TIP PROJECT: B-4692

WBS: 33838

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4692	1	41

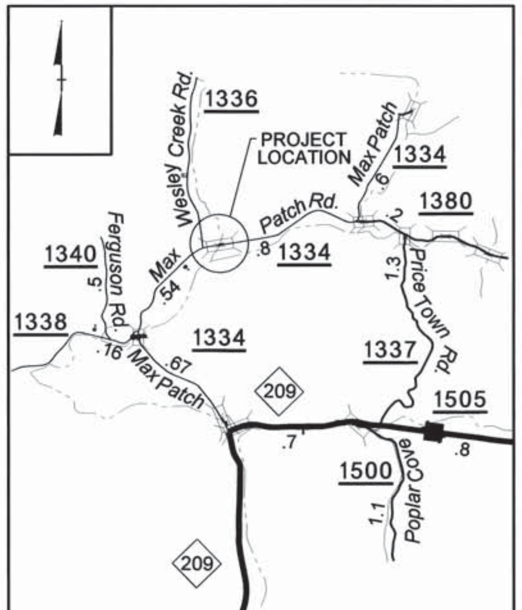
STATE PROJECT NO.	F.A. PROJ. NO.	DESCRIPTION
33838.1.1	PFH-12(1)	P.E.
33838.2.2	PFH-12(1)	R/W
33838.3.1	PFH-12(1)	CONSTRUCTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

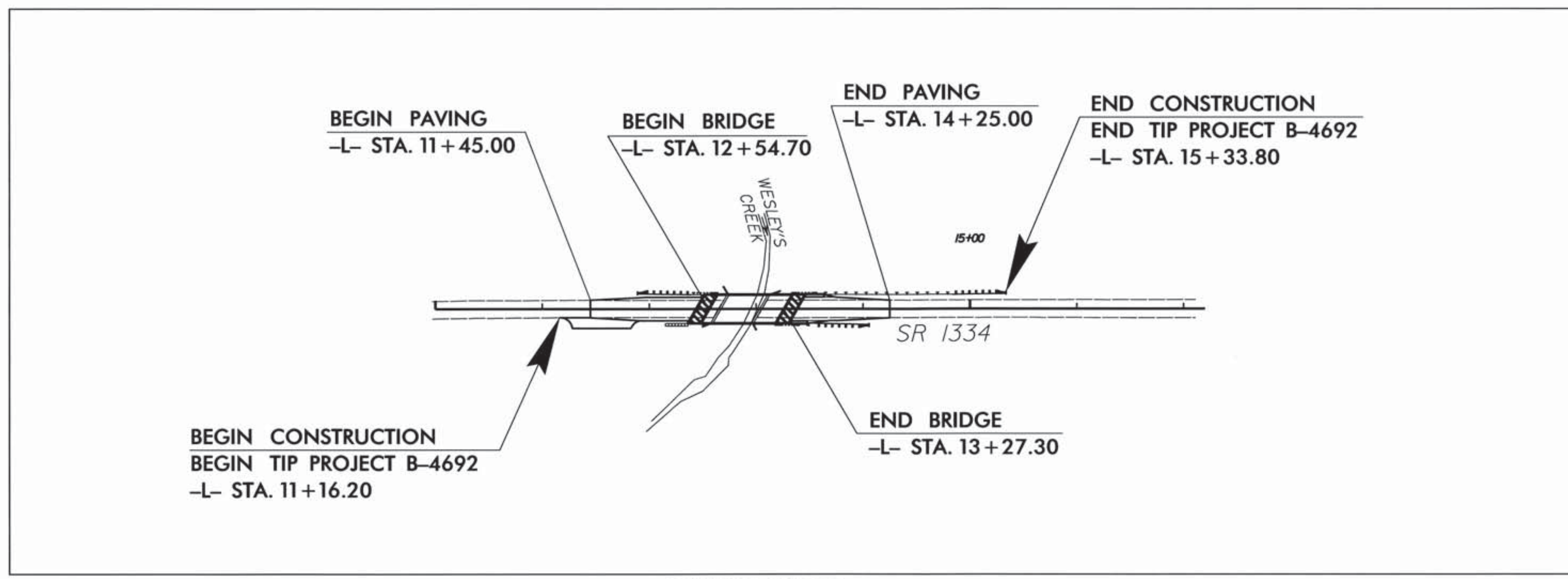
LOCATION: BRIDGE NO. 283 ON SR 1334 OVER WESLEY'S CREEK BETWEEN SR 1336 AND SR 1380

TYPE OF WORK: BRIDGE REPLACEMENT WITH PRE-STRESSED CONCRETE BOX BEAM SUPERSTRUCTURE ON STEEL PILE END BENTS AND ROADWAY APPROACHES



VICINITY MAP
(NOT TO SCALE)

NAD 83



LOCATION SKETCH

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

ADT 2003 = 550
ADT 2030 = 1000
DHV = %
D = %
T = 3 % *
V = 45 MPH

* TTST 2% DUAL 1%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4692 = 0.065 MILE

LENGTH STRUCTURE TIP PROJECT B-4692 = 0.014 MILE

TOTAL LENGTH TIP PROJECT B-4692 = 0.079 MILE

Prepared In the Office of:

BRIDGE MANAGEMENT UNIT

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

LETTING DATE:

DAN HOLDERMAN, PE
STATE BRIDGE MANAGEMENT ENGINEER

NCDOT CONTACT:

MIKE SUMMERS
BRIDGE MANAGEMENT PROJECT MANAGER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026441 DOMINIC M. WAINWRIGHT

Dominic M. Wainwright 2/28/11

DOMINIC WAINWRIGHT, PE
DESIGN ENGINEER

DATUM DESCRIPTION

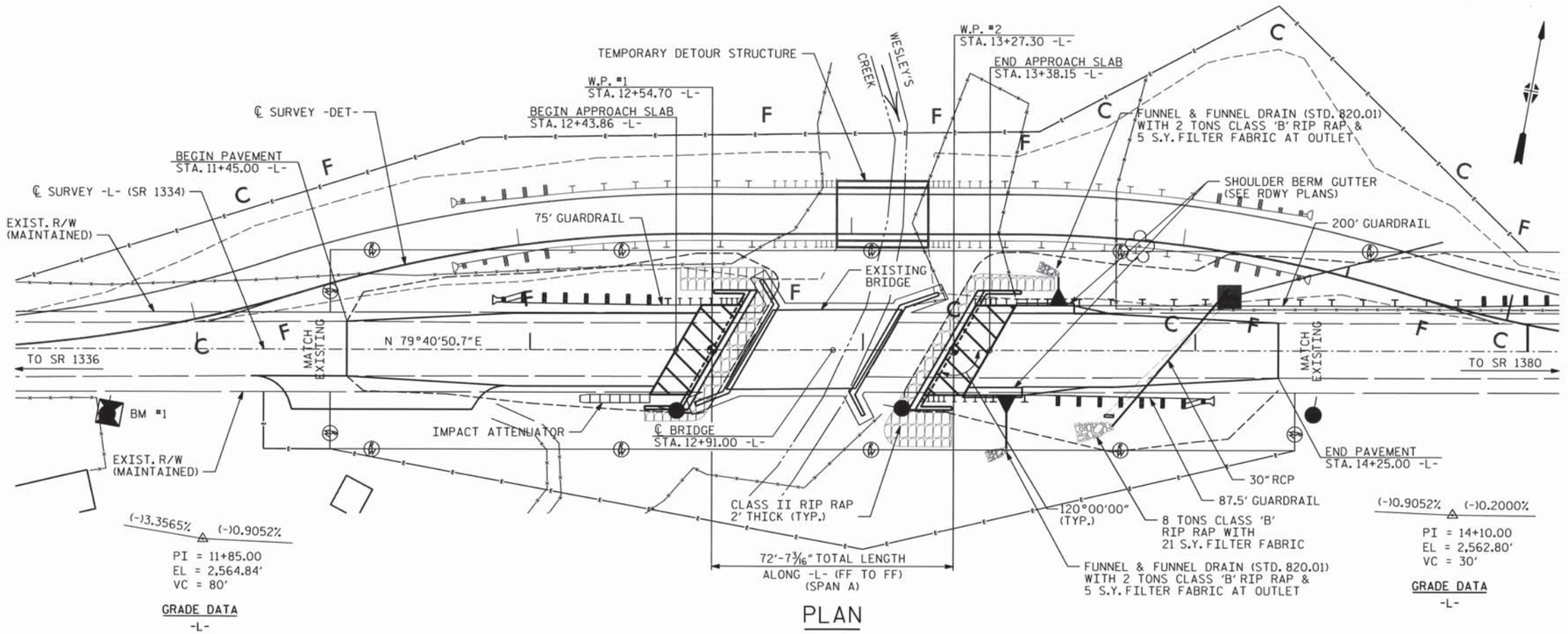
BM * 1
NAIL IN BASE OF POWER POLE
STA. 10+73.63 -L- (19.31' RT)
ELEV. = 2568.66'

THE BEARING AND HORIZONTAL GROUND
DISTANCE FROM BM *1 TO -L- STA. 12+54.70
IS N 73°35'30.97"E 182.094 (FT.)

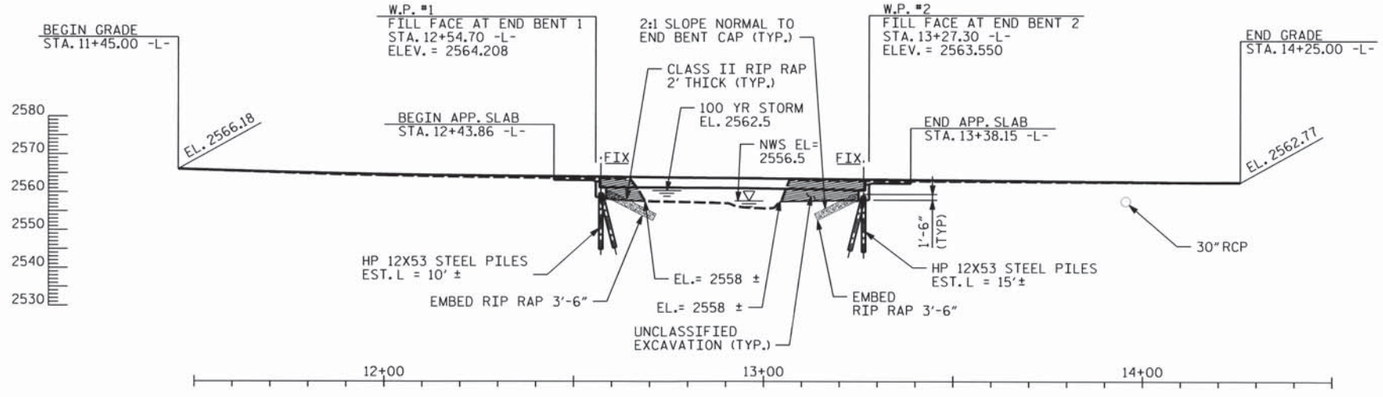
THE BEARING AND HORIZONTAL GROUND
DISTANCE FROM BM *1 TO -L- STA. 11+45.00
IS N 64°32'13.13"E 73.934 (FT.)

NOTES

1. ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
2. THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
3. FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
4. FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
5. THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
6. PLAIN RIP RAP CLASS II (2'-0" THICK)
   END BENT 1 = 131 TONS
   END BENT 2 = 126 TONS
7. SEE ROADWAY SHEETS FOR TYPICAL SECTION, PAVEMENT, AND OTHER ROADWAY INFORMATION.
8. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", JULY 2006.
9. THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.
10. FOR PILES, SEE PILES SPECIAL PROVISION.
11. PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 142 TONS PER PILE.
12. PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 142 TONS PER PILE.
13. STEEL PILE POINTS WITH TEETH ARE REQUIRED FOR STEEL PILES AT END BENTS NO. 1 AND 2.
14. DRIVE PILES AT END BENT NO. 1 TO REFUSAL OR ROCK.
15. DRIVE PILES AT END BENT NO. 2 TO REFUSAL OR ROCK.



PLAN



PROFILE ALONG -L-
(SECTIONS AT END BENTS TAKEN AT RIGHT ANGLES TO BENTS)

EXISTING BRIDGE INFORMATION

SPANS: 1 @ 40'-0"
CLEAR ROADWAY WIDTH = 24.3'
END BENTS: CONCRETE WALLS ON SPREAD FOOTING
TIMBER DECK WITH ACP OVERLAY ON STEEL I-BEAMS TO BE REMOVED

HYDRAULIC DATA

DRAINAGE AREA	2.9 SQ. MI.
DESIGN DISCHARGE	950 CFS
DESIGN FREQUENCY	25 YR.
DESIGN HIGH WATER ELEVATION	2560.3 FT
BASE DISCHARGE	1450 CFS
BASE FREQUENCY	100 YR.
BASE HIGH WATER ELEVATION	2562.5 FT
OVERTOPPIG DISCHARGE	1600 CFS
OVERTOPPING WSEL	2562.8 FT

PROJECT NO. 33838.1.1
HAYWOOD COUNTY
STATION: 12+91.00 -L-

REPLACES BRIDGE NO. 283

DRAWN BY : J. ROSADO DATE : 01/09
CHECKED BY : D. COLETTI DATE : 01/09

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI 2-28-11

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON SR 1334 OVER WESLEY'S CREEK BETWEEN SR 1336 AND SR 1380

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	2
1			3			TOTAL SHEETS
2			4			41

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE BOX BEAMS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE									SERVICE III LIMIT STATE					COMMENT NUMBER
							MOMENT				SHEAR					MOMENT				
						LIVE-LOAD FACTORS (γ_L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	DISTANCE FROM LEFT END OF SPAN (f+)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	DISTANCE FROM LEFT END OF SPAN (f+)	LIVE-LOAD FACTORS (γ_L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	DISTANCE FROM LEFT END OF SPAN (f+)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.26	--	1.75	0.25	1.45	A	36.30	0.63	1.42	A	8.30	0.80	0.25	1.26	A	36.30	
	HL-93 (OPERATING)	N/A		1.84	--	1.35	0.25	1.88	A	36.30	0.63	1.84	A	8.30	N/A	--	--	--	--	
	HS-20 (INVENTORY)	36.00	2	1.31	47.16	1.80	0.25	1.83	A	36.30	0.63	1.88	A	8.30	1.00	0.25	1.31	A	36.30	
	HS-20 (OPERATING)	36.00		2.43	87.48	1.35	0.25	2.43	A	36.30	0.63	2.51	A	8.30	N/A	--	--	--	--	
LEGAL LOAD RATING	SNSH	13.50		4.07	54.95	1.80	0.25	4.07	A	36.30	0.63	5.08	A	8.30	1.00	0.25	2.92	A	36.30	
	SNGARBS2	20.00		3.05	61.00	1.80	0.25	3.05	A	36.30	0.63	3.60	A	8.30	1.00	0.25	2.19	A	36.30	
	SNAGRIS2	22.00		2.90	63.80	1.80	0.25	2.90	A	36.30	0.63	3.34	A	8.30	1.00	0.25	2.08	A	36.30	
	SNCOTTS3	27.25		2.02	55.05	1.80	0.25	2.02	A	36.30	0.63	2.40	A	8.30	1.00	0.25	1.45	A	36.30	
	SNAGGRS4	34.92		1.70	59.36	1.80	0.25	1.70	A	36.30	0.63	1.87	A	8.30	1.00	0.25	1.22	A	36.30	
	SNS5A	35.55		1.66	59.01	1.80	0.25	1.66	A	36.30	0.63	1.89	A	8.30	1.00	0.25	1.19	A	36.30	
	SNS6A	39.95		1.53	61.12	1.80	0.25	1.53	A	36.30	0.63	1.68	A	8.30	1.00	0.25	1.10	A	36.30	
	SNS7B	42.00		1.46	61.32	1.80	0.25	1.46	A	36.30	0.63	1.64	A	8.30	1.00	0.25	1.04	A	36.30	
	TNAGRIT3	33.00		1.87	61.71	1.80	0.25	1.87	A	36.30	0.63	2.15	A	8.30	1.00	0.25	1.34	A	36.30	
	TNT4A	33.08		1.87	61.86	1.80	0.25	1.87	A	36.30	0.63	2.07	A	8.30	1.00	0.25	1.34	A	36.30	
	TNAGRIT4	43.00		1.51	64.93	1.80	0.25	1.52	A	36.30	0.63	1.51	A	8.30	1.00	0.25	1.09	A	36.30	
	TNAGRIT5A	45.00		1.43	64.35	1.80	0.25	1.43	A	36.30	0.63	1.51	A	8.30	1.00	0.25	1.03	A	36.30	
	TNAGRIT5B	45.00	3	1.41	63.45	1.80	0.25	1.41	A	36.30	0.63	1.41	A	8.30	1.00	0.25	1.02	A	36.30	
	TNT6A	41.60		1.54	64.06	1.80	0.25	1.54	A	36.30	0.63	1.78	A	8.30	1.00	0.25	1.10	A	36.30	
	TNT7A	42.00		1.55	65.10	1.80	0.25	1.55	A	36.30	0.63	1.72	A	8.30	1.00	0.25	1.11	A	36.30	
	TNT7B	42.00		1.56	65.52	1.80	0.25	1.60	A	36.30	0.63	1.56	A	8.30	1.00	0.25	1.15	A	36.30	

LOAD FACTORS

LIMIT STATE	γ_{DC}	γ_{DW}
STRENGTH I	1.25	1.50
SERVICE III	1.00	1.00

NOTES

MINIMUM RATING FACTORS FOR DESIGN LOAD RATING ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

MINIMUM RATING FACTORS FOR LEGAL LOAD RATING ARE BASED ON THE STRENGTH I LIMIT STATE.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS

1. EXTERIOR GIRDER CONTROLS IN ALL CASES.

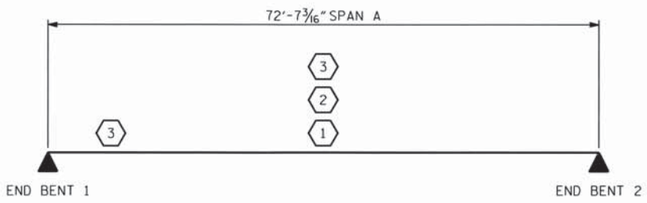
(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE



LRFR SUMMARY

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR PRESTRESSED CONCRETE BOX BEAM
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	3
1			3			TOTAL SHEETS
2			4			41

HDR Engineering, Inc. of the Carolinas
2733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

DRAWN BY : J. ROSADO DATE : 01/09
CHECKED BY : D. COLETTI DATE : 01/09

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4692	4

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

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 Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Proposed Wheel Chair Ramp Curb Cut — WCC
- Curb Cut for Future Wheel Chair 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 — HH
- 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
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

2/28/2011
C:\pwworking\tpa\d0135401\b4692_rdy_tsh.dgn
11:27:07 AM

PROJECT REFERENCE NO.	SHEET NO.
B-4692	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026441 ENGINEER DOMINIC M. WAINWRIGHT

Dominic M. Wainwright 2/28/11

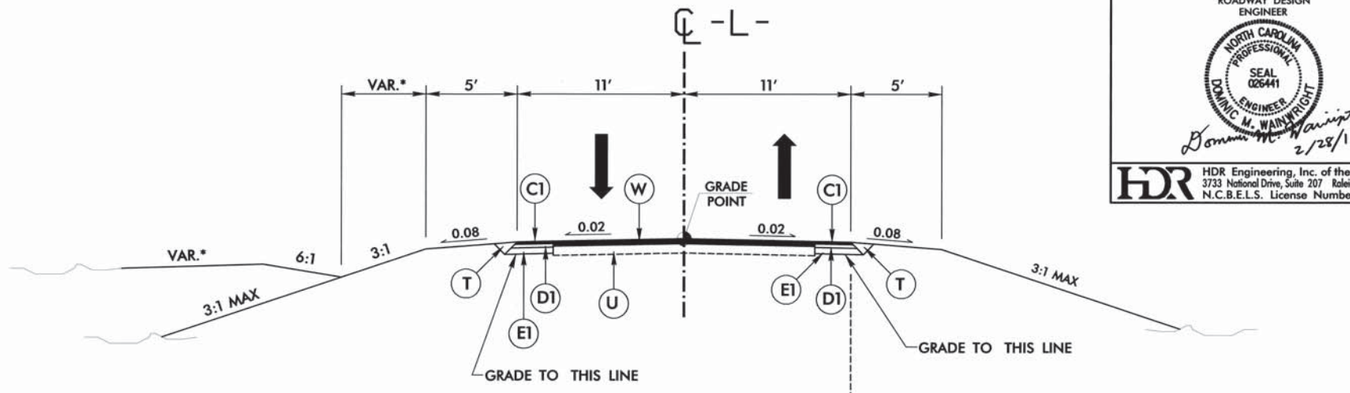
HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

REVISIONS

8.17.99

PAVEMENT SCHEDULE

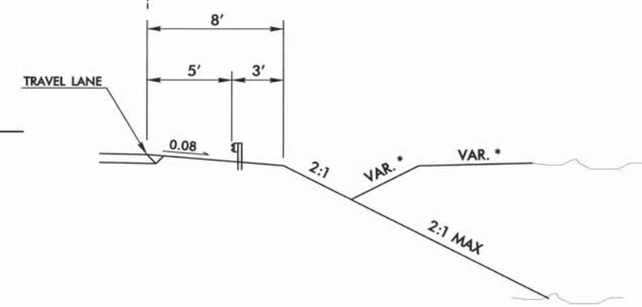
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 Lbs PER SQUARE YARD IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2.0" IN DEPTH.
C3	PROP. APPROX. 2.0" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 220 Lbs PER SQUARE YARD.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 Lbs PER SQUARE YARD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.25" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 Lbs PER SQUARE YARD.
E2	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 GREATER THAN 5.5" IN DEPTH OR LESS THAN 3" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING

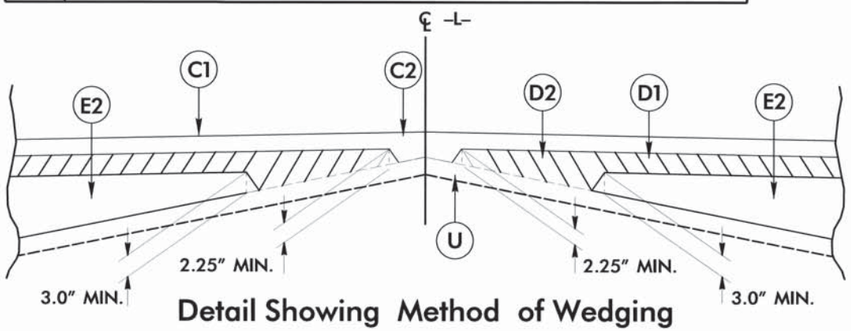


* VARIES – SEE ROADWAY CROSS SECTIONS

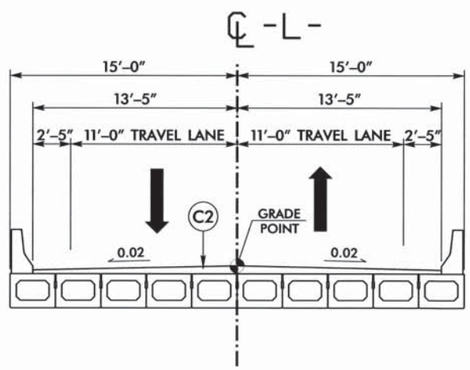
TYPICAL SECTION NO. 1

LINE	FROM STATION	TO STATION
-L-	11+45.00	12+54.70
-L-	13+27.30	14+25.00





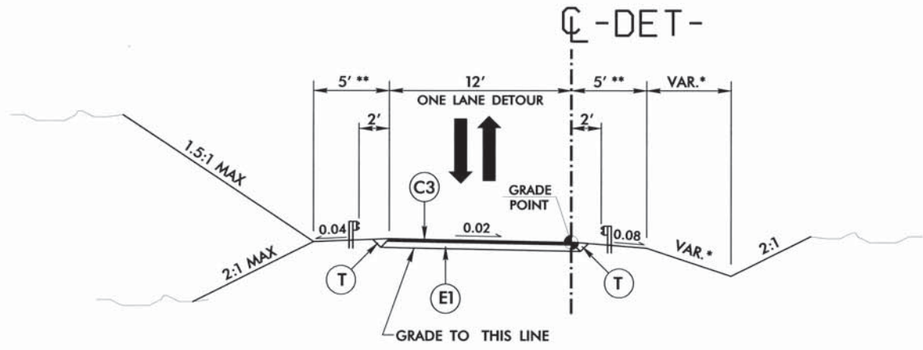
Detail Showing Method of Wedging



TYPICAL SECTION NO. 2

27" BOX BEAM

LINE	FROM STATION	TO STATION
-L-	12+54.70	13+27.30



* VARIES – SEE ROADWAY CROSS SECTIONS.
** 2' SHOULDER WIDTH WITHOUT GUARDRAIL.

TYPICAL SECTION NO. 3

LINE	FROM STATION	TO STATION
-DET-	10+95.80	15+05.06

PROJECT REFERENCE NO.	SHEET NO.
B-4692	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 026441 ENGINEER DOMINIC M. WAINWRIGHT 2/28/11

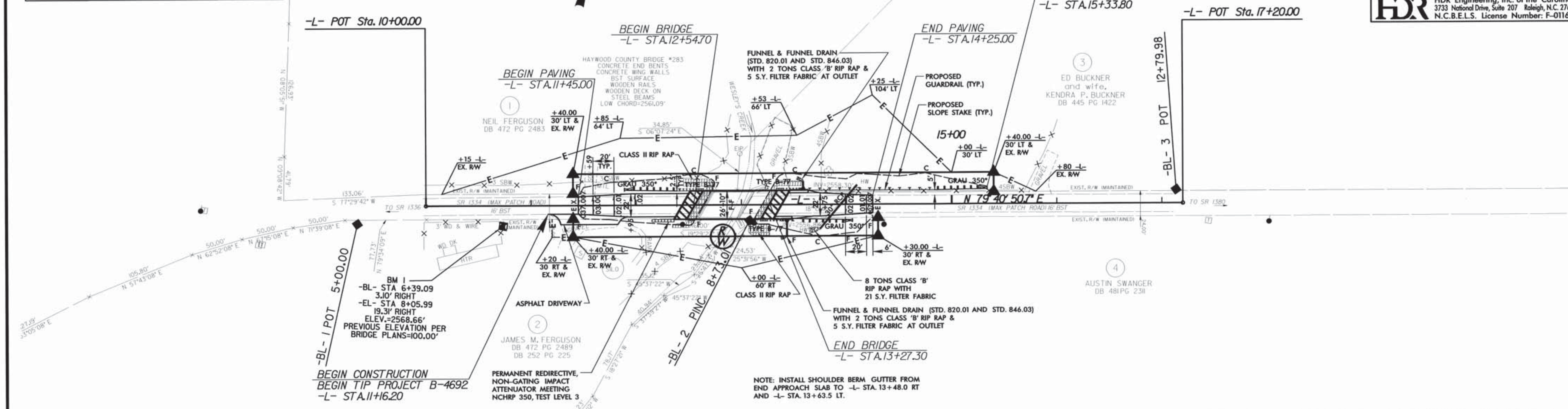
HYDRAULICS ENGINEER — SEAL 15033 — 3-9-11

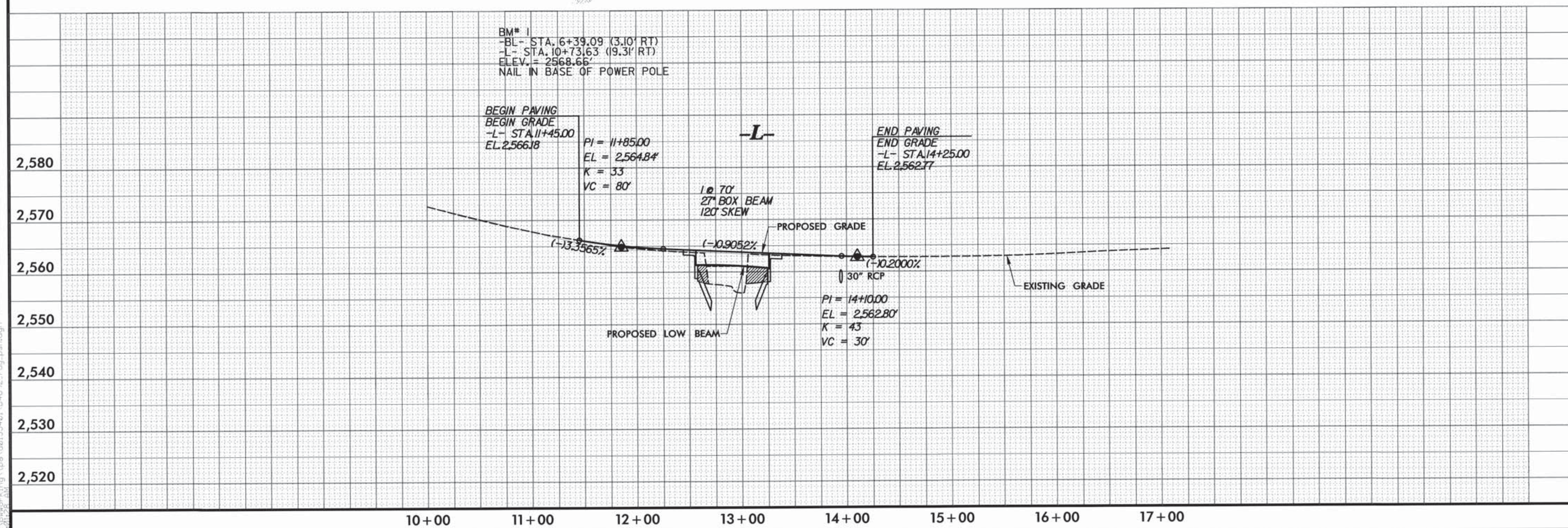
HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY VAUGHN & MELTON FOR MONUMENT "BL-3" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 728750.8629(ft) EASTING: 829368.6025(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9997834941 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES. THE VERTICAL DATUM IS BASED ON NCDOT MONUMENT "BL-3" (ELEV. 2563.23') (NAVD 88).

*NOTE: GRAU 350 ARE TO BE TYPE TL-3.





REVISIONS

DATUM DESCRIPTION

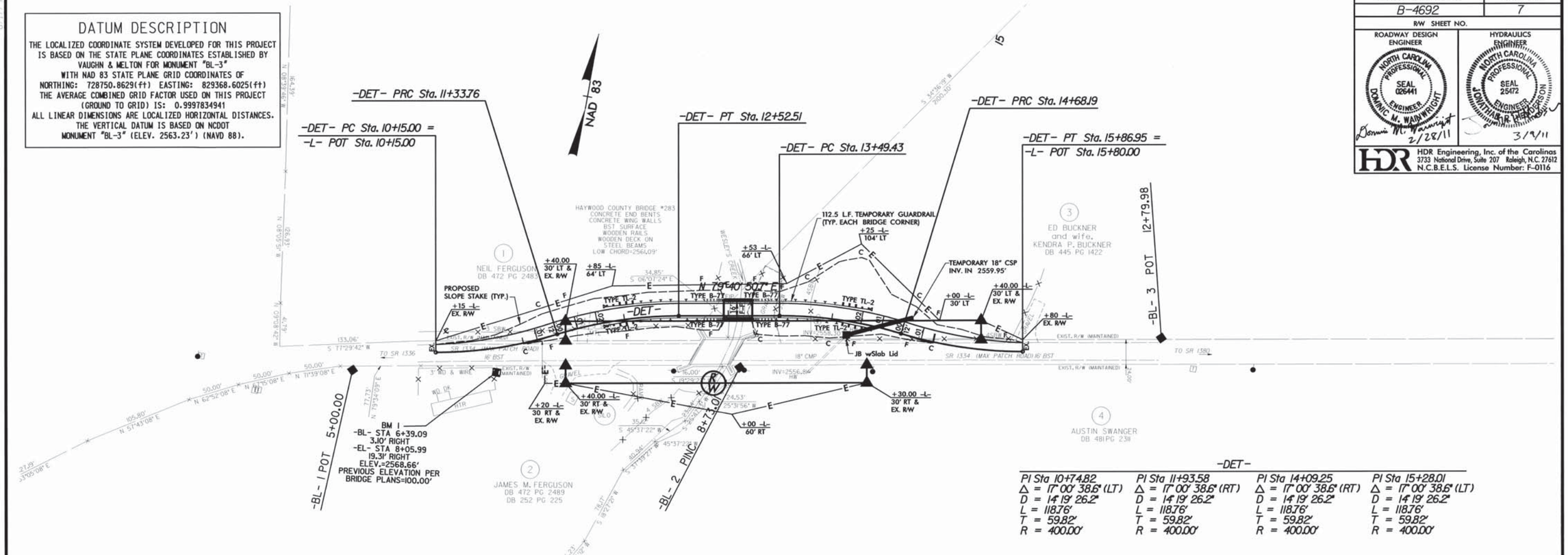
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY VAUGHN & MELTON FOR MONUMENT "BL-3" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 728750.8629(ft) EASTING: 829368.6025(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9997834941 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES. THE VERTICAL DATUM IS BASED ON NCDOT MONUMENT "BL-3" (ELEV. 2563.23') (NAVD 88).

PROJECT REFERENCE NO.	SHEET NO.
B-4692	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026441 ENGINEER DOMINIC M. WAINWRIGHT
2/28/11

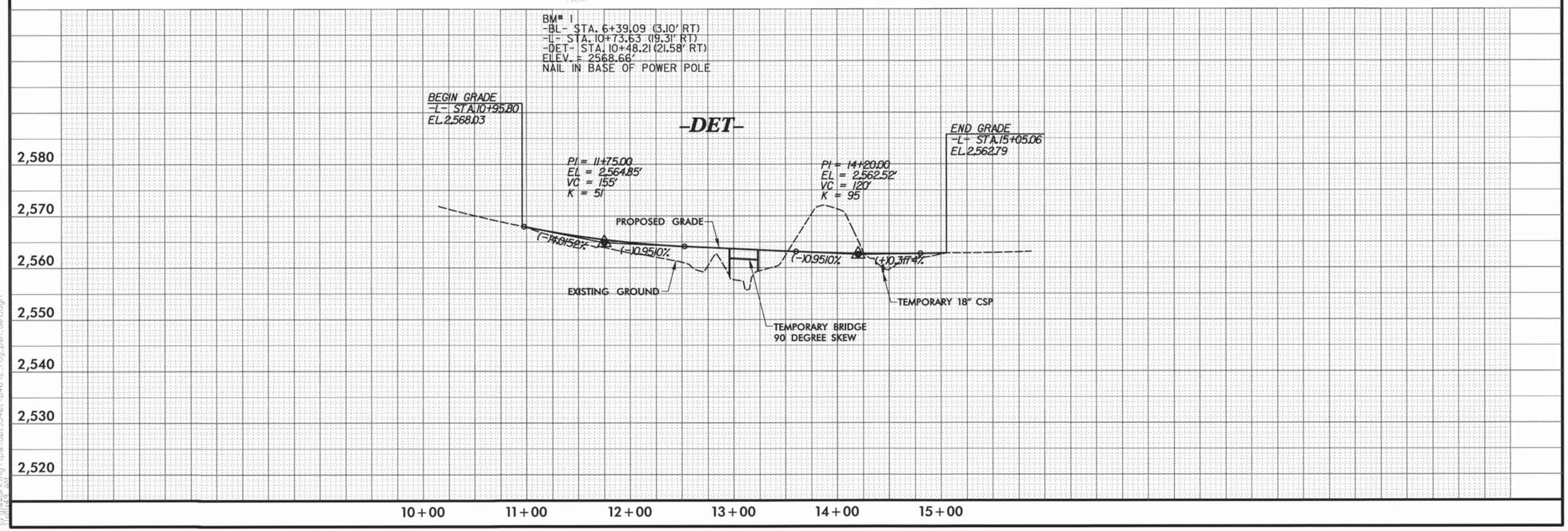
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25472 ENGINEER JONATHAN R. THOMPSON
3/9/11

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116



-DET-

PI Sta 10+74.82	PI Sta 11+93.58	PI Sta 14+09.25	PI Sta 15+28.01
Δ = 17° 00' 38.6" (LT)	Δ = 17° 00' 38.6" (RT)	Δ = 17° 00' 38.6" (RT)	Δ = 17° 00' 38.6" (LT)
D = 14° 19' 26.2"	D = 14° 19' 26.2"	D = 14° 19' 26.2"	D = 14° 19' 26.2"
L = 118.76'	L = 118.76'	L = 118.76'	L = 118.76'
T = 59.82'	T = 59.82'	T = 59.82'	T = 59.82'
R = 400.00'	R = 400.00'	R = 400.00'	R = 400.00'



REVISIONS

2/28/2011 C:\Projects\roadway\tpo_d0135401\B4692_rdy_psh_det.dgn

PROJ. REFERENCE NO.	SHEET NO.
B-4692	7-A

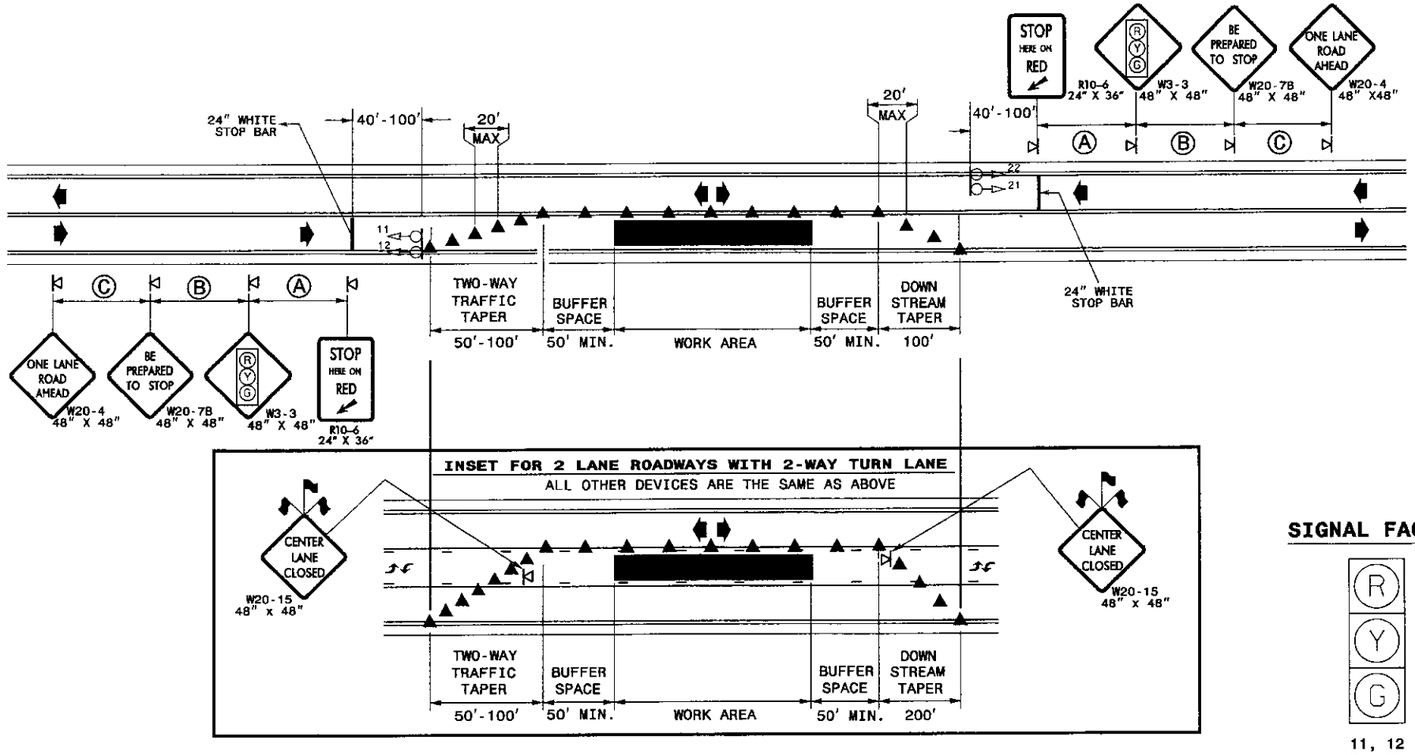
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

TEMPORARY LANE CLOSURES

USING PORTABLE TRAFFIC SIGNAL

SHEET 1 OF 1



INSET FOR 2 LANE ROADWAYS WITH 2-WAY TURN LANE
ALL OTHER DEVICES ARE THE SAME AS ABOVE

LEGEND

- WARNING FLAGS
- CONE
- TRAFFIC SIGNAL HEAD
- PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

-REFER TO STD. DWG. 1101.11-SHEET 4, FOR SIGN SPACING.
-INSTALL LANE CLOSURES WITH THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE UPSTREAM SIDE OF TRAFFIC.
-REMOVE LANE CLOSURES AGAINST THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE DOWNSTREAM SIDE OF TRAFFIC.
-PLACE CONES THRU THE WORK AREA AT THE MAXIMUM SPACING EQUAL IN FEET TO 2 TIMES THE POSTED SPEED LIMIT.
-EXTEND LANE CLOSURES AT THE BUFFER SPACE SUCH THAT STOPPING SIGHT DISTANCE IS PROVIDED TO THE STOP BAR. (REFER TO STD. DWG. 1101.11-SHEET 2)
-DRUMS MAY BE USED IN LIEU OF CONES.
-USE STD. DWG. 1705.01 SHEET 2 OF 2 WHEN CLEARING FROM ONE PHASE TO ANOTHER.

SIGNAL FACE I.D.

11, 12
21, 22

PHASING DIAGRAM

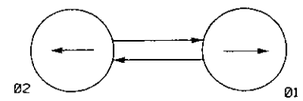


TABLE OF OPERATION

SIGNAL FACE	PHASE 2	PHASE 1	FLASH
11 · 12	R	G	R
21 · 22	G	R	R

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

ENGLISH STANDARD DRAWING FOR

TEMPORARY LANE CLOSURES

USING PORTABLE TRAFFIC SIGNAL

SHEET 1 OF 1

APPROVED: M M McDiarmid DATE: 5/25/2006

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025895 ENGINEER MEREDITH M. McDIARMID

TEMPORARY LANE CLOSURES
USING PORTABLE TRAFFIC SIGNALS

SCALE:	NONE
DATE:	5/25/2006
DWG. BY:	
DESIGN BY:	
REVIEWED BY:	JPG

REVISIONS

CADD FILE

25-MAY-2006 10:42
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galloway A1 WZTC224247

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4692	8

TEMPORARY DETOUR (TYP.)

ORIGINAL GROUND LINE (TYP.)

2567.83
11+00.00

2568.90
10+75.00

2570.11
10+50.00

2571.37
10+25.00

2572.7
10+00.00

2/28/2011
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8/23/99

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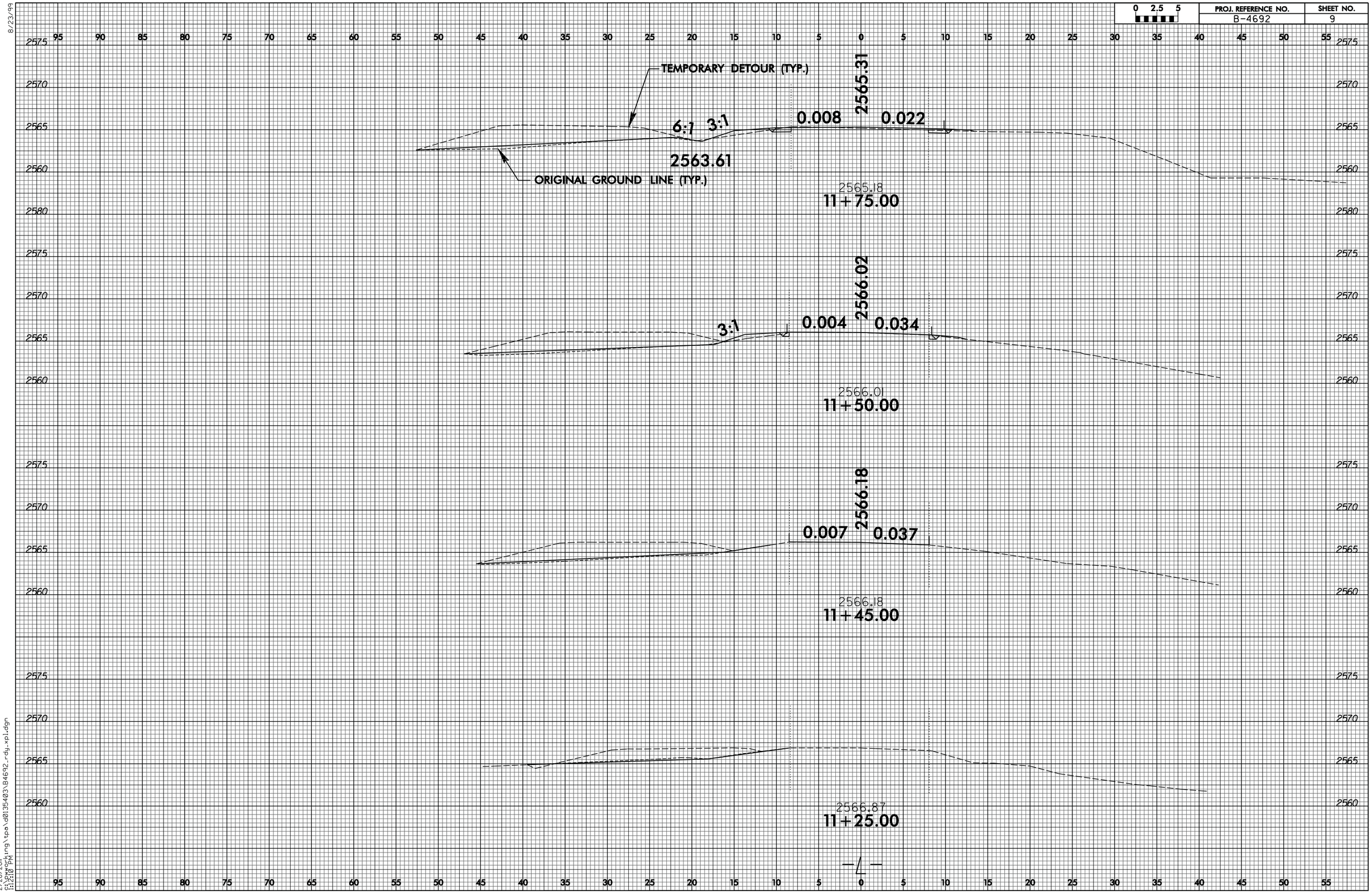

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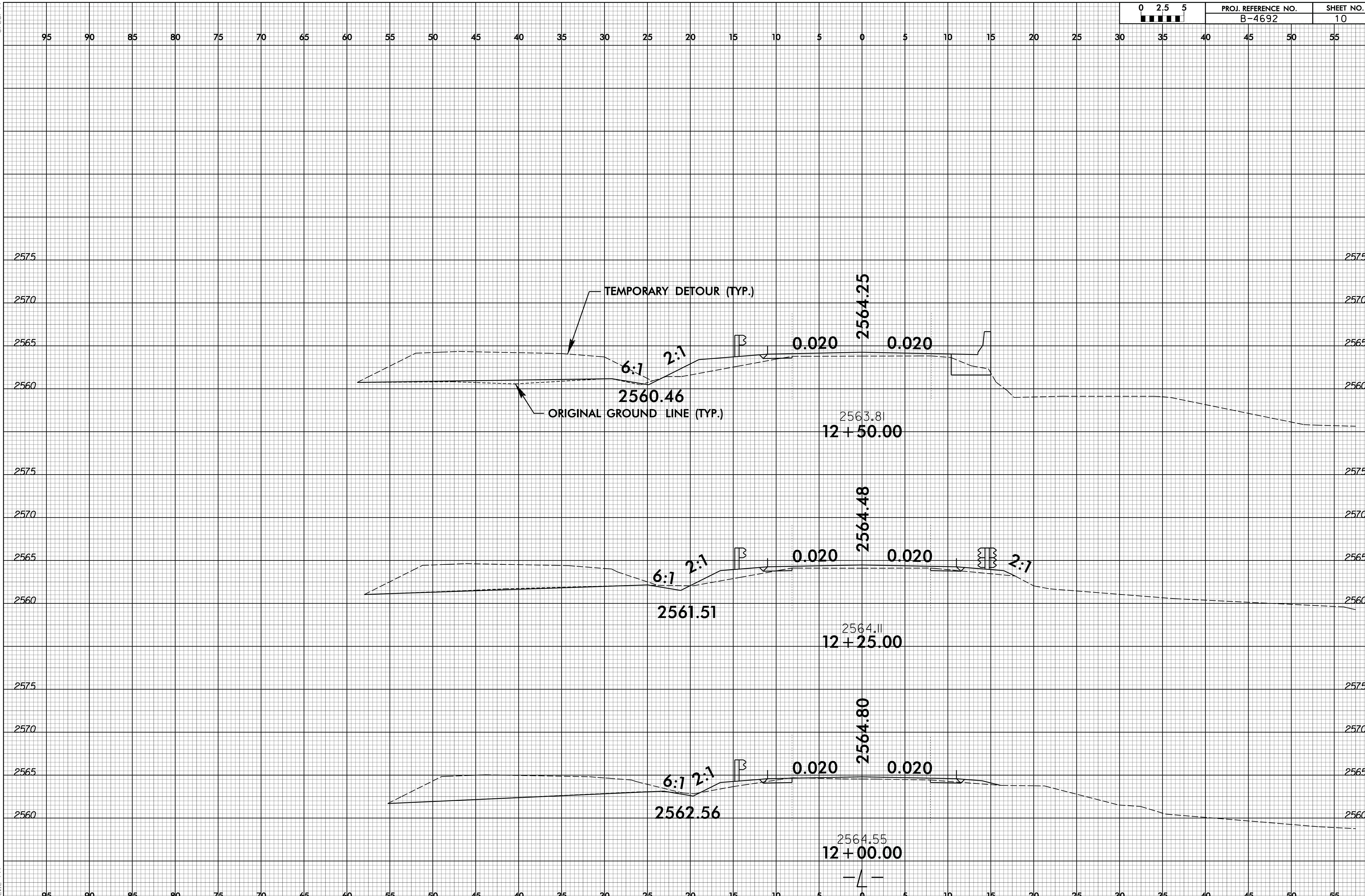

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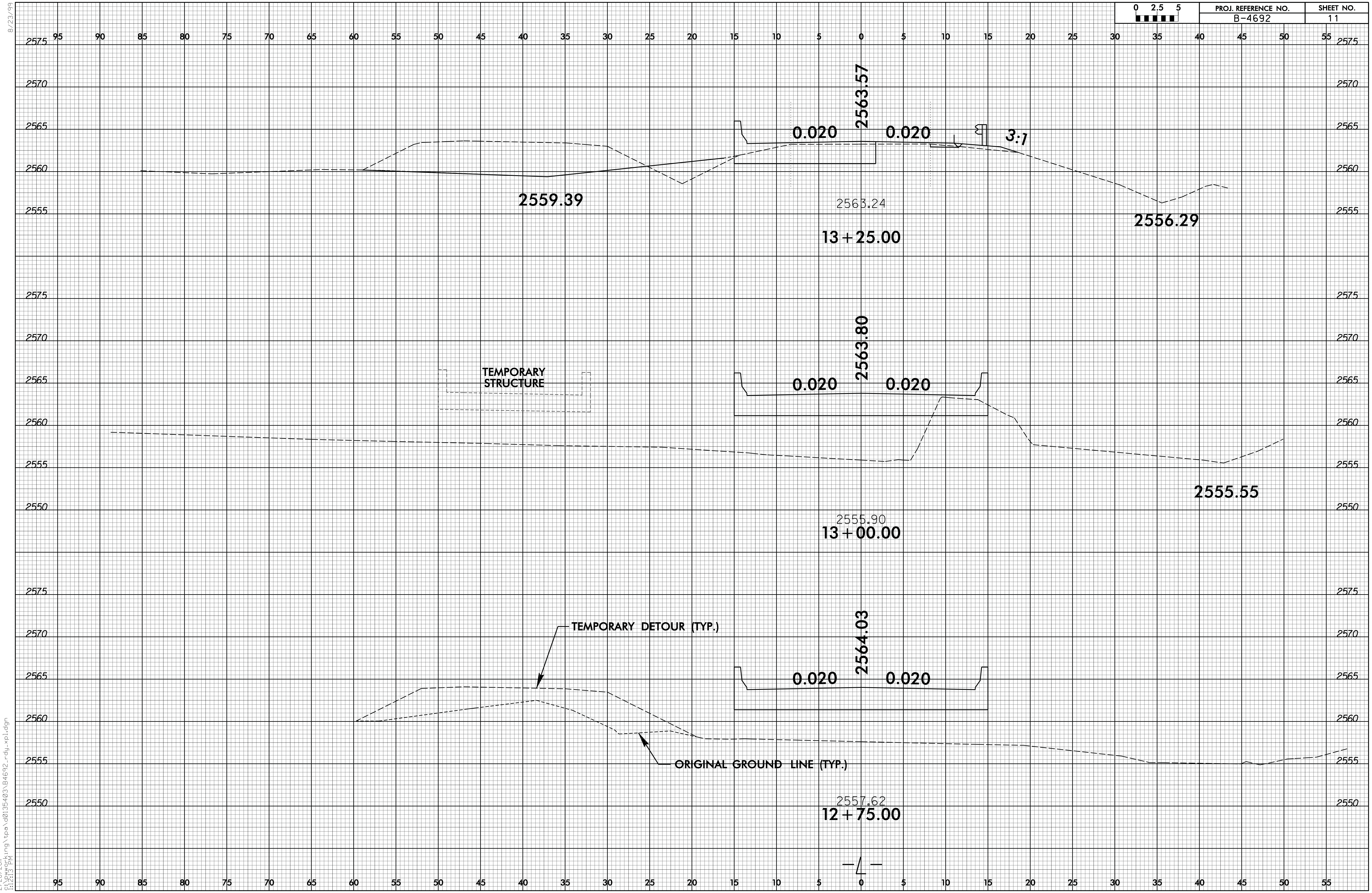

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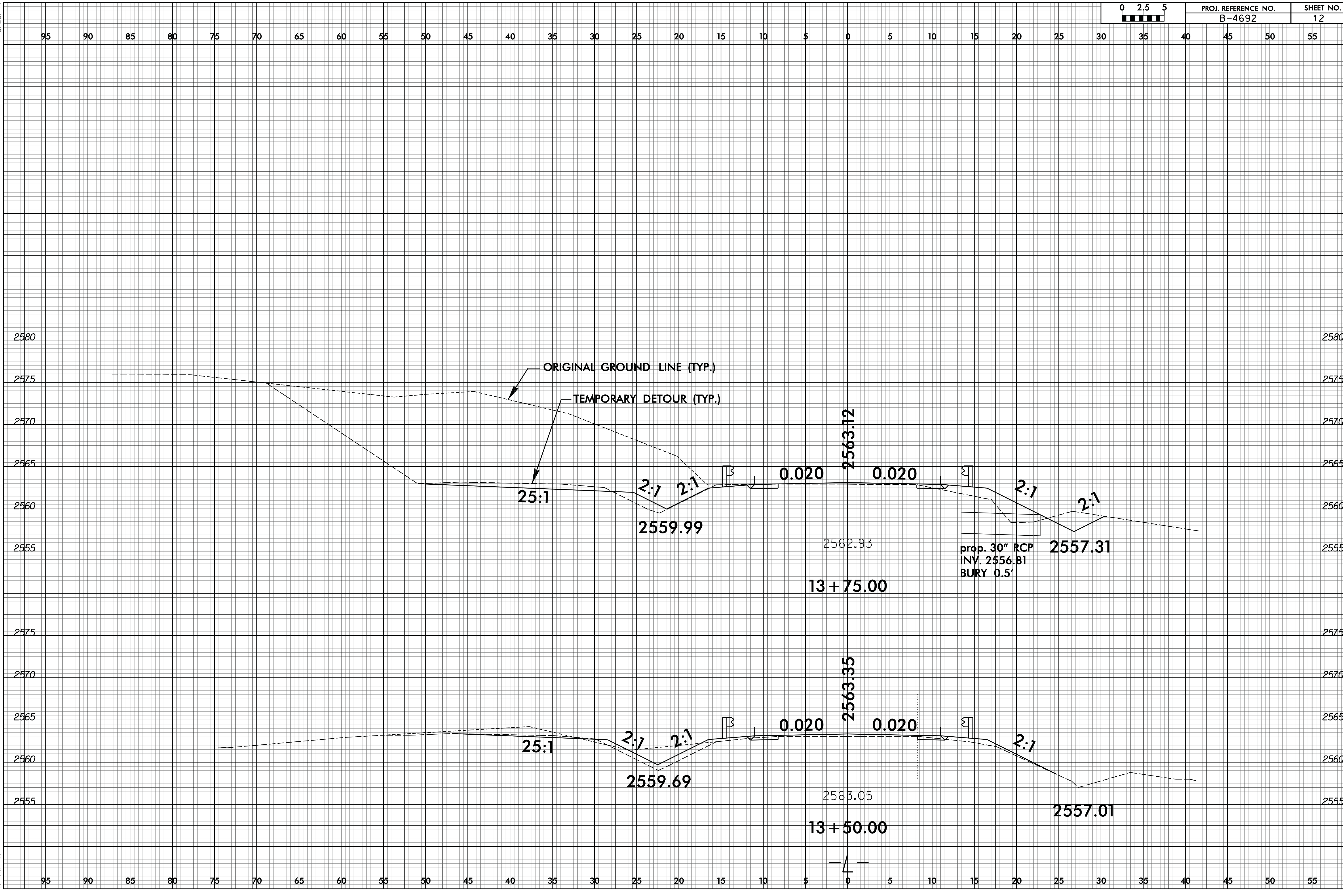

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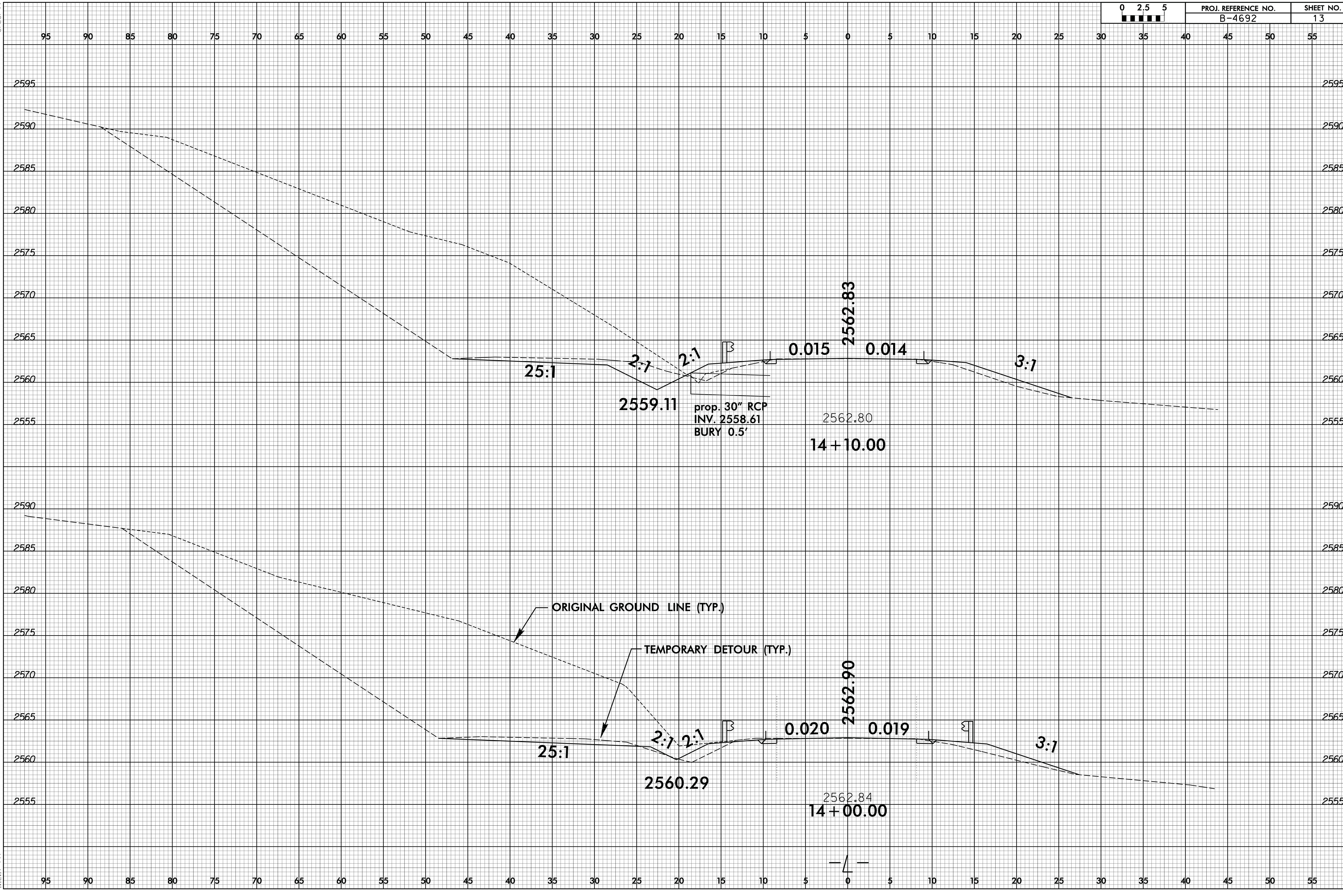

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95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55

25:1

2:1

2:1

2559.59

2562.75

14+50.00

TEMPORARY DETOUR (TYP.)

25:1

2:1

2:1

2559.29

0.007

2562.77

0.007

ORIGINAL GROUND LINE (TYP.)

2562.77

14+25.00

2/28/2011
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2575 2570 2565 2560 2555 2580 2575 2570 2565 2560 2555

2560.37

2562.80
15+25.00

15:1

2560.17

2562.78
15+00.00

TEMPORARY DETOUR (TYP.)

15:1

ORIGINAL GROUND LINE (TYP.)

2559.95

2562.77
14+75.00

2575 2570 2565 2560 2555 2580 2575 2570 2565 2560 2555

95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55

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2570
2565
2560

2563.5
16+25.00

2570
2565
2560

2563.27
16+00.00

2570
2565
2560

2563.06
15+75.00

2570
2565
2560
2555

2562.9
15+50.00

95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55

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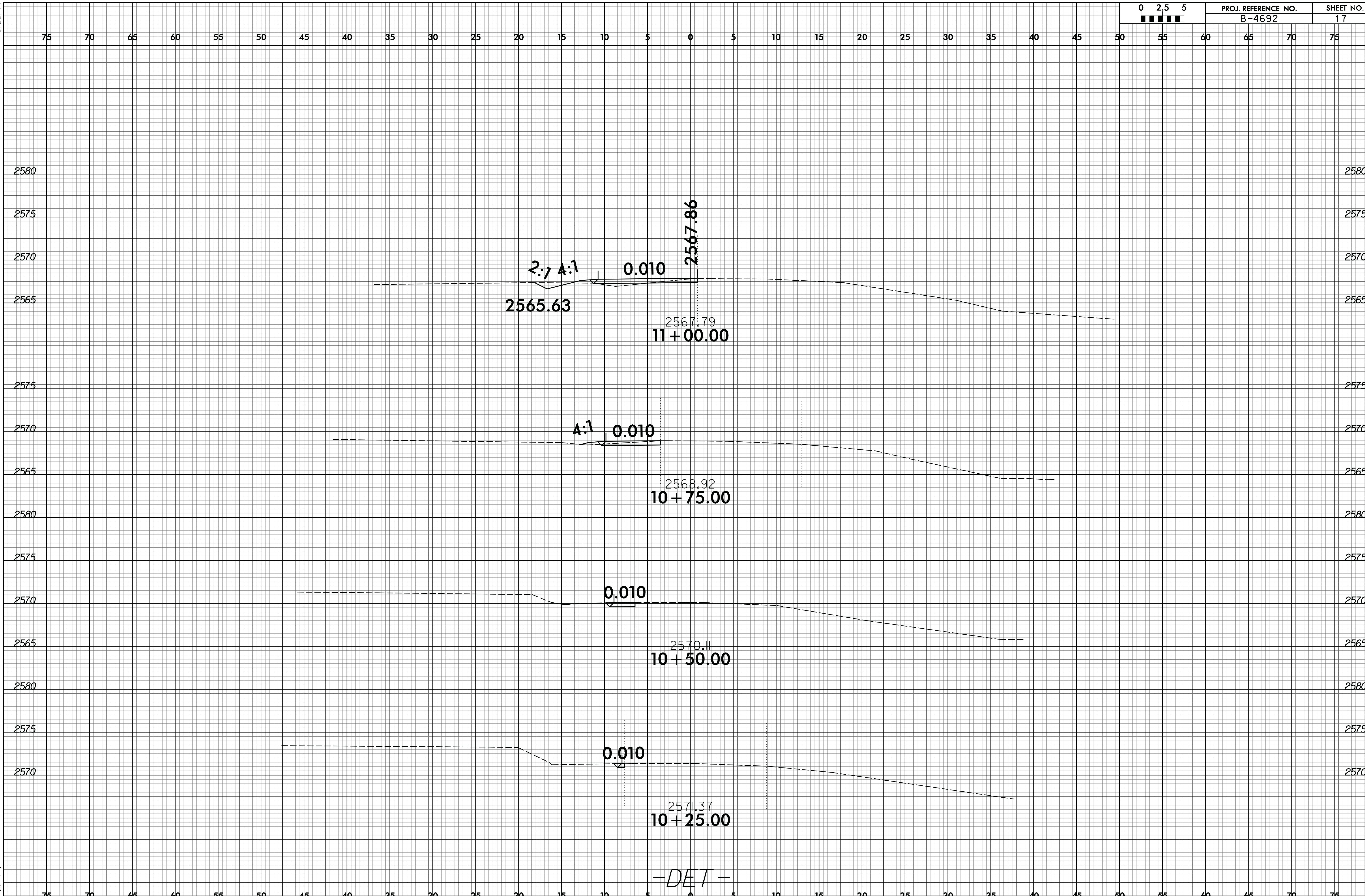

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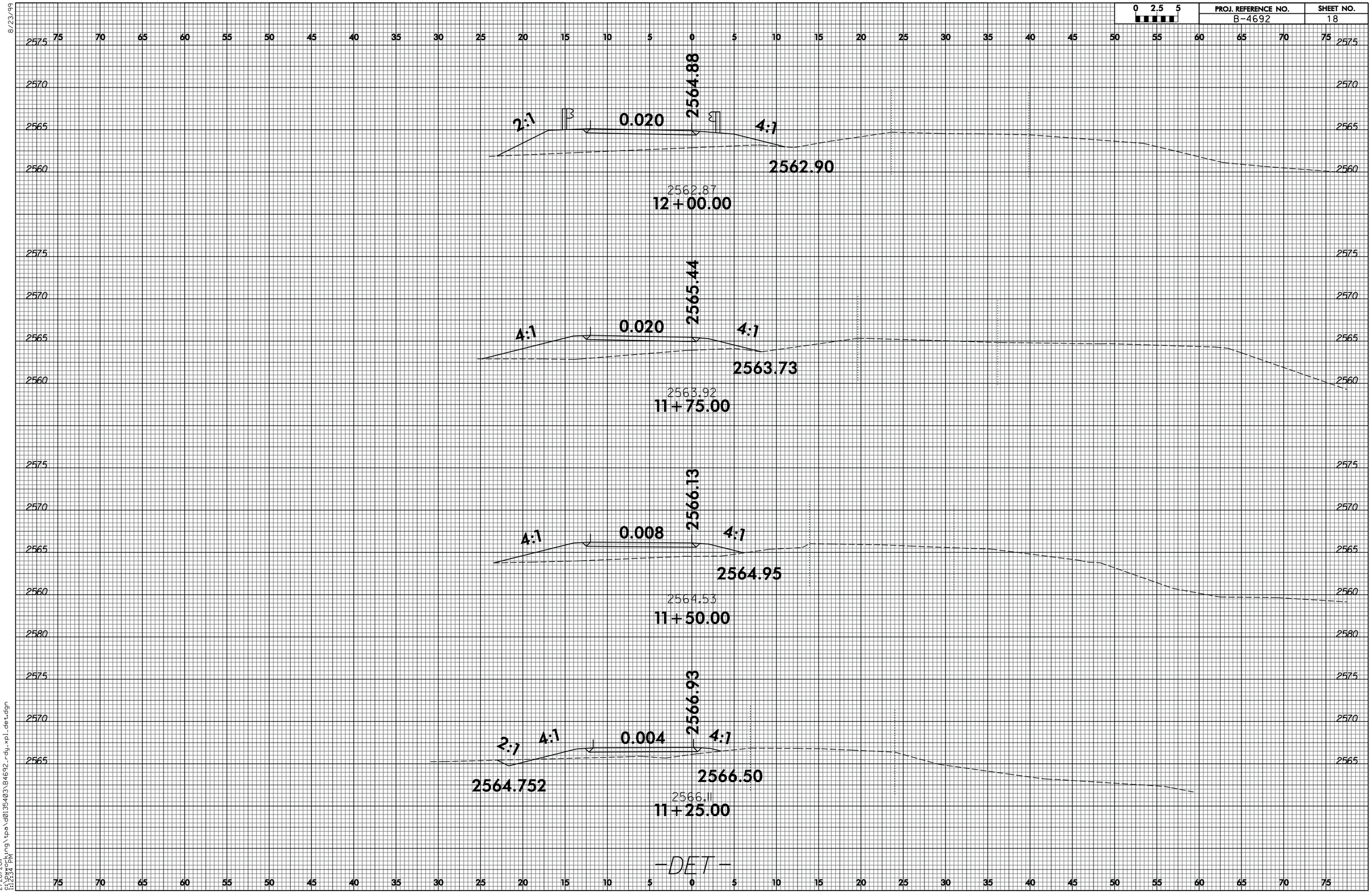

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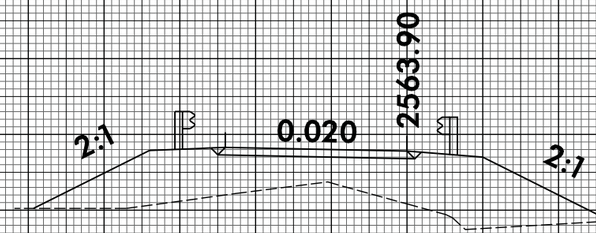
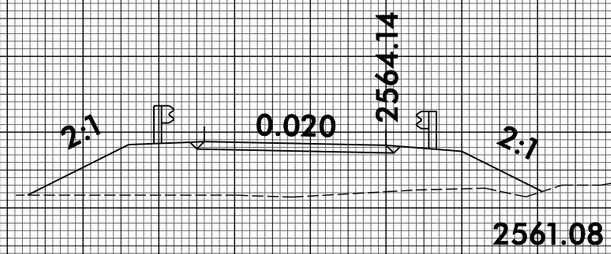
2575
2570
2565
2560
2555



2560.41
12+75.00



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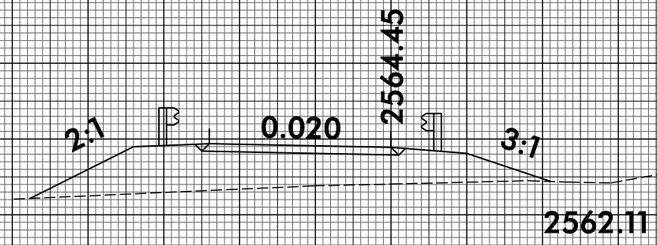
12+50.00



2562.04
12+25.00

-DET-

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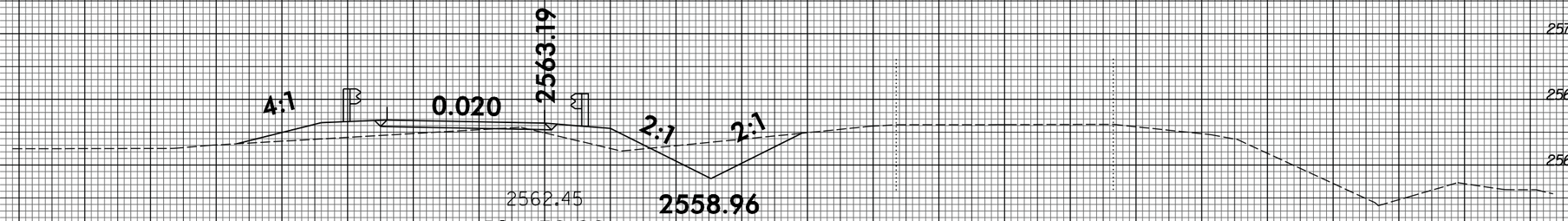
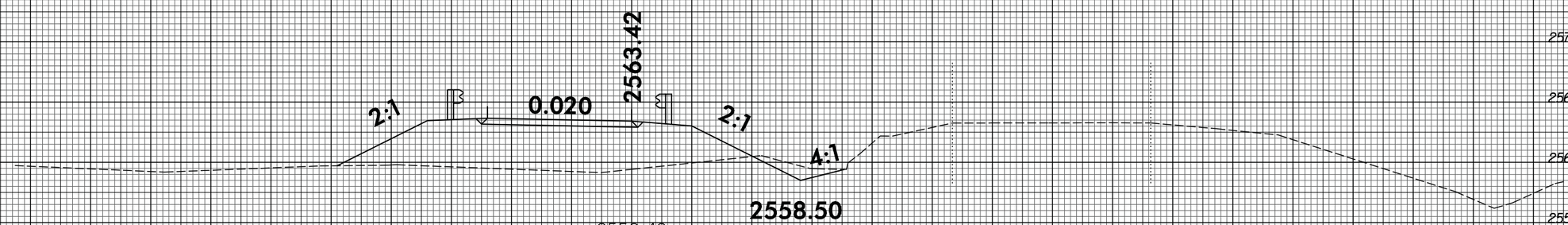
2575 2570 2565 2560



13 + 50.00



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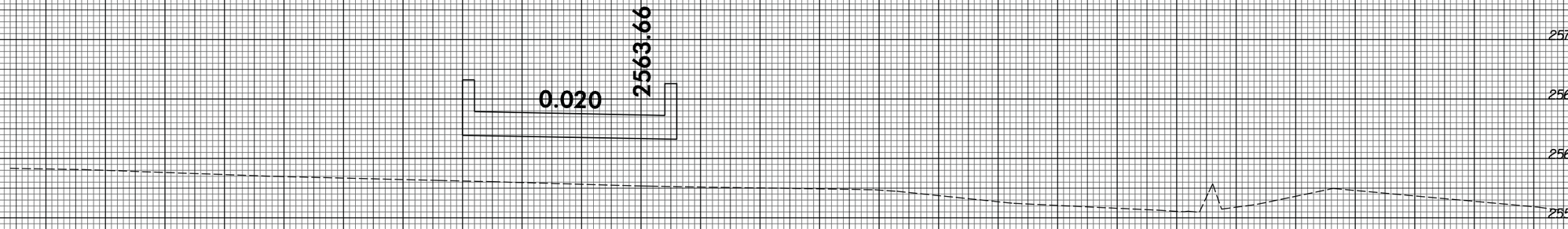

13 + 00.00

-DET-

2555

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2595 2590 2585 2580 2575 2570 2565 2560

1.5:1

2571.33

2562.79

0.020

3:1 2:1

2562.83

2559.88

14+00.00

2570.40

1.5:1

2562.96

0.020

2:1 2:1

2563.00

2559.42

13+75.00

-DET-

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2590 2585 2580 2575 2570 2565 2560 2555

1.75:1

0.009

2562.66

4:1

2562.52

2561.64

2559.59

14+50.00

2595 2590 2585 2580 2575 2570 2565 2560 2555

1.5:1

0.020

2562.70

4:1

2562.74

2563.01

2560.34

14+25.00

-DET-

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2/28/2011
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75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0.010

2562.87

15+50.00

6:1 0.010

2560.37

2562.79

15+25.00

6:1 0.010 2562.77

2560.17

2562.59

15+00.00

2:1 4:1 0.003 2562.70 4:1

2559.95

2562.19

2561.65

14+75.00

-DET-

2/28/2011
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8/23/99

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2570
2565
2560

0.010

2563.01
15+75.00
-DET-

2/28/2011
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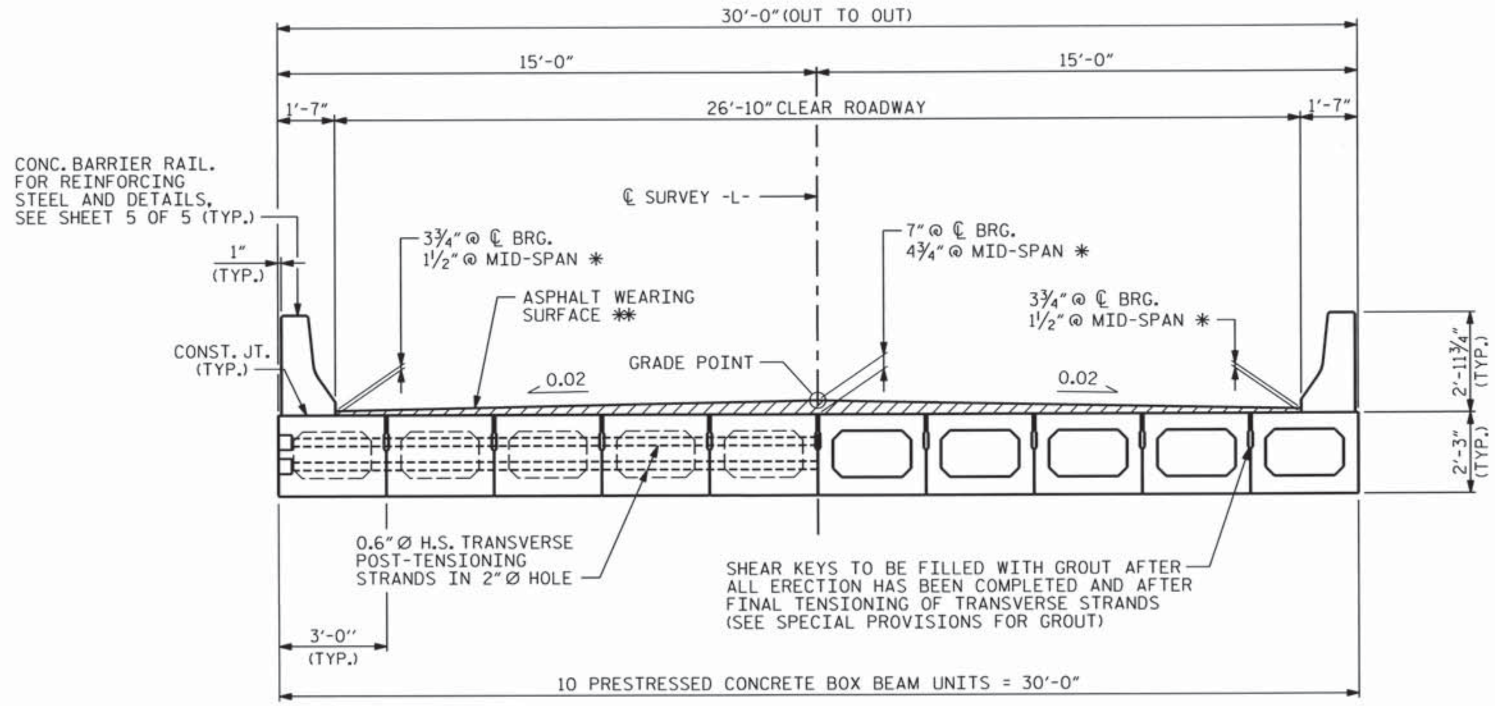
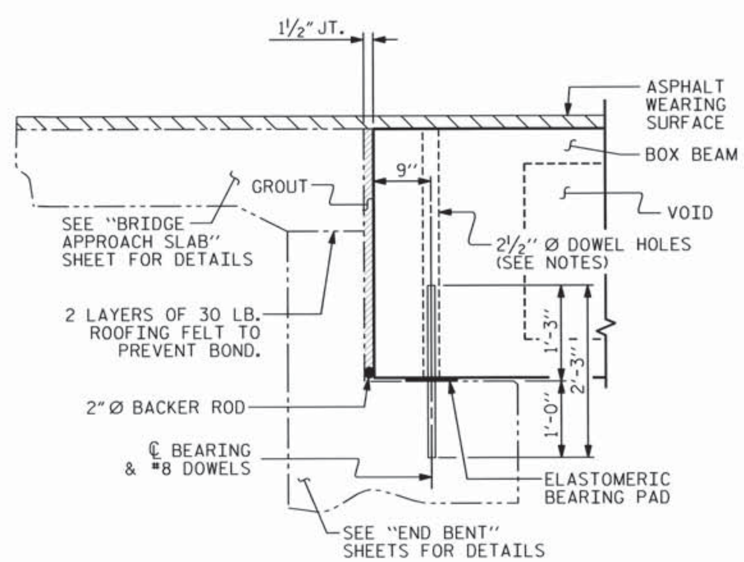


HALF SECTION @ INTERMEDIATE DIAPHRAGM HALF SECTION @ VOIDS

TYPICAL SECTION

✱ BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

✱✱ ASPHALT WEARING SURFACE S9.5B



SECTION AT END BENT

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS UNTIL CONCRETE HAS REACHED RELEASE STRENGTH. STRUCTURAL DETAILS AND SPACING OF THE HOLD-DOWNS SHALL BE INCLUDED WITH THE WORKING DRAWING SUBMITTAL.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

STRUCTURAL STEEL ITEMS SHALL CONFORM TO EITHER ASTM A36 OR A373 EXCEPT THAT HIGH STRENGTH BOLTS SHALL BE ASTM A325. ALL STRUCTURAL STEEL SHALL BE GALVANIZED AS PER THE SPECIFICATIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

SHEET 1 OF 5

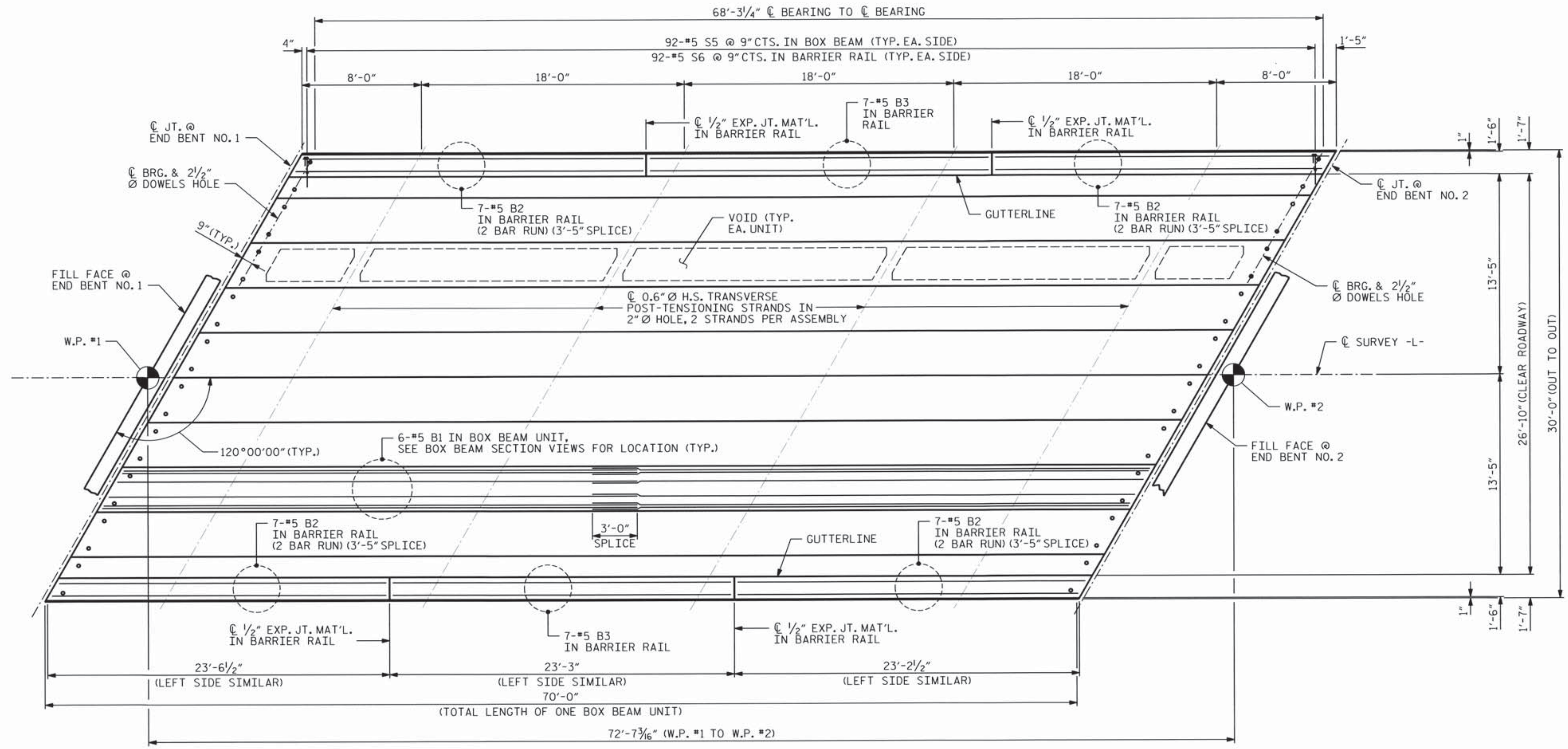
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAM UNIT

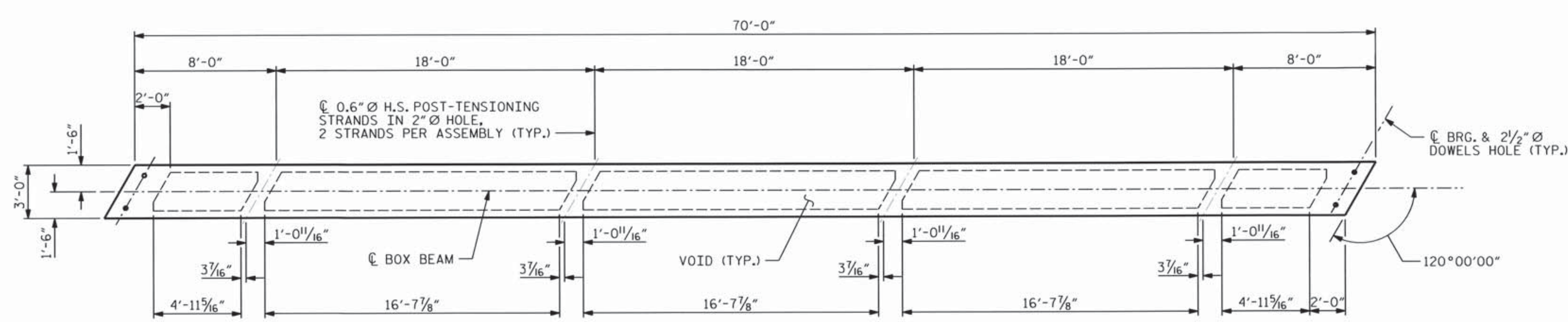
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	25
1			3			TOTAL SHEETS
2			4			41

HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116

DRAWN BY : J. ROSADO DATE : 01/09
CHECKED BY : D. COLETTI DATE : 01/09



PLAN OF SPAN A



PLAN OF BOX BEAM UNIT

FOR REINFORCING STEEL, SEE PLAN OF BOX BEAM, SHEET 3 OF 5.

DIMENSIONS ARE TO THEORETICAL ACUTE CORNERS AND DO NOT ACCOUNT FOR ANY CHAMFERS THAT MAY BE REQUIRED.

DRAWN BY : J. ROSADO DATE : 01/09
CHECKED BY : D. COLETTI DATE : 01/09

PROJECT NO. 33838.1.1
HAYWOOD COUNTY
STATION: 12+91.00 -L-
SHEET 2 OF 5

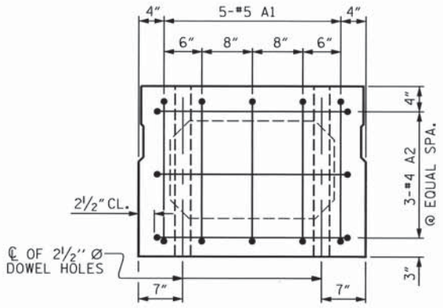
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29589 DOMENIC A. COLETTI 2-28-11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAM UNIT PLAN OF SPAN A

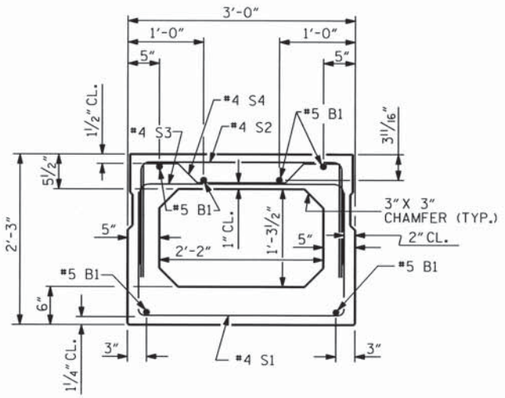
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116

REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	26
1			3			TOTAL SHEETS	41
2			4				



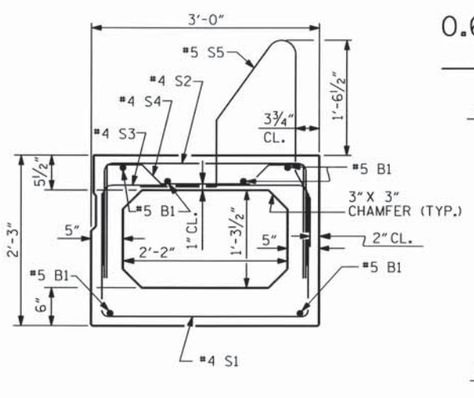
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

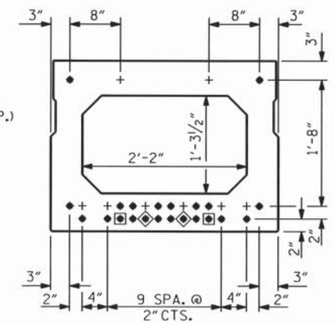
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

(22 STRANDS REQUIRED)

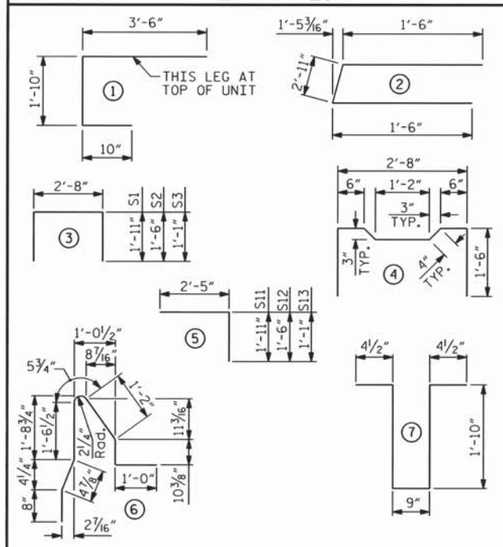
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 8'-0" FROM END OF BEAM
- ◈ STRANDS DEBONDED FOR 12'-0" FROM END OF BEAM

GRADE 270 STRANDS	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

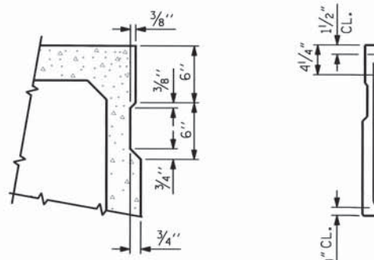
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

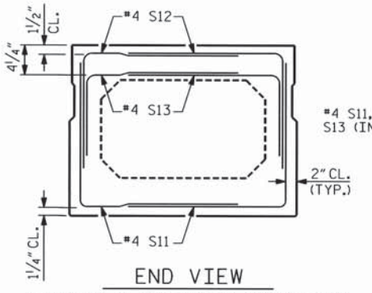
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
A1	10	#5	1	6'-2"	65	6'-2"	65
A2	22	#4	2	5'-11"	87	5'-11"	87
B1	12	#5	STR	36'-5"	456	36'-5"	456
K1	12	#4	7	5'-2"	42	5'-2"	42
K2	8	#4	STR	2'-11"	16	2'-11"	16
S1	73	#4	3	6'-6"	317	6'-6"	317
S2	73	#4	3	5'-8"	277	5'-8"	277
S3	89	#4	3	4'-10"	288	4'-10"	288
S4	40	#4	4	5'-10"	156	5'-10"	156
S11	28	#4	5	4'-4"	82	4'-4"	82
S12	28	#4	5	3'-11"	74	3'-11"	74
S13	28	#4	5	3'-6"	66	3'-6"	66
✳ S5	92	#5	6	6'-2"	592	--	--
REINFORCING STEEL				1926 LBS.		1926 LBS.	
✳ EPOXY COATED REINF. STEEL				592 LBS.		-- --	
6500 P.S.I. CONCRETE				11.3 CU. YDS.		11.3 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 22		No. 22	



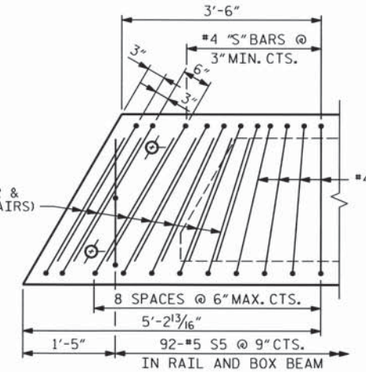
SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



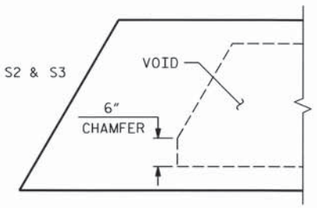
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



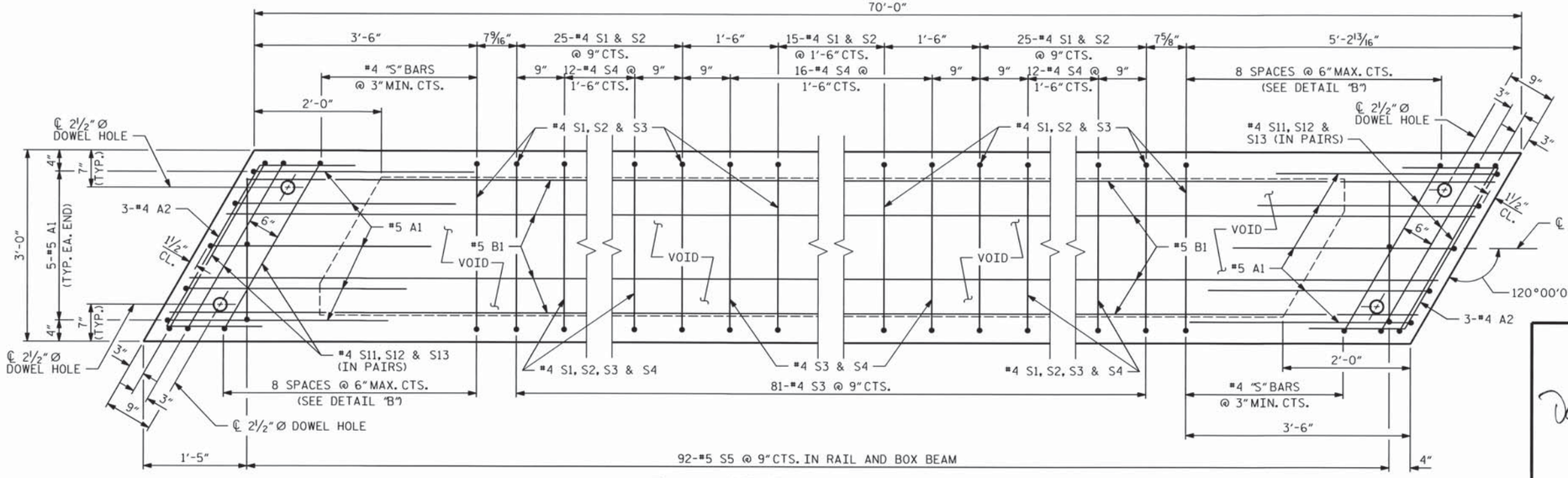
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



CHAMFER DETAIL

SHOWING 6" VOID CHAMFER



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS.
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

SHEET 3 OF 5

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

2-28-11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	27
1			3			TOTAL SHEETS
2			4			41

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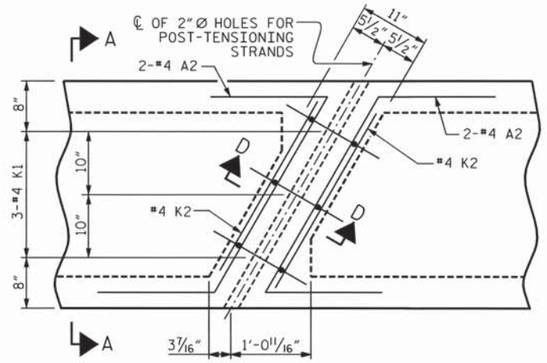
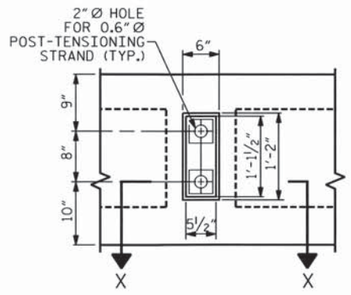
CHECKED BY : D. COLETTI DATE : 01/09

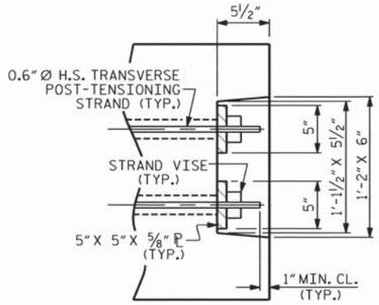


PLAN

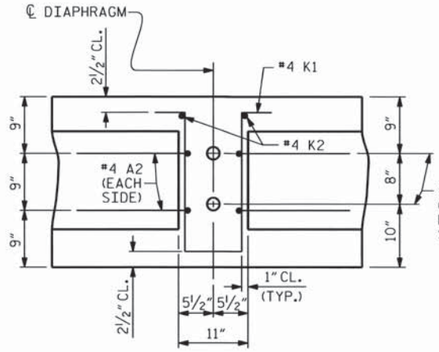


VIEW Y-Y

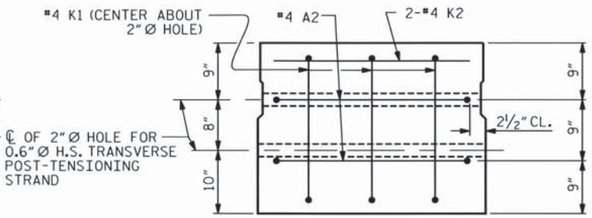
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"

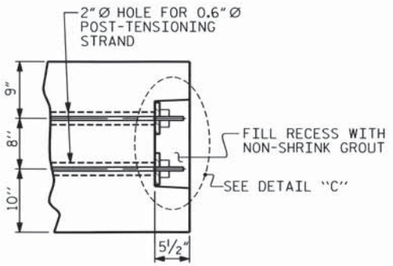


SECTION D-D

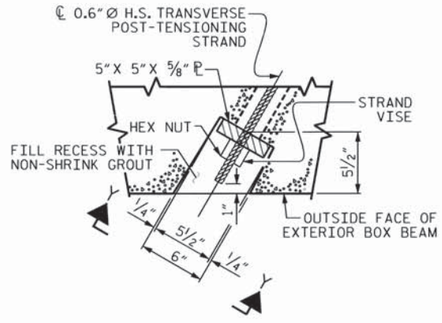


SECTION A-A

VOIDS NOT SHOWN



PART SECTION AT RECESS



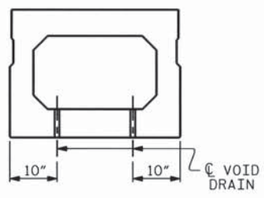
SECTION X-X

SHOWING PLAN VIEW OF GROUTED RECESS

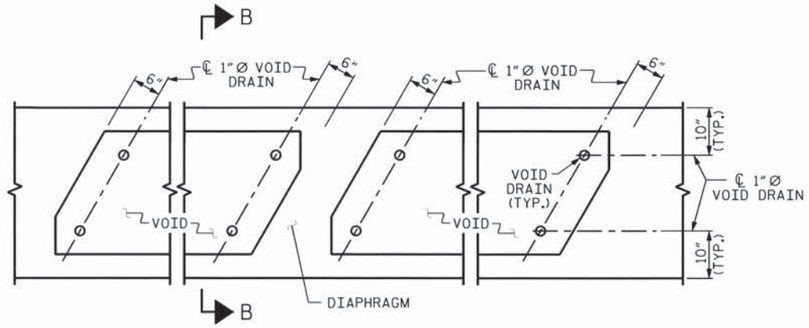
GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2" Ø HOLE.



SECTION B-B



PART PLAN

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 2'-3"
	0.6"Ø L.R. STRAND
	SPAN "A"
CAMBER (BEAM ALONE IN PLACE)	2 13/16" (UP)
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD *	9/16" (DOWN)
FINAL CAMBER	2¼" (UP)

* INCLUDES FUTURE WEARING SURFACE

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAM UNIT

REVISIONS						SHEET NO. 28
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 41
2			4			

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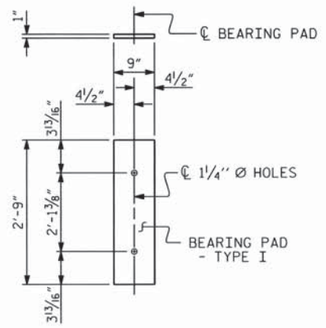
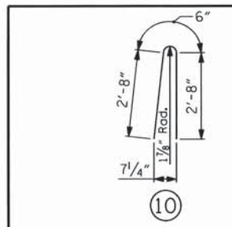


FIXED END
(TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

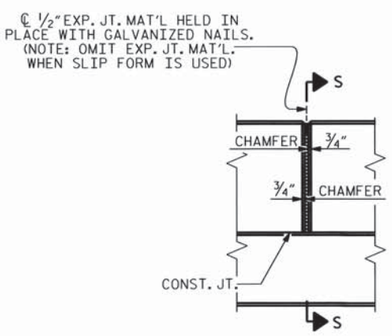
ELASTOMER IN ALL BEARINGS
SHALL BE 60 DUROMETER

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	70'-0"	140'-0"
INTERIOR B.B.	8	70'-0"	560'-0"
TOTAL	10	70'-0"	700'-0"

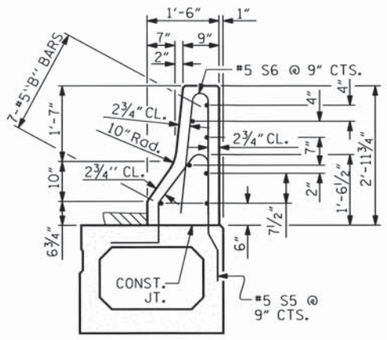


BAR TYPE
BAR DIMENSIONS ARE OUT TO OUT

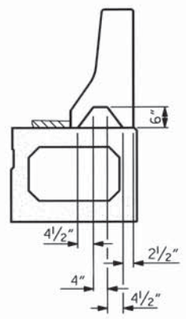
BILL OF MATERIAL FOR CONCRETE BARRIER RAIL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B2	56	#5	STR	13'-7"	794
✳B3	14	#5	STR	22'-10"	334
✳S6	92	#5	10	5'-10"	560
✳EPOXY COATED REINFORCING STEEL LBS.					1688
CLASS AA CONCRETE CU. YDS.					16.5
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL					140.00



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

BARRIER RAIL DETAILS

PROJECT NO. 33838.1.1
HAYWOOD COUNTY
STATION: 12+91.00 -L-
SHEET 5 OF 5

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI
2-28-11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 2'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT
DETAILS

REVISIONS						SHEET NO. 29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 41
2			4			

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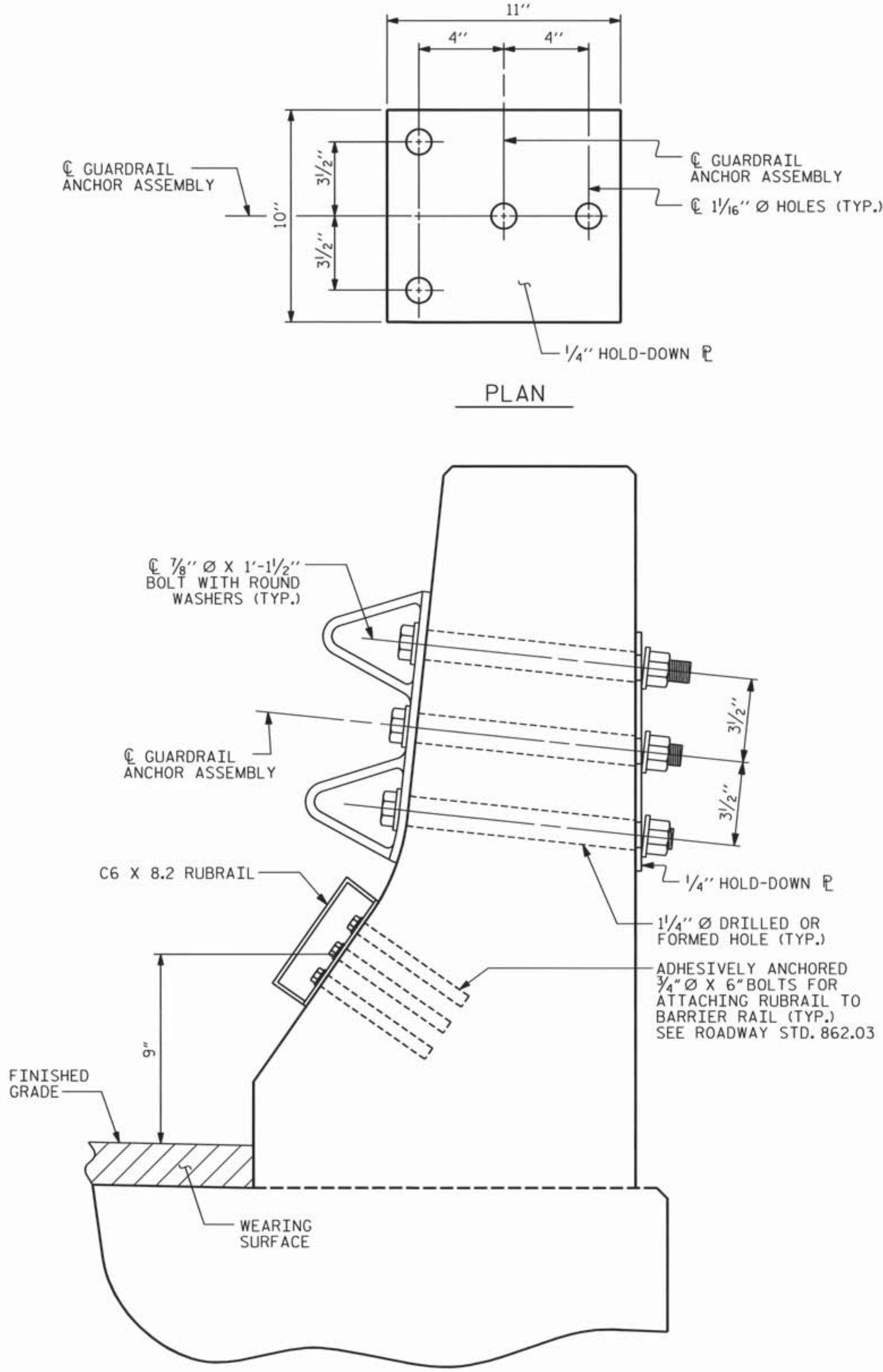
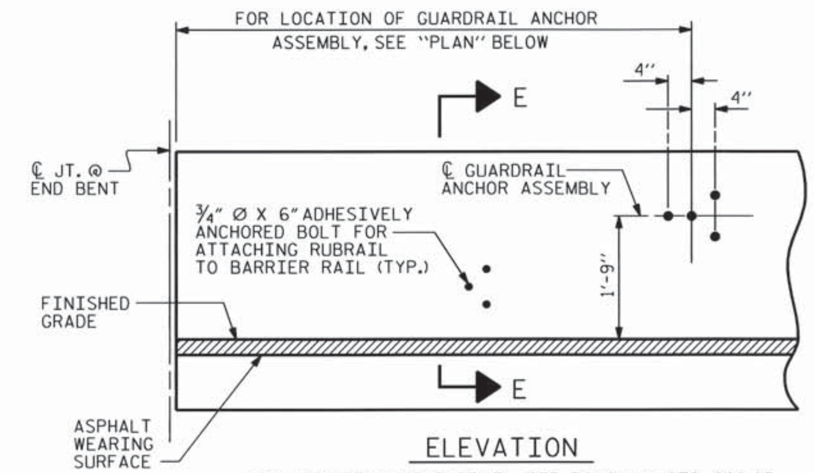
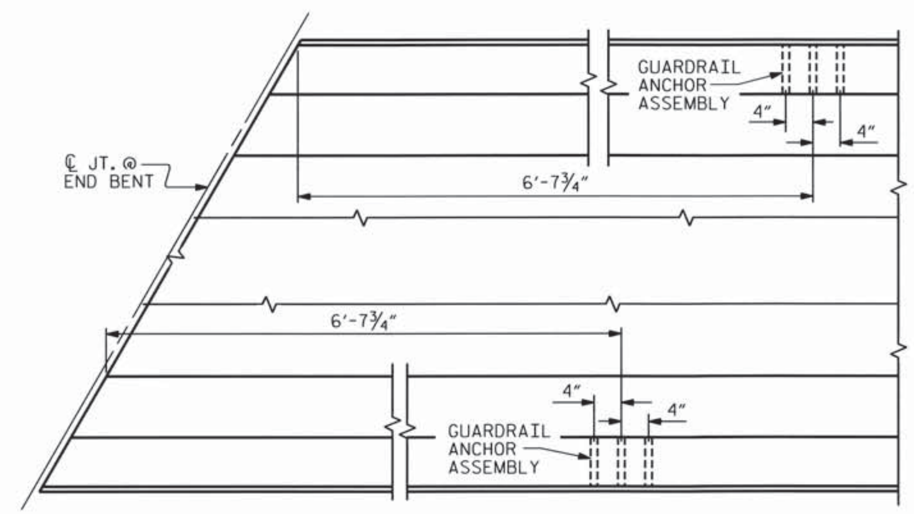


GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

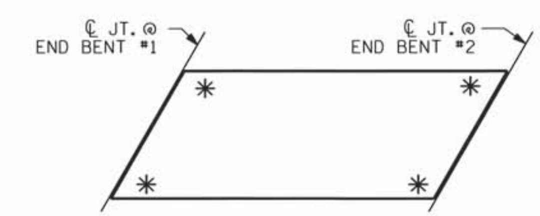
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI 2-28-11

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1			3			SHEET NO. 30
2			4			TOTAL SHEETS 41

DRAWN BY : J. ROSADO DATE : 01/09
CHECKED BY : D. COLETTI DATE : 01/09

STD. NO. GRA2

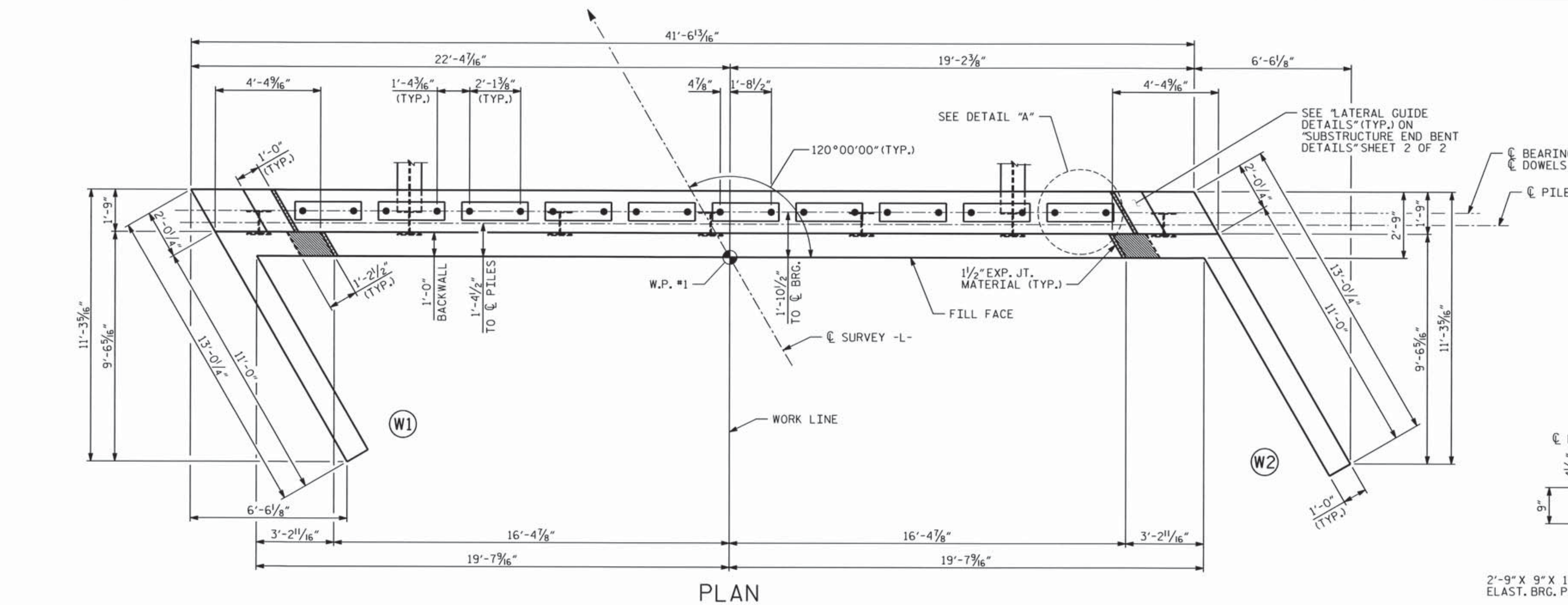
NOTES

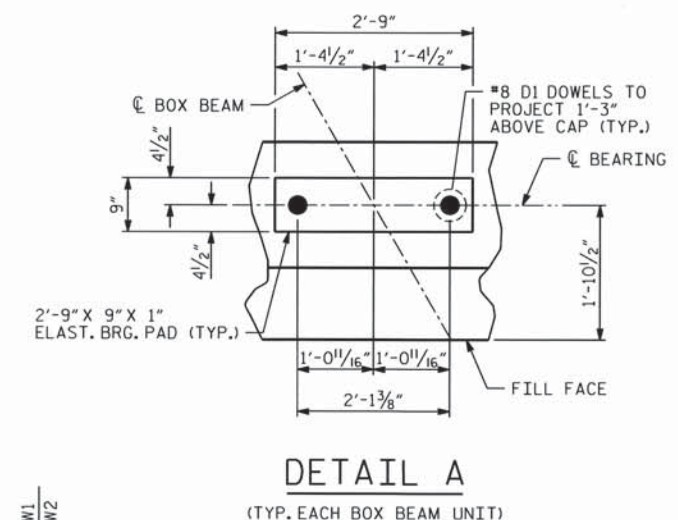
STIRRUPS IN CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR DOWELS.

THE LATERAL GUIDES AT EACH END OF THE CAP ARE NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.

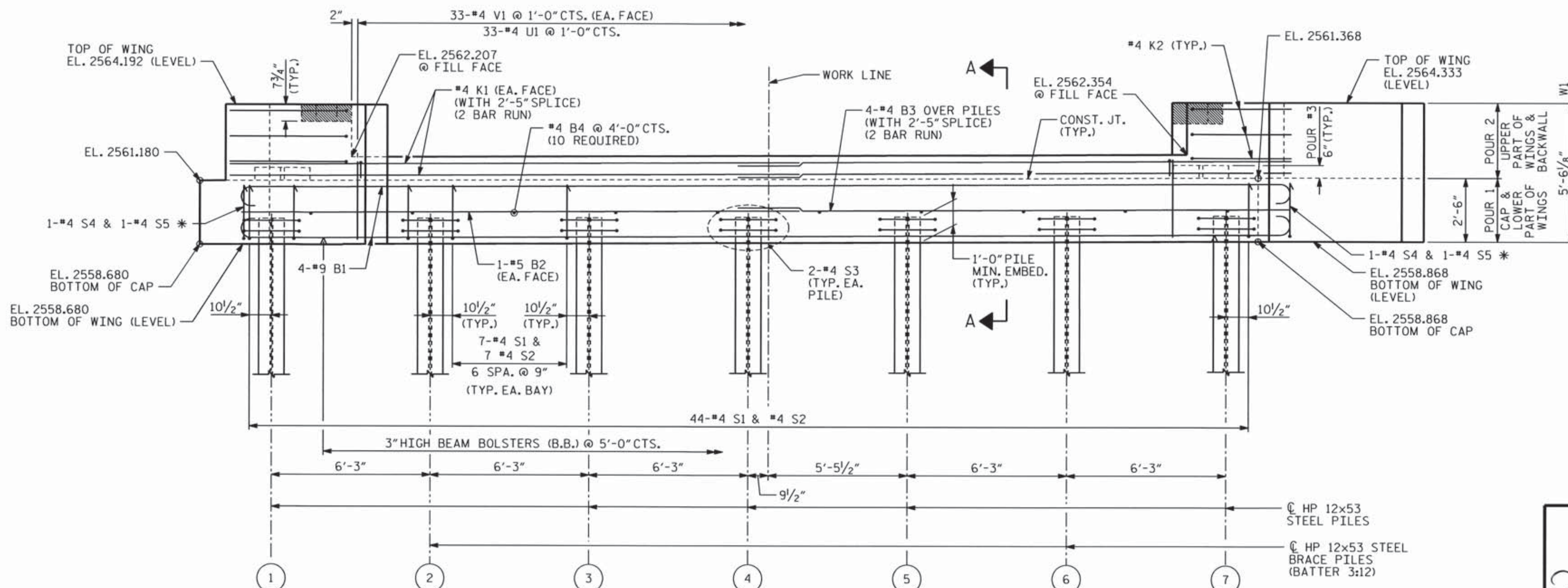
CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

SEE "SUBSTRUCTURE END BENT DETAILS" SHEETS FOR INFORMATION NOT SHOWN.





END BENT 1 PILE CUT-OFF ELEVATIONS						
PILE 1	PILE 2	PILE 3	PILE 4	PILE 5	PILE 6	PILE 7
2559.689	2559.718	2559.746	2559.774	2559.802	2559.831	2559.859



ELEVATION

REINFORCING IN WINGWALLS NOT SHOWN FOR CLARITY.
SEE "SUPERSTRUCTURE END BENT DETAILS" SHEETS.

(X) DENOTES PILE NUMBER
SEE PILE CUT-OFF ELEVATIONS TABLE THIS SHEET.

✱ SEE PLAN OF WING (W1 AND W2) FOR ORIENTATION OF BARS S4 AND S5

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI 2-28-11

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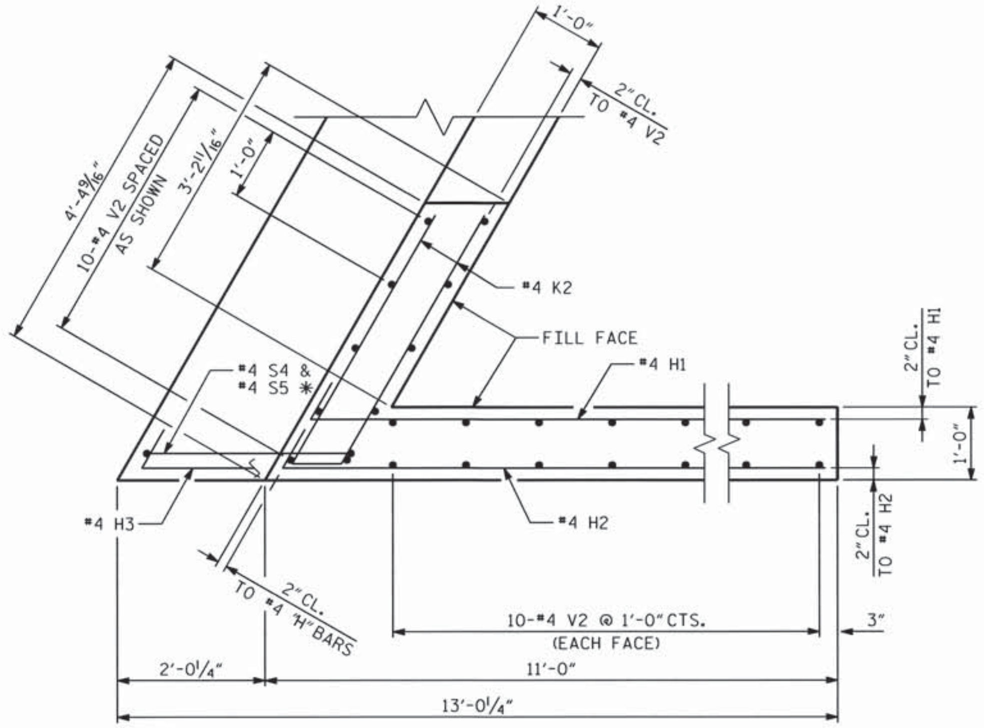
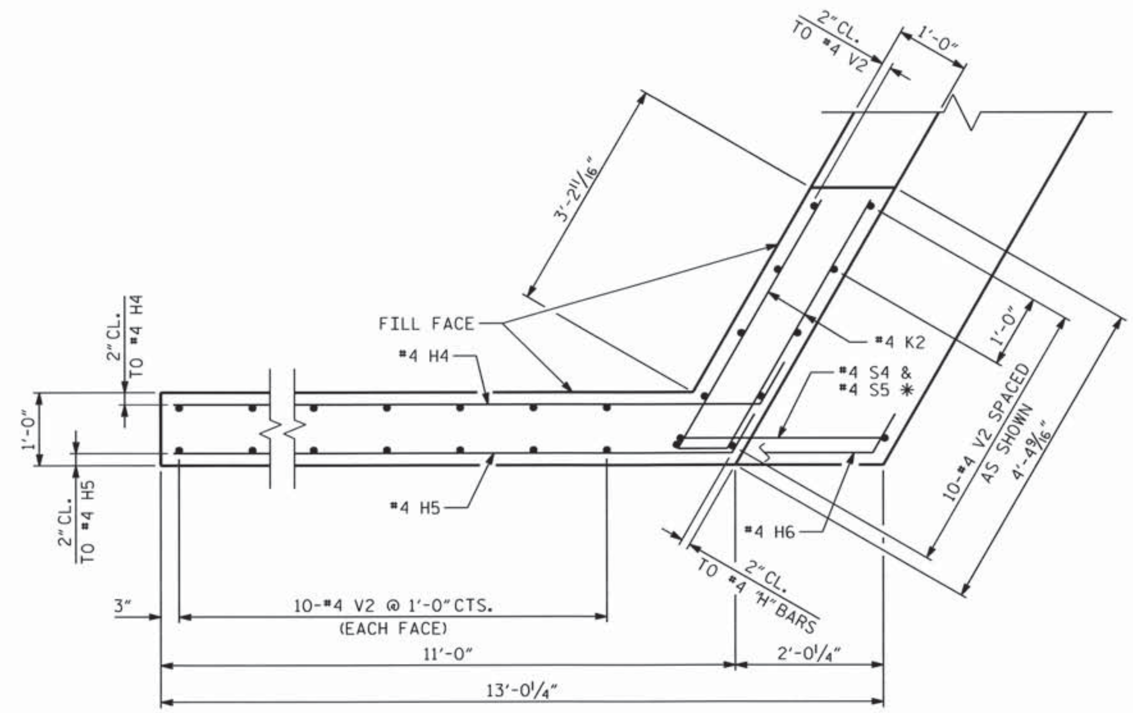
REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	31
1			3			TOTAL SHEETS	41
2			4				

DRAWN BY : J. ROSADO DATE : 01/09
CHECKED BY : D. COLETTI DATE : 01/09

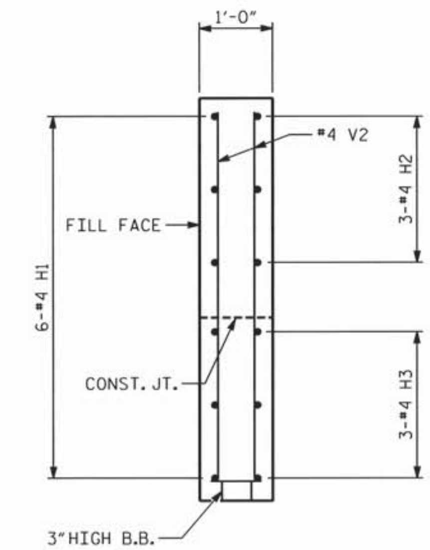


W1 PLAN OF WING

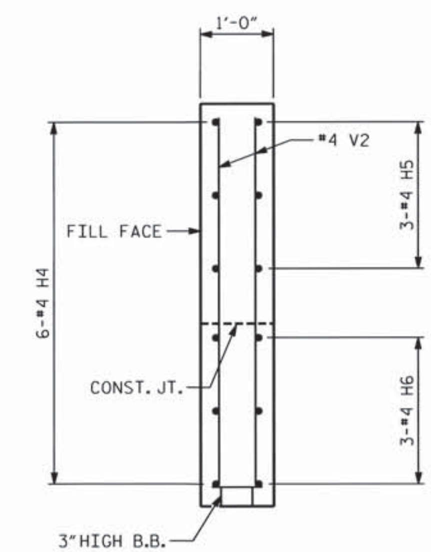


W2 PLAN OF WING

✱ BARS S4 AND S5 SHOWN TO ILLUSTRATE ORIENTATION. OTHER REINFORCING IN CAP NOT SHOWN FOR CLARITY.



SECTION X-X



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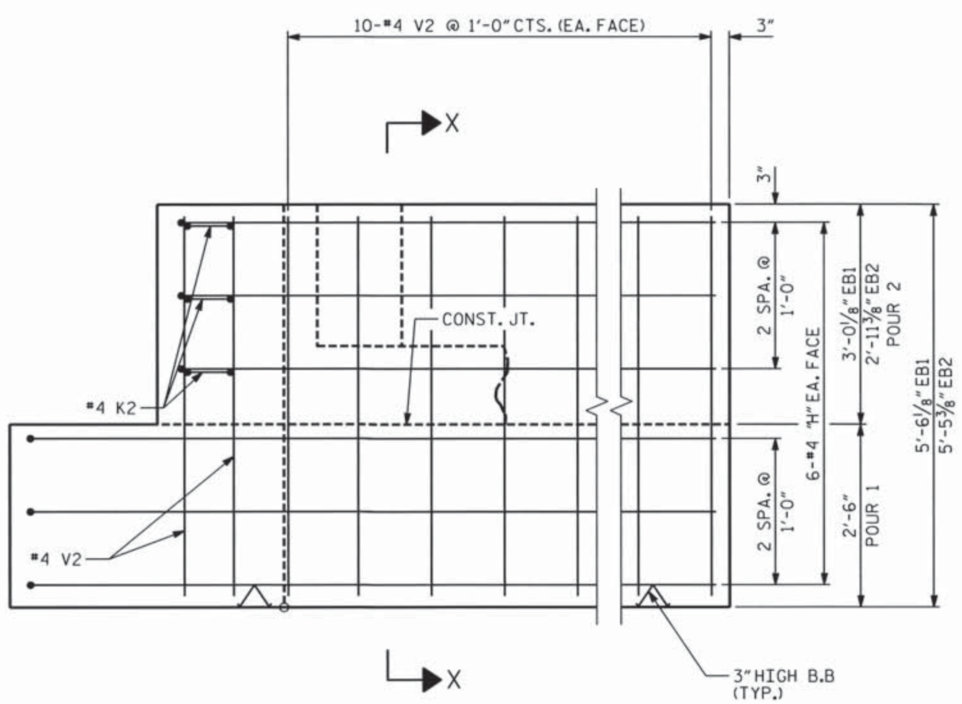
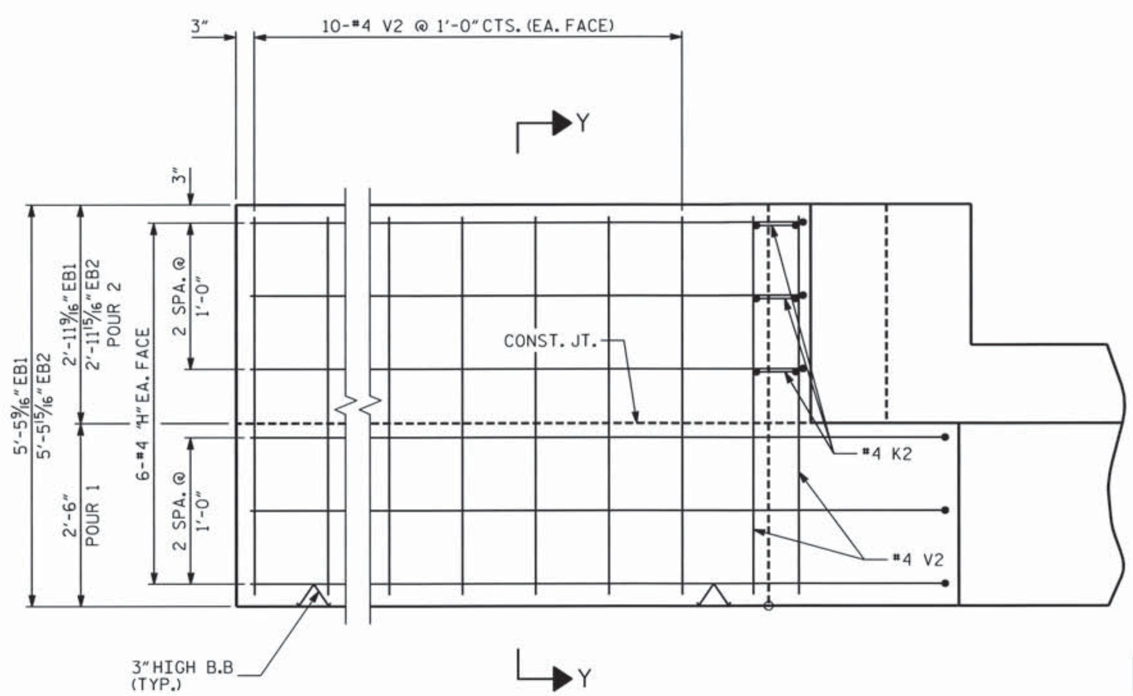


W1 ELEVATION OF WING

FOR ELEVATIONS SEE "SUBSTRUCTURE END BENT 1" AND "SUBSTRUCTURE END BENT 2" SHEETS



W2 ELEVATION OF WING

FOR ELEVATIONS SEE "SUBSTRUCTURE END BENT 1" AND "SUBSTRUCTURE END BENT 2" SHEETS

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

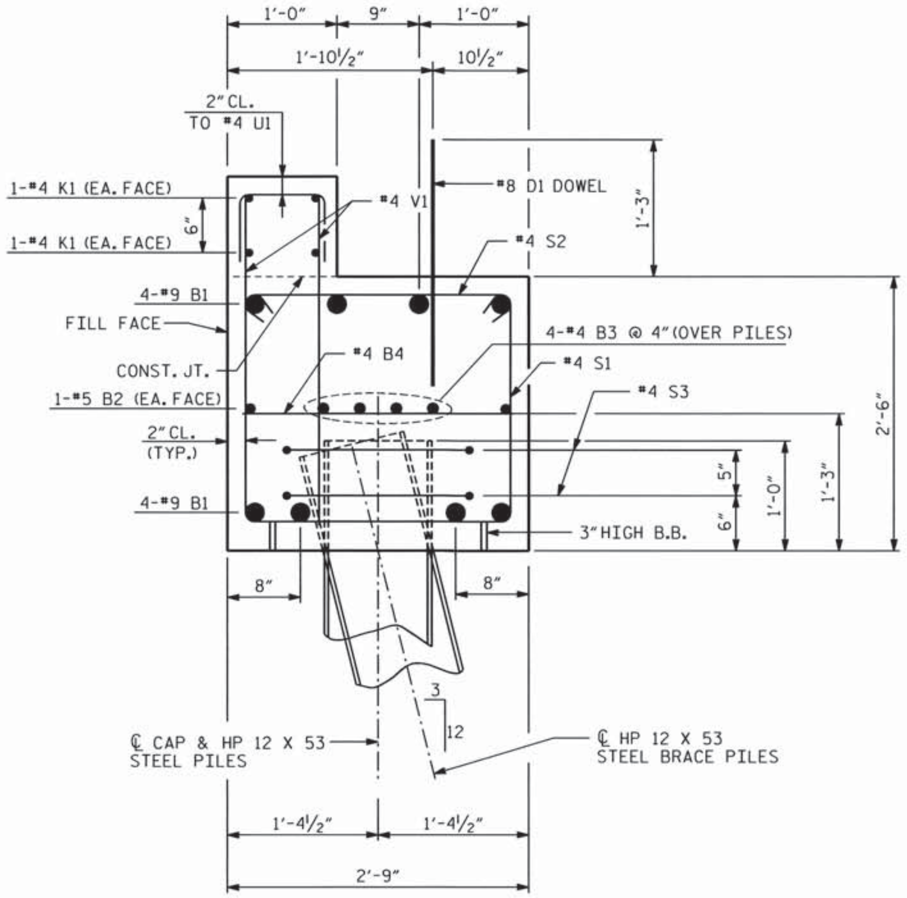
SUBSTRUCTURE
END BENT
DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI 2-28-11

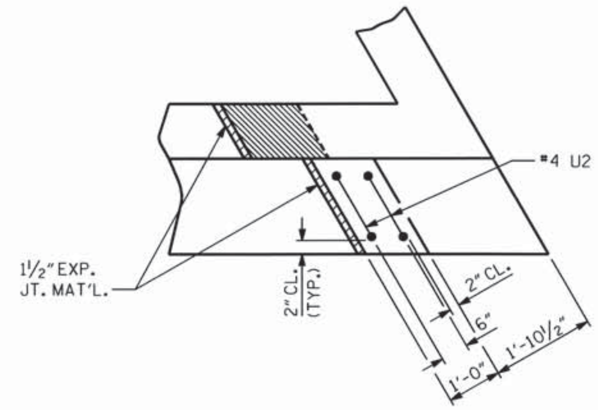
HDR Engineering, Inc. of the Carolinas, 3733 National Drive, Suite 207 Raleigh, N.C. 27612, N.C.B.E.L.S. License Number: F-0116

REVISIONS						SHEET NO. 32
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 41
2			4			

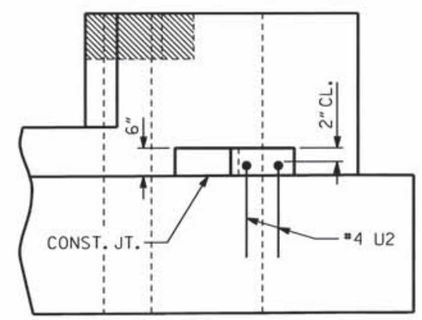
DRAWN BY: J. ROSADO DATE: 01/09
CHECKED BY: D. COLETTI DATE: 01/09



SECTION A-A



PLAN

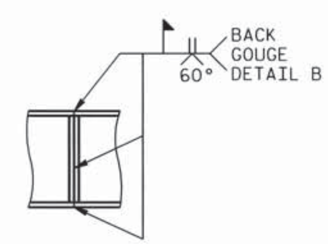


ELEVATION

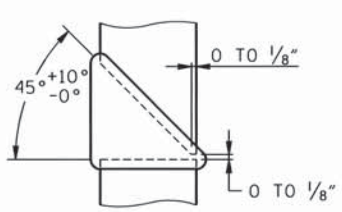
LATERAL GUIDE DETAILS

(RIGHT SIDE END BENT 2 SHOWN, OTHERS SIMILAR)

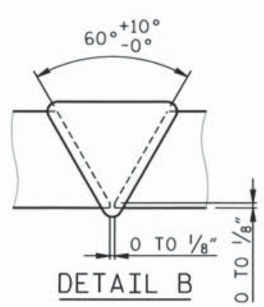
∗ PILE VERTICAL



∗ PILE HORIZONTAL OR VERTICAL



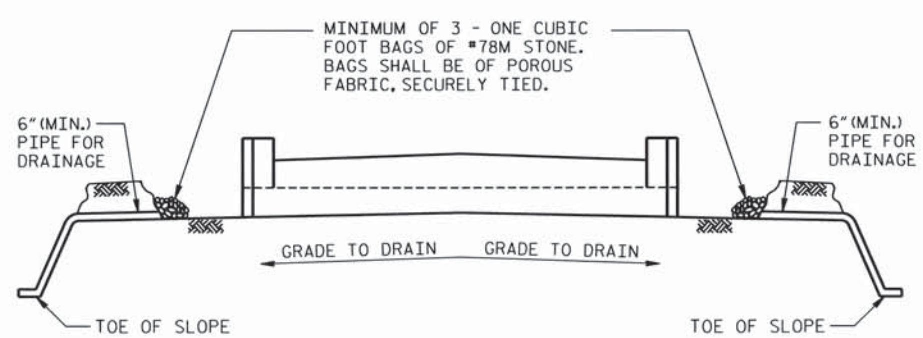
DETAIL A



DETAIL B

PILE SPLICE DETAILS

∗ POSITION OF PILE DURING WELDING



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

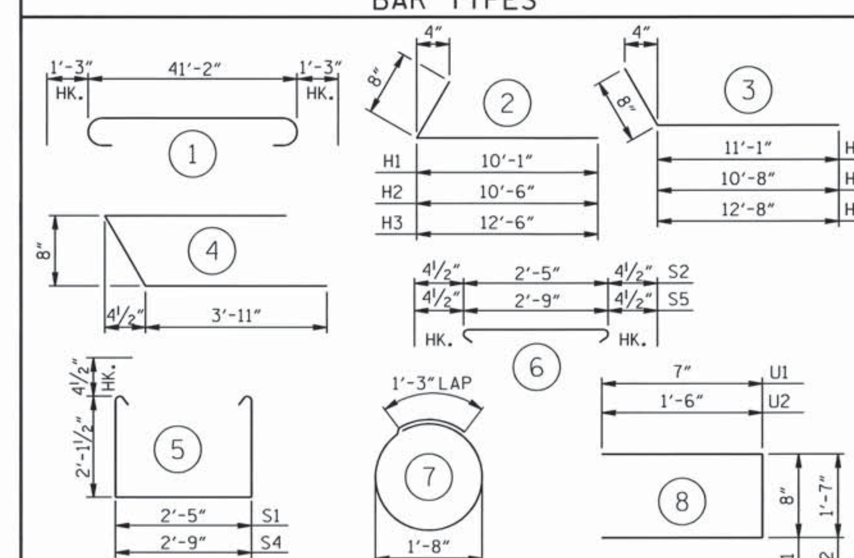
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BILL OF MATERIAL

END BENT 1						END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	43'-8"	1188	B1	8	#9	1	43'-8"	1188
B2	2	#5	STR.	41'-2"	86	B2	2	#5	STR.	41'-2"	86
B3	8	#4	STR.	21'-10"	117	B3	8	#4	STR.	21'-10"	117
B4	10	#4	STR.	2'-5"	17	B4	10	#4	STR.	2'-5"	17
D1	20	#8	STR.	2'-3"	121	D1	20	#8	STR.	2'-3"	121
H1	6	#4	2	10'-9"	44	H1	6	#4	2	10'-9"	44
H2	3	#4	2	11'-2"	23	H2	3	#4	2	11'-2"	23
H3	3	#4	2	13'-2"	27	H3	3	#4	2	13'-2"	27
H4	6	#4	3	11'-9"	48	H4	6	#4	3	11'-9"	48
H5	3	#4	3	11'-4"	23	H5	3	#4	3	11'-4"	23
H6	3	#4	3	13'-4"	27	H6	3	#4	3	13'-4"	27
K1	8	#4	STR.	21'-10"	117	K1	8	#4	STR.	21'-10"	117
K2	6	#4	4	8'-7"	35	K2	6	#4	4	8'-7"	35
S1	44	#4	5	7'-5"	218	S1	44	#4	5	7'-5"	218
S2	44	#4	6	3'-2"	94	S2	44	#4	6	3'-2"	94
S3	14	#4	7	6'-6"	61	S3	14	#4	7	6'-6"	61
S4	2	#4	5	7'-9"	11	S4	2	#4	5	7'-9"	11
S5	2	#4	6	3'-6"	5	S5	2	#4	6	3'-6"	5
U1	33	#4	8	1'-10"	41	U1	33	#4	8	1'-10"	41
U2	4	#4	8	4'-7"	13	U2	4	#4	8	4'-7"	13
V1	66	#4	STR.	3'-1"	136	V1	66	#4	STR.	3'-1"	136
V2	60	#4	STR.	5'-1"	204	V2	60	#4	STR.	5'-1"	204
REINFORCING STEEL			LBS.		2656	REINFORCING STEEL			LBS.		2656
CLASS 'A' CONCRETE						CLASS 'A' CONCRETE					
POUR 1			CU. YDS.		12.5	POUR 1			CU. YDS.		12.5
POUR 2			CU. YDS.		4.4	POUR 2			CU. YDS.		4.4
POUR 3			CU. YDS.		0.1	POUR 3			CU. YDS.		0.1
TOTAL			CU. YDS.		17.0	TOTAL			CU. YDS.		17.0
HP 12 X 53 STEEL PILES						HP 12 X 53 STEEL PILES					
NO. 7			LIN. FT.		70	NO. 7			LIN. FT.		105

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29589 DOMENIC A. COLETTI 2-28-11

HDR Engineering, Inc. of the Carolinas, 3733 National Drive, Suite 207 Raleigh, N.C. 27612, N.C.B.E.L.S. License Number: F-0116

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SHEET NO. 33

TOTAL SHEETS 41

DRAWN BY: J. ROSADO DATE: 01/09
CHECKED BY: D. COLETTI DATE: 01/09

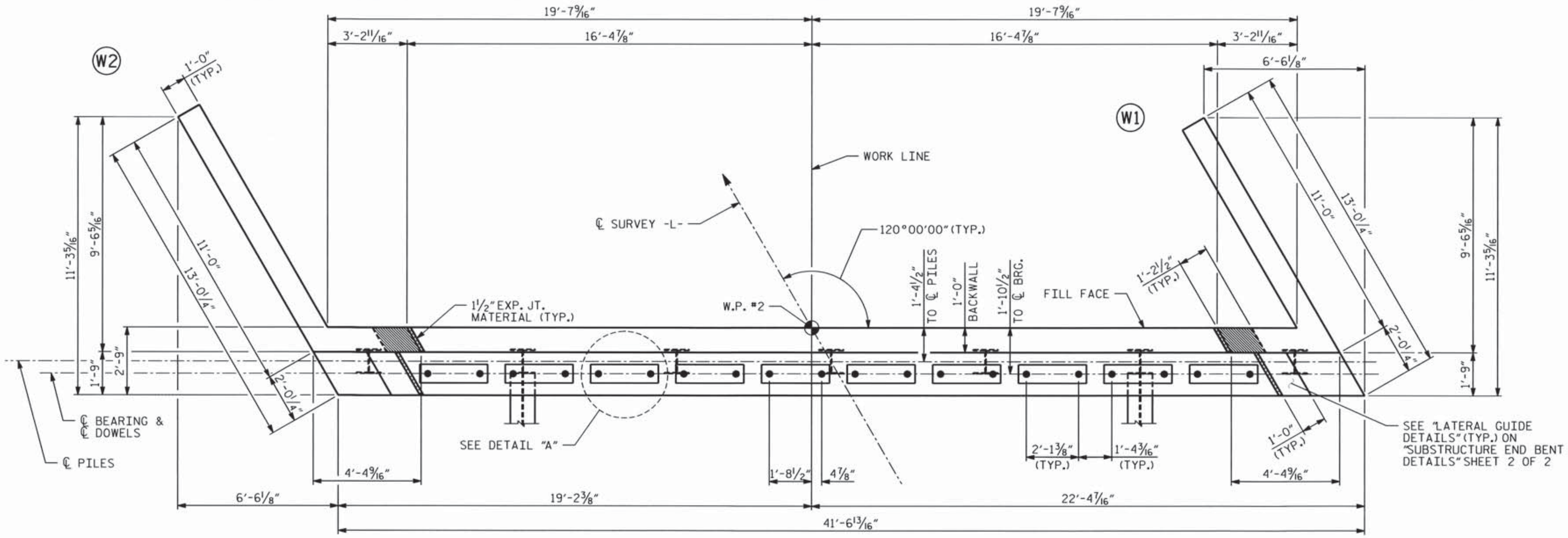
NOTES

STIRRUPS IN CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR DOWELS.

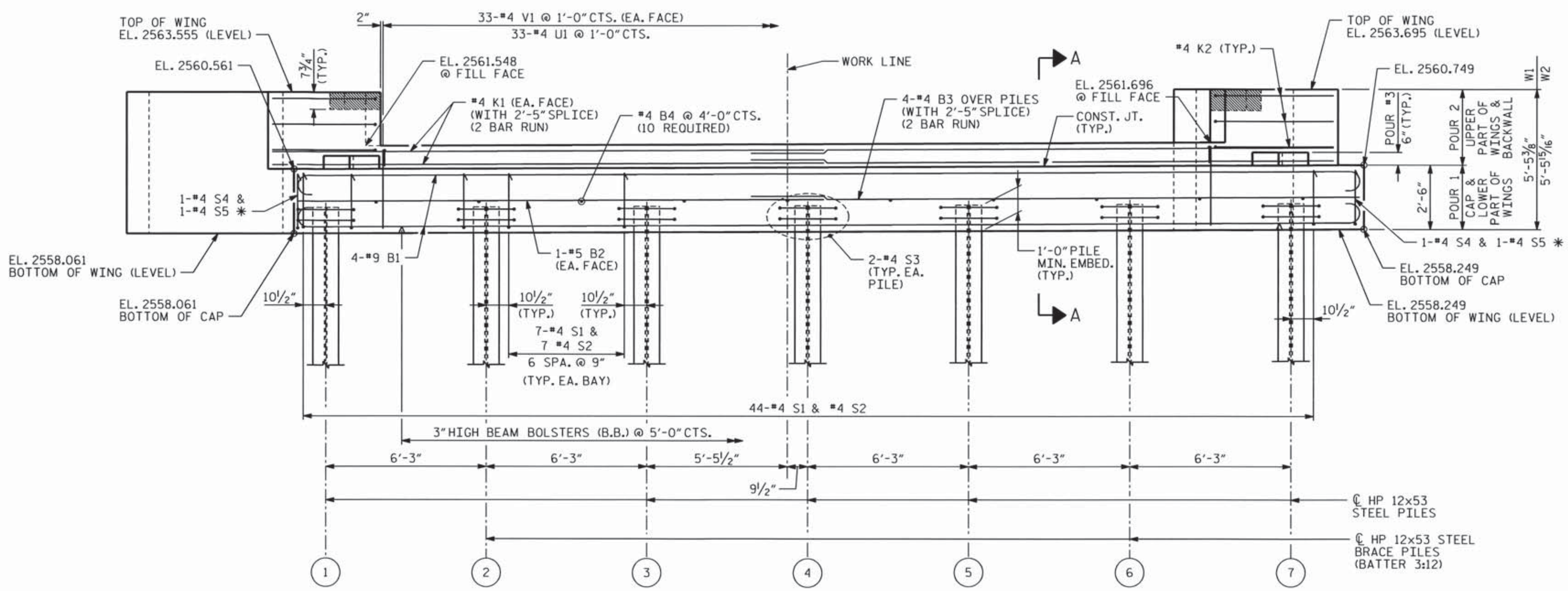
THE LATERAL GUIDES AT EACH END OF THE CAP ARE NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.

CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

SEE "SUBSTRUCTURE END BENT DETAILS" SHEETS FOR INFORMATION NOT SHOWN.



PLAN

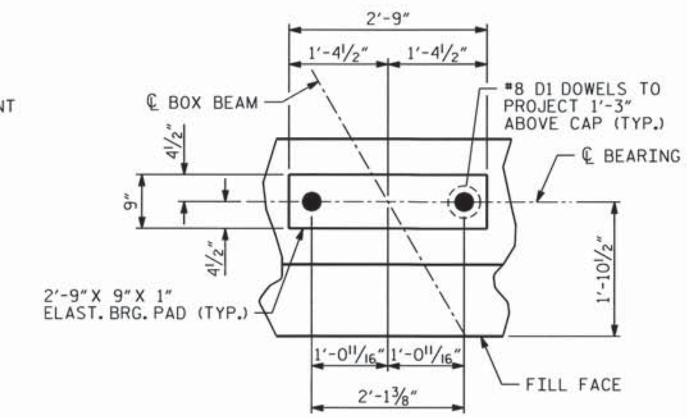


ELEVATION

REINFORCING IN WINGWALLS NOT SHOWN FOR CLARITY.
SEE "SUPERSTRUCTURE END BENT DETAILS" SHEETS.

(X) DENOTES PILE NUMBER
SEE PILE CUT-OFF ELEVATIONS TABLE THIS SHEET.

✱ SEE PLAN OF WING (W1 AND W2) FOR ORIENTATION OF BARS S4 AND S5



DETAIL A

(TYP. EACH BOX BEAM UNIT)

END BENT 2
PILE CUT-OFF ELEVATIONS

PILE 1	PILE 2	PILE 3	PILE 4	PILE 5	PILE 6	PILE 7
2559.070	2559.099	2559.127	2559.155	2559.183	2559.212	2559.240

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI 2-28-11

HDR Engineering, Inc. of the Carolinas, 3733 National Drive, Suite 207 Raleigh, N.C. 27612, N.C.B.E.L.S. License Number: F-0116

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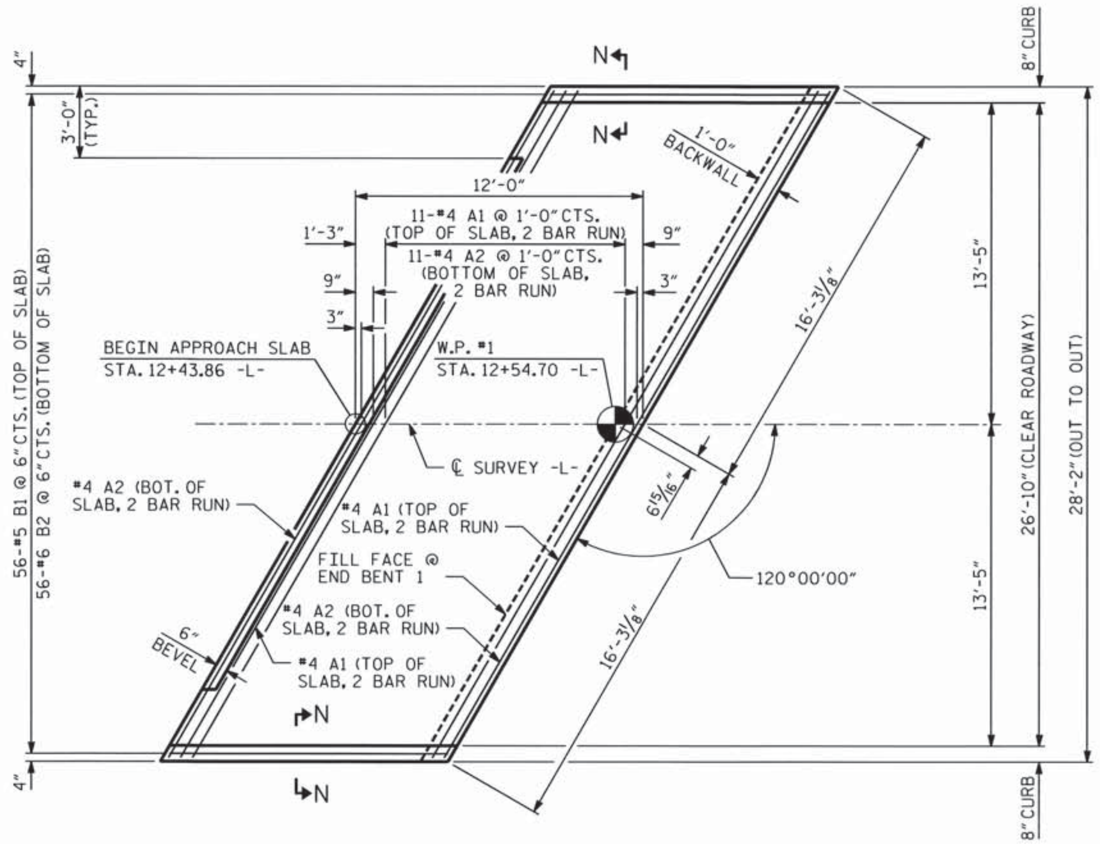
SHEET NO. 34
TOTAL SHEETS 41

DRAWN BY : J. ROSADO DATE : 01/09
CHECKED BY : D. COLETTI DATE : 01/09



PLAN OF APPROACH SLAB

(BEGIN APPROACH SLAB SHOWN; END APPROACH SLAB SIMILAR)

SPLICE CHART		
BAR	SIZE	LENGTH
A1	#4	2'-0"
A2	#4	1'-9"

NOTES

FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLAB.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

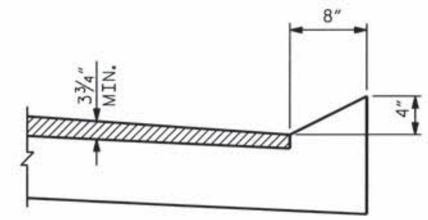
BILL OF MATERIAL

APPROACH SLAB AT EB #1

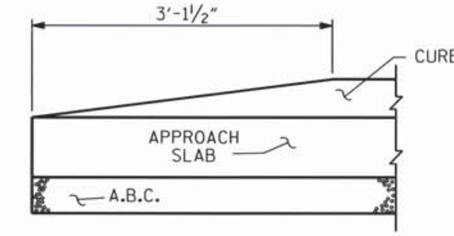
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	17'-1"	297
A2	26	#4	STR	16'-11"	294
* B1	56	#5	STR	11'-2"	653
B2	56	#6	STR	11'-8"	982
REINFORCING STEEL				LBS.	1276
* EPOXY COATED REINFORCING STEEL				LBS.	950
CLASS AA CONCRETE				C. Y.	15.2

APPROACH SLAB AT EB #2

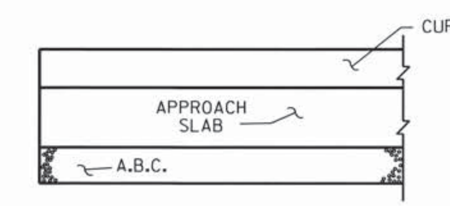
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	17'-1"	297
A2	26	#4	STR	16'-11"	294
* B1	56	#5	STR	11'-2"	653
B2	56	#6	STR	11'-8"	982
REINFORCING STEEL				LBS.	1276
* EPOXY COATED REINFORCING STEEL				LBS.	950
CLASS AA CONCRETE				C. Y.	15.2



SECTION N-N



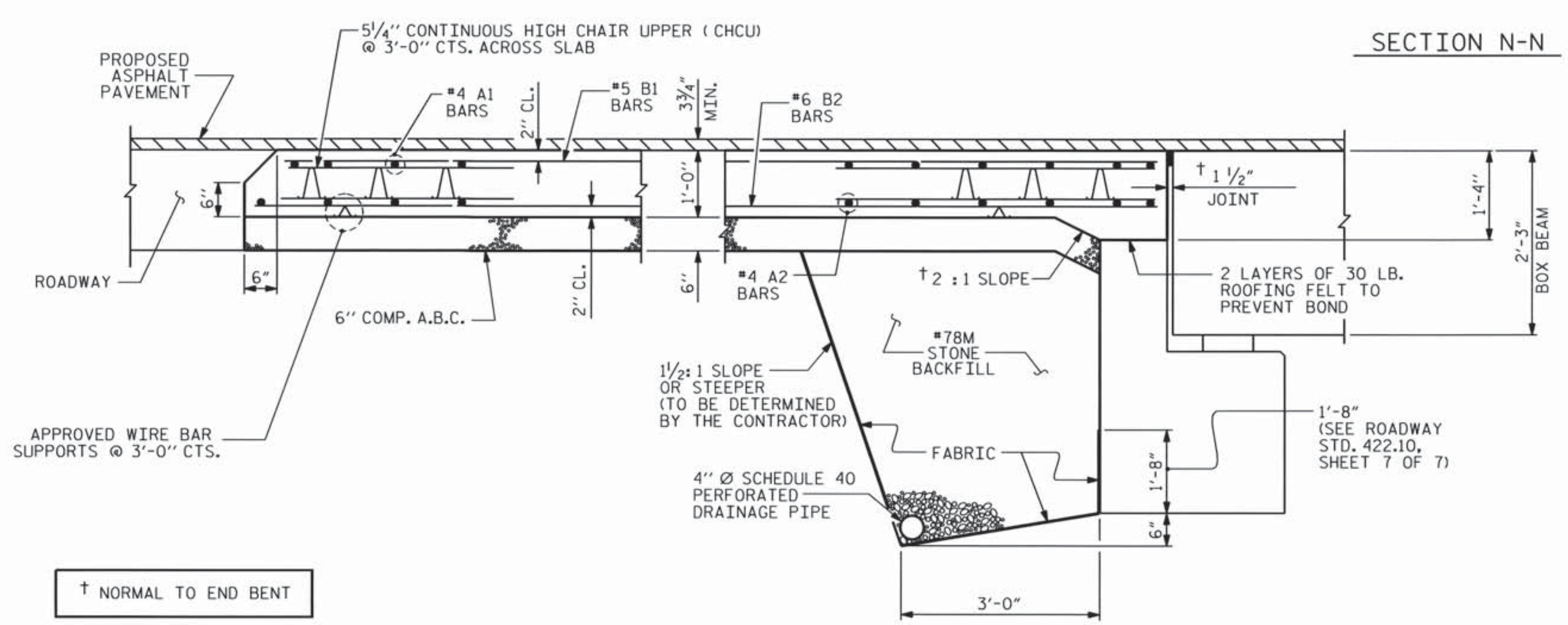
END OF CURB WITHOUT SHOULDER BERM GUTTER



END OF CURB WITH SHOULDER BERM GUTTER

(SEE SHEET NO. 2 FOR LOCATION OF SHOULDER BERM GUTTER)

CURB DETAILS



† NORMAL TO END BENT

SECTION THRU SLAB

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONC. BOX BEAM UNIT (SUB-REGIONAL TIER)

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI 2-28-11

HDR Engineering, Inc. of the Carolinas, 3733 National Drive, Suite 207 Raleigh, N.C. 27612, N.C.B.E.L.S. License Number: F-0116

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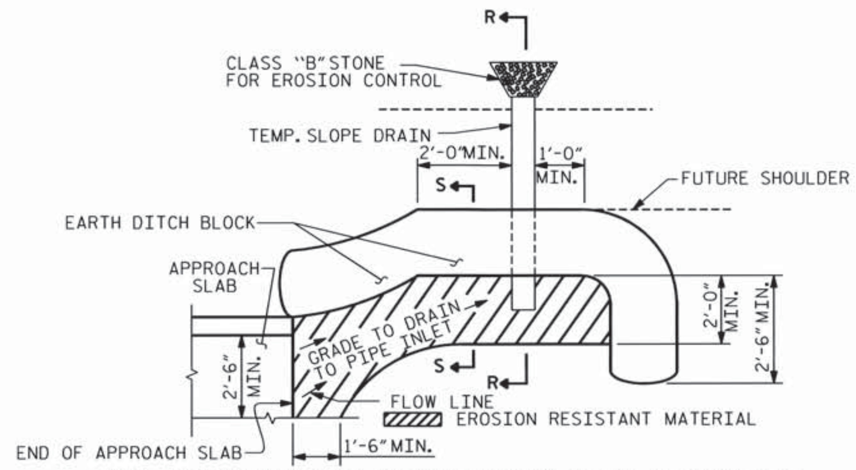
SHEET NO. 35

TOTAL SHEETS 41

DRAWN BY : J. ROSADO DATE : 01/09

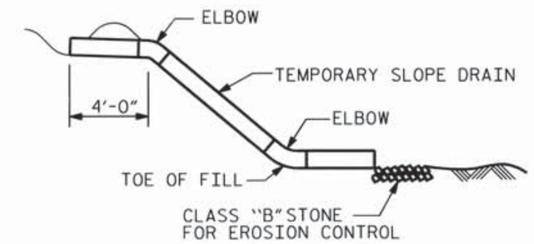
CHECKED BY : D. COLETTI DATE : 01/09

(SHT 2)

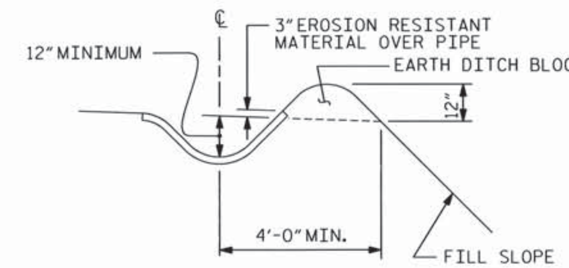


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW



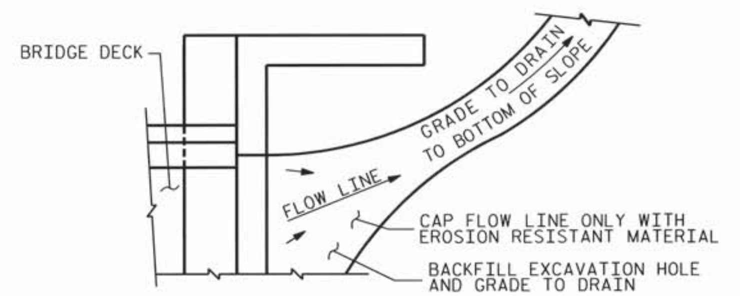
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

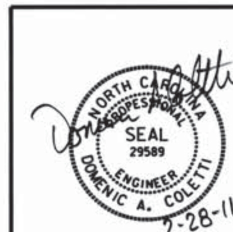
TEMPORARY DRAINAGE DETAIL

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

REVISIONS						SHEET NO. 36
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 41
1			3			
2			4			

DRAWN BY :	J. ROSADO	DATE :	01/09
CHECKED BY :	D. COLETTI	DATE :	01/09

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

PROJECT NO. 33838.1.1

HAYWOOD COUNTY

STATION: 12+91.00 -L-

DRAWN BY : J. ROSADO DATE : 01/09

CHECKED BY : D. COLETTI DATE : 01/09

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

2-28-11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD NOTES

REVISIONS						SHEET NO. 37
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 41
2			4			

HDR Engineering, Inc. of the Carolinas
3723 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

8/17/99

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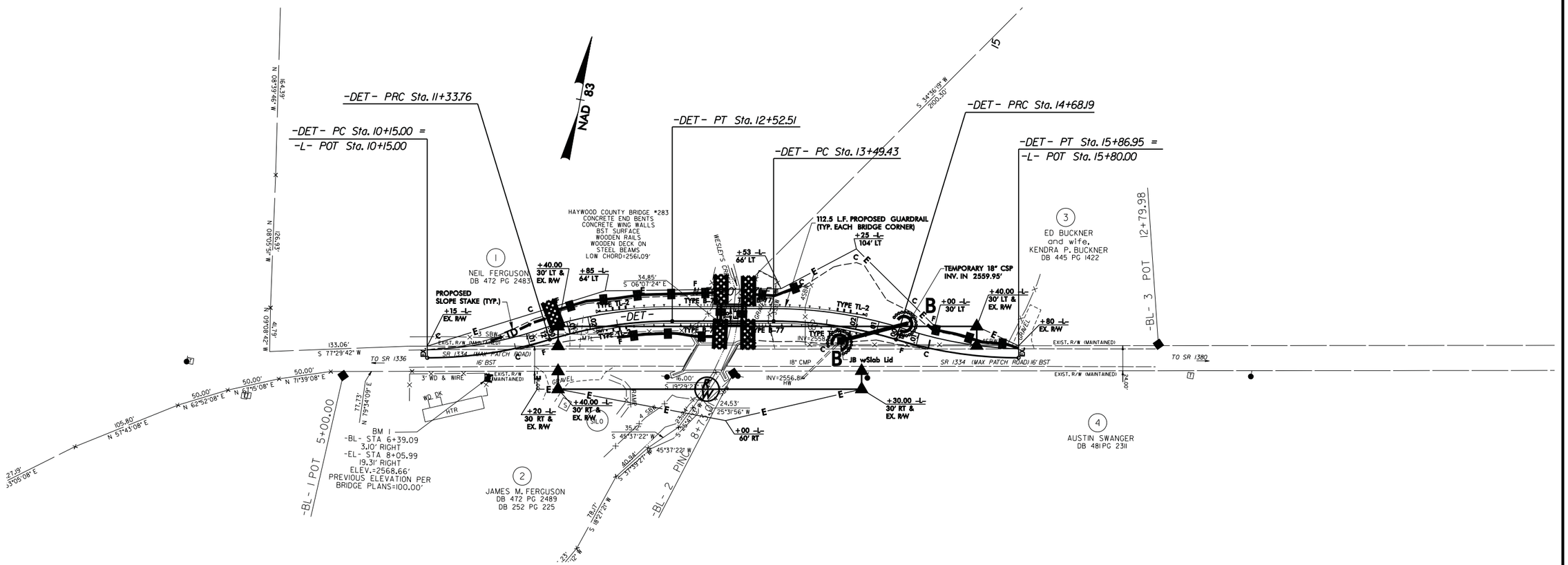
EROSION CONTROL PLAN



Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1630.05	Temporary Diversion	TD
1633.01	Temporary Rock Silt Check Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ROADSIDE ENVIRONMENTAL UNIT
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RALEIGH, N.C.

2006 STANDARD SPECIFICATIONS

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PROJECT REFERENCE NO.	SHEET NO.
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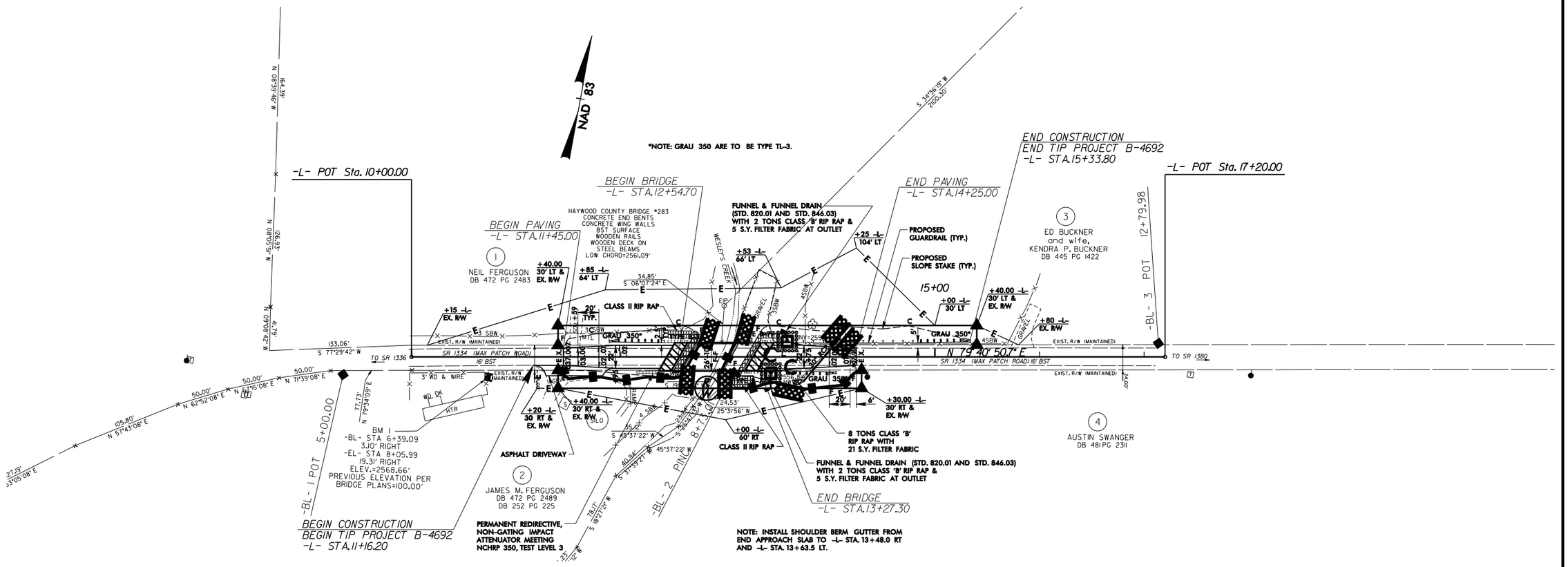
EROSION CONTROL PLAN



Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1632.03	Rock Inlet Sediment Trap Type C	
1633.01	Temporary Rock Silt Check Type-A	

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

2006 STANDARD SPECIFICATIONS

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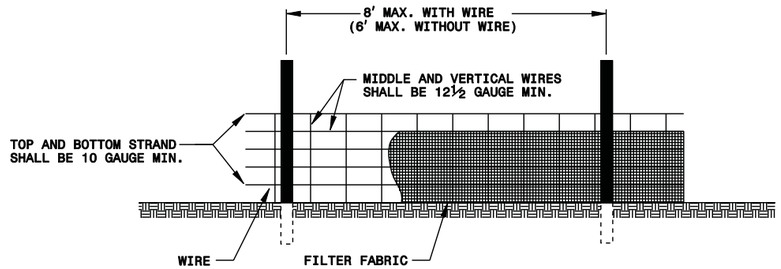
EROSION CONTROL PLAN

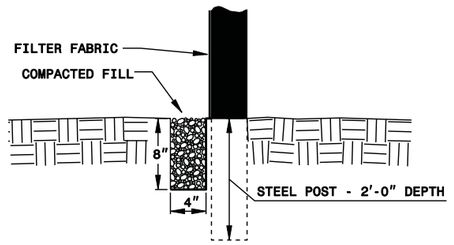
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR **TEMPORARY SILT FENCE**

SHEET 1 OF 1 — 1605.01



NOTES
USE WIRE A MINIMUM OF 32" IN WIDTH AND WITH A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
USE FILTER FABRIC A MINIMUM OF 36" IN WIDTH AND FASTEN ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
PROVIDE 5'-0" STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.



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

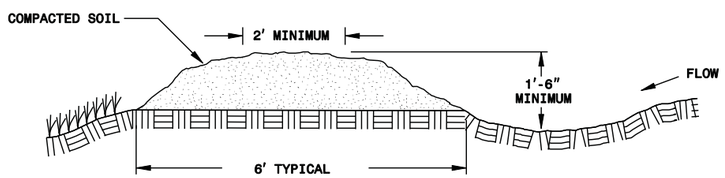
ENGLISH STANDARD DRAWING FOR **TEMPORARY SILT FENCE**

SHEET 1 OF 1 — 1605.01

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

ENGLISH STANDARD DRAWING FOR **TEMPORARY DIVERSION**

SHEET 1 OF 1 — 1630.05

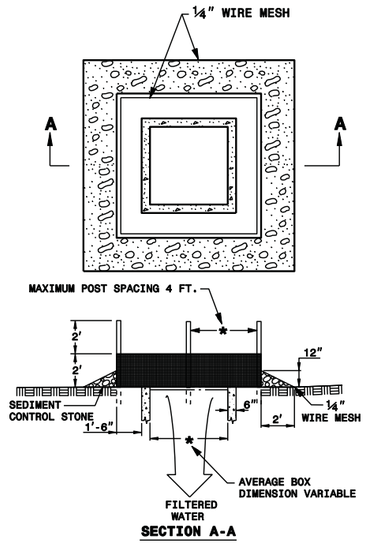


CROSS SECTIONAL VIEW

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

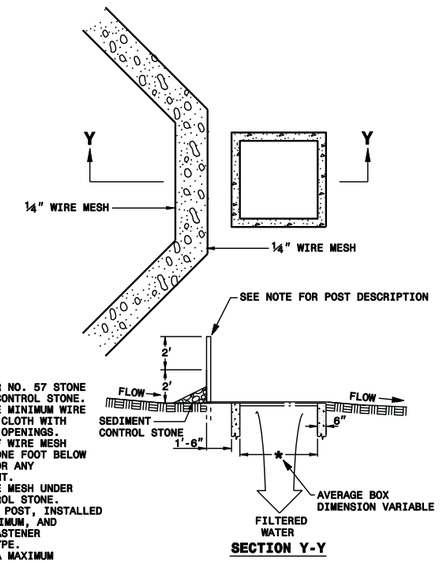
ENGLISH STANDARD DRAWING FOR **ROCK INLET SEDIMENT TRAP TYPE 'C'**

SHEET 1 OF 1 — 1632.03



SECTION A-A

NOTE
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
USE 24 GAUGE MINIMUM WIRE MESH HARDWARE CLOTH WITH 1/4 INCH MESH OPENINGS.
PLACE TOP OF WIRE MESH A MINIMUM OF ONE FOOT BELOW THE SHOULDER OR ANY DIVERSION POINT.
INSTALL WIRE MESH UNDER SEDIMENT CONTROL STONE.
USE 5' STEEL POST, INSTALLED 1.5' DEEP MINIMUM, AND OF THE SELF-FASTENER ANGLE STEEL TYPE.
SPACE POST A MAXIMUM OF 4'.



SECTION Y-Y

MULTI-DIRECTIONAL FLOW

SINGLE-DIRECTIONAL FLOW

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

ENGLISH STANDARD DRAWING FOR **ROCK INLET SEDIMENT TRAP**

SHEET 1 OF 1 — 1632.03

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PROJECT REFERENCE NO.	SHEET NO.
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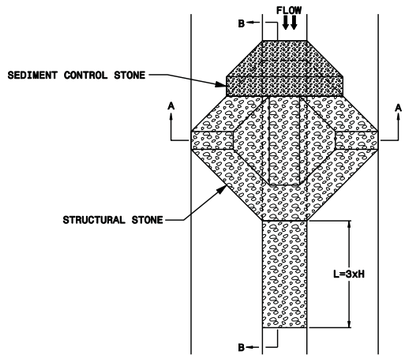
EROSION CONTROL PLAN

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

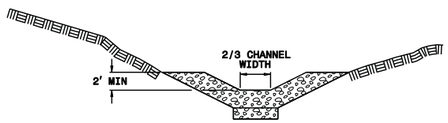
ENGLISH STANDARD DRAWING FOR

TEMPORARY ROCK SILT CHECK TYPE 'A'

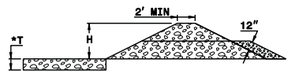
SHEET 1 OF 1
1633.01



PLAN



SECTION A-A



SECTION B-B
*T = 12" MIN., 18" MAX.

NOTE
USE CLASS 'B' EROSION CONTROL STONE FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.

STATE OF NORTH CAROLINA
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ENGLISH STANDARD DRAWING FOR

TEMPORARY ROCK SILT CHECK TYPE 'A'

SHEET 1 OF 1
1633.01

SAFETY FENCE:

Description

Safety Fence shall consist of furnishing, installing and maintaining polyethylene or polypropylene fence along the outside riparian buffer, wetland, or water boundary located within the construction corridor to mark the areas that have been approved to infringe within the buffer, wetland or water. The fence shall be installed prior to any land disturbing activities.

Materials

Polyethylene or polypropylene fence shall be a highly visible preconstructed safety fence approved by the Engineer.

Either wood posts or steel posts may be used. Wood posts shall be nominal 2" x 4" or 4" x 4" lengths as required, structural light framing, grade No. 2, Southern Pine. Steel posts shall be at least 5 ft. in length, approximately 1 3/8" wide measured parallel to the fence, and have a minimum weight of 1.25 lb./ft. of length. The steel post shall be equipped with an anchor plate having a minimum area of 14 square inches.

Construction Methods

No additional clearing and grubbing is anticipated for the installation of this fence; however, if any clearing and grubbing is required, it will be the minimum required for the installation of the safety fence. Such clearing shall include satisfactory removal and disposal of all trees, brush, stumps and other objectionable material.

The fence shall be erected to conform to the general contour of the ground. When determined necessary, minor grading along the fence line shall be performed to meet this requirement provided no obstructions to proper drainage are created.

Posts shall be set and maintained in a vertical position and may be hand set or set with a post driver. If hand set, all backfill material shall be thoroughly tamped. Wood posts may be sharpened to a dull point if power driven. Posts damaged by power driving shall be removed and replaced prior to final acceptance. The tops of all wood posts shall be cut at a 30-degree angle. The wood posts may, at the option of the Contractor, be cut at this angle either before or after the posts are erected.

The fence fabric shall be attached to the wood posts with one 2" galvanized wire staple across each cable or to the steel posts with wire or other acceptable means.

The Contractor shall be required to maintain the safety fence in a satisfactory condition for the duration of the project as determined by the Engineer.

Measurement and Payment

Safety Fence will be paid for at the contract price for "Lump Sum for Erosion Control". Such payment will be full compensation including but not limited to clearing and grading, furnishing and installing fence fabric with necessary posts and post bracing, staples, tie wires, tools, equipment and incidentals necessary to complete this work.

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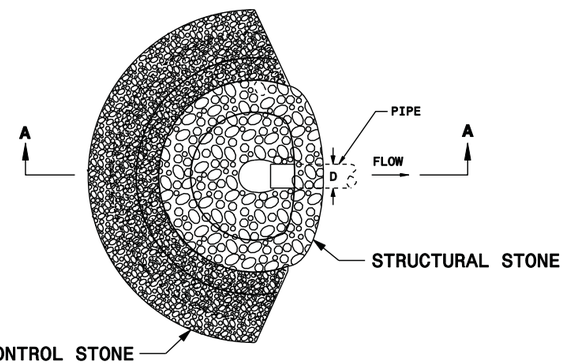
RALEIGH, N.C.
7-06

ENGLISH STANDARD DRAWING FOR

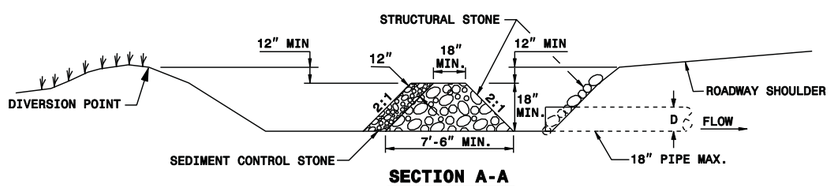
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'

SHEET 1 OF 1
1635.02

NOTE:
USE CLASS 'A' EROSION CONTROL STON FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL.
CONSTRUCT TOP OF BERM A MINIMUM OF ONE FOOT BELOW THE SHOULDER OR DIVERSION POINT.
PROVIDE A TOTAL SEDIMENT TRAP VOLUME OF 1800± CUBIC FEET PER ACRE OF DISTURBED AREA. SOME OF THE REQUIRED VOLUME MAY BE PROVIDED BY OTHER UP OR DOWNSTREAM CONTROLS.



PLAN



SECTION A-A

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

ENGLISH STANDARD DRAWING FOR

ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'

SHEET 1 OF 1
1635.02

ROADSIDE ENVIRONMENTAL UNIT
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2006 STANDARD SPECIFICATIONS

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