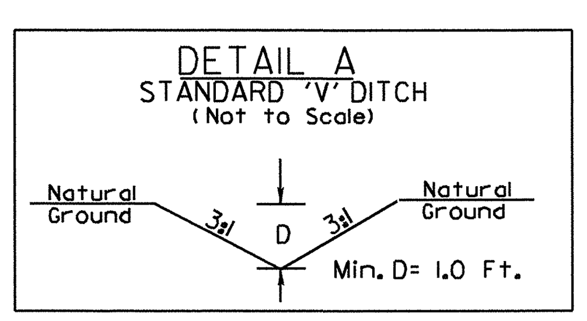
PROJECT REFERENCE NO.	SHEET NO.
B-4090	2-B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 024373, JASON M. TALLEY, 8-11-11	SEAL 12575, PAUL F. FISHER, 8/11/2011

NOTE: SEE TRANSPORTATION MANAGEMENT PLANS FOR EXACT JERSEY BARRIER LOCATIONS

NOTE: FENCE ON PARCEL 2 HAS BEEN RELOCATED OUTSIDE OF TUE LIMITS. DO NOT DISTURB FENCE.



DETOUR IS DESIGNED FOR 25 MPH.



FROM STA. 17+75 TO STA. 18+35 -L- (LT)

HC DENOTES HAND CLEARING

-DET- CURVE DATA

PI Sta 12+70.50	PI Sta 14+15.71	PI Sta 17+85.92	PI Sta 19+31.14
Δ = 33° 16' 47.6" (LT)	Δ = 33° 16' 47.6" (RT)	Δ = 33° 16' 47.6" (RT)	Δ = 33° 16' 47.6" (LT)
D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 22° 55' 05.9"
L = 145.21'	L = 145.21'	L = 145.21'	L = 145.21'
T = 74.72'	T = 74.72'	T = 74.72'	T = 74.72'
R = 250.00'	R = 250.00'	R = 250.00'	R = 250.00'
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

NOTES:

FOR -L- SEE SHEET No. 4
FOR -DET- PROFILE, SEE SHEET No. 5
2' JERSEY BARRIER
HPB HISTORIC PROPERTY BOUNDARY

REVISIONS

8/17/99

10-AUG-2011 08:58 b4090_rdy_psh_det.dgn

PROJECT REFERENCE NO.	SHEET
B-4090	2-C

GEOTECHNICAL ENGINEER

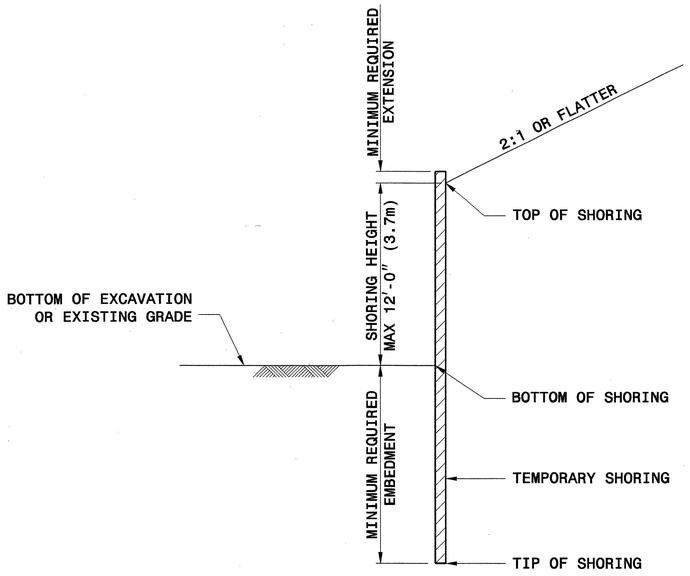
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

Scott A. Hidden 3/29/07

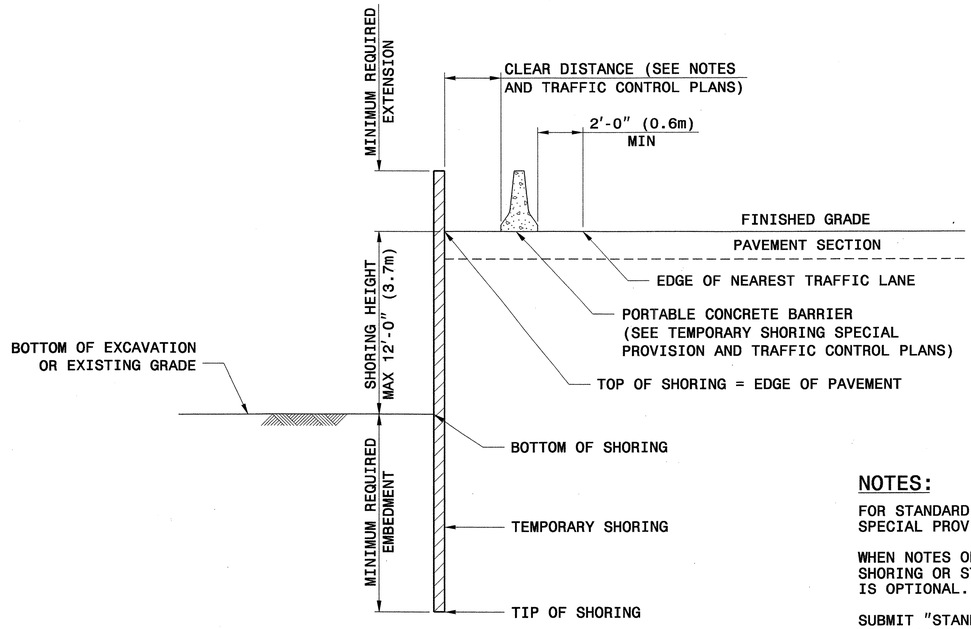
SIGNATURE DATE

ENGINEER

SIGNATURE DATE



SLOPE CASE



SURCHARGE CASE

GROUNDWATER CONDITION	SHORING HEIGHT FT (m)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H PILES WITH TIMBER LAGGING			SHEET PILES		H PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN^3/FT (cm^3/m)	MINIMUM REQUIRED EMBEDMENT FT (m)			MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN^3/FT (cm^3/m)	MINIMUM REQUIRED EMBEDMENT FT (m)		
				HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)			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 OR STANDARD 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 AVAILABLE IS LESS THAN THE MINIMUM REQUIRED IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS, SET THE BARRIER AGAINST THE TRAFFIC SIDE OF THE SHORING AND 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.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

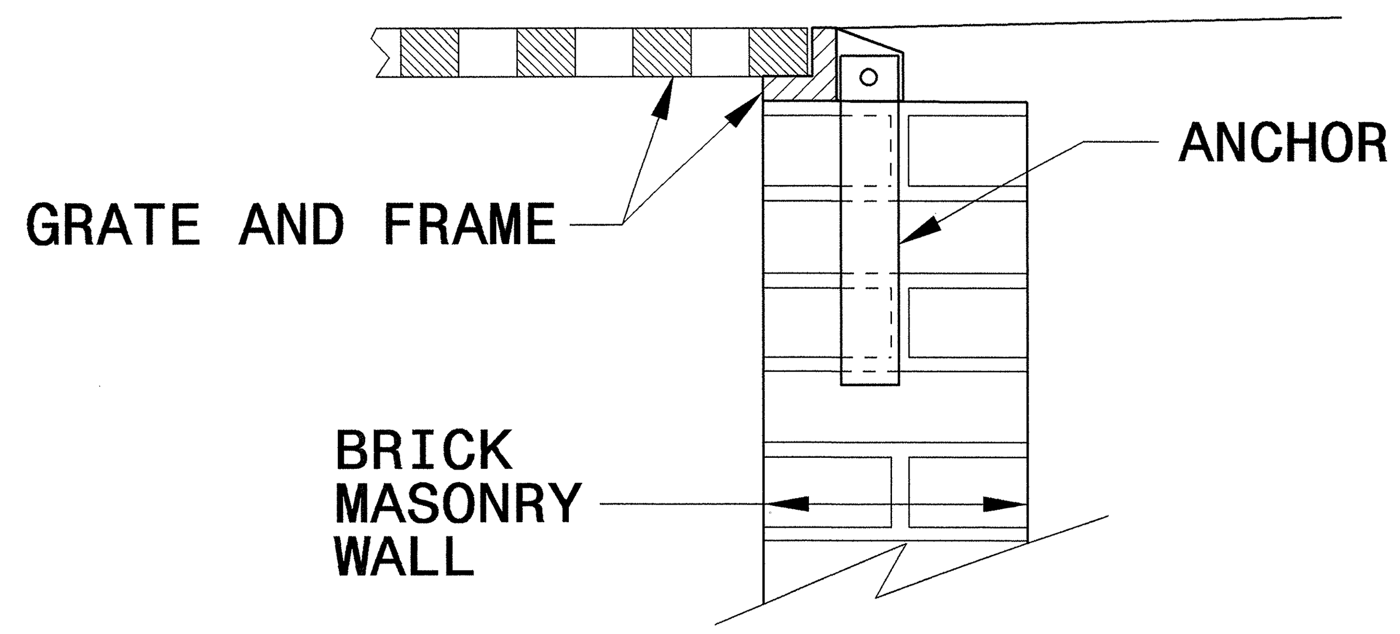
STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

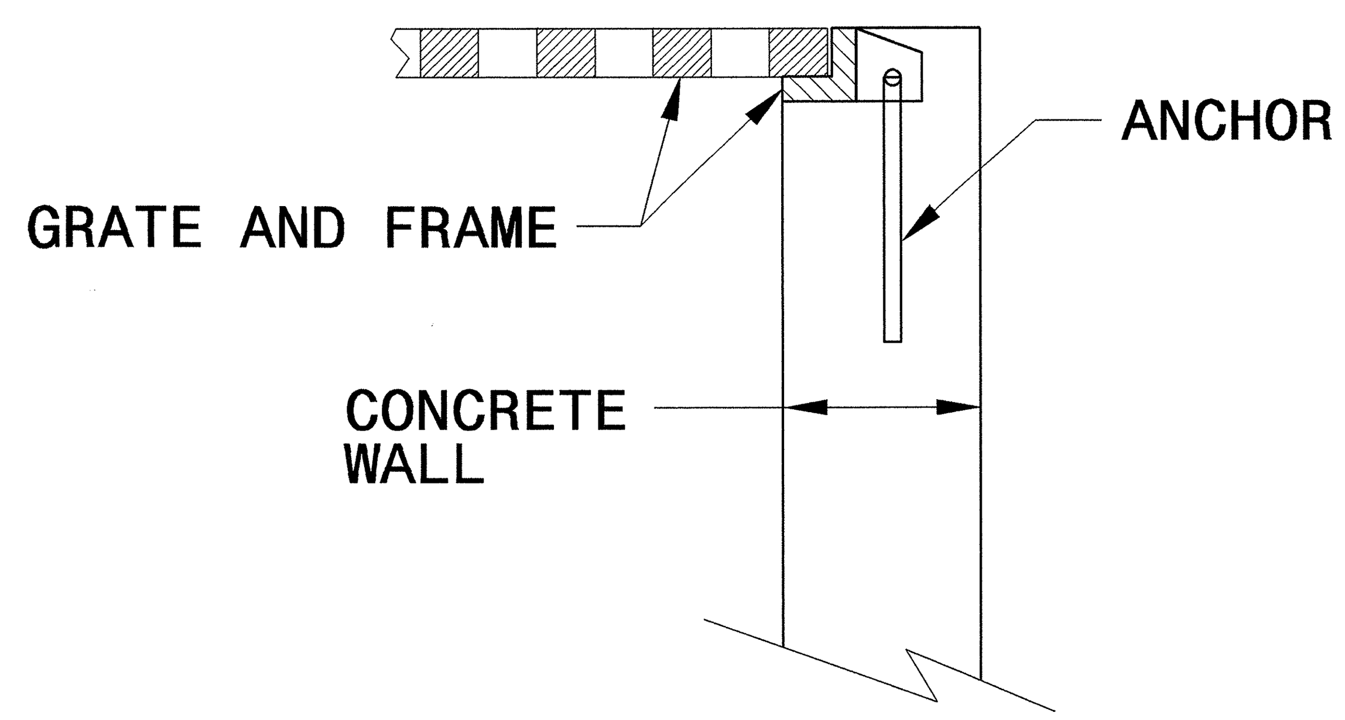
DATE: 2-20-07

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

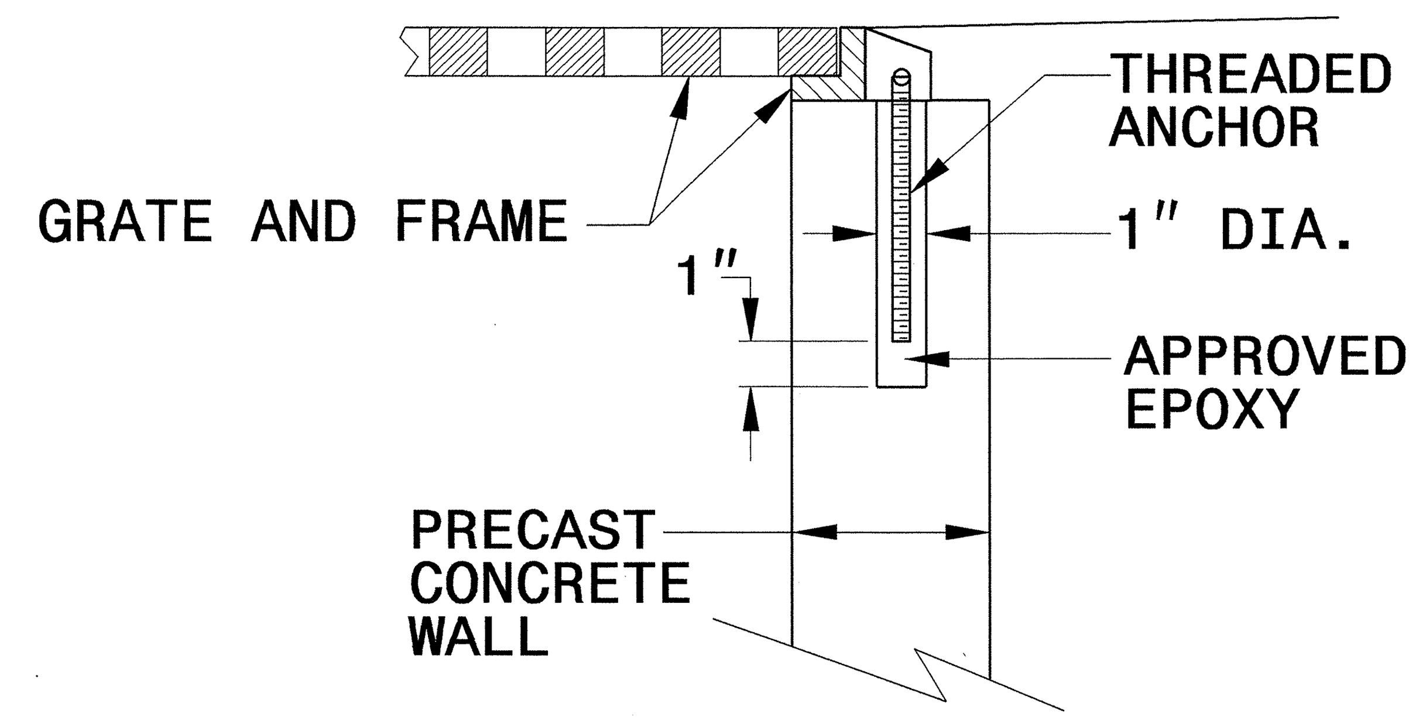
ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE



BRICK MASONRY CONSTRUCTION



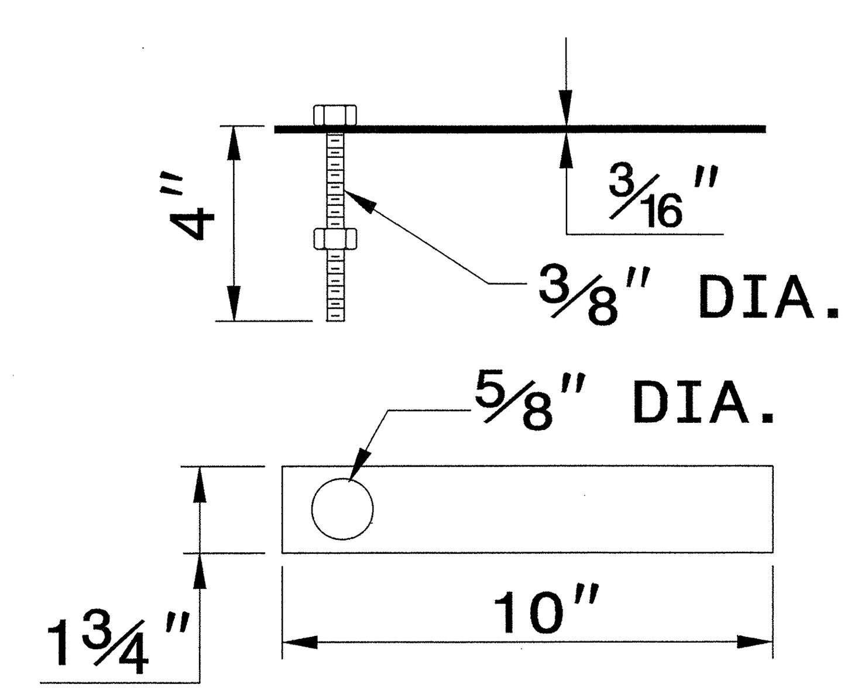
CONCRETE CONSTRUCTION



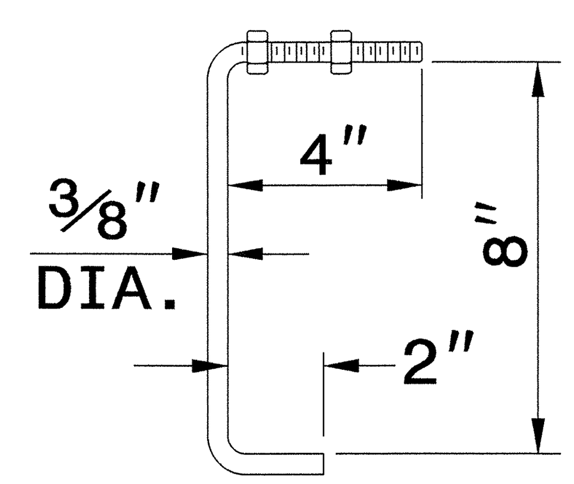
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

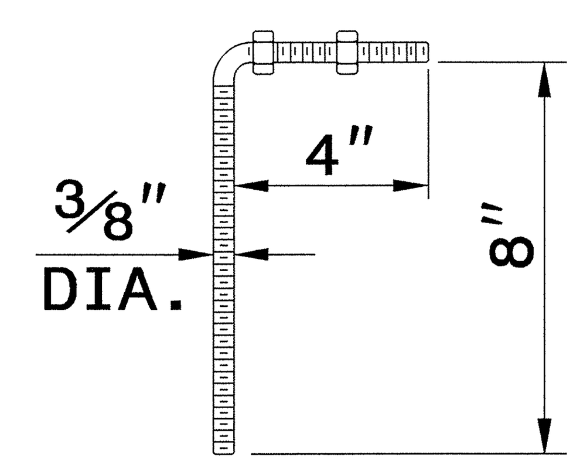
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



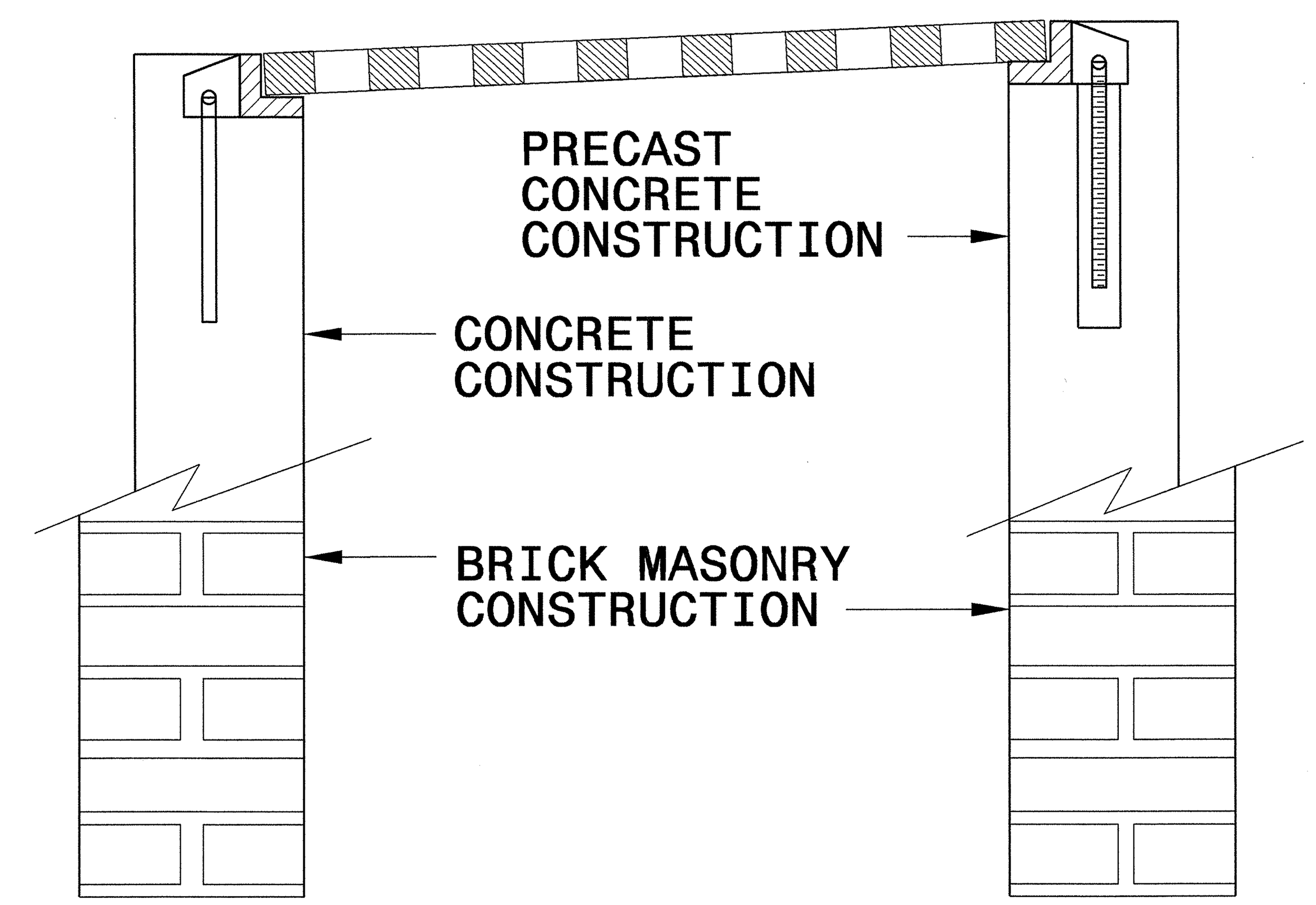
MASONRY ANCHOR
3⁄8″ DIA. BOLT WITH PLATE



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

SHEET 1 OF 1
840D25

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
8/16/11

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.:

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

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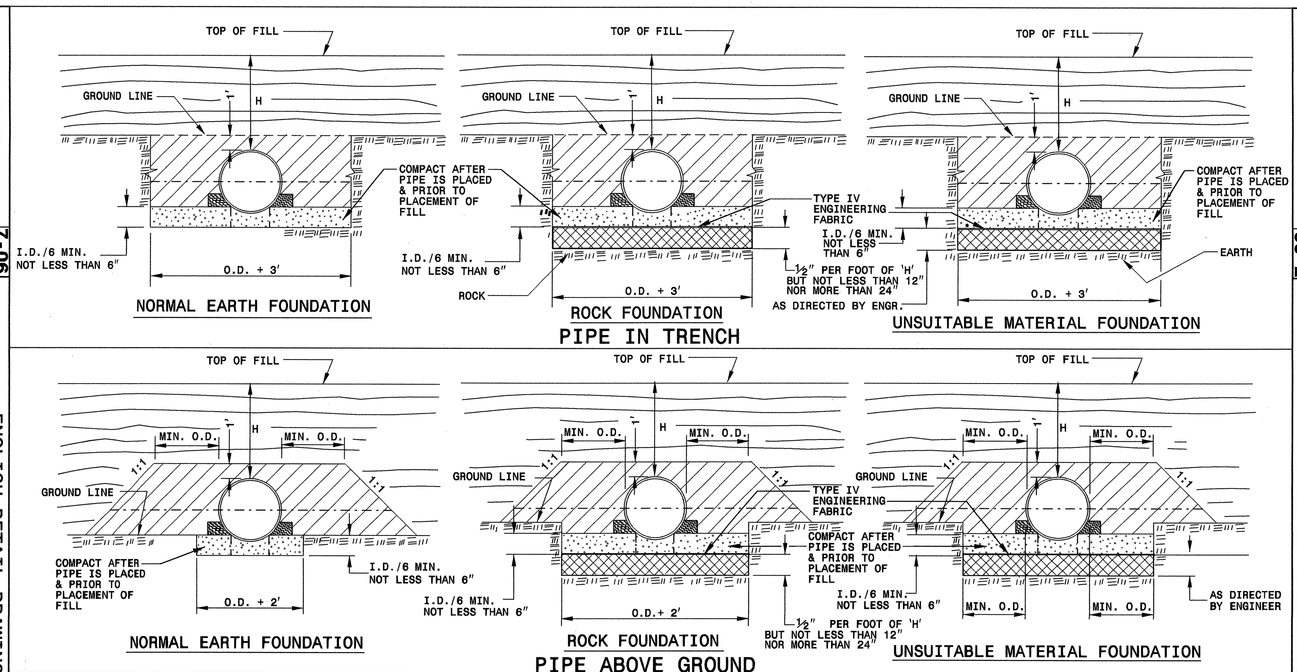
jhowerton AT PS237501

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
FLEXIBLE PIPE



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

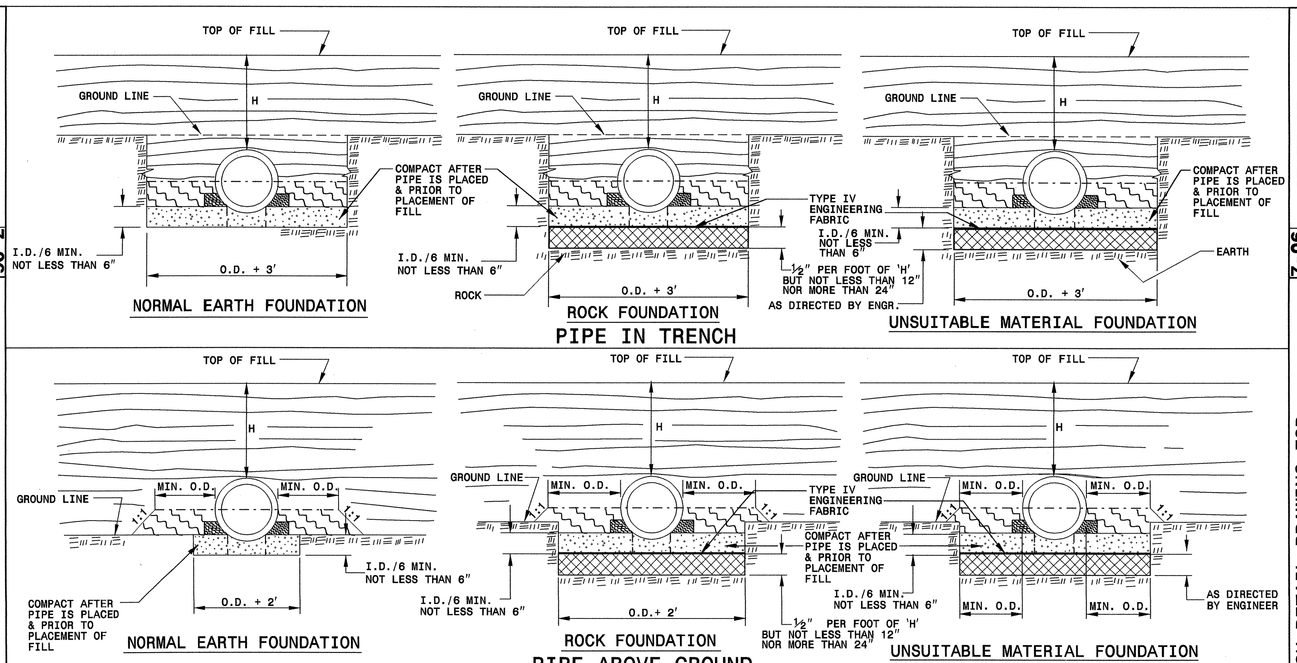
SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 1 OF 3
300D01

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



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.

SHEET 2 OF 3
300D01

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

ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC: s:\contracts\contracts\special details\ericward\stds\stdstodetails\30001\0300d01.dgn

SEE PLATE FOR TITLE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 02288

PROJECT REFERENCE NO. B-4060
SHEET NO. 2-E

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5/14/99

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 REFERENCE NO. B-4090
SHEET NO. 2-F

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
8/16/11

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
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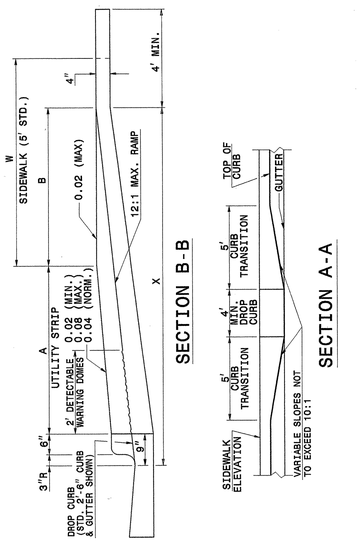

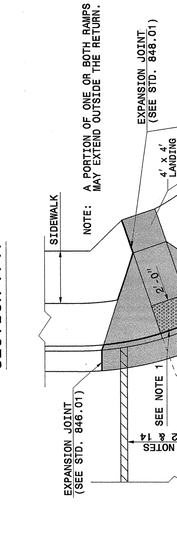

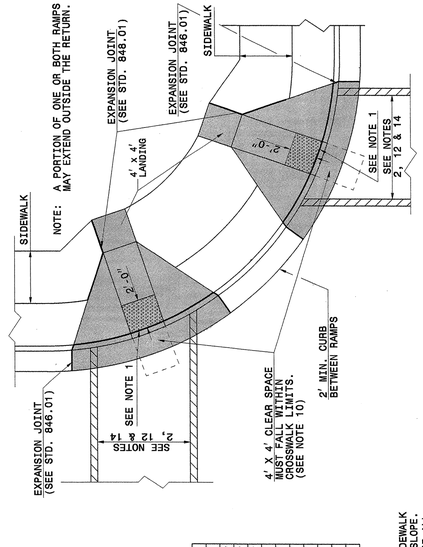

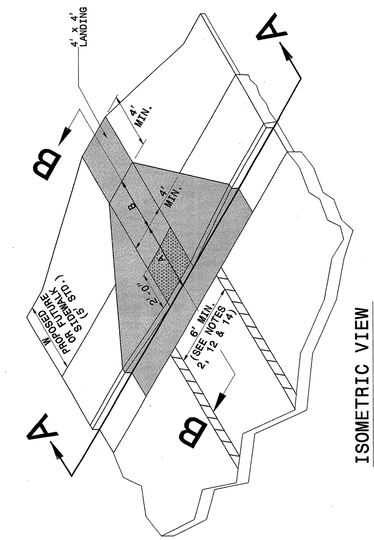

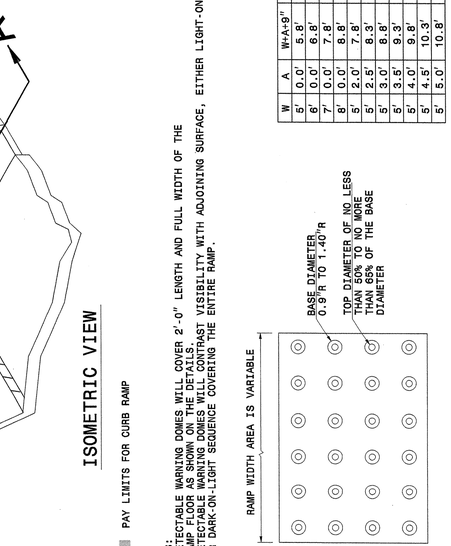

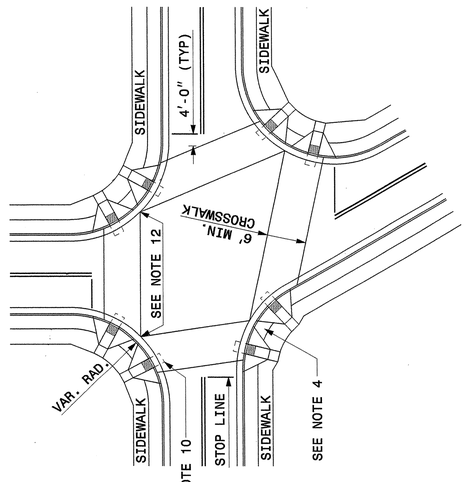

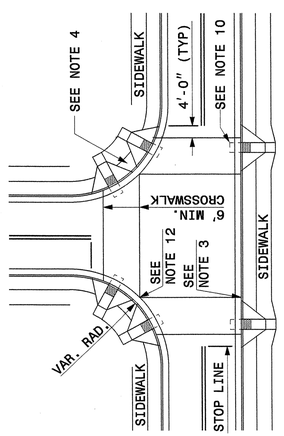

PROJECT REFERENCE NO.	SHEET NO.
B-4090	2-G

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

ENGLISH DETAIL DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

SHEET 1 OF 3
848D05

ISOMETRIC VIEW

▨ PAY LIMITS FOR CURB RAMP

NOTES:
1. DETECTABLE WARNING DOMES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.

DETECTABLE WARNING DOMES

SECTION B-B

SECTION A-A

PLAN VIEW

DUAL RAMPS
ANY RADII
(4' MIN. FLOOR WIDTH)

W	A	W+A+9"	X	B
5'	0.0'	5.8'	5.8'	5.0'*
6'	0.0'	6.8'	6.8'	6.0'**
7'	0.0'	7.8'	7.3'	6.5'**
8'	0.0'	8.8'	7.3'	6.5'**
5'	2.0'	7.8'	7.8'	5.0'
5'	2.5'	8.3'	8.1'	4.8'
5'	3.0'	8.8'	8.3'	4.4'
5'	3.5'	9.3'	8.4'	4.1'
5'	4.0'	9.8'	8.6'	3.8'
5'	4.5'	10.3'	8.7'	3.4'
5'	5.0'	10.8'	8.9'	3.1'

B = X-(A+9")
B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

SHEET 1 OF 3
848D05

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

ENGLISH DETAIL DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

SHEET 2 OF 3
848D05

DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS

DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES

ROADWAY PLAN SYMBOL
CR
FOR PROPOSED CURB RAMP

PROPOSED CURB RAMP W/ LANDING
PROPOSED OR FUTURE SIDEWALK

ALLOWABLE LOCATIONS
DUAL RAMP RADII..........ANY

STATE OF
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

SHEET 2 OF 3
848D05

SEAL 022966
8/16/11

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

SEE PLATE FOR TITLE

ORIGINAL BY: STD.NO.848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/12/10
FILE SPEC.: SpecialDetails/EricWard/STDS/848d05.dgn

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
7-06

ENGLISH DETAIL DRAWING FOR
CURB RAMPS
NOTES

SHEET 3 OF 3
848D05

NOTES:

1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT.
2. PROVIDE DETECTABLE WARNINGS FOR ALL RAMPS. THE DETECTABLE WARNING SURFACE SHOULD CONTRAST VISIBLY WITH ADJACENT SURFACES.
3. NORTH CAROLINA GENERAL STATUTE 136-44.14 REQUIRES THAT ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED FOR MAINTENANCE PROCEDURES, TRAFFIC OPERATIONS, REPAIRS, CORRECTION OF UTILITIES OR ALTERED FOR ANY REASON AFTER SEPTEMBER 1, 1973 SHALL PROVIDE CURB RAMPS FOR THE PHYSICALLY DISABLED AT ALL INTERSECTIONS WHERE BOTH CURB AND GUTTER AND SIDEWALKS ARE PROVIDED AND AT OTHER POINTS OF PEDESTRIAN FLOW.

   IN ADDITION, SECTION 228 OF THE 1973 FEDERAL AID HIGHWAY SAFETY ACT REQUIRES PROVISION OF CURB RAMPS ON ANY CURB CONSTRUCTION AFTER JULY 1,1976 WHETHER A SIDEWALK IS PROPOSED INITIALLY OR IS PLANNED FOR A FUTURE DATE.

   THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990 EXTENDS TO INDIVIDUALS WITH DISABILITIES. COMPREHENSIVE CIVIL RIGHTS PROTECTIONS SIMILIAR TO THOSE PROVIDED TO PERSONS ON THE BASIS OF RACE, SEX, NATIONAL ORIGIN AND RELIGION UNDER THE CIVIL RIGHTS ACT OF 1964. THESE CURB RAMPS HAVE BEEN DESIGNED TO COMPLY WITH THE CURRENT ADA STANDARDS.
4. PROVIDE CURB RAMPS AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATE CURB RAMPS AS DIRECTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT. PLACE DUAL RAMPS PERPENDICULAR TO THE TRAVEL LANE OR AS DIRECTED BY THE ENGINEER.
5. DO NOT EXCEED 0.08 (12:1) SLOPE ON THE RAMP.
6. CONSTRUCT CURB RAMPS A MINIMUM OF 4' FOR SINGLE RAMPS.
7. PLACE A ½" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AND AS SHOWN ON STD. DWG. 848.01.
8. PLACE THE INSIDE PEDESTRIAN CROSSWALK LINES NO CLOSER IN THE INTERSECTION BY BISECTING THE INTERSECTION RADII, WITH ALLOWANCE OF A 4' CLEAR ZONE IN THE VEHICULAR TRAVELWAY WHEN ONE RAMP IS INSTALLED. (SEE NOTE 14)
9. COORDINATE THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SO THE 4' X 4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
10. CONSTRUCT THE PEDESTRIAN CROSSWALK A MINIMUM OF 6 FEET IN WIDTH. A CROSSWALK WIDTH OF 10 FEET OR GREATER IS DESIRABLE.
11. USE STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE TO BE PARALLEL TO THE INTERSECTING ROADWAY.
12. TERMINATE PARKING A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK.
13. PLACE ALL PAVEMENT MARKINGS IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD.
14. CONSTRUCT ALL RAMPS SURFACES TO COMPLY WITH SECTIONS R301 AND R303.3.3 OF THE REVISED ADA GUIDELINES.
15. CONSTRUCT ALL RAMPS AND SIDEWALKS WITH A 2% MAXIMUM CROSS SLOPE.
16. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
17. CONSTRUCT ALL SIDE FLARES FOR CURB RAMPS WITH SLOPES NO GREATER THAN 10:1.
18. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT SECTION FOR THE DETAILS OR FOR A SPECIAL DESIGN.

STATE OF NORTH CAROLINA
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DIVISION OF HIGHWAYS
RALEIGH, N.C.
7-06

ENGLISH DETAIL DRAWING FOR
CURB RAMPS
NOTES

SHEET 3 OF 3
848D05

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
8/16/11

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

SEE PLATE FOR TITLE

ORIGINAL BY: STD.NO.848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/12/10
FILE SPEC.: SpecialDetails/EricWard/STDS/848d05.dgn

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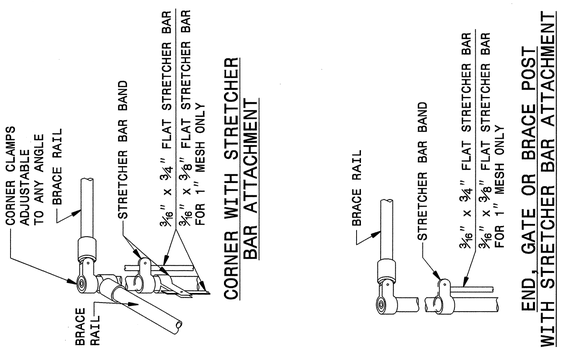
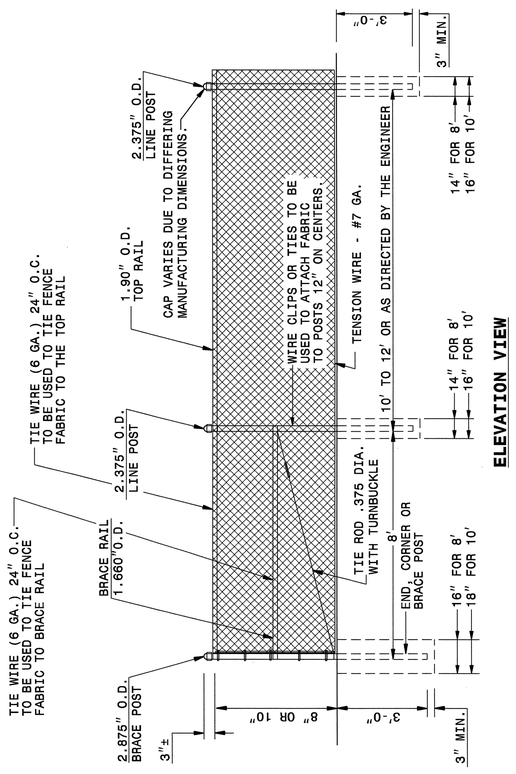
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4090	2-I

ENGLISH DETAIL DRAWING FOR
CHAIN LINK FENCE
8' AND 10' HEIGHT

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



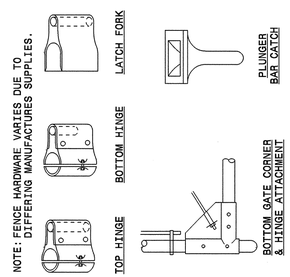


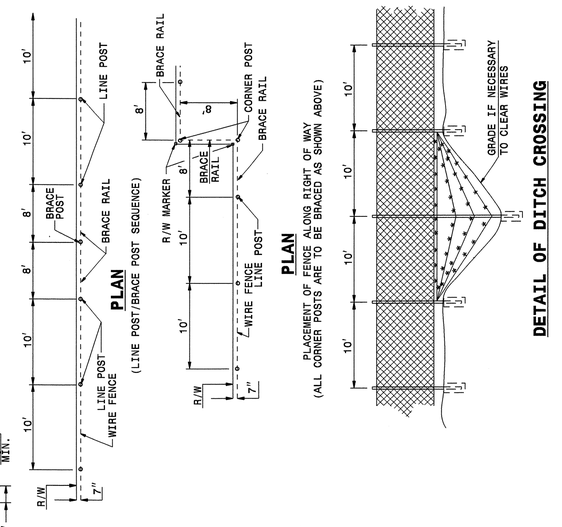
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

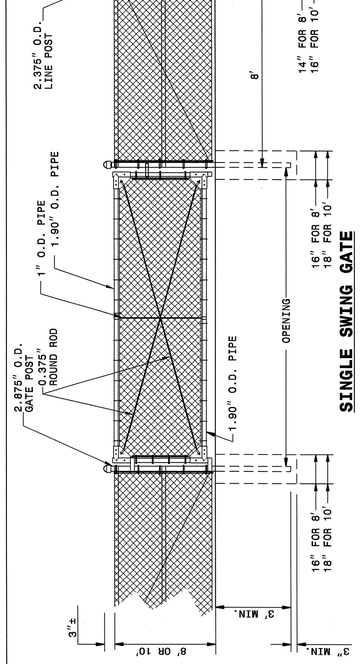
ENGLISH DETAIL DRAWING FOR
CHAIN LINK FENCE
8' AND 10' HEIGHT

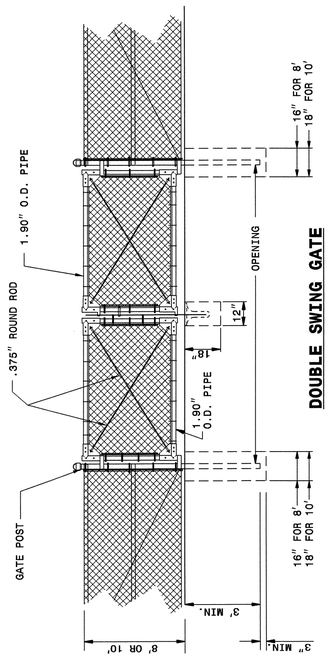
ENGLISH DETAIL DRAWING FOR
CHAIN LINK FENCE
8' AND 10' HEIGHT

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









NOTES:
-CAPS ARE REQUIRED ON PIPE POSTS.
-BRACE POSTS ERECT BETWEEN END, CORNER OR GATE POSTS AT INTERVALS NOT EXCEEDING 500' ON TANGENTS OR 350' ON SHORT RADIUS CURVES.
-ADDITIONAL BRACE POSTS REQUIRED IF SO DIRECTED BY THE ENGINEER.
-BRACE POSTS FROM BOTH SIDES OF POST.
-ALTERNATE TYPES OF POSTS WILL BE ALLOWED AT DISCRETION OF THE ENGINEER.

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

ENGLISH DETAIL DRAWING FOR
CHAIN LINK FENCE
8' AND 10' HEIGHT

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

SEE PLATE FOR TITLE

ORIGINAL BY:	N.T. KEGLERS	DATE:	3-11-96
MODIFIED BY:	TSS	DATE:	1-31-11
CHECKED BY:		DATE:	8/11/11

FILE SPEC.: d$172:/usr/details/metric/fence/fence2cl.dgn

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4090	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0022000000-E	225	14,200	CY	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (18+55.00)
0036000000-E	225	300	CY	UNDERCUT EXCAVATION
0106000000-E	230	20,400	CY	BORROW EXCAVATION
0134000000-E	240	15	CY	DRAINAGE DITCH EXCAVATION
0156000000-E	250	4,100	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0195000000-E	SP	300	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	2,050	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	730	SF	TEMPORARY SHORING
0318000000-E	SP	20	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0320000000-E	SP	40	SY	FOUNDATION CONDITIONING FABRIC
0594000000-E	SP	96	LF	24" CS PIPE CULVERTS, 0.064" THICK
0995000000-E	340	64	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1121000000-E	520	1,762	TON	AGGREGATE BASE COURSE
1330000000-E	607	380	SY	INCIDENTAL MILLING
1491000000-E	610	260	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1503000000-E	610	250	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1519000000-E	610	500	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-E	610	245	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1575000000-E	SP	70	TON	ASPHALT BINDER FOR PLANT MIX
2253000000-E	840	1	CY	PIPE COLLARS
2549000000-E	846	600	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	300	SY	4" CONCRETE SIDEWALK
2655000000-E	852	110	SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
2759000000-N	SP	1	EA	GENERIC PAVING ITEM CONCRETE CURB RAMPS
2800000000-N	858	1	EA	ADJUSTMENT OF CATCH BASINS
3030000000-E	862	225	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3533000000-E	866	300	LF	CHAIN LINK FENCE, **' FABRIC (120")
3539000000-E	866	25	EA	METAL LINE POSTS FOR **' CHAIN LINK FENCE (120")
3545000000-E	866	5	EA	METAL TERMINAL POSTS FOR **' CHAIN LINK FENCE (120")
3628000000-E	876	43	TON	RIP RAP, CLASS I
3656000000-E	876	1,149	SY	FILTER FABRIC FOR DRAINAGE
4072000000-E	903	97	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	12	EA	SIGN ERECTION, TYPE E
4155000000-N	907	13	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4400000000-E	1110	853	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	514	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	44	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	4	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	4	EA	CHANGEABLE MESSAGE SIGN
4430000000-N	1130	105	EA	DRUMS
4435000000-N	1135	64	EA	CONES
4445000000-E	1145	80	LF	BARRICADES (TYPE III)
4450000000-N	1150	56	HR	FLAGGER
4465000000-N	1160	4	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	4	EA	RESET TEMPORARY CRASH CUSHIONS
4480000000-N	1165	4	EA	TMIA
4485000000-E	1170	940	LF	PORTABLE CONCRETE BARRIER
4490000000-E	1170	700	LF	PORTABLE CONCRETE BARRIER (ANCHORED)
4495000000-E	1170	180	LF	PORTABLE CONCRETE BARRIER (DRAINAGE)
4500000000-E	1170	760	LF	RESET PORTABLE CONCRETE BARRIER
4506000000-E	1170	180	LF	RESET PORTABLE CONCRETE BARRIER (DRAINAGE)
4510000000-N	SP	180	HR	LAW ENFORCEMENT
4516000000-N	1180	64	EA	SKINNY DRUM
4685000000-E	1205	341	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	3,152	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	95	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4725000000-E	1205	8	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	690	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (III)
4770000000-E	1205	1,323	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
4810000000-E	1205	29,984	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	432	LF	PAINT PAVEMENT MARKING LINES (8")
4835000000-E	1205	340	LF	PAINT PAVEMENT MARKING LINES (24")
4840000000-N	1205	24	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	104	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	11,762	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4860000000-E	1205	633	LF	REMOVAL OF PAVEMENT MARKING LINES (8")
4875000000-N	1205	25	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4900000000-N	1251	472	EA	PERMANENT RAISED PAVEMENT MARKERS
6000000000-E	1605	3,370	LF	TEMPORARY SILT FENCE
6006000000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	380	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	465	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	5	ACR	TEMPORARY MULCHING
6018000000-E	1620	200	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.75	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	800	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	10	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	900	LF	SAFETY FENCE
6030000000-E	1630	440	CY	SILT EXCAVATION
6036000000-E	1631	6,500	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	1,050	SY	COIR FIBER MAT
6038000000-E	SP	1,400	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	300	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	2	EA	SPECIAL STILLING BASINS
6071010000-E	SP	100	LF	WATTLE
6071020000-E	SP	25	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	240	LF	COIR FIBER BAFFLE
6071050000-E	SP	1	EA	**' SKIMMER (1-1/2")
6084000000-E	1660	6	ACR	SEEDING & MULCHING
6087000000-E	1660	0.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	150	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	4.5	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	100	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	30	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.4	ACR	REFORESTATION

6/21/00

COMPUTED BY: JMT	DATE: 5/2010
CHECKED BY: RJD	DATE: 6/2010

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4090	3-A

NOTE: Invert Elevations 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" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)								C.S. PIPE (UNLESS NOTED OTHRWISE)													CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED)							
SIZE								12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"		30"		36"		42"		48"		12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE		FROM	TO													.064	.064	.064	.064		.079		.079		.109		.109									
-L- STA. 15+52	RT	0402		89.40'	78.56'																															
-DET- STA 18+16	LT	0201	OUT		50.45'		0.3												96																	
-L- STA. 20+90	LT																																			
SAY TOTALS																			96																	

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	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'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & 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 GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32			ADJUST EXISTING CATCH BASIN					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- STA. 15+52																										1									
-DET- STA 18+16																																.5526		8	
-L- STA. 20+90																																		56	REMOVE 56' OF C.S. PIPE WHEN DETOUR IS REMOVED (PIPE 0201 ON PSH 2-B)
SAY TOTALS																										1						1		64	

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

SUMMARY OF EARTHWORK

	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
STAGE 1: DETOUR CONSTRUCTION				
(-L- STA IN ( ))				
-DET- STA 13+09.61 (-L- STA 15+93.75) TO -DET- STA 15+17.87 (-L- STA 18+01.81) (BEG. BR.)	573	928	355	
-DET- STA 16+98.41 (-L- STA 19+82.35) (END BR.) TO -DET- STA 19+33.14 (-L- STA 22+08.93)	216	19,129	18,913	
SUBTOTALS:	789	20,057	19,268	
STAGE 2: L CONSTRUCTION				
-L- STA 16+00.00 TO -L- STA 17+39.46 (BEG. BR.)	59	121	62	
-L- STA 19+70.54 (END BR.) TO -L- STA 20+50.00	89	31		58
SUBTOTALS:	148	152	62	58
STAGE 3: DETOUR REMOVAL				
-DET- STA 13+09.61 (-L- STA 15+93.75) TO -DET- STA 15+17.87 (-L- STA 18+01.81) (BEG. BR.)	841	620		221
-DET- STA 16+98.41 (-L- STA 19+82.35) (END BR.) TO -DET- STA 19+33.14 (-L- STA 22+08.93)	12,327			12,327
SUBTOTALS:	13,168	620		12,548
STAGE 4: CONSTRUCT REMAINDER OF L LT.				
-L- STA 15+98.50 TO -L- STA. 17+39.46 (BEG. BR.)	4	73	69	
-L- STA 19+70.54 (END BR.) TO -L- STA 22+15.00	49	244	195	
SUBTOTALS:	53	317	264	
TOTALS:	14,158	21,146	19594	12,606
WASTE IN LIEU OF BORROW			-264	-264
PROJECT TOTALS:	14,158		19,330	12,342
EST 5% TO REPLACE BORROW PIT TOP SOIL			967	
GRAND TOTALS:	14,158		20,297	12,342
SAY:	14,200		20,400	

UNDERCUT = 300 CY AS A CONTINGENCY
ESTIMATE DDE = 15 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.

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
L	16+75	17+55.88	CL	611.09
L	19+55.59	20+25	CL	524.43
DET	13+06.69	13+28.86	CL	55.67
DET	13+28.86	13+79.94	RT	289.45
DET	13+79.94	14+69.52	CL	646.97
DET	14+69.52	15+17.87	RT	392.17
DET	ADDITIONAL PAVED SHOULDER "TO DRAIN" AFTER BRIDGE		RT	105.67
DET	ADDITIONAL PAVED SHOULDER "TO DRAIN" AFTER BRIDGE		RT	167.11
DET	16+98.41	18+16.78	CL	854.89
DET	18+16.78	18+69.45	CL	298.46
DET	18+69.45	19+33.14	CL	129.79
			TOTAL:	4075.70
			SAY:	4,100

"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			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	TYPE III	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
L	16+08.21	17+39.46 (BR.)	RT	131.25			17+40.00 (BR)		7.5'	10' (BERM)	112.5		2.25				1		1											
L	16+58.21	17+39.46 (BR.)	LT	81.25				17+40.00 (BR)	7.5'	10' (BERM)		62.5		1.25			1		1											
L	19+70.54 (BR.)	20+51.79	RT	81.25				19+70.00 (BR)	7.5'	10' (BERM)		62.5		1.25			1		1											
L	19+70.54 (BR.)	21+51.79	LT	181.25			19+70.00 (BR)		7.5'	10' (BERM)	162.5		3.25				1		1											
			SUB-TOTAL	475																										
			ANCHOR DEDUCTION	-275																										
			TOTAL	200											TOTAL		4		4											
			SAY	225											SAY		4		4											

ANCHOR DEDUCTIONS
TYPE III: 4 @ 18.75' = 75'
TYPE 350: 4 @ 50' = 200'
GRAND TOTAL = 275'

ADDITIONAL GUARDRAIL POSTS = 5

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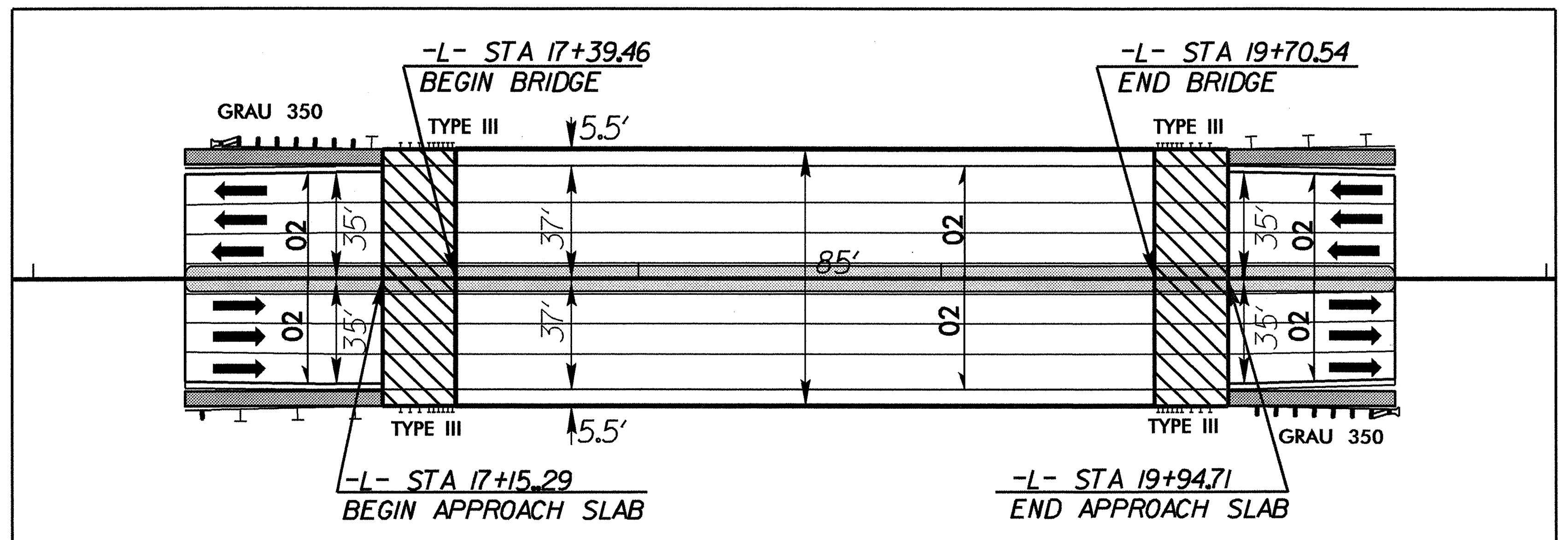
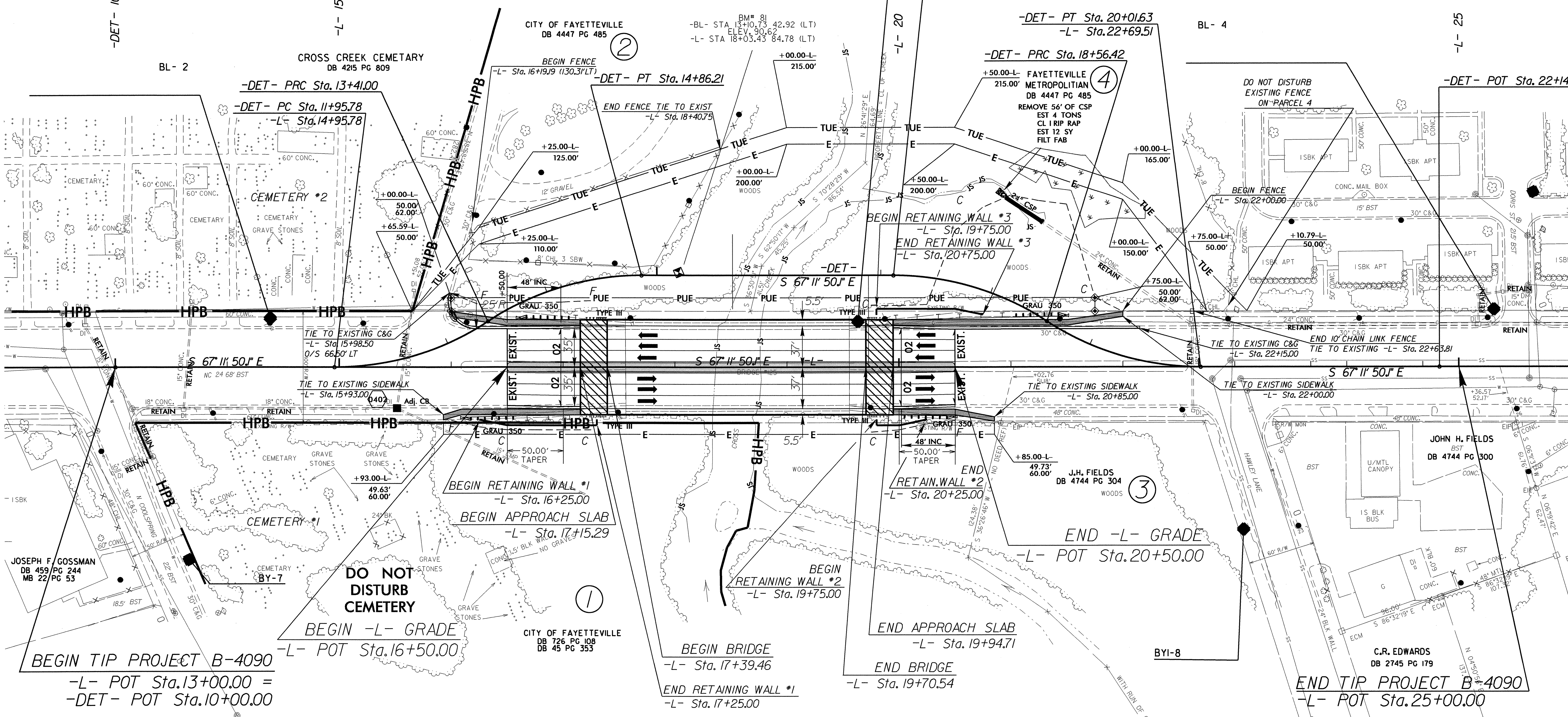
PROJECT REFERENCE NO.	SHEET NO.
B-4090	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 02947 ENGINEER JASON M. TALLEY 9/9/2011	NORTH CAROLINA PROFESSIONAL SEAL 12575 ENGINEER PAUL F. FISHER 9/9/2011



DETAIL SHOWING PAVEMENT - BRIDGE RELATIONSHIP

PERMANENT SOIL REINFORCEMENT MAT SHALL BE PLACED ON SLOPES FROM STA.16+20 *TO STA.16+30 *-L- (RIGHT), STA.20+20 *TO STA.20+30 *-L- (RIGHT), STA.20+40 *TO STA.21+60 *-L- (LEFT) AND FROM STA.21+70 * TO STA.21+80 *-L- (LEFT). SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.



NAD 83/95
CROSS CREEK CEMETARY
DB 4215 PG 809
CITY OF FAYETTEVILLE
DB 4447 PG 485
FAYETTEVILLE METROPOLITIAN
DB 4447 PG 485
-DET- PRC Sta. 13+41.00
-DET- PC Sta. 11+95.78
-L- Sta. 14+95.78
-DET- PT Sta. 14+86.21
-DET- PC Sta. 17+11.21
-DET- PT Sta. 20+01.63
-L- Sta. 22+69.51
-DET- PRC Sta. 18+56.42
-DET- POT Sta. 22+14.80
CEMETERY #2
CEMETERY #1
DO NOT DISTURB CEMETERY
BEGIN RETAINING WALL #1
-L- Sta. 16+25.00
BEGIN APPROACH SLAB
-L- Sta. 17+15.29
BEGIN RETAINING WALL #3
-L- Sta. 19+75.00
END RETAINING WALL #3
-L- Sta. 20+75.00
END RETAIN. WALL #2
-L- Sta. 20+25.00
END -L- GRADE
-L- POT Sta. 20+50.00
BEGIN RETAINING WALL #2
-L- Sta. 19+75.00
END APPROACH SLAB
-L- Sta. 19+94.71
BEGIN BRIDGE
-L- Sta. 17+39.46
END BRIDGE
-L- Sta. 19+70.54
END RETAINING WALL #1
-L- Sta. 17+25.00
BEGIN -L- GRADE
-L- POT Sta. 16+50.00
BEGIN TIP PROJECT B-4090
-L- POT Sta. 13+00.00 =
-DET- POT Sta. 10+00.00
END TIP PROJECT B-4090
-L- POT Sta. 25+00.00
S 67° 11' 50.1" E
JOSEPH F. GOSSMAN
DB 459 PG 244
MB 22 PG 53
J.H. FIELDS
DB 4744 PG 304
JOHN H. FIELDS
DB 4744 PG 300
C.R. EDWARDS
DB 2745 PG 179
CITY OF FAYETTEVILLE
DB 726 PG 108
DB 45 PG 353

A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED LANE WIDTH.

-DET- CURVE DATA

PI Sta 12+70.50	PI Sta 14+15.71	PI Sta 17+85.92	PI Sta 19+31.14
Δ = 33° 16' 47.6" (LT)	Δ = 33° 16' 47.6" (RT)	Δ = 33° 16' 47.6" (RT)	Δ = 33° 16' 47.6" (LT)
D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 22° 55' 05.9"
L = 145.21'	L = 145.21'	L = 145.21'	L = 145.21'
T = 74.72'	T = 74.72'	T = 74.72'	T = 74.72'
R = 250.00'	R = 250.00'	R = 250.00'	R = 250.00'
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

NOTES:

SEE SHEET 2-B FOR DETOUR
FOR -L- PROFILE, SEE SHEET NO. 5
SIDEWALK
BRIDGE APPROACH SLAB
HPB HISTORIC PROPERTY BOUNDARY
FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-41
FOR RETAINING WALL PLANS, SEE SHEET W-1 THRU W-2

REVISIONS

8/17/99

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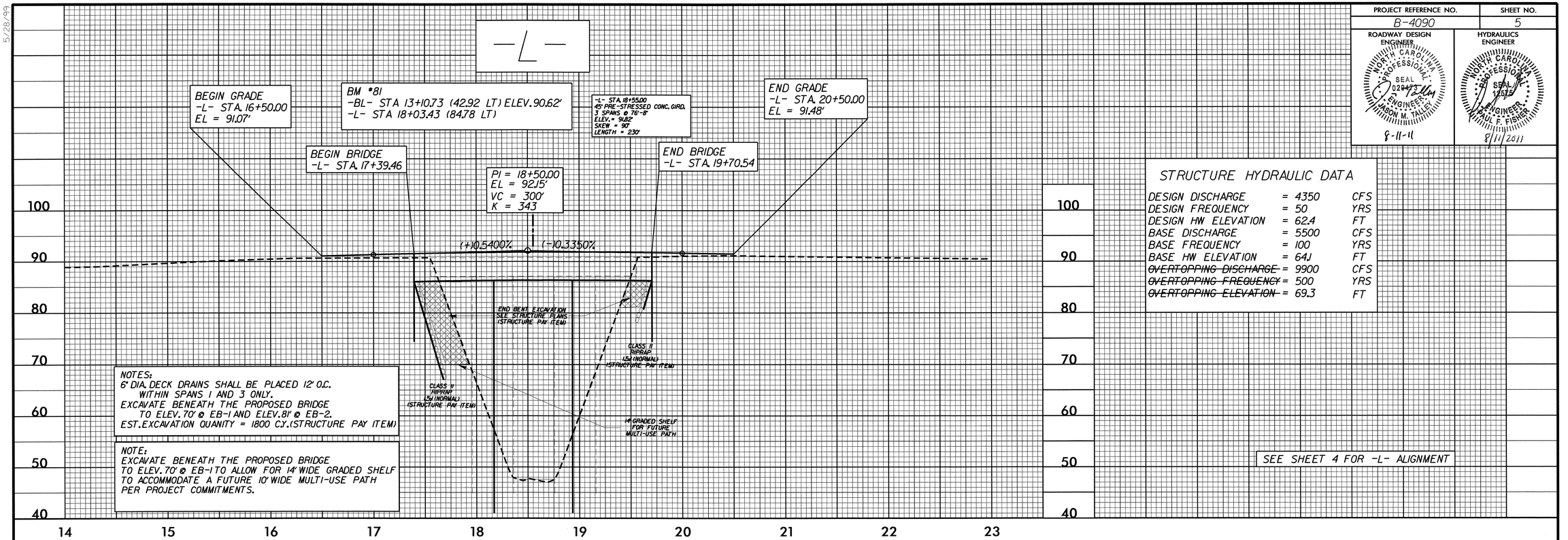
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4090	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
8-11-11

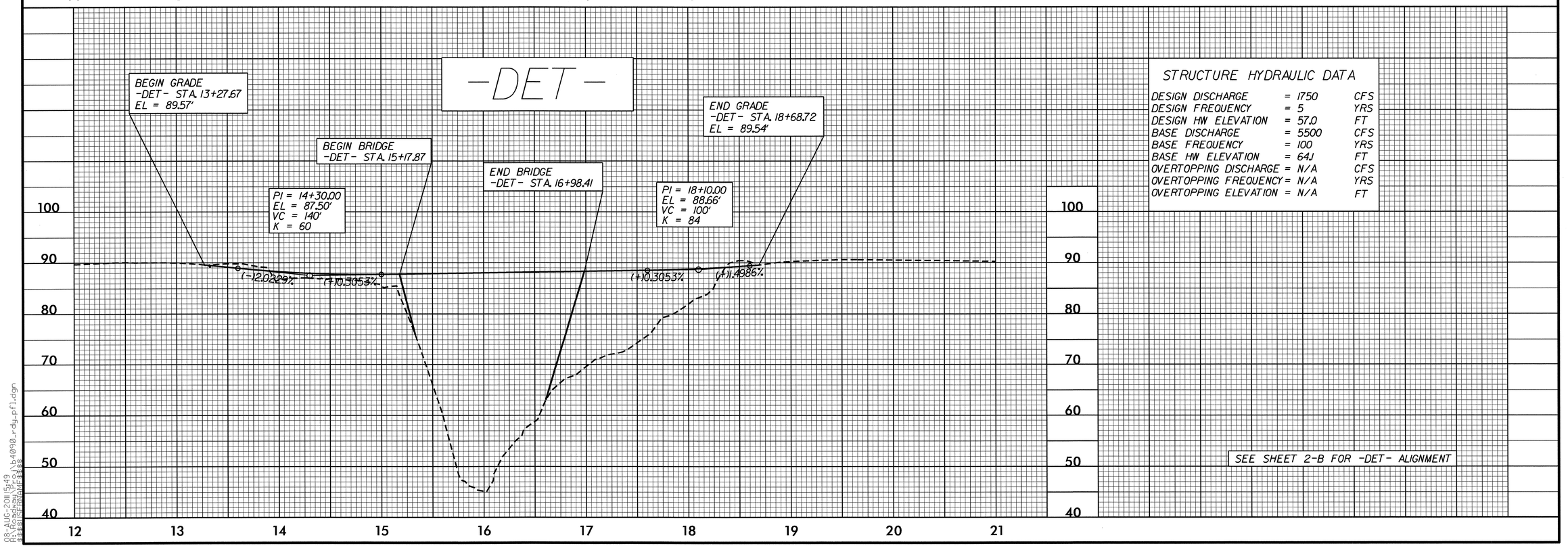
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19575 ENGINEER PAUL F. FISHER
8/11/2011



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 4350	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 62.4	FT
BASE DISCHARGE	= 5500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 64.1	FT
~~OVERTOPPING DISCHARGE~~	= 9900	CFS
~~OVERTOPPING FREQUENCY~~	= 500	YRS
~~OVERTOPPING ELEVATION~~	= 69.3	FT

SEE SHEET 4 FOR -L- ALIGNMENT



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 1750	CFS
DESIGN FREQUENCY	= 5	YRS
DESIGN HW ELEVATION	= 57.0	FT
BASE DISCHARGE	= 5500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 64.1	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= N/A	YRS
OVERTOPPING ELEVATION	= N/A	FT

SEE SHEET 2-B FOR -DET- ALIGNMENT

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